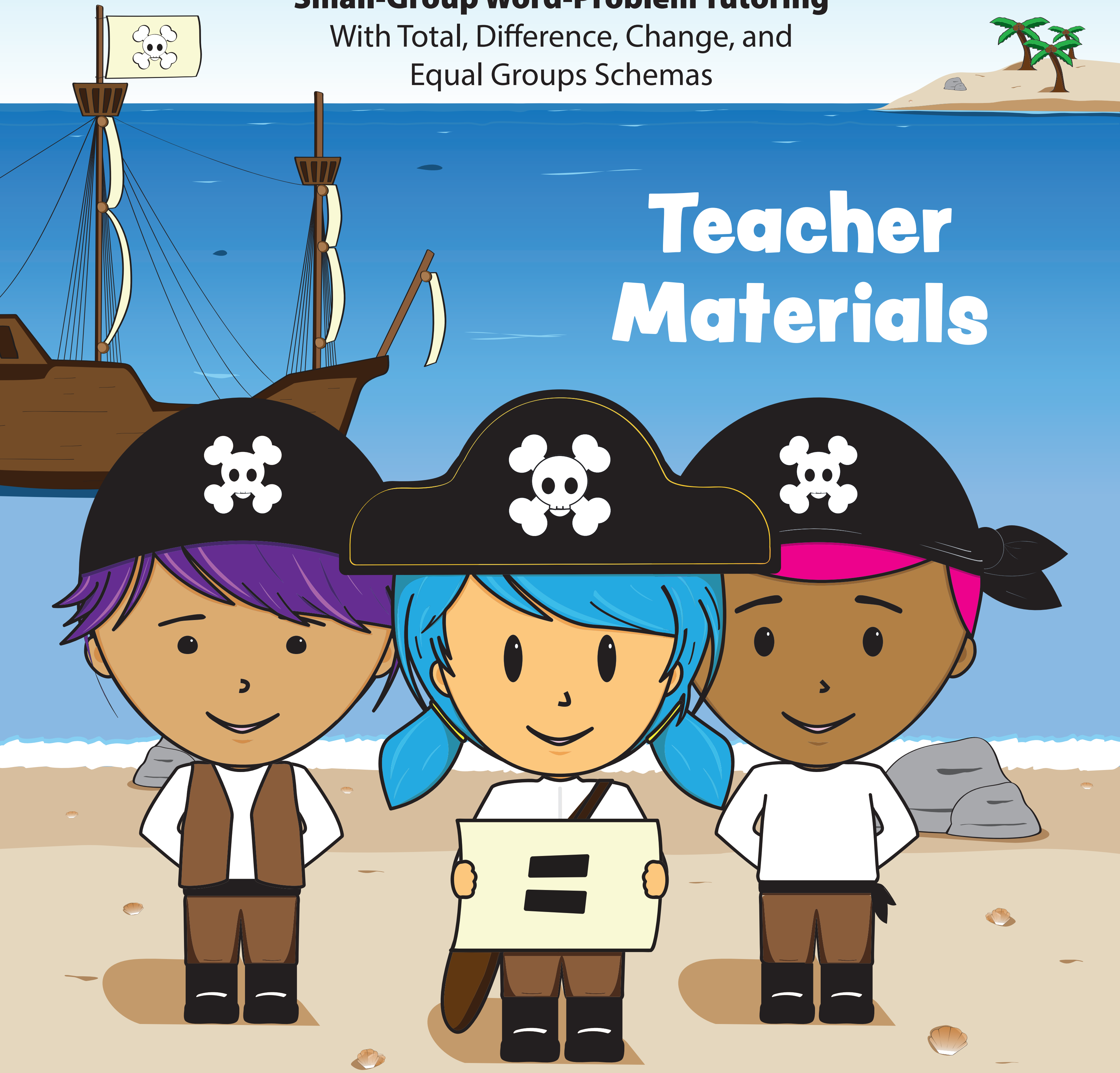
Pirate Math Equation Quest

Small-Group Word-Problem Tutoring
With Total, Difference, Change, and
Equal Groups Schemas



Teacher Materials

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The University of Texas at Austin

The Meadows Center
FOR PREVENTING EDUCATIONAL RISK

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TEACHER MATERIALS

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TEXAS
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Thank you to the third-grade teachers and students of Austin Independent School District who graciously participated in this research project. We also thank the many research assistants at the University of Texas at Austin for their time, effort, and dedication to the project. A special thanks to Ana Acunto for her assistance in the development of this manual.

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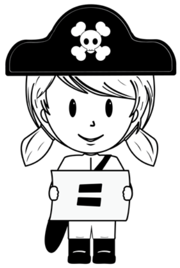


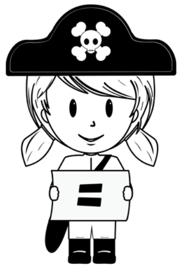
Introduction

Welcome to *Pirate Math Equation Quest*!

We designed this version of *Pirate Math Equation Quest* as a small-group intervention for use with students at the third-grade instructional level. This version of the program was developed to offer support to Tier-2 and Tier-3 students who require supplemental mathematics remediation in the area of word-problem solving. The focus of the *Pirate Math Equation Quest* small-group intervention is single-digit and double-digit additive and multiplicative word problems that include four schemas: Total, Difference, Change, and Equal Groups.

This manual includes the Teacher Lesson Guides, Teacher Activity Guides, and accompanying Supplemental Materials (i.e., posters, maps, cards, graphs, and mats) necessary to implement *Pirate Math Equation Quest* with small groups of 3-4 students. A separate Student Manual includes the student materials, organized by lesson, needed to implement *Pirate Math Equation Quest*.

Scientific evaluations of *Pirate Math Equation Quest* indicated that at-risk third-grade students (with and without mathematics disabilities) who performed in the lowest 13th percentile of their classes demonstrated improved word-problem performance with *Pirate Math Equation Quest* compared to students who did not participate in *Pirate Math Equation Quest* (Powell, Berry, & Barnes, 2019).



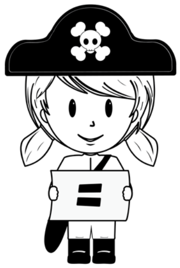
In This Manual

This Teacher Manual includes the following:

Introduction
- Basic information about implementing *Pirate Math Equation Quest*
- Schedule for implementation
- Explanation of Teacher Materials
- Explanation of Student Materials
- Explanation of Supplemental Materials
- Explanation of Other Materials

Lesson Guides 1-39
- Teacher Lesson Guides

Activity Guides
- Guides to core lesson components (teachers are referred to Activity Guides in the Lesson Guides)



Implementation

The *Pirate Math Equation Quest* small group intervention is implemented **three times** per week for **13 school weeks**. Each lesson lasts **30-35 minutes**.

During each lesson, the teacher explicitly teaches a lesson to the group of 3-4 students. Each lesson includes five components: (1) Math Fact Flashcards, (2) Equation Quest, (3) Buccaneer Problems, (4) Shipshape Sorting, and (5) Jolly Roger Review. First, students complete two trials of Math Fact Flashcards. During Lessons 1-30, students answer as many addition and subtraction flashcards as they can in 1 minute. During Lessons 31-39, students answer as many multiplication and division flashcards as they can in 1 minute. After 2 trials, one of the students from the group graphs the higher score. Second, students receive instruction on solving equations and the meaning of the equal sign in Equation Quest. Third, students receive schema instruction to solve three word problems during Buccaneer Problems. Fourth, students participate in Shipshape Sorting and practice identifying word-problem schemas learned during the Buccaneer Problems during a 1-minute timing. Fifth, students work individually to solve addition, subtraction, multiplication, and/or division fluency problems and a word problem using the schema steps.

Daily Activities

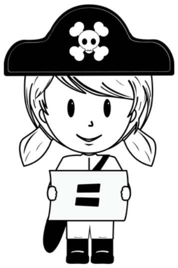
(1) Math Fact Flashcards (2-3 minutes)
- Students complete two trials of Math Fact Flashcards, each for 1 minute
- Teacher and students count cards after each timing
- Teacher monitors and provides feedback as needed, using the Counting Up strategy to assist
- After 2 trials, students graph the higher score

(2) Equation Quest (5 minutes)
- Students receive instruction on solving equations and the meaning of the equal sign

(3) Buccaneer Problems (15-18 minutes)
- Students receive schema instruction to solve three word problems
- Teacher monitors and provides feedback as needed

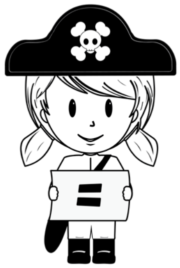
(4) Shipshape Sorting (2-3 minutes)
- Students practice identifying word-problem schemas during a 1-minute timing
- Teacher monitors and provides feedback as needed

(5) Jolly Roger Review (5 minutes)
- Students independently complete addition, subtraction, multiplication, and/or division fluency problems during a 1-minute timing (top of Jolly Roger Review worksheet)
- Students independently solve a word problem using the schema steps during a 2-minute timing (botttom of Jolly Roger Review worksheet)
- Teacher provides feedback at the end of the 3 minutes
- Students color number of earned coins/stamps during lesson on a Treasure Map



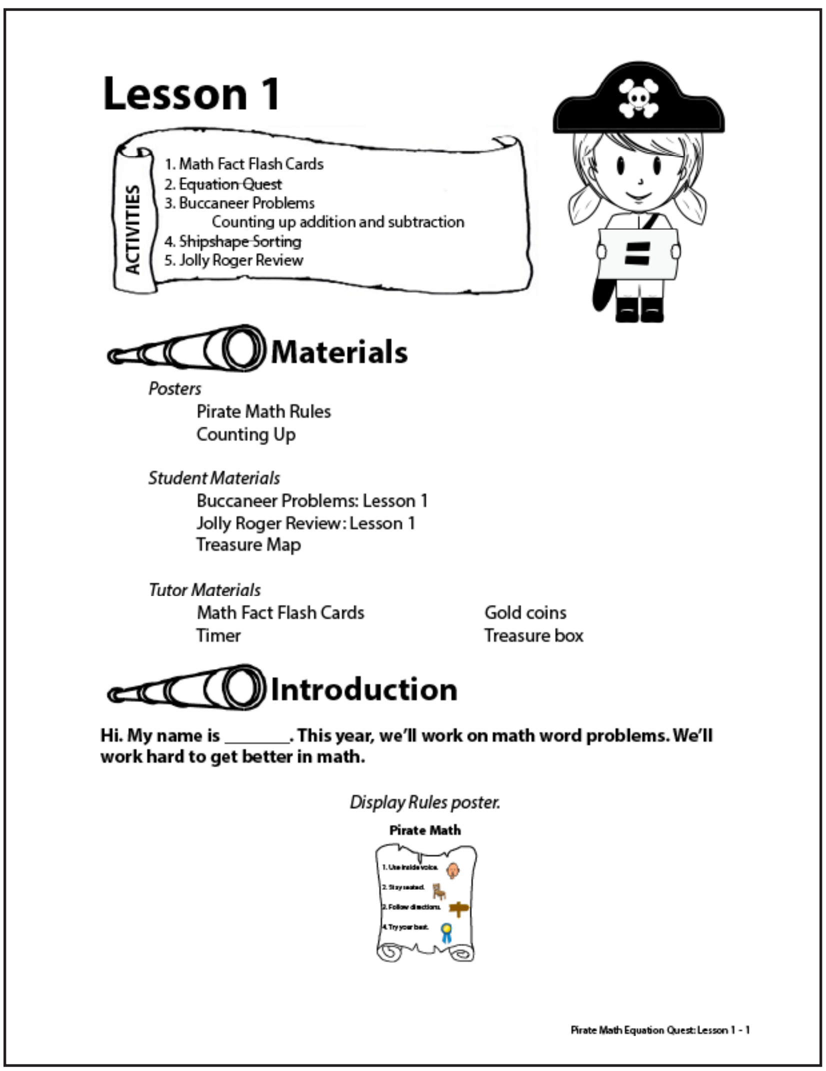
Schedule

LESSON	TEACHER LESSON
1	Counting Up Addition and Subtraction
2	Double-digit addition and subtraction
3	Numbering charts and graphs
4	Introduce Total problems (T as X)
5	Total problems (T as X), irrelevant information
6	Total problems (P1 and P2 as X)
7	Total problems (P1 and P2 as X)
8	Total problems with three parts
9	Total problems (P1, P2, and T as X)
10	Total problems (P1, P2, and T as X)
11	Introduce Difference problems (D as X)
12	Difference problems (D as X), Compare sentences
13	Total and Difference problems
14	Total and Difference problems
15	Total and Difference problems
16	Total and Difference problems
17	Difference problems (D as X)
18	Total and Difference problems
19	Introduce Change problems (E as X)
20	Change problems (E as X), *more* practice
21	Difference and Change problems (C as X)
22	Change problems (C and E as X)
23	Change problems (ST as X)
24	Difference and Change problems
25	Total and Change problems with two changes
26	Change problems with two changes
27	Change problems with one and two changes
28	Introduce Equal Groups problems (P as X)
29	Change and Equal Groups problems (P as X)
30	Change and Equal Groups problems (P as X)
31	Change and Equal Groups problems (P as X)
32	Total and Equal Groups problems (P as X)
33	Equal Groups problems (N as X)
34	Difference and Equal Groups problems
35	Equal Groups problems (N and P as X)
36	Change and Equal Groups problems
37-39	Review of all 4 schemas



Teacher Materials

During each lesson, teachers will use the Lesson Guides and Activity Guides to provide instruction to students. Each Lesson Guide is labeled as the lesson number. For example, the Lesson Guide for Lesson 1 is labeled Lesson 1. The Lesson Guides provide a step-by-step guide for teachers to follow throughout the lesson. In the Lesson Guides, teacher dialogue **is bolded** and student responses are unbolded. Teachers should review the Lesson Guides before each lesson. To implement *Pirate Math Equation Quest* with fidelity (as conducted in the research used to validate *Pirate Math Equation Quest*), it is essential teachers teach each and every principle covered in all lessons. Some teachers study the Lesson Guides and prepare an outline; then, they use the outline to deliver the instruction in their own words. Other teachers, however, after studying the lesson, still rely heavily on the wording of the Lesson Guide to deliver the lesson. In either case, it is necessary to <u>study</u> the lesson before delivery. In all cases, teachers should deviate from the Lesson Guide to elaborate concepts if students do not seem to understand.



Lesson 1

ACTIVITIES

1. Math Fact Flash Cards
2. ~~Equation Quest~~
3. Buccaneer Problems
   Counting up addition and subtraction
4. ~~Shipshape Sorting~~
5. Jolly Roger Review

Materials

Posters

Pirate Math Rules
Counting Up

Student Materials

Buccaneer Problems: Lesson 1
Jolly Roger Review: Lesson 1
Treasure Map

Tutor Materials

Math Fact Flash Cards	Gold coins
Timer	Treasure box

Introduction

Hi. My name is _______. This year, we'll work on math word problems. We'll work hard to get better in math.

Display Rules poster.

Pirate Math

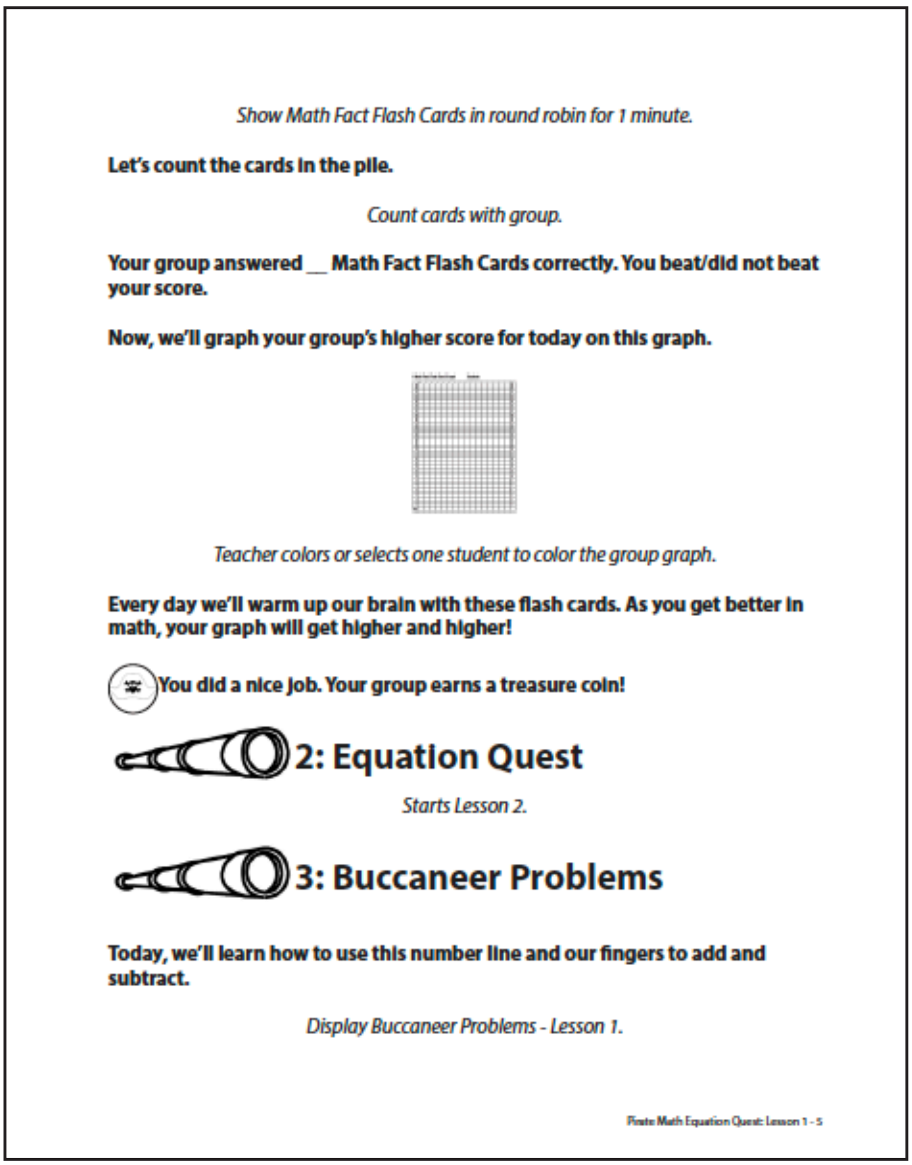
1. Use inside voice.
2. Stay seated.
3. Follow directions.
4. Try your best.

Pirate Math Equation Quest: Lesson 1 - 1

At the top of each Lesson Guide, the activities for the lesson are listed. Activities crossed out in the list indicate lesson components not taught in the current lesson. In Lesson 1, for example, Equation Quest is crossed out because the activity is introduced during Lesson 2. Shipshape Sorting is crossed out because the activity is introduced during Lesson 7.

Below the list of activities for each lesson is a list of posters, student materials, and tutor (teacher) materials needed for each lesson. Prior to lesson implementation, teachers should review this list to ensure strong preparation in advance of each lesson.

When teachers need to introduce a poster or worksheet, dialogue is written *in italics* with an accompanying picture. In Lesson 1, shown below, the Lesson Guide reads *Display Buccaneer Problems - Lesson 1* with a picture on the next page to prompt teachers to introduce Buccaneer Problems. Similar instructions are *written in italics* throughout the Lesson Guides.



Show Math Fact Flash Cards in round robin for 1 minute.

Let's count the cards in the pile.

Count cards with group.

Your group answered __ Math Fact Flash Cards correctly. You beat/did not beat your score.

Now, we'll graph your group's higher score for today on this graph.

Teacher colors or selects one student to color the group graph.

Every day we'll warm up our brain with these flash cards. As you get better in math, your graph will get higher and higher!

You did a nice job. Your group earns a treasure coin!

2: Equation Quest

Starts Lesson 2.

3: Buccaneer Problems

Today, we'll learn how to use this number line and our fingers to add and subtract.

Display Buccaneer Problems - Lesson 1.

Pirate Math Equation Quest: Lesson 1 - 5

There are Lesson Guides for all 39 lessons in the small group intervention program. All of the developed Lesson Guides are included in this manual.

When teachers become familiar and comfortable with the lesson content and sequencing, they may choose to print and refer to the Activity Guides during lessons. The Activity Guides highlight the core lesson components. Some teachers may choose to use the Activity Guides exclusively as they progress with lesson implementation. Other teachers may print the Activity Guides and use them in combination with the Lesson Guides. Below is the first page of the Equation Quest Activity Guide.

Equation Quest
ACTIVITY GUIDE

It's time to solve some equations!

When we are solving an addition, subtraction, multiplication, or division problem, we can follow a few steps to help us solve any equation.

Can you remind me what the equal sign means?

The same as.

Exactly! The equal sign means the same as. Whenever we see the equal sign, what do we need to do?

Make the sides the same.

That's right. The equal sign acts as a balance, so what is on one side of the equal sign (point) **must be the same as what is on the other side of the equal sign** (point)**.**

We need to balance the sides and find the missing information.

Now let's read the number sentence.

(Read number sentence, saying "the same as" in place of "equals.")

The first step to solving an equation is to draw a line down from the equal sign.

(Draw line coming down from the equal sign.)

This line (point) **helps us remember to balance the two sides of the equation.**

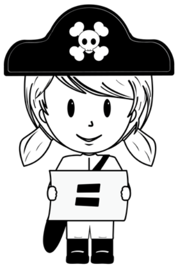
The second step is to isolate the X. Say that with me.

Isolate the X.

Say it again with me.

512 - Pirate Math Equation Quest: Activity Guide for Equation Quest

There are Activity Guides for the following core lesson components: RUN, Total, Difference, Change, Equal Groups, Math Fact Flashcards, Equation Quest, Shipshape Sorting, and Jolly Roger Review. All of the developed Activity Guides are included in this manual.

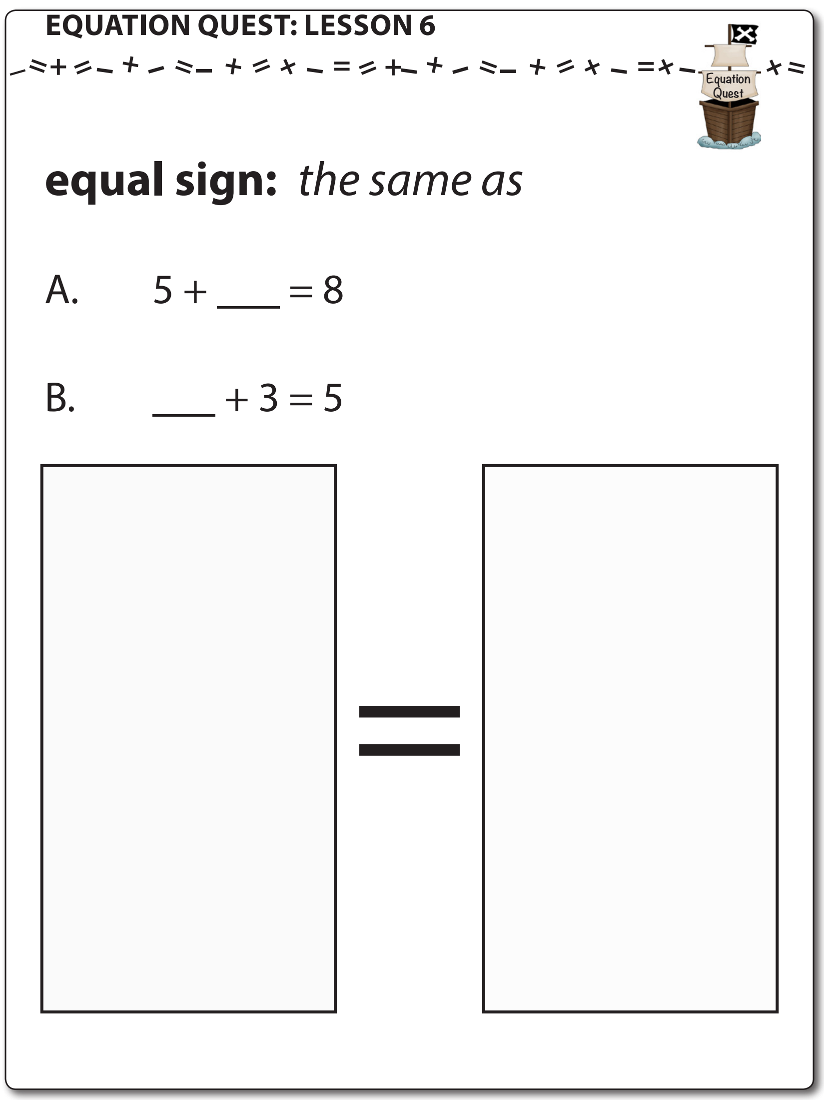


Student Materials

The Student Materials needed for each lesson are organized in a packet by lesson. For example, the Student Lesson Packet for Lesson 6 is labeled Lesson 6 Group Student Lesson Packet.

Student Lesson Packets include the following 4 pages:
(1) Equation Quest (beginning in Lesson 2; page 1)
(2) Buccaneer Problems (pages 2-3)
(3) Jolly Roger Review (page 4)

Pictured below is the Equation Quest worksheet, page 1, in the Lesson 6 Group Student Lesson Packet.



EQUATION QUEST: LESSON 6

Equation Quest

equal sign: *the same as*

A. $5 + \_\_\_ = 8$

B. $\_\_\_ + 3 = 5$

=

All Student Lesson Packets include 4 pages, so the packets can be printed for students in a set prior to the lesson. Teachers should print the Student Lesson Packets double-sided with a staple in the top left-hand corner. *Note that page 1 of the Student Lesson Packets for Lesson 1 is blank because Equation Quest is introduced during Lesson 2.* The Student Lesson Packets for all 39 lessons are included in this manual.

After Equation Quest, students complete three Buccaneer Problems. Buccaneer Problems serve as a guided practice opportunity for students to solve word problems. Teachers provide support and feedback as needed.

Page 2, the front side of the Buccaneer Problems worksheet in the Lesson 6 Group Student Lesson Packet, is displayed below.

BUCCANEER PROBLEMS: LESSON 6

A. Mrs. Taylor bought 4 apples and 9 bananas. How many apples and bananas did Mrs. Taylor buy?

B. Alex found 3 shells and 8 rocks on the beach. He found 7 leaves in the woods. How many shells and rocks did Alex find on the beach?

Page 3, the back side of the Buccaneer Problems worksheet in the Lesson 6 Group Student Lesson Packet, is displayed below. Buccaneer Problems include three word-problems: Problems A, B, and C.

B. The table shows the animals on Farmer Mack's farm. If he has 15 cows and horses, how many cows does he have?

Horses	7
Pigs	3
Cows	
Goats	2

C. The baker has 42 chocolate and strawberry cupcakes. If 26 of the cupcakes are chocolate, how many are strawberry?

The final worksheet in the Group Student Lesson Packet is the Jolly Roger Review. The Jolly Roger Review is an independent practice activity that provides students the opportunity to demonstrate their understanding of learned concepts. Below is the Jolly Roger Review worksheet, page 4, in the Lesson 6 Group Student Lesson Packet.

JOLLY ROGER REVIEW: LESSON 6

A. $\begin{array}{r} 89 \\ \underline{+\ 19} \end{array}$

B. $\begin{array}{r} 54 \\ \underline{-\ 12} \end{array}$

C. $\begin{array}{r} 67 \\ \underline{-\ 14} \end{array}$

D. $\begin{array}{r} 66 \\ \underline{-\ 40} \end{array}$

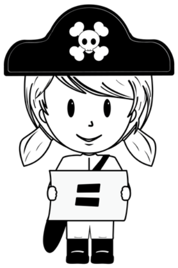
E. $\begin{array}{r} 88 \\ \underline{+\ 13} \end{array}$

F. $\begin{array}{r} 27 \\ \underline{+\ 92} \end{array}$

JOLLY ROGER REVIEW: LESSON 6

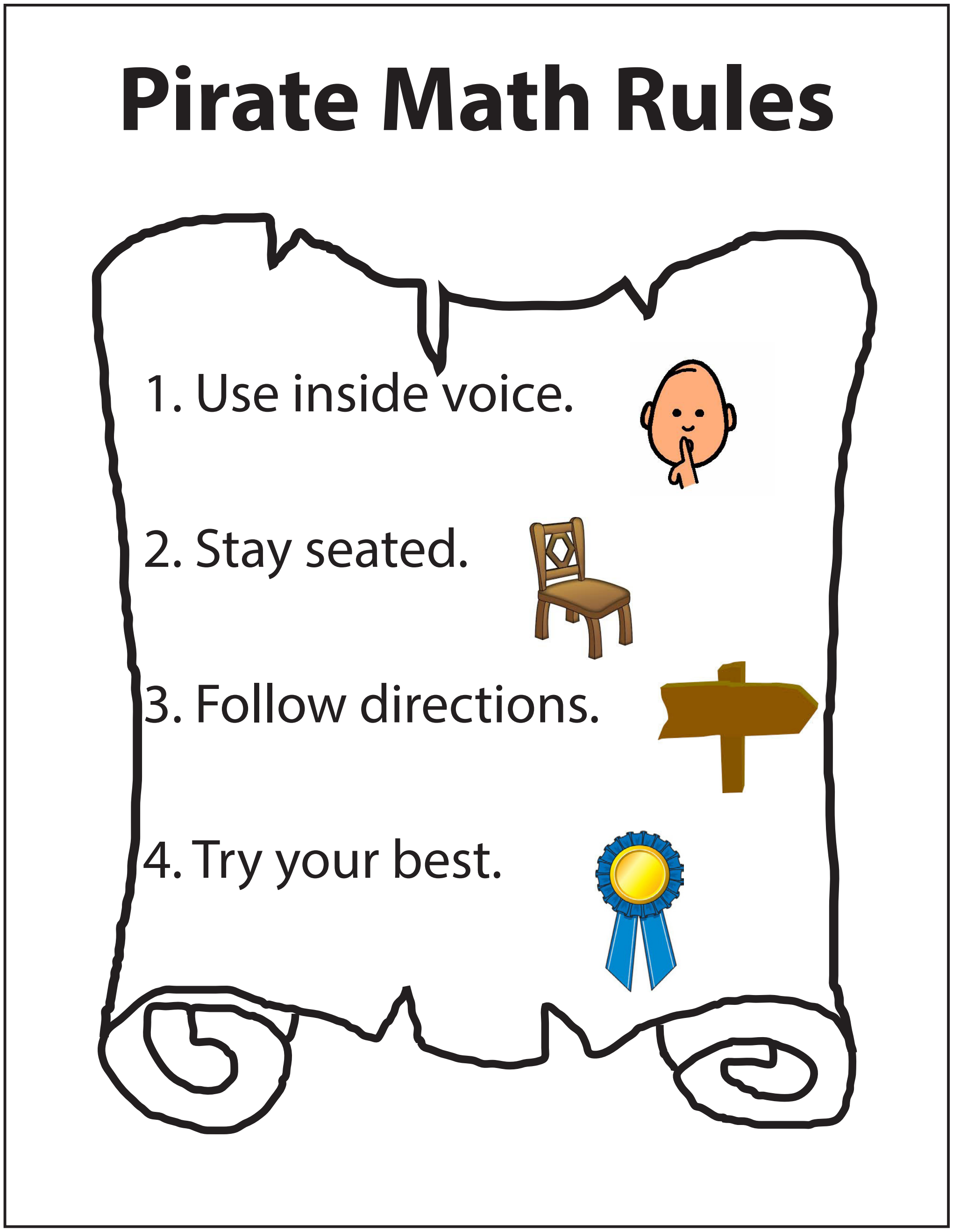
Vanessa and Diego ate 46 tacos. They ate 2 bowls of queso. If Diego ate 12 tacos, how many tacos did Vanessa eat?

Teachers score the top of the Jolly Roger Review worksheet as the number of addition, subtraction, multiplication, and/or division problems answered correctly. Teachers score the bottom of the Jolly Roger Review worksheet out of 2 points. Students earn one point for the correct number answer; students earn one point for the correct label answer. As needed, teachers provide feedback and a brief review to students.



Supplemental Materials

Pirate Math Equation Quest includes six posters for teachers to display throughout the lessons. Templates for the posters are included in this manual. In the beginning lessons, teachers should display the Pirate Math Rules and Counting Up Addition and Subtraction posters pictured on this page and the following page.



COUNTING UP
Addition

1. Put the greater number in your fist and say it.
2. Count up the number that's less on your fingers.
3. The sum is the last number you say.

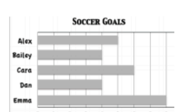
COUNTING UP
Subtraction

1. Put the minus number in your fist and say it.
2. Count up your fingers to the number you start with.
3. The difference is the number of fingers you have up.

As teachers introduce the four schemas, Total, Difference, Change, and Equal Groups, they need to display the RUN poster, pictured below, and the corresponding schema posters for students to reference. The RUN poster provides an attack strategy for students to use as they solve word problems.

RUN

If needed, number the graph



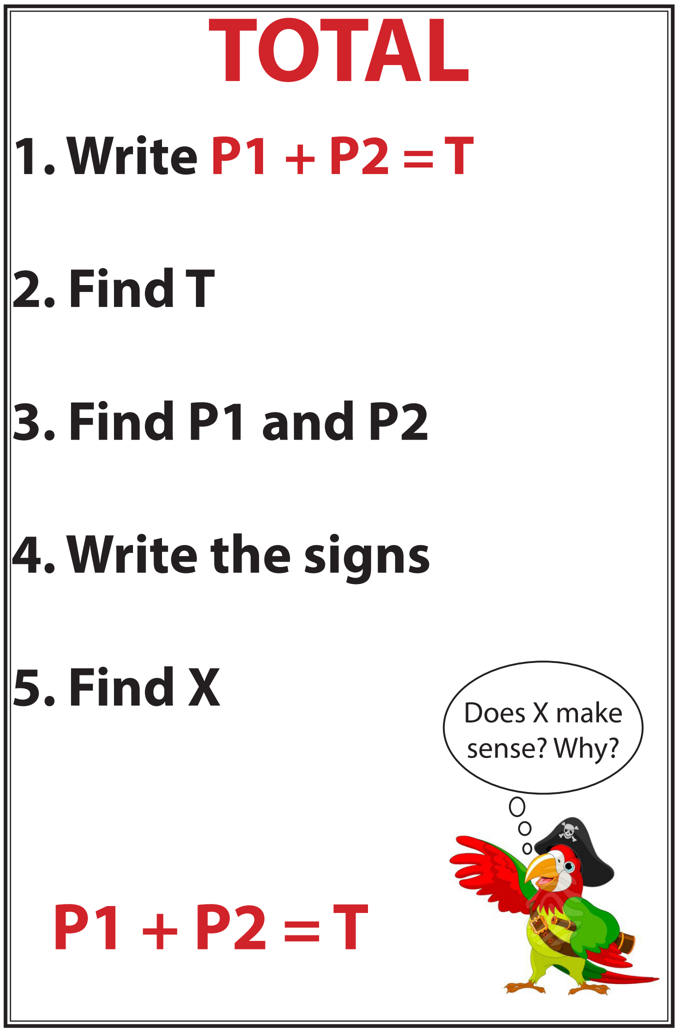
1. *Read* the problem

2. *Underline* the label and ~~cross out irrelevant info~~

3. *Name* the problem type

Total
Difference
Change
Equal Groups

The schema posters, pictured below and on the following page, provide specific steps for setting up and solving a word problem after identifying the correct schema. Total problems are introduced during Lesson 4, Difference problems are introduced during Lesson 11, Change problems are introduced during Lesson 19, and Equal Groups problems are introduced during Lesson 28.



DIFFERENCE

1. Write G – L = D

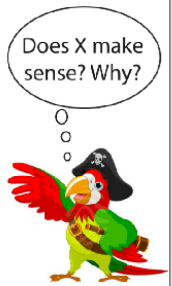
2. [Compare sentence] and label G and L

3. Find D

4. Find G and L

5. Write the signs

6. Find X



G – L = D

CHANGE

1. Write ST +/– C = E

2. Find ST

3. Find C

4. Find E

5. Write the signs

6. Find X

ST +/– C = E

EQUAL GROUPS

1. Write GR × N = P

2. Find P

3. Find GR and N

4. Write the signs

5. Find X

GR × N = P

After teachers have introduced the Total, Difference, Change, and Equal Groups problems, they should display the What Do You Ask Yourself? poster, featured below. The What Do You Ask Yourself? poster, introduced during Lesson 29, provides a prompt for students to ask questions and gesture to determine the correct schema. We encourage teachers to use gestures to help students recall the four schemas. The Total gesture is introduced in Lesson 4. The Difference gesture is introduced in Lesson 11. The Change gesture is introduced in Lesson 19. The Equal Groups gesture is introduced in Lesson 28. Teachers can refer to the Lesson Guides to learn the specific schema gestures to model for students. Students often struggle to identify the correct problem type after all four schemas have been introduced. This poster helps students to distinguish between the Total, Difference, Change, and Equal Groups schemas.

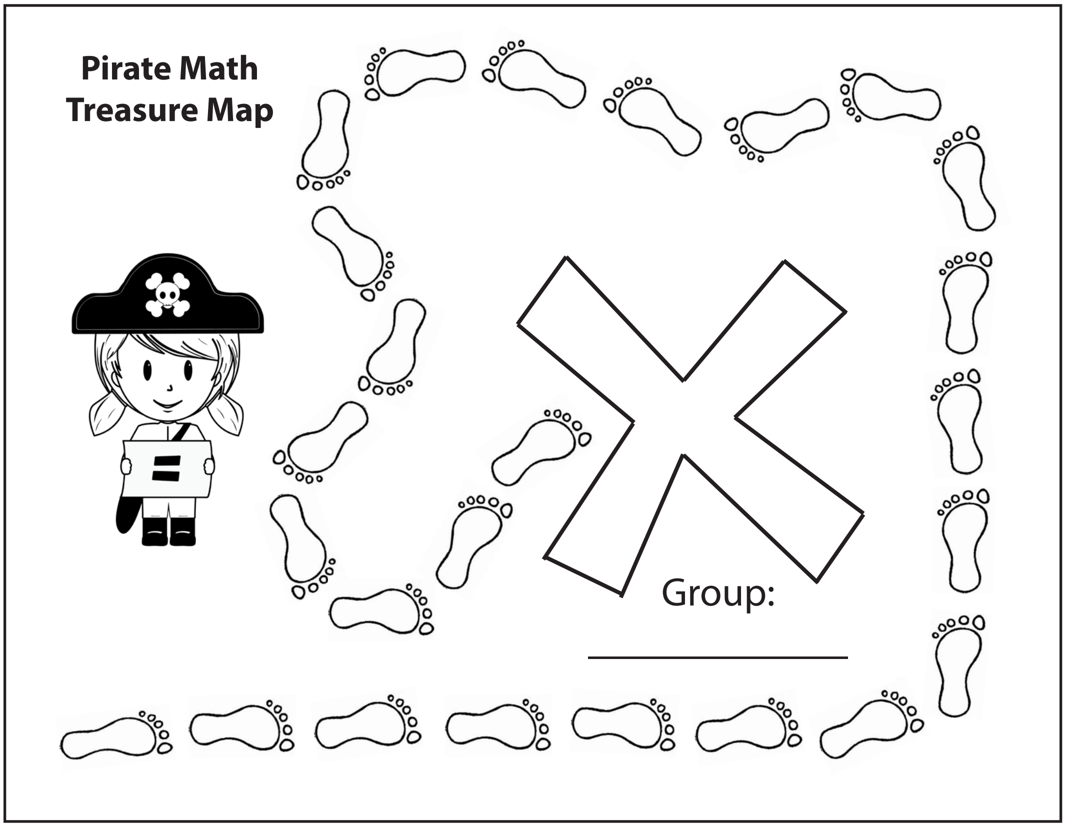
What Do You Ask Yourself?

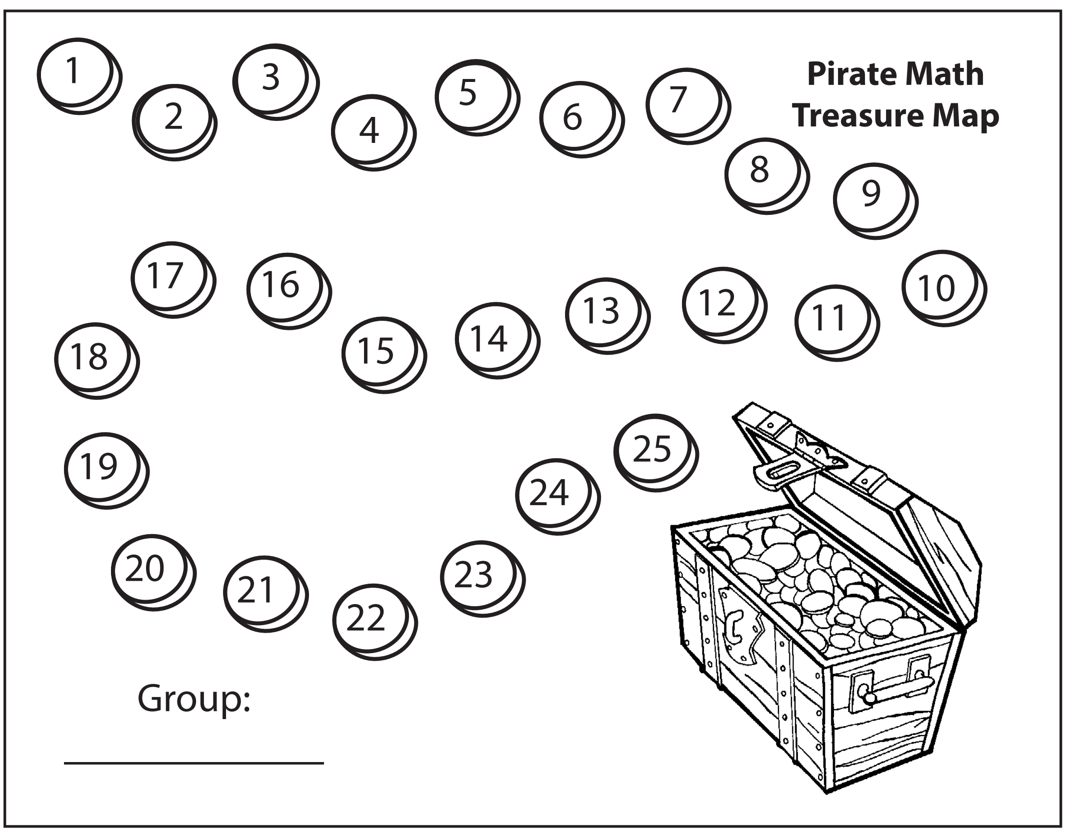
Total	Are parts put together into a total?
Difference	Are two amounts compared for a difference?
Change	Is there a start amount that increases or decreases to a new amount?
Equal **G**roups	Are there groups with an equal number in each group?

During every lesson, teachers also display the Treasure Map. Throughout each lesson, students can earn coins for their Treasure Map for following the Pirate Math rules. When students reach the end of their Treasure Map, they earn a novelty prize from a treasure box.

If teachers do not have coins, they can use stamps, stickers, or colored pencils to color the designated number of spaces on the Treasure Map. Similarly, teachers can use any prize bag or box if they do not have a treasure box.

On the following pages are four different variations of the Treasure Map. Teachers can choose one map or alternate maps depending on students' preferences. All four Treasure Map templates are included in this manual.


Pirate Math
Treasure Map
Group:


1
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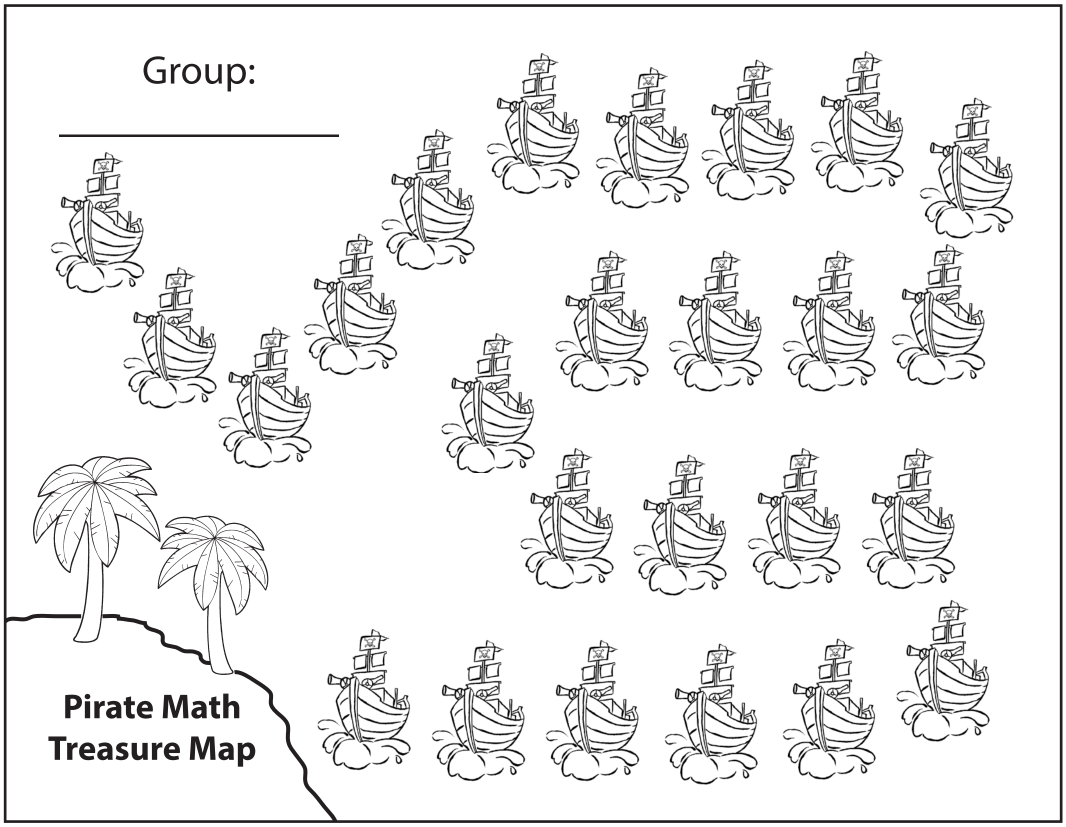
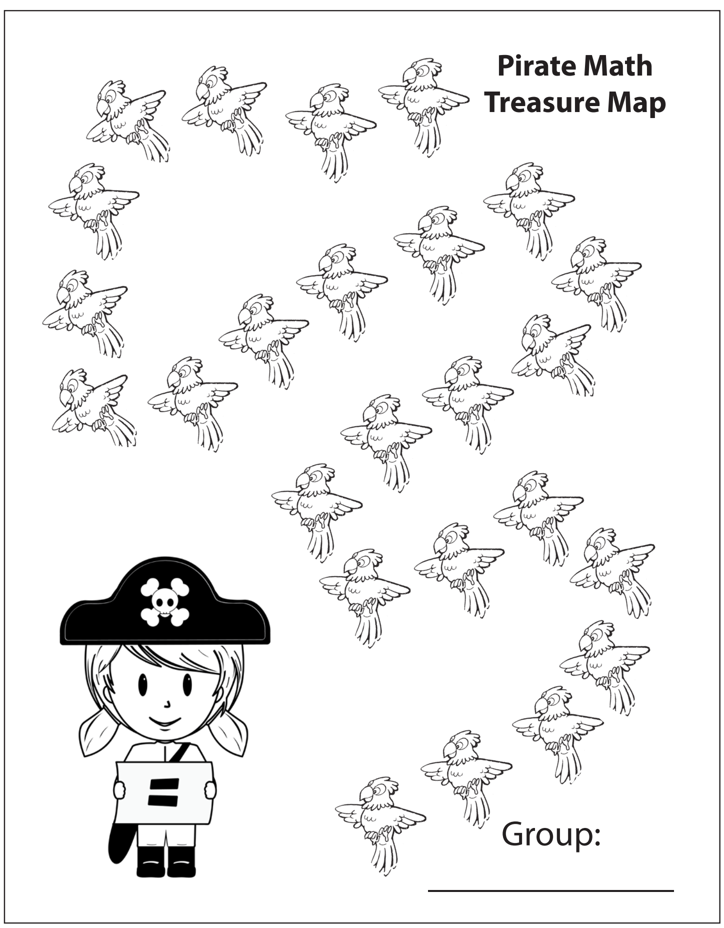
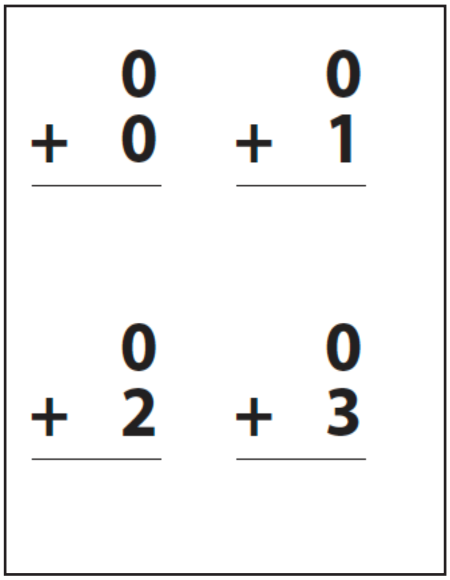
Pirate Math
Treasure Map
Group:

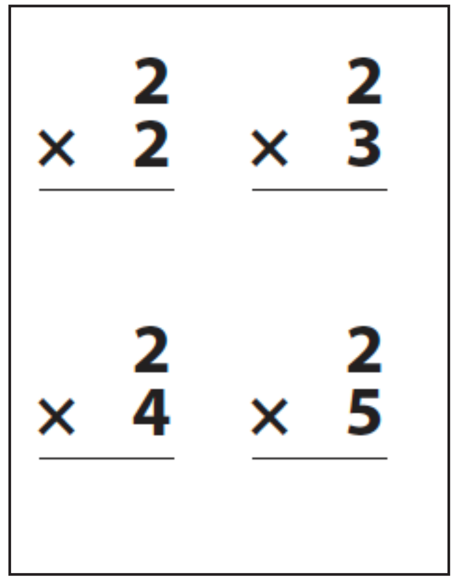

Group:
Pirate Math
Treasure Map


Pirate Math
Treasure Map
Group:

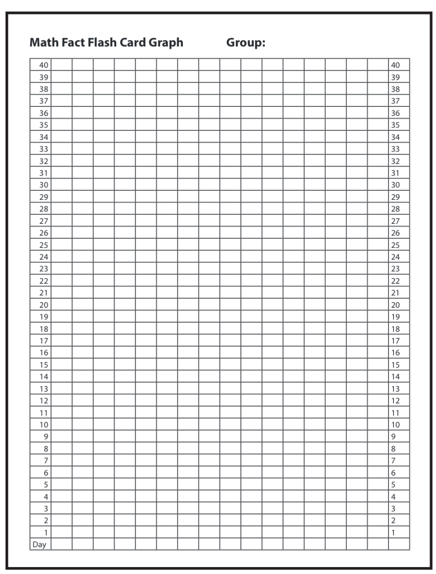
For the Math Fact Flashcards Activity, teachers need to cut and print the Math Fact Flashcards and print the Math Fact Flashcards graph. Templates for the Math Fact Flashcards and the Math Fact Flashcards graph are included in this manual.

There are two sets of Math Fact Flashcards for the small group intervention. The first set includes an addition or subtraction problem on the front side of the card and the correct answer on the back side of the card. The second set includes a multiplication or division problem on the front side of the card and the correct answer on the back side of the card. It is recommended that teachers print these cards double-sided on cardstock. There are four problems per page; teachers should cut each page into fourths using a paper cutter.





Teachers also need to print the Math Fact Flashcard Graph, pictured below, in advance of the lesson. At the end of the Math Fact Flashcards activity, students graph their higher score from the two trials on the graph below. Teachers should plan to copy extra graphs for easy access after students complete the first graph.



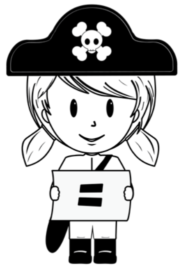
During Shipshape Sorting, which begins in Lesson 7, students participate in schema sorting practice using sorting cards and the sorting mat, displayed below. Templates for the Shipshape Sorting Mat and accompanying cards are included in this manual.

Shipshape Sorting

T	**D**
C	**?**

The Shipshape Sorting cards include a word problem on the front side of the card and the correct schema (i.e., T for Total, D for Difference, and C for Change) on the back side of the card. It is recommended that teachers print the Shipshape Sorting cards double-sided on cardstock. There are four word problems per page; teachers should cut each page into fourths using a paper cutter. There are no sorting cards for Equal Groups problems. If desired, teachers can create their own Equal Groups sorting cards and a new sorting mat that includes an EG box.

Jerry saw 3 sharks at the aquarium. He saw 2 turtles. How many sharks and turtles did Jerry see?	Dante's mom planted 8 trees and rose bushes in the yard. She planted 4 rose bushes. How many trees did she plant?
Ann and Elise sold 7 boxes of Girl Scout cookies. Elise sold 3 boxes. How many boxes of cookies did Ann sell?	Mrs. Towns spent $4 at the grocery store and $5 at the pet store. How much money did she spend in all?



Other Materials

Other Materials

The following materials are used throughout the program but are not included in this manual.

- Timer
- Cubes
- Gold coins
- Treasure box
- Dry erase board
- Dry erase markers
- Dry erasers
- Blue painter's tape

The timer is used during the timed activities: Math Fact Flashcards, Shipshape Sorting, and Jolly Roger Review.

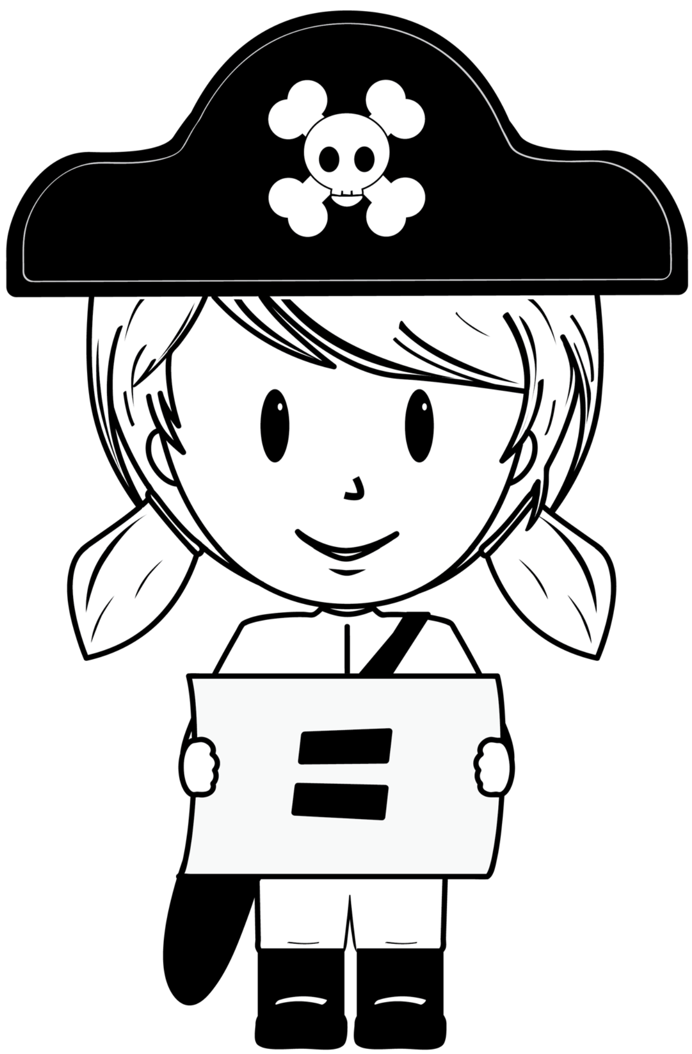
Different colored unit cubes are used during Equation Quest to help students develop their pre-algebraic reasoning skills. The timer and cubes can be purchased from a teacher supply store or a mathematics manipulatives company.

The gold coins and treasure box are used throughout each lesson to reward students for following the Pirate Math rules. As previously mentioned, stamps, stickers, or colored pencils can substitute for gold coins. Teachers can use any prize bag or box if they do not have a treasure box.

The dry erase board, dry erase markers, dry erasers, and blue painter's tape are used during lessons that include Equal Groups problems (i.e., Lessons 28-39) to help students understand the concept of Equal Groups. Students use these materials to illustrate groups with an equal number in each group. Teachers can purchase these materials from a teacher or office supply store.

For all lessons, teachers and students also need pencils.

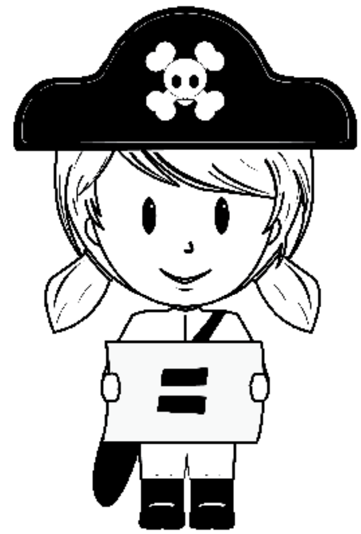
Lesson Guides
1 - 39



Lesson 1

ACTIVITIES

1. Math Fact Flash Cards
2. ~~Equation Quest~~
3. Buccaneer Problems
   Counting up addition and subtraction
4. ~~Shipshape Sorting~~
5. Jolly Roger Review



Materials

Posters

Pirate Math Rules
Counting Up

Student Materials

Buccaneer Problems: Lesson 1
Jolly Roger Review: Lesson 1
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Gold coins
Treasure box

Introduction

Hi. My name is ________. This year, we'll work on math word problems. We'll work hard to get better in math.

Display Rules poster.

Pirate Math

Before we get started, let's talk about some rules. This poster (point to Rules poster) **shows us the rules for how to behave when we work together. Look at our first rule** (point)**. It says, "Use inside voice." Look at the picture that goes with this rule** (point to first picture)**. Why is this** (point) **a good picture to remind us about using our inside voices?**

(Students respond.)

You're right. We'll work in the (library/hallway)**, so we have to be quiet and use our inside voices. Always use your inside voices. That's our first rule.**

Here's the next rule (point to second rule)**. It says, "Stay seated." Look at the picture that goes with this rule** (point to second picture)**. Why is this a good picture to remind us to stay in our seats?**

(Students respond.)

Good job! The chair reminds us that when we work together, we must stay seated. Let's look at the next rule (point)**. This rule says, "Follow directions." Why is this a good picture to remind us to follow directions** (point to third picture)**?**

(Students respond.)

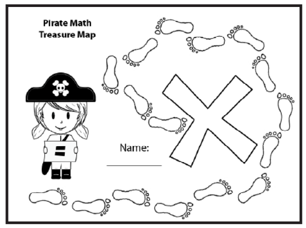
Yes. The picture reminds us to listen and follow directions. This is a very important rule. Part of following directions means raising your hand if you want to speak or answer a question. Remember that we are working in a group, so it is important for everyone to have an opportunity to speak and listen to each other.

We have one more rule (point to fourth rule)**. This last rule says, "Try your best." Look at this picture** (point to fourth picture)**. Why is this a good picture** (point) **to remind us to try our best?**

(Students respond.)

If you follow these rules, we'll have fun and learn a lot about math!

When we work on math problems together, we'll play Pirate Math. Just like a pirate, we will have a Treasure Map.



Display Treasure Map.

This Treasure Map has footsteps to color. When we have colored in all the footsteps and land on the "X," each of you will receive a prize from the treasure box! On the treasure map, there is a space for us to write our group name. Do you have any ideas for a good group name? This will be our group name for the year. Please raise your hand.

Spend 1-2 min deciding on a group name with students.

Display treasure box.

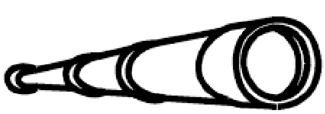
Throughout the lesson, your group will earn treasure coins by following the Pirate Math Rules. Each time we work together, we'll count the number of coins you earned as a group and color that number of footsteps on the Treasure Map.

What happens when you have enough stickers to land on the big "X" on the map?

Each of you gets to pick a prize from the treasure box.

Exactly! You each get to pick a prize from the treasure box. Then, your group will get a new Treasure Map.

I like the way you're all following our Pirate Math rules right now. You're using your inside voices, staying seated, following my directions, and raising your hands. So, your group earns a treasure coin for your Treasure Map! (Give students first coin.)



1: Math Fact Flash Cards

The first activity we'll do every day is Math Fact Flash Cards. Look at these cards.

Display Math Fact Flash Cards.

Each card has one math problem on it. The problem is an addition problem or a subtraction problem. We will complete the flash card activity as a round robin. In the round robin, I'll show the first person in the group one card. The first person will look at the problem and tell me the answer as quickly as he/she can. Then, I will move to the second person and show him/her the second card. This person will look at the problem, and tell me the answer as quickly as he/she can. We will continue with the third and fourth person. We will repeat the pattern and your group will answer as many flash cards as you can in 1 minute.

Remember, you only answer the problem when it is your turn in the round robin.

If you get the answer correct, I'll put it in a pile on the table.

Remember, as a group, you'll have 1 minute to answer as many flash cards as you can. I'll hold up a flash card for the first person. You'll give me the answer. Then I will hold up a flash card for the next person. And so on.

Let's practice. (Hold up flash card.) **What's the answer?**

(Each group member responds to complete one round of the round robin.)

Good! At the end of 1 minute, we'll count the number of cards in the pile. Are you ready? Let's try.

Show Math Fact Flash Cards in round robin for 1 minute.

Good! Let's count the cards in the pile.

Count cards with students.

Your group answered __ Math Fact Flash Cards correctly!

Let's try to beat that score. We'll use the same flash cards. I'll show you one card at a time. The first person will look at the problem and tell me the answer as quickly as he/she can. Then we will move to the second person. Remember, try to beat __. You have 1 minute. Go!

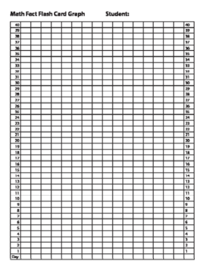
Show Math Fact Flash Cards in round robin for 1 minute.

Let's count the cards in the pile.

Count cards with group.

Your group answered __ Math Fact Flash Cards correctly. You beat/did not beat your score.

Now, we'll graph your group's higher score for today on this graph.



Teacher colors or selects one student to color the group graph.

Every day we'll warm up our brain with these flash cards. As you get better in math, your graph will get higher and higher!

You did a nice job. Your group earns a treasure coin!

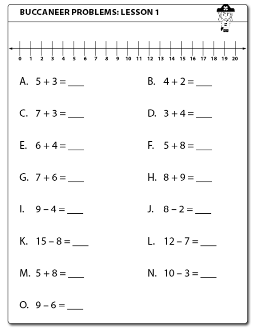
2: Equation Quest

Starts Lesson 2.

3: Buccaneer Problems

Today, we'll learn how to use this number line and our fingers to add and subtract.

Display Buccaneer Problems - Lesson 1.



BUCCANEER PROBLEMS: LESSON 1

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

A. 5 + 3 = ___	B. 4 + 2 = ___
C. 7 + 3 = ___	D. 3 + 4 = ___
E. 6 + 4 = ___	F. 5 + 8 = ___
G. 7 + 6 = ___	H. 8 + 9 = ___
I. 9 – 4 = ___	J. 8 – 2 = ___
K. 15 – 8 = ___	L. 12 – 7 = ___
M. 5 + 8 = ___	N. 10 – 3 = ___
O. 9 – 6 = ___	

Look at the number line (point)**. Have you ever seen a number line before?**

Yes.

This number line starts at 0 (point to 0) **and goes up to 20** (point to 20)**. Each notch along the number line has one number on it.** (Point to numbers.) **Let's count the numbers now, starting with zero.**

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

Now, let's look at some addition problems and use the number line to find the answers.

Point to A.

What sign tells us to add?

A plus sign.

That's right. A plus sign tells us to add. (Point to plus sign.) **When we add, we combine two or more numbers together. The problems we'll work on today have two numbers you add together. One of the numbers is greater. One of the numbers is less.**

Look at this first problem (point)**. This problem says 5 plus 3 equals blank. We can use our number line to solve a math problem like this. I put my finger on the number that's greater. Which number is greater, 5 or 3?**

5.

That's right, 5 is the greater number. So, I put my finger on 5.

Place finger on 5 on the number line.

This problem says 5 plus 3, so you add 3. To add 3, jump up 3 more numbers on the number line. I start on 5, and use my finger to jump up 3 numbers. 6 (hold up 1 finger; use finger on other hand to move up on number line from 5 to 6)**, 7 (**hold up 2 fingers; use finger to move up to 7)**, 8** (hold up 3 fingers; use finger to move up to 8)**. So, 5 plus 3 equals what?**

8.

Yes! Your answer is the last number you say. In an addition problem, we call the answer the sum. Put 5 in your fist (hold up fist)**; then count up 3 more: 6, 7, 8.** (Point to the number line for each successive number and hold up an additional finger with each jump.) **8, the last number you say, is the sum. 8 is more than 5.**

Write 8.

When you add, you move this way, up the number line (use your finger to move in a positive direction on the number line) **toward the greater numbers. In an addition problem, your answer, also called the sum, is more than each of the numbers you add together.**

Now, be careful! When you're jumping up the number line, don't count the number the clothespin is already on. Jump up to the next higher number. Let's practice counting up the number line.

Look at this problem. (Point to B.) **4 plus 2 equals blank. I put my finger on which number?**

4.

Right. I place my finger on the greater number, 4.

Place finger on 4 on the number line.

How many do we count up?

2.

Let's practice counting up from 4. Count up 2 more numbers. I'll jump up to the next higher number and say, "5." (Jump finger to 5.) **Then, I'll jump up to the**

next number and say, "6." (Point to 6.)

You jump up two numbers and the last number you say is 6. So, 4 plus 2 equals 6.

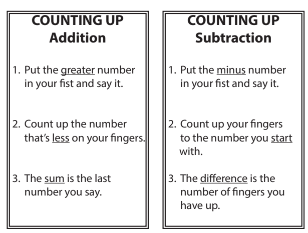
Write 6.

6 is more than 4. 6 also is more than 2. When you add, you move up the number line (use your finger to demonstrate on the number line) **toward the greater numbers. In an addition problem, your answer, called the sum, is more than each of the numbers you add together.**

We don't need a number line to count up for adding. You can use your fingers instead. We call this "counting up." Sometimes when you add two numbers together, you know the answer right away in your brain, and that's great! But sometimes, we don't know the answer right away. Counting up is a neat trick to help you figure out the answer quickly.

Look at this poster.

Display Counting Up Addition poster.



This poster shows the three steps to Counting Up addition problems. Let's use these steps to solve 4 plus 2 equals blank. (Point to B.)

The first step says, "Put the greater number in your fist and say it." (Point to Step 1.) **Which number is the greater number?**

4.

That's right! Start with the greater number, 4. Put that number in your fist and say, "4."

Tap closed fist on leg and say, "4."

Look at Step 2. (Point to Step 2.) **Step 2 says, "Count up the number that's less on your fingers." Now, count up 2 more, and use your fingers to keep track of how many you're adding. Watch me.**

I put the greater number in my fist, 4 (tap closed fist on leg)**, 5** (hold up 1 finger)**, 6** (hold up 2 fingers)**. I knew I had to add 2 more to 4** (point to "+ 2")**. I used my fingers to make sure I counted up exactly 2 more** (show students the 2 fingers still held up)**.**

Now look at Step 3. (Point to Step 3.) **Step 3 says, "Your answer, or the sum, is the last number you say." Watch: I put the greater number in my fist, 4** (tap closed fist on leg)**, 5** (hold up 1 finger)**, 6** (hold up 2 fingers)**. What was the last number I said out loud?**

6.

So, what's 4 plus 2?

6.

That's right! 4 plus 2 equals 6. Write 6 in the blank.

(Students write 6.)

Just like the number line, be careful! When you count up with your fingers, don't put a finger up for the number you start with. That number goes in your fist. You have to add more fingers!

Watch me. I'll practice this problem. (Point to C.) **7 plus 3 equals blank. I put the greater number, 7, in my fist.** (Tap closed fist on leg and say, "7.") **Then I count up 3 more. Watch: 8** (hold up 1 finger)**, 9** (hold up 2 fingers)**, 10** (hold up 3 fingers)**. 10 is the last number I say. That's the sum. Write 10 in the blank.**

(Students write 10.)

I use my fingers to keep track of how many I add. So, 7 plus 3 equals 10. 10 is more than 7 and more than 3. Your answer, or the sum, is always more than each of the numbers you add together.

Before we solve the next problem, I'll tell you something cool about addition

problems. In addition problems, you always start with the greater number. It doesn't matter whether the greater number is here (point to 7 of 7 + 3) **or here** (point to 3 of 7 + 3)**. You always start with the greater number. What number do you always start with?**

The greater number.

That's right! For addition problems, you always start with the greater number.

Now, let's practice counting up together. Look at this problem. (Point to D.) **This problem says 3 plus 4 equals blank. In this problem, the greater number, 4, doesn't come first. You still solve the problem the same way, though.**

What number do you put in your fist?

4.

Yes, put the 4 in your fist.

(Students tap closed fist on leg and say 4.)

How many do you count up?

3.

So, count up 3 more.

5 (students hold up 1 finger), 6 (students hold up 2 fingers), 7 (students hold up 3 fingers).

So, what's 3 plus 4?

7.

Yes, 7 was the last number you said. 7 is the sum. 3 plus 4 equals 7. Write your sum in the blank.

(Students write 7.)

Let's try this problem. (Point to E.) **6 plus 4 equals blank. Show me how to count up 6 plus 4.**

(Students count up.)

Very good. (Count up 6 plus 4.) **6 plus 4 equals 10. Write your sum in the blank.**

(Students write 10.)

Let's try another problem. (Point to F.) **This problem says 5 plus 8 equals blank. This is an addition problem, so the sum is more than each of the numbers you add together. Try counting up 5 plus 8.**

(Students count up.)

Great. (Count up 5 plus 8.) **5 plus 8 equals 13. Write your sum in the blank.**

(Students write 13.)

(Point to G.) **This problem says 7 plus 6 equals blank. Show me how to count up 7 plus 6.**

(Students count up.)

Awesome. (Count up 7 plus 6.) **7 plus 6 equals 13. Write 13 in the blank.**

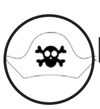
(Students write 13.)

Let's try one more problem. (Point to H.) **Show me how to count up 8 plus 9.**

(Students count up.)

Yes! (Count up 8 plus 9.) **8 plus 9 equals 17. Great job! Write 17 in the blank.**

(Students write 17.)


Nice work with addition! Your group earns a treasure coin!

Now, let's think about subtraction.

Point to I.

Look at this sign. (Point to minus sign.) **This is a minus sign. A minus sign tells us to subtract. When we subtract, we start with a number. Then we subtract. What sign tells us to subtract?**

A minus sign.

Here's a subtraction problem. (Point to I.) **Each subtraction problem we work on today has two numbers. One number is the *number you start with.***

The number you start with is the first number in the subtraction problem. In 9 minus 4, the number you start with is 9.

We call the other number in the subtraction problem the minus number. The minus number is the number after the minus sign. What number is after the minus sign (point)**?**

4.

Yes. 4 is after the minus sign. So, it's the minus number.

Look at this problem. (Point to J.) **8 minus 2. What's the number you start with?**

8.

What's the minus number? What number is after the minus sign (point)**?**

2.

Nice work! Look at this problem. (Point to K.) **15 minus 8. What's the number you start with?**

15.

What's the minus number?

8.

Yes. 15 is the number you start with. 8 is the minus number. 8 is the number after the minus sign.

Look at this problem again. (Point to I.) **9 minus 4 equals blank.**

Display number line.

We can use our number line to solve a subtraction problem like this. I put my finger on the number you start with. In this problem, the number you start with is 9. I put my finger on 9.

Place finger on 9 on the number line.

Once your finger is on the number you start with, don't move it. This problem says 9 <u>minus</u> 4. The minus number comes right after the minus sign. So, 4 is the minus number. I subtract the minus number. So I subtract 4. On the number line, I could subtract 4 by going back four spaces on the number line. But let's try something different.

When we subtract, we find the difference between two numbers. Let me show you what I mean.

This problem says 9 <u>minus</u> 4. We find the difference between 9 and 4. I already have my finger on 9. I'll put my other finger on the minus number. In this problem, the minus number is 4. It's the number right after the minus sign. I put my other finger on 4.

Place finger on 4 on the number line.

To find the difference between 9 and 4, I start on the minus number, 4, and count up to 9. The number of jumps is the difference between 9 and 4. The number of jumps is my answer. So, I say 4 (point to 4) **and then start counting. Use your fingers to keep track. I say 4, then I count: 5** (move finger to 5 and hold up 1 finger)**, 6** (move finger to 6 and hold up 2 fingers)**, 7** (move finger to 7 and hold up 3 fingers)**, 8** (move finger to 8 and hold up 4 fingers)**, 9** (move finger to 9 and hold up 5 fingers)**. How many fingers am I holding up?**

5.

That's right. When you subtract, your answer is the number of fingers you're holding up. 9 minus 4 equals 5.

Write 5.

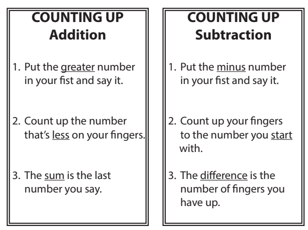
You may want to start on 9 and count backward. But counting backward is

hard. It's easy to make a mistake. If you count up a subtraction problem to find the difference between the minus number and the start number, like I just showed you, it's easier and you won't make mistakes.

We don't need a number line to count up for subtraction. You can use your fingers instead. You already know how to count up addition problems. So, let's learn how to count up subtraction problems.

Look at this poster.

Display Counting Up Subtraction poster.



This poster shows us three steps for Counting Up subtraction problems. Let's use these steps to solve this problem: 9 minus 4 equals blank. (Point to I.)

The first step says, "Put the minus number in your fist and say it." (Point to Step 1.) **Which number is the minus number? It's the number *right after* the minus sign.**

4.

Yes! Start with the minus number, 4. Put that number in your fist and say, "4."

Tap closed fist on leg and say, "4."

Look at Step 2. (Point to Step 2.) **Step 2 says, "Count up your fingers to the number you start with." So, count up to the number you start with, 9. Watch me. I put the minus number in my fist, 4** (tap closed fist on leg)**: 5** (hold up 1 finger)**, 6** (hold up 2 fingers)**, 7** (hold up 3 fingers)**, 8** (hold up 4 fingers)**, 9** (hold up 5 fingers)**.**

Now look at Step 3. (Point to Step 3.) **Step 3 says, "Your answer, also called the difference, is the number of fingers you have up." How many fingers am I holding up?**

5.

So, what's 9 minus 4?

5.

That's right! 9 minus 4 equals 5.

Point to 5.

That's the same answer we got when we used the number line. But counting up with our fingers is much easier. Sometimes we don't have a number line, but we always have our fingers.

Look at this next problem. (Point to J.) **When you count up with your fingers, don't put a finger up for the minus number. That number goes in your fist.**

Watch me. 8 minus 2 equals blank. I put the minus number, 2, in my fist (Tap closed fist on leg and say, "2."). **Then I count up to the number I start with, 8. Watch.** (Tap closed fist on leg and say) **2: 3,** (hold up 1 finger)**, 4** (hold up 2 fingers)**, 5** (hold up 3 fingers)**, 6** (hold up 4 fingers) **7** (hold up 5 fingers)**, 8** (hold up 6 fingers)**. How many fingers do I have up?**

6.

So, 8 minus 2 equals 6. The difference between 8 and 2 equals 6.

Write 6.

6 is *less* than 8. The difference is always less than the number you start with.

Before we solve the next problem, let's talk about something very important. Do you have your listening ears on?

Yes.

Subtraction problems are not like addition problems. In addition, the order of the numbers doesn't matter. 2 plus 3 is the same as 3 plus 2.

But in a subtraction problem, like 8 minus 2 (point)**, you CANNOT switch the**

order of the numbers. You can't subtract 2 minus 8. That doesn't make sense. In a subtraction problem, you NEVER switch the order of the numbers.

You always put the minus number in your fist, and count up to the number you start with. The difference is the number of fingers you have up.

Let's practice counting up together. Look at this problem. (Point to K.) **This problem says 15 minus 8 equals blank. First, do you add or subtract?**

Subtract.

That's right. This is a minus sign, so you subtract. What number do you put in your fist?

8.

Yes. 8 is the minus number because it comes right after the minus sign. Put the 8 in your fist.

(Students tap closed fist on leg and say, 8.)

What number do you count up to?

15.

Count up to 15.

9, 10, 11, 12, 13, 14, 15.

How many fingers are you holding up?

7.

So, what's 15 minus 8?

7.

Yes, 7 is the number of fingers you have up. 7 is the difference. 15 minus 8 equals 7.

Write 7.

Let's try this problem. (Point to L.) **12 minus 7. Do you add or subtract?**

Subtract.

What's the minus number?

7.

7 is the minus number because it's after the minus sign. Put the minus number in your fist, and count up to the number you start with, 12.

8, 9, 10, 11, 12.

How many fingers are you holding up?

5.

So, what's 12 minus 7?

5.

Yes. 12 minus 7 equals 5.

Write 5.

Let's try this problem. (Point to M.) **5 plus 8. Do you add or subtract?**

Add.

Smart thinking! This is a plus sign. So, you add! How do you count up an addition problem?

Put the greater number in your fist, count up the number that's less on your fingers, and the sum is the last number you say.

Counting up addition problems are different from counting up subtraction problems. (Point to posters.) **To count up an addition problem, put the greater number in your fist, count up the number that's smaller on your fingers, and the sum is the last number you say.**

To count up a subtraction problem, you put the minus number in your fist, count up to the number you start with, and the difference is the number of fingers you have up.

Show me how to count up 5 plus 8.

(Students count up.)

Yes. You put the greater number, 8, in your fist and count up 5 more: 9, 10, 11, 12, 13. What's the last number you said?

13.

5 plus 8 equals 13. Write 13 in the blank.

(Students write 13.)

Look at this problem. (Point to N.) **10 minus 3. Do you add or subtract?**

Subtract.

This is a minus sign (point)**, so you subtract.**

Remind me, what's a minus number?

It's the number after the minus sign.

That's right. The minus number is the number right *after* the minus sign. What number do you count up to?

The number you start with.

Let's count up 10 minus 3. What's the minus number, 10 or 3?

3.

Put the 3 in your fist and count up to the number you start with, 10.

4, 5, 6, 7, 8, 9, 10.

What's 10 minus 3?

7.

Write 7 in the blank.

(Students write 7.)

Let's try this last problem. (Point to O.) **This problem says 9 minus 6 equals blank. Do you add or subtract?**

Subtract.

What tells you to subtract?

The minus sign.

The minus sign tells you to subtract. Use counting up for subtraction.

(Students count up.)

What's your answer? Write it in the blank.

3.

(Students write 3.)

Great.

(Count up 9 minus 6.)

9 minus 6 equals 3.

Excellent work! You earn a treasure coin!

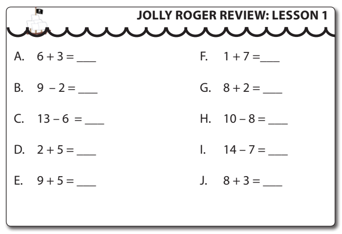
4: Shipshape Sorting

Starts Lesson 7.

5: Jolly Roger Review

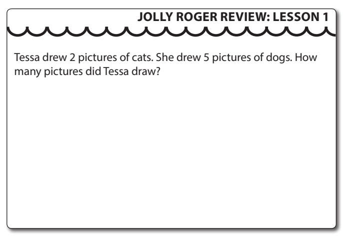
The last activity we do every day is practice problems. We call these problems our Jolly Roger Review.

Display Jolly Roger Review - Lesson 1.



JOLLY ROGER REVIEW: LESSON 1

A. 6 + 3 = ___	F. 1 + 7 = ___
B. 9 – 2 = ___	G. 8 + 2 = ___
C. 13 – 6 = ___	H. 10 – 8 = ___
D. 2 + 5 = ___	I. 14 – 7 = ___
E. 9 + 5 = ___	J. 8 + 3 = ___



JOLLY ROGER REVIEW: LESSON 1

Tessa drew 2 pictures of cats. She drew 5 pictures of dogs. How many pictures did Tessa draw?

The top box has addition and subtraction problems. The bottom box has a word problem. You'll learn how to solve these word problems soon.

You each have 1 minute to work on the addition and subtraction problems in the top box. Go ahead and get started.

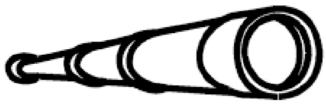
Set timer for 1 minute. Remind students to use counting up to solve these problems.

Now, you each have 2 minutes to work on the word problem. Go ahead.

Set timer for 2 minutes.

Review 3 addition and subtraction problems from the top box (using counting up) and the word problem from bottom box as a group.

Great job! You earn another treasure coin!



Treasure Map

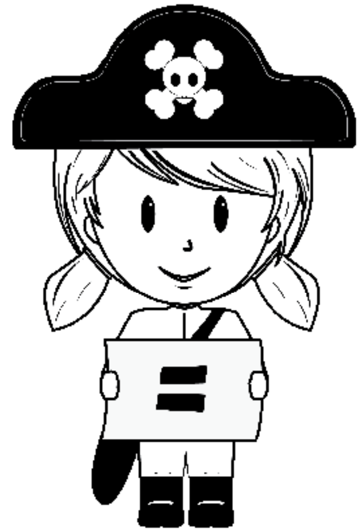
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ footsteps on your Treasure Map! (Students color.)

Remember, once your group fills in the footsteps to the 'X' in the middle of the map, everyone will choose a prize out of the treasure box!

Lesson 2



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Double-digit addition and subtraction
4. ~~Shipshape Sorting~~
5. Jolly Roger Review

Materials

Posters

Counting Up

Student Materials

Buccaneer Problems: Lesson 2
Equation Quest: Lesson 2
Jolly Roger Review: Lesson 2
Treasure Map

Tutor Materials

Math Fact Flash Cards	Gold coins
Timer	Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Every day, before we start solving word problems, we'll learn about the symbols used in math. Today, let's talk about the equal sign.

Point to equal sign.

This is the equal sign. The equal sign means *the same as.* When there's an equal

sign, people say equals or *the same as*. When there's an equal sign (point)**, what do people say?**

Equals or the same as.

The equal sign means equals, but the equal sign also means *the same as*. The same as means the same thing as equals. When you see the equal sign, I want you to say *the same as*. What would I like for you to say when you see this sign (point)**?**

The same as.

That's right. Say *the same as* (point to "the same as")**.**

Let's look at some number sentences. We'll read each sentence as a group. When you see the equal sign, remember to say *the same as*.

Point to A.

This number sentence says, 4 plus 6 is *the same as* (point to =) **10. Let's say that together as a group.**

4 plus 6 is the same as 10.

Let's read it again.

4 plus 6 is the same as 10.

Point to B.

Let's read this number sentence as a group.

5 plus 8 is the same as 13.

Yes. 5 plus 8 is *the same as* (point to =) **13.**

Point to C.

Now, this number sentence looks a little different. We'll read it from left (point) **to right** (point)**. 5 is *the same as*** (point to =) **2 plus 3. Let's say that together as a group.**

5 is the same as 2 plus 3.

What do you say when you see the equal sign?

The same as.

Point to D.

Let's read this number sentence as a group.

21 plus 54 is the same as 75.

Great. 21 plus 54 is *the same as* 75.

Point to E.

Try this number sentence. Let's read it as a group. Remember, the equal sign means *the same as*.

75 is the same as 21 plus 54.

It doesn't matter where the equal sign is in a number sentence. Whenever you see the equal sign, you say *the same as*. What do you say?

The same as.

Great! We'll practice this more next time!

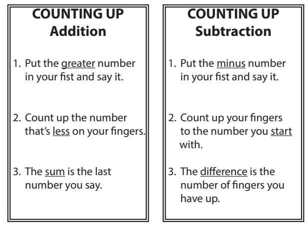
For all intervention students, now refer to the equal sign as "the same as" when used in any number sentence.

3: Buccaneer Problems

Let's count up like we did last time. Remember, if you work hard and listen to directions, your group will earn more treasure coins to mark on your treasure map.

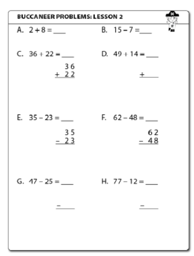
Let's use the Counting Up posters while we add and subtract.

Show Counting Up posters to students.



Now, sometimes you know the answer to an addition or subtraction problem right away in your head, and that's great! But if you don't know the answer right away, count up on your fingers.

Point to A.



Look at this problem. 2 plus 8. Do you add or subtract?

Add.

What sign tells you to add?

The plus sign.

If we need to add, which Counting Up steps do we follow?

(Students point.)

Yes, we look at the Counting Up addition steps.

Let's count up. Step 1 says, "Put the greater number in your fist and say it." What's the greater number?

8.

Put 8 in your fist.

(Students tap fists.)

Step 2 says, "Count up the number that's less on your fingers." Do that now. Count up 2 more, and use your fingers to keep track of how many you're adding.

(Students count up.)

Step 3 says, "The sum is the last number you say." So, what's 2 plus 8?

10.

That's right! 2 plus 8 is the same as 10. Go ahead and write 10.

(Students write.)

So, 2 plus 8 is the same as what?

10.

Point to B.

This problem says 15 minus 7 is the same as blank. Do you add or subtract?

Subtract.

What sign tells you to subtract?

Minus sign.

What steps do we follow?

(Students point.)

When subtracting, we follow the Counting Up subtraction steps.

Step 1 says, "Put the minus number in your fist and say it." Do you remember what the minus number is?

It's the number after the minus sign.

That's right. The minus number is the number that comes right after the minus sign. What's the minus number for this problem?

7.

Good. Now put 7 in your fist.

(Tap fists.)

Step 2 says, "Count up on your fingers to the number you start with." So, count up on your fingers until you get to the number you start with, 15. Start with 7, and count: 8 (hold up 1 finger)**, 9** (hold up 2 fingers)**, 10** (hold up 3 fingers)**, 11** (hold up 4 fingers)**, 12** (hold up 5 fingers)**, 13** (hold up 6 fingers)**, 14** (hold up 7 fingers)**, 15** (hold up 8 fingers)**.**

Step 3 says, "The difference is the number of fingers you have up." How many fingers do you have up?

8.

So, what's 15 minus 7?

8.

Yes, 15 minus 7 is the same as 8. Write 8.

(Students write.)

We solved this subtraction problem by finding the difference between the 2 numbers, 7 and 15 (point to Problem B)**.**

Look at this problem.

Point to C.

This problem says 36 plus 22 is the same as blank. This problem has a plus sign, so do we add or subtract?

Add.

That's right. The plus sign tells us to add. We can write this number sentence two ways. We can write it like this (point to 36 + 22 = ___)**, but it's hard to keep the ones and tens places straight in our heads this way. An easier way to see the ones and tens places is to write the problem up and down, like this** (point to vertical presentation of the problem)**.**

Before adding, let's draw a line down the middle to separate the columns. Go ahead and draw a line.

(Students draw.)

Now we can see which column is for the ones place (point) **and which column is for the tens place** (point)**. This is very important in math, because when we add, we have to add the ones first. What do we add first?**

The ones.

Then, we add the tens. What do we then add?

The tens.

Let's do that now. Where do I start?

Ones.

Yes, I always start with the ones column. We need to add 6 plus 2 (point)**. Put the greater number in your fist** (show fist and say, "6,")**, and count up: 7** (hold up 1 finger)**, 8** (hold up 2 fingers)**. The sum is the last number you say, so the sum is what?**

8.

Write 8 in the ones place.

(Write.)

Now, let's add the tens column. 3 tens plus 2 tens (point)**. What's 3 plus 2? Count up on your fingers if you don't know the answer right away.**

(Count up.)

Great! 3 tens plus 2 tens is the same as 5 tens, so write 5 in the tens place.

(Write.)

So, what's 36 plus 22?

58.

That's right. 36 plus 22 is the same as 58.

Let's do another addition problem.

Point to D.

49 plus 14 is the same as blank. Are you going to add or subtract?

Add.

How do you know you add?

The plus sign.

That's right. The plus sign tells you to add.

Before we get started, rewrite the number sentence and line up the columns. Remember, the ones (point) **need to line up and the tens** (point) **need to line up.**

(Write.)

And go ahead and draw a line down the middle to separate the ones column and tens column.

(Draw.)

Very nice. Now, go ahead and solve this problem. Use the Counting Up poster if you need to.

(Solve.)

You added the ones in the ones column, and exchanged 13 ones for 1 ten and 3 ones. You wrote 13, but you placed the 1 ten here (point) **and the 3 ones here**

(point). **Then, in the tens column, you added 4 plus 1 plus 1. You wrote your answer, 6 tens, in the tens place, and found that 49 plus 14 is the same as 63. What's 49 plus 14?**

63.

Nice work with those problems! Your group earns a treasure coin!

Now, let's do something different. So far, we've talked about adding and subtracting numbers that are small enough to count on our fingers. We've also talked about adding greater numbers that are hard to count on our fingers, like this problem (point to Problem D)**.**

Now we'll talk about subtracting greater numbers that are hard to count on our fingers.

Look at the next problem.

Point to E.

35 minus 23 is the same as blank. Are you going to add or subtract?

Subtract.

How do you know you subtract?

The minus sign.

That's right. The minus sign tells you to subtract.

This problem looks different because it has greater numbers, but it's still a subtraction problem. The minus number is here, right after the minus sign (point to 23)**. Here is the number you start with** (point to 35)**.**

Because this number sentence is written *across* like this (run finger horizontally under the problem)**, it's hard for me to keep the ones and tens places straight. So I rewrite the problem like this, up and down, before I start** (point).

We still want to draw a line to separate the ones column and tens column. Go ahead and do that now.

(Draw.)

Now it's time to subtract. Where do I start?

Ones column.

Yes, always start with the ones column. We need to subtract 5 minus 3 (point)**. Let's do that by counting up on our fingers. We start by putting the minus number in our fist. Here is the minus sign** (point)**.** (Point to minus sign.) **The minus sign is in the row next to the minus numbers. When we subtract the ones** (point to ones column)**, the minus sign goes with this number** (point to 3)**.**

Which number is the minus number?

3.

Yes, the minus number, 3, is the number that comes after the minus sign. Put the minus number in your fist (show fist and say, "3,")**, and count up: 4** (hold up 1 finger)**, 5** (hold up 2 fingers)**. The difference is the number of fingers you have up, so the difference is what?**

2.

Write 2 in the ones place.

(Write.)

Let's move to the tens column. Now, we subtract the tens: 3 tens minus 2 tens (point)**. What's 3 minus 2? Count up on your fingers if you don't know the answer right away.**

1.

We put the minus number in our fist and count up to the number we started with. The minus number, 2, is the number that comes after the minus sign (point)**. So, 3 tens minus 2 tens is the same as 1 ten. Write 1 in the tens place.**

(Write.)

So, what's 35 minus 23?

12.

That's right. 35 minus 23 is the same as 12.

Look at this problem.

Point to F.

62 minus 48 is the same as blank. Are we going to add or subtract?

Subtract.

We need to subtract. The minus sign (point) **tells us to subtract.**

What should we do first?

Draw a line to separate the columns.

Yes, that's a good idea. Draw a line to separate the columns.

(Draw.)

So, where do we start?

Ones column.

Good answer. So, the ones column says, 2 minus 8 (point to ones column)**. Which number is the minus number?**

8.

That's right! The minus number is the number that comes after the minus sign (point)**. To count up, we start with the minus number, 8, and count up to the number you start with, 2. Picture a number line in your head. Can we start at 8** (pause) **and count *up* to 2** (pause)**?**

No.

Another way to think about this is, if you have *2* (point to 2)**, can you subtract *8*** (point)**?**

No.

You're right. You can't subtract 8 from 2. Can we reverse the numbers?

No.

We can't reverse the numbers in subtraction. So, we can't subtract 8 from 2, and we can't reverse the numbers and just subtract 2 from 8.

So, how do we solve this problem?

Regroup.

Yes, we need to regroup, or exchange the number we start with, 2 (point)**. To do this, we subtract 1 ten from these 6 tens** (point to 6 with pencil, and then cross it out)**. Now we're left with 5 tens** (write 5 above the crossed out 6)**.**

We exchange that 1 ten for 10 ones, and give them to the 2 ones we already have. This 2 becomes 12 (write 1 next to the 2 ones so that it looks like 12)**.**

Now, if we have 12 (point to 12)**, can we subtract our minus number, 8, from 12?**

Yes.

Great! Do that now. Use counting up if you don't know the answer right away in your head.

4.

12 minus 8 is the same as 4. Write 4 in the ones place.

(Write.)

Now move to the tens column. 5 tens minus 4 tens (point)**. What's 5 minus 4? Count up on your fingers if you don't know the answer right away.**

1.

5 tens minus 4 tens is the same as 1 ten, so write 1 in the tens place.

(Write.)

So, what's 62 minus 48?

(Students.)

Now, what question should you ask to check your answer?

(Students.)

Is 14 less than 62?

Yes.

Yes, so you know your answer makes sense. Excellent!

Your group earns a treasure coin!

Look at the rest of the problems on this page and the next page.

Point to G through P.

Now it's your turn. We'll work each problem one at a time.

First, let's look at the sign to decide whether to add or subtract.

Then, we'll write the problem to make it easier to solve. We'll draw a line to separate the columns.

Then, we'll add or subtract the ones column and add or subtract the tens column.

Let's get started!

(Students work.)

Provide feedback as necessary.

Your group earns another treasure coin!

4: Shipshape Sorting

Starts Lesson 7.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

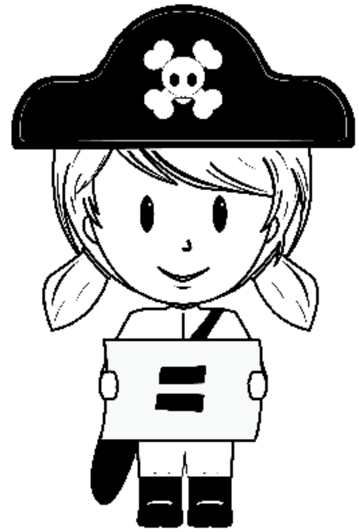
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 3



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Numbering charts and graphs
4. ~~Shipshape Sorting~~
5. Jolly Roger Review

Materials

Posters

Counting Up

Student Materials

Equation Quest: Lesson 3
Buccaneer Problems: Lesson 3
Jolly Roger Review: Lesson 3
Cubes
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Every day, before we start solving word problems, we'll do Equation Quest with the equal sign.

What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Let's read this number sentence. When you see the equal sign, remember to say *the same as*. This number sentence says, 6 plus 8 is *the same as* (point to =) **14. Let's say that together.**

6 plus 8 is the same as 14.

Let's read it again.

6 plus 8 is the same as 14.

Point to B.

Read this number sentence. Remember, it doesn't matter where the equal sign is. You always say *the same as*.

11 is the same as 5 plus 6.

Yes. 11 is the same as (point to =) **5 plus 6. Let's read that again.**

11 is the same as 5 plus 6.

Point to C.

Now, this number sentence has a minus sign, but we still say *the same as* when you see the equal sign. So, this is 13 minus 4 is *the same as* 9. Let's say that together.

13 minus 4 is the same as 9.

What do you say when you see the equal sign?

The same as.

Point to D.

Let's read this number sentence.

72 minus 10 is the same as 62.

Great. 72 minus 10 is *the same as* 62.

Point to E.

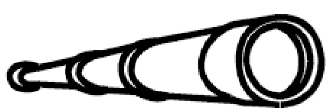
Try this number sentence. Remember, the equal sign means *the same as*.

12 is the same as 23 minus 11.

It doesn't matter where the equal sign is in a number sentence. Whenever you see the equal sign, you say *the same as*. What do you say?

The same as.

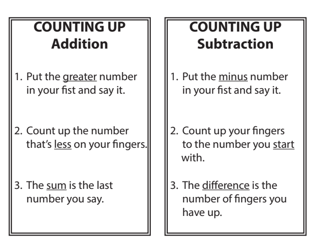
Great! We'll practice this more next time!



3: Buccaneer Problems

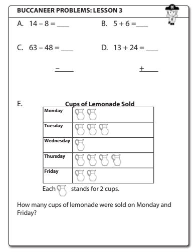
Let's review addition and subtraction. Remember, if you work hard and listen to directions, you'll earn more treasure coins to mark on your treasure map. Let's use the Counting Up posters while we add and subtract.

Show Counting Up posters to students.



Now, sometimes you know the answer to an addition or subtraction problem right away in your head, and that's great! But if you don't know the answer right away, count up on your fingers.

Point to A.


BUCCANEER PROBLEMS: LESSON 3

A. 14 – 8 = ___ B. 5 + 6 = ___

C. 63 – 48 = ___ D. 13 + 24 = ___

E. Cups of Lemonade Sold

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Each stands for 2 cups.

How many cups of lemonade were sold on Monday and Friday?

Look at this problem. 14 minus 8. Do you add or subtract?

Subtract.

What sign tells you to subtract?

The minus sign.

If we need to subtract, which Counting Up steps do we follow?

(Point.)

Let's say the steps together.

Put the minus number in your fist and say it.
Count up your fingers to the number you start with.
The difference is the number of fingers you have up.

Let's say the steps again.

Put the minus number in your fist and say it.
Count up your fingers to the number you start with.
The difference is the number of fingers you have up.

Let's count up. "Put the minus number in your fist and say it." What's the minus number?

8.

That's right. The minus number is 8. 8 is after the minus sign (point).

(Tap fists.)

“Count up your fingers to the number you start with.”

(Count up.)

“The difference is the number of fingers you have up.” What’s the difference?

6.

Write 6.

(Write.)

So, 14 minus 8 is the same as?

6.

Yes. 14 minus 8 is the same as 6.

Point to B.

Look at this problem. 5 plus 6. Do you add or subtract?

Add.

What sign tells you to add?

The plus sign.

If we need to add which Counting Up steps do we follow?

(Point.)

Let’s say the steps together.

Put the greater number in your fist and say it.
Count up the number that’s less on your fingers.
The sum is the last number you say.

Let’s say the steps again.

Put the greater number in your fist and say it.
Count up the number that's less on your fingers.
The sum is the last number you say.

So, "Put the greater number in your fist and say it." What's the greater number?

6.

(Tap fists.)

Step 2 says, "Count up the number that's less on your fingers." Do that now.

(Count up.)

Step 3 says, "The sum is the last number you say." So, what's 5 plus 6?

11.

That's right! 5 plus 6 is the same as 11. Go ahead and write 11.

(Writes.)

So, 5 plus 6 is the same as what?

11.

Look at this problem.

Point to C.

This problem says 63 minus 48 is the same as blank. This problem has a minus sign (point)**, so do we add or subtract?**

Subtract.

That's right. The minus sign tells us to subtract. We can write this number sentence two ways. We can write it like this (point to 63 – 48 = ____)**, but it's hard to keep the ones and tens places straight in our heads this way. An easier way to see the ones and tens places is to write the problem up and down. Rewrite the problem here.**

(Rewrite.)

Before subtracting, let's draw a line down the middle to separate the columns. Go ahead and draw a line.

(Draw.)

So, where do we start?

Ones column.

Good answer. So, the ones column says, 3 minus 8 (point to ones column)**. Which number is the minus number?**

8.

That's right! The minus number is the number that comes after the minus sign (point)**. To count up, we start with the minus number, 8, and count up to the number you start with, 3. Picture a number line in your head. Can we start at 8** (pause) **and count *up* to 3** (pause)**?**

No.

You're right. You can't subtract 8 from 3. Can we reverse the numbers?

No.

We can't reverse the numbers in subtraction. So, we can't subtract 8 from 3, and we can't reverse the numbers and just subtract 3 from 8.

So, how do we solve this problem?

Regroup.

Yes, we need to regroup, or exchange the number we start with, 3 (point)**. To do this, we subtract 1 ten from these 6 tens** (point to 6 with pencil, and then cross it out)**. Now we're left with 5 tens** (write 5 above the crossed out 6)**.**

We exchange that 1 ten for 10 ones, and give them to the 3 ones we already have. This 3 becomes 13 (write 1 next to the 3 ones so that it looks like 13)**.**

Now, if we have 13 (point to 13)**, can we subtract our minus number, 8, from 13?**

Yes.

Great! Do that now. Use counting up if you don't know the answer right away in your head.

5.

13 minus 8 is the same as 5. Write 5 in the ones place.

(Write.)

Now move to the tens column. 5 tens minus 4 tens (point)**. What's 5 minus 4? Count up on your fingers if you don't know the answer right away.**

1.

5 tens minus 4 tens is the same as 1 ten, so write 1 in the tens place.

(Write.)

So, what's the answer to 63 minus 48?

(Students.)

15.

Excellent! Look at this problem.

Point to D.

13 plus 24. This problem has a plus sign (point)**, so do we add or subtract?**

Add.

That's right. The plus sign tells us to add. We can write this number sentence two ways. We can write it like this (point)**, but what's a better way to write it?**

Up and down.

Go ahead and write the problem up and down.

(Write.)

Before adding, let's also draw a line down the middle to separate the columns. Go ahead and draw a line.

(Draw.)

So, where do we start?

Ones column.

Yes, I always start with the ones column. We need to add 3 plus 4 (point)**. What's 3 plus 4? If you don't know the answer, count up.**

7.

Write 7 in the ones place.

(Write.)

Now, let's add the tens column. 1 ten plus 2 tens (point)**. What's 1 plus 2? If you don't know the answer, count up.**

3.

Great! 1 ten plus 2 tens is the same as 3 tens, so write 3 in the tens place.

(Write.)

So, what's 13 plus 24?

37.

That's right. 13 plus 24 is the same as 37.

Nice work with those problems! Your group earns a treasure coin!

Now, let's do something different. Next time, we'll start to work on solving

word problems. Sometimes you find the numbers you need to solve word problems right there, in the word problem. Sometimes, though, the word problem comes with a table, chart, or a graph.

Before solving a word problem, we'll always number the table, chart, or graph. This will make solving the word problem easier.

Look at this problem.

Point to E.

Here's a word problem (point) **with a table** (point). **This table says, "Cups of Lemonade Sold."** (Point.) **The days of the week are on this side of the graph** (point). **"Monday, Tuesday, Wednesday, Thursday, Friday."**

So this table tells us how many cups of lemonade were sold for each day of the week.

To figure out how to read and number this graph, we look for any special directions about the graph. Down here at the bottom, we see directions (point)**. They say, "Each picture of lemonade stands for 2 cups."**
Because each picture of lemonade stands for 2 cups, we can count by twos to see how many cups were sold each day.

Let's start with Monday (point)**. Monday has 1** (point)**, 2** (point) **pictures of lemonade. So, let's count by twos: 2, 4. How many cups of lemonade were sold on Monday?**

4.

So, let's write 4 next to "Monday".

(Write.)

Look at Tuesday (point). **Remember, the special directions down here tell you that each picture stands for two cups. So we count by twos. How many cups of lemonade were sold on Tuesday? Let's count by twos. 2, 4, 6.**

6.

6 cups of lemonade were sold on Tuesday. So, what should you write next to

“Tuesday”?

6.

Write 6.

(Write.)

Let’s label Wednesday (point). **How many cups of lemonade were sold on Wednesday? Remember to count by twos.**

2.

Write 2.

(Write.)

How many cups of lemonade were sold on Thursday (point)**? Go ahead and label.**

(Write.)

How many cups of lemonade were sold on Friday (point)**? Go ahead and label.**

(Write.)

Now that we’ve numbered the table, let’s read this word problem and answer the question. “How many cups of lemonade were sold on Monday and Friday?” What do we need to do to solve this problem?

Add the cups from Monday and Friday.

That’s right. We’ve already numbered the table, so this should be easy. How many cups were sold on Monday?

4.

How many cups were sold on Friday?

4.

So, we need to add together 4 plus 4. What's 4 plus 4?

8.

Very good. 4 plus 4 is the same as 8. So, I'll write 8 below the word problem.

Write 8.

There's one other thing you need to know about answering word problems. Whenever you write your answer for a word problem, you always write a number. That's easy to remember. But that's not enough. You also must write a label. A label is a word that tells us what the number is talking about.
We already have part of our answer, the number 8. Now we have to write our label. What is the number 8 talking about? Bears? Canoes? Cups?

Cups.

Excellent. 8 tells about the number of cups. So, let's write our label, "cups," next to the number 8.

Write cups.

So, help me remember. What should we do anytime we see a table or graph with a word problem?

Number it.

That's right. You number the table or graph before reading and answering the word problem. That makes doing the word problem easier if you have the table or graph labeled before you start working.

Point to F.

Let's do another problem together. This graph shows different kinds of animals at the zoo. The animals are listed at the bottom of the graph (point). **How many different kinds of animals are shown on this graph?**

4.

Yes. There are lions (point), **monkeys** (point), **giraffes** (point), **and zebras** (point) **at the zoo.**

Now, look over here on the left side of the graph (point)**. The bottom number is 0 and the top number is 8. We use these numbers to see how many lions, monkeys, giraffes, and zebras are at the zoo.**

Watch me. Let's start with the lions. I put my finger at the top of the lions' box. (Place finger at top of lions' box.) **To know how many lions are at the zoo, I slide my finger over to the numbers on the left side.** (Slide finger over to number 3.) **My finger is on the number 3. So, there are 3 lions at the zoo. Let's write the number 3 next to the word lions.**

(Write.)

What's the next animal on this graph?

Monkeys.

That's right. Let's see how many monkeys are at the zoo. I put my finger on the monkeys' box. (Place finger at top of monkeys' box.) **To know how many monkeys are at the zoo, I slide my finger from the top of the monkeys' box to the number on the left side.** (Slide finger over to number 7.) **How many monkeys are at the zoo?**

7.

Very good. There are 7 monkeys at the zoo. Where should we write 7?

Next to monkeys.

Write 7 next to monkeys.

(Write.)

How many giraffes are at the zoo?

2.

Very good. There are 2 giraffes at the zoo. Where should I write the number 2?

Next to giraffes.

(Write.)

Are we finished numbering the graph?

No.

That's right. We still have to number the zebras. How many zebras are at the zoo?

4.

Yes. To decide the number of zebras, move your finger to the top of the zebras' box then slide my finger over to the left side.

Write 4 next to zebras.

(Write.)

Great work! You did a nice job numbering that graph! Now that we've numbered the graph, let's read this word problem (point) **and answer the question.**

"How many lions and giraffes are at the zoo?"

What do we need to do to solve this problem?

Add the lions and giraffes together.

Yes. We have to add the number of lions to the number of giraffes. Does the story tell us how many lions and giraffes there are?

No.

Where should we look for that information?

In the graph.

How many lions are at the zoo?

3.

How many giraffes are at the zoo?

2.

So, we have 3 lions and 2 giraffes. To find the total number of lions and giraffes, we can add 3 plus 2. What's 3 plus 2?

5.

That's right. 3 lions plus 2 giraffes is the same as 5. So, to answer the question, write 5 below the word problem.

(Write.)

There's one more thing we need to do. When you write your answer for a word problem, you always write a number. That's easy to remember. But that's not enough. Whenever your answer to a word problem is a number, you also must write a label. What's a label?

It's a word that tells about the number.

A label is a word that tells us what the number is talking about. We already have part of our answer, the number 5. Now we have to write our label. What is the number 5 talking about?

Animals *or* lions and giraffes.

Excellent. 5 tells about the number of lions and giraffes. So, let's write our label, "lions and giraffes," next to the number 5.

(Write.)

That was good work! So, whenever you see a graph, what should you do even before you read the word problem?

Number it.

Good. Always number a graph before you work on the word problem. Let's practice another graph problem together.

Point to G.

There's a graph at the top (point)**. There's a question at the bottom** (point)**. Every time you see a graph, what should you do?**

Number the graph.

That's right. You should number the graph before you read and answer the word problem. What's this graph showing us?

Number of soccer goals scored.

Just like we numbered the graph with the lines going up and down, we number this graph with the lines going side to side.

So, how many soccer goals did Alex score? I slide my finger to the end of Alex's line. (Slide finger to right.) **Then, I slide my finger down to the numbers to see how many soccer goals Alex scored.** (Slide finger down to 5.) **My finger is on the number 5, so Alex scored 5 goals.**

Write 5 next to Alex's name.

(Write.)

How many goals did Bailey score?

4.

That's right. Bailey scored 4 goals. So, write 4 next to Bailey's name.

(Write.)

How many goals did Cara score?

6.

Very good! Write 6 next to Cara's name.

(Write.)

Label the number of goals for Dan and Emma.

(Write.)

Now that we've numbered the graph, we can read and answer the word problem. The word problem says, "Which kids scored the same number of goals?" How do we decide who scored the same number of goals?

Find the two numbers that are the same.

Very good. To decide who scored the same number of goals, find the two numbers that are the same. What two numbers are the same?

4.

So, who scored the same number of goals?

Bailey and Dan.

Good. Bailey and Dan scored the same number of goals. So, we'll write "Bailey and Dan" under the word problem.

(Write.)

So, every time you see a table or graph, what should you do first?

Number it.

That's right. Numbering a table or graph makes solving the word problem much easier.

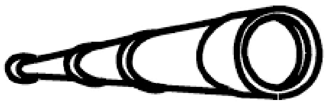
You earn a treasure coin!

4: Shipshape Sorting

Starts Lesson 7.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.



Treasure Map

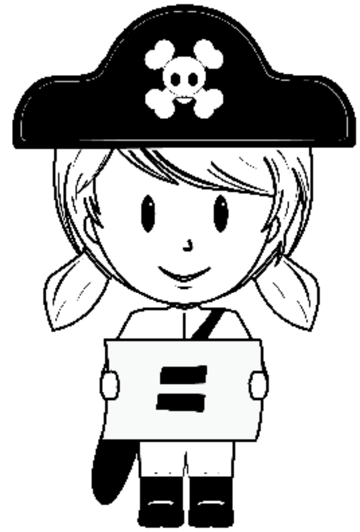
Let’s count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you’ll each choose a prize out of the treasure box!

Lesson 4



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total with T missing
4. ~~Shipshape Sorting~~
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 4	Cubes
Buccaneer Problems: Lesson 4	Crayons
Jolly Roger Review: Lesson 4	Treasure Map

Tutor Materials

Math Fact Flash Cards	Gold coins
Timer	Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

1 plus 6 is *the same as* blank.

To solve this problem with cubes, we can place 1 cube (place 1 cubes of one color) **and 6 cubes** (place 6 cubes of another color) **on this side of the equal sign.**

Place 1 cube and 6 cubes in left box.

Now, the equal sign acts as a balance. We need to make these sides the same. How many cubes do we have on this side (point)**? Add the 1 cube and 6 cubes.**

7.

So, if we have 7 cubes on this side of the equal sign (point)**, how many cubes do we need on that side** (point)**?**

7.

That's right. To make the sides the same, we need 7 cubes. Place 7 cubes.

(Place cubes.)

Okay, let's check that this side (point) **is the same as that side** (point)**. On this side of the equal sign** (point to left)**, there are 1, 2, 3, 4, 5, 6, 7 cubes** (touch each cube)**.**

On that side of the equal sign (point to right)**, there are 1, 2, 3, 4, 5, 6, 7 cubes** (touch each cube)**. Is this side** (point to left) **the same as that side** (point to right)**?**

Yes.

Yes! The two sides are the same. 1 plus 6 is the same as 7. Go ahead and write 7.

(Write.)

What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as*.

Let's try another one.

Point to B.

This problem says blank is *the same as* 5 plus 5. Let's read that together.

Blank is the same as 5 plus 5.

This problem looks a little different, but we can solve it. All we need to do is make the sides the same.

To solve this problem with cubes, place 5 cubes on that side (point) **of the mat.**

(Place cubes.)

Now, add 5 cubes on that side of the equal sign (point)**.**

(Place cubes.)

The equal sign acts as a balance. We need to make these sides the same. How many cubes can we add to this side (point) **to make the sides the same? Let's add 1 cube at a time. Let's use different colored cubes to make it easy to see how many cubes we added.**

(Add cubes.)

Are the sides the same?

Yes.

You have 10 cubes on this side of the equal sign (point)**, and 10 cubes on that side of the equal sign** (point)**.**

So, what is *the same as* 5 plus 5?

10.

That's right. You placed 10 cubes on this side (point)**. So, 10 is *the same as* 5 plus 5. Go ahead and write 10.**

(Write.)

Let's read the number sentence together.

10 is the same as 5 plus 5.

What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as*.

Good work for today!

3: Buccaneer Problems

Yesterday we started talking about word problems. What do we always do first when we see a table or graph?

Number it before we read the word problem.

Yes. We always have to check if the word problem has a table or a graph. Whenever we see a table or graph, we number it before we read the word problem.

And, when we solve word problems, what two things do we have in our answer?

A number and a label.

Very good. You must have a number *and* a label. What is a label?

A label is a word that tells us what the problem is mostly about.

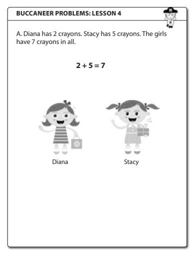
Excellent. A label is a word that tells us what the problem is mostly about. A label also tells us about our missing information.

Today, we'll work on math word problems where the important information is in a <u>story</u>. We need to read the story carefully to find the important information.

Today, we'll talk about Total problems.

Total means the <u>entire</u> amount, or the <u>whole</u> amount. In a Total problem, two or more parts are <u>put together</u> into a <u>total</u>. Listen to this Total story.

Point to A.



"Diana has 2 crayons. Stacy has 5 crayons. The girls have 7 crayons in all."

Circle 2, 5, and 7 in the story as you say the following:

This is a Total story because we have two parts, Diana's crayons and Stacy's crayons. The parts are put together into a total number of crayons.

Here's the number sentence that goes with this story: 2 plus 5 is the same as 7. This number sentence stands for what's happening in this Total story.

Diana's 2 crayons (point to 2 in number sentence) **and Stacy's 5 crayons** (point to 5 in number sentence) **are put together into a total of 7** (point to 7 in number sentence) **crayons.**

Display crayons.

Let me show you how this works. We'll use these crayons. Look at this picture (point)**. This is a picture of Diana. Her name is written here** (point)**. Now here is a picture of Stacy** (point)**. Her name is written here** (point)**.**

How many crayons does Diana have?

2.

That's right. Let's count 2 crayons. 1, 2. Put two crayons underneath Diana's picture.

(Place crayons.)

How many crayons should Stacy have?

5.

That's right. Let's count 5 crayons. 1, 2, 3, 4, 5. Put 5 crayons underneath Stacy's picture.

(Place crayons.)

In Total problems, we put parts together into a total.

Hold out two hands; clasp hands together. Continue using hand motions throughout.

In this problem, Diana's crayons are part 1 (raise one hand)**. Stacy's crayons are part 2** (raise other hand)**.**

I put two parts together into a <u>total</u> (clasp hands)**. Let's see how many the total is. I put part 1, Diana's crayons, together with part 2, Stacy's crayons. That makes a total of 7 crayons in all.**

Count the 7 crayons.

2 plus 5 is the same as 7. 7 is the total number of crayons.

The number sentence 2 plus 5 is the same as 7 matches the story.

Point to 2 + 5 = 7.

All Total problems have the same number sentence: Part 1 plus part 2 is the same as the total. We remember this as P1 plus P2 is the same as T.

Write P1 + P2 = T underneath 2 + 5 = 7.

We call P1 plus P2 is the same as T our Total equation. Equation is a fancy word.

Say it with me.

Equation.

Write the word equation next to P1 + P2 = T.

Equation has most of the word *equal* in it.

Underline "equa" in equation.

An equation has the equal sign in it, like P1 plus P2 is the same as T has the equal sign (point to equal sign)**. We call P1 plus P2 is the same as T our Total equation because it stands for what happens in a Total problem. Let's say the Total equation together.**

P1 plus P2 is the same as T.

What does P1 stand for?

Part 1.

What does P2 stand for?

Part 2.

And what does T stand for?

Total.

What's our Total equation?

P1 plus P2 is the same as T.

That's right. Part 1 plus part 2 is the same as the total.

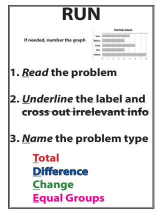
Now, let's think about word problems. We call our program Pirate Math Equation Quest because we have to be math pirates. When pirates bury their treasures, they mark the treasures with an X. We'll use an X to mark word-problem treasures. The treasure is the word-problem answer!

Some word problems will be easy. But other word problems will be much

harder. For *every* word problem, you can use Pirate Math Equation Quest to help you find the answer, even if you think the problem is easy. You need to practice your Pirate Math Equation Quest skills and show me how you get your answer.

Let me show you what I mean. Pirates work through a word problem like this.

Display RUN poster.



Point to B.

Whenever we see a word problem, we use the RUN poster to help us solve it. We RUN through the problem.

The letters in the word RUN, R-U-N, help you remember the steps for solving the problem. What do you do when you see a word problem?

RUN through the problem.

Great, you RUN through the problem.

Make running motion with arms. Continue using hand motions throughout.

Now, look at this poster. Let's read the title together: "RUN." Now let's look at what each letter stands for.

Point to R.

R stands for "Read the problem." When you see a word problem, you read the problem. If you have trouble reading a problem I'll help you. What does R stand for?

Read the problem.

That's great! Listen as I read the problem. "Diana has 2 crayons. Stacy has 5 crayons. How many crayons do the girls have together?"

The next letter is U.

Point to U.

U stands for "Underline the label and cross out irrelevant information." After you read the problem, underline the label. The label is what the problem is about. We underline the label to know which numbers are important and to help label the answer later. What does the U stand for?

Underline the label and cross out irrelevant information.

The label is a word or words that tells us what the problem is mostly about. What's this problem about? Is it about monkeys?

No.

Is this problem about cookies?

No.

Is this problem about crayons?

Yes.

This problem is about crayons because the question asks, "How many crayons do the girls have together?" The question asks about the crayons for Diana and Stacy, so I underline the word "crayons."

Underline crayons in the question sentence.

I underlined the word "crayons" in the question (point)**. We only need to underline the word "crayons" one time. Even though we see the word "crayons" here** (point to Diana's sentence) **and here** (point to Stacy's sentence)**, you still only underline "crayons" one time.**

Should we underline the word "crayons" every time we see it in the word problem?

No.

That's right. We only underline the label one time. It doesn't really matter where you underline the word "crayons," but it's usually best to underline the label in the question sentence.

Like we talked about last time, the question sentence is the sentence with a question mark at the end (point)**. A sentence always starts with a capital letter. A sentence ends with a period or a question mark.**

What does a sentence start with?

A capital letter.

What does a sentence end with?

A period or question mark.

Good. In word problems, the question sentence helps us figure out the label.

After we underline the label, we have to check for irrelevant information. Sometimes we have extra numbers in a problem that are not about the label. We do not need these numbers to answer the question, so we call this irrelevant information. If there is irrelevant information, we should cross it out.

We see the words "irrelevant information" here (point) **on the RUN poster after underline the label. So, after we underline the label, we need to ask ourselves, "Is there any irrelevant information? Are all of the numbers about the label we underlined?"**

Yes.

Now look at the N.

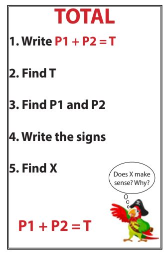
Point to N.

The N in RUN stands for "Name the problem type." After you read the problem and underline the label and check for irrelevant information, you name the problem type. In Pirate Math Equation Quest, we'll learn about four problem types. Right now, we only know about Total problems. A Total problem puts parts together into a total. Does this problem put parts together into a total?

Yes.

Right. This problem puts parts together into a total. This is a Total problem. To remind me it's a Total problem, I write T next to the problem. T stands for Total problem.

Write T.



Display Total poster.

After you RUN through the problem, you're ready to solve it! We decided this is a Total problem, so we use this Total poster to solve it. This is the Total poster. We'll use it to help organize your work.

There are five steps. Like a pirate following a treasure map, we'll follow each step to get to the treasure – the word-problem answer!

To solve a Total problem, we have five steps. Step 1. "Write P1 plus P2 is the same as T." We saw this before. This is our Total equation.

In a Total problem, parts are put together into a total. We add part 1 plus part 2 and that is the same as the total. Once we know the problem is a Total problem, we write our Total equation: P1 plus P2 is the same as T. (Point.) **This helps us organize our Total work. Go ahead and write P1 plus P2 is the same as T.**

(Write.)

Remind me again, what does P1 (point) **stand for?**

Part 1.

What does P2 (point) **stand for?**

Part 2.

What does T (point) **stand for?**

Total.

And what do we call P1 plus P2 is the same as T?

Total equation.

Very good. Look at Step 2: "Find T." What does T stand for?

The total.

That's right. We know T stands for the total because total starts with a T. In a Total problem, we have two parts, and we have a total. The question helps us figure out whether we're finding the total or one of the parts.

Look at the word problem again. The first sentence (point) **says, "Diana has 2 crayons." Diana has one part** (point to P1; then hold up that hand for Diana's part; keep that hand up)**.**

The next sentence (point) **says, "Stacy has 5 crayons." Stacy has one part.** (Point to P2 with the other hand; then hold up that hand for Stacy's part.) **The question asks, "How many crayons do the girls have together?"** (Bring together both hands and clasp together.)

We know the two parts, so the question is asking us to find the total. The missing part is the total, or T (point)**.**

In number sentences, we mark missing information with an X. How do we mark missing information?

With an X.

Right. T is the missing information, so we put an X in the number sentence under T. This helps keep the work organized.

(Write.)

Step 3: "Find P1 and P2." What do P1 and P2 stand for?

Part 1 and part 2.

Let's work on part 1, or P1. The problem (point) **says, "Diana has 2 crayons." We already underlined the word "crayons" to help us remember this problem is about crayons. Is 2 talking about crayons?**

Yes.

2 is talking about crayons. So 2 is an important number for solving the problem. Let's say Diana's crayons is part 1. What number stands for part 1?

2.

2 is part 1, or P1. I check off the 2 in the problem, like this, so I remember I've already used it. Then, I write 2 in the number sentence underneath P1, like this.

Check off 2 and write 2 underneath the P1.

Now let's work on part 2, or P2. The next sentence (point) **says, "Stacy has 5 crayons." Remember, this problem is about crayons. Is 5 talking about crayons?**

Yes.

5 is talking about crayons, so it's an important number for solving the problem. We already have P1 in our number sentence (point)**. Stacy's number is part 2. What number is part 2?**

5.

5 is part 2, or P2. I check off 5, like this, to remember that I've used that number. Then I write 5 under P2 in the number sentence.

Check off 5 and write 5 underneath the P2.

Now we have P1, P2, and T filled in (point to 2, 5, and X)**. We use these numbers to find the word-problem answer!**

But before we find the answer, look at Step 4. "Write the signs."

For Total problems, our Total equation is P1 <u>plus</u> P2 is the same as T. That's why

we wrote the Total equation as Step 1, right here (point)**.**

Now we know what's missing in the problem, the total. We wrote X here to stand for T (point)**. We found P1 and P2 in the story. We wrote those numbers, 2 and 5, underneath P1 and P2, right here** (point)**. But we still don't have any math signs. What math signs do we need to complete our number sentence?**

Plus and the same as sign.

Right. We always use a plus sign in a Total problem because we add parts together for a total. Write the plus and the same as signs in the number sentence like this.

(Write.)

2 stands for part 1. 5 stands for part 2. X stands for the total. Now it's time to solve this problem.

To solve this problem, we need to balance the two sides. If you add 2 plus 5, what can you place on that side to make the two sides the same?

7.

Yes. 2 plus 5 is the same as 7. Go ahead and write 7.

(Write.)

Good. So, what number does X stand for in 2 plus 5 is the same as X?

7.

Right! You said 2 plus 5 is the same as 7; X is the same as 7. Let's put 7 in the problem where X is to check our work.

Write $2 + 5 = 7$ underneath $2 + 5 = X$.

Does 7 make this side the same as that side?

Yes.

Right. 2 plus 5 is the same as 7. That makes sense. So X is the same as 7.

Write X is the same as 7.

(Write.)

Whenever we write an answer to a word problem, we need a number and a label. We know that 7 is the number answer, but we still need a label. Think about what the problem is about. Go back to the word we underlined. What did we underline?

Crayons.

We underlined crayons, right here (point)**. Crayons is what the problem is about. It tells us about our missing information. We use the word crayons for our label. So, we write crayons after the number 7.**

Write crayons next to 7. Monitor that students do this as well.

What is our number answer?

7.

Right. And what is our label answer?

Crayons.

Yes. Diana and Stacy have 7 crayons together. 7 is our number answer. Crayons is our label answer. 7 crayons is our final answer.

The last thing we need to do is check to see if our answer makes sense. Let's see if the answer makes sense. "Diana has 2 crayons. Stacy has 5 crayons. How many crayons do the girls have together?" Does it make sense that the girls have 7 crayons?

Yes.

Yes. This is a Total problem. So, the Total is always more than the numbers in parts 1 and 2. Is 7 more than 2 and more than 5?

Yes.

Did we answer the question, "How many crayons do the girls have altogether?"

Yes.

We did because we said that they had 7 crayons.

Good job working a Total problem. That was a lot to learn today. Let's review.

What's a Total problem?

When parts are put together into a total.

Good. A Total problem is when parts are put together into a total.

When you see a word problem, what's the first thing you do? (Point to RUN poster.)

RUN through the problem.

Good. What does R stand for?

Read the problem.

U?

Underline the label and cross out irrelevant information.

N?

Name the problem type.

Good. Today we learned about Total problems. When you name a Total problem, what do you write next to the problem to help you remember it's a Total problem?

T.

Great. Then you use the Total poster to help you solve it!

 **Your group earns a treasure coin!**

4: Shipshape Sorting

Starts Lesson 7.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

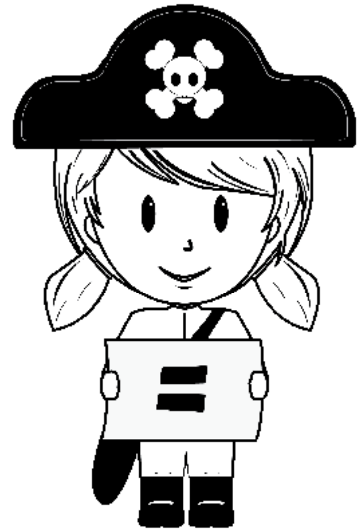
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 5

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total with T missing; irrelevant information
4. ~~Shipshape Sorting~~
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 5	Cubes
Buccaneer Problems: Lesson 5	Treasure Map
Jolly Roger Review: Lesson 5	

Tutor Materials

Math Fact Flash Cards	Gold coins
Timer	Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Blank is *the same as* 4 plus 4. Let's say that together.

Blank is the same as 4 plus 4.

Every number sentence has two sides. One side is here, on this side of the equal sign (point to __)**. The other side is there, on that side of the equal sign** (point to 4 + 4)**.**

Your job is to make the sides the same. Does it matter where the equal sign is in the number sentence?

No.

So, to solve this problem with cubes, we can place 4 cubes of one color on that side (point) **of the equal sign.**

(Place cubes.)

Then we place 4 cubes of another color on that side (point) **of the equal sign.**

(Place cubes.)

Now, the equal sign (point to =) **acts as a balance. We need to make these sides the same. How many cubes do we have on that side** (point)**? Add the 4 cubes and 4 cubes.**

8.

So, if we have 8 cubes on that side of the equal sign (point)**, how many cubes do we need on this side** (point)**?**

8.

That's right. To make the sides the same, we need 8 cubes. Place 8 cubes on this side (point)**.**

(Place cubes.)

Okay, let's check that this side (point) **is the same as that side** (point)**. On this side of the equal sign** (point to left)**, there are 1, 2, 3, 4, 5, 6, 7, 8 cubes** (touch each cube)**.**

On that side of the equal sign (point to right)**, there are 1, 2, 3, 4, 5, 6, 7, 8 cubes** (touch each cube)**. Is this side** (point to left) **the same as that side** (point to right)**?**

Yes.

The two sides are the same. 8 is the same as 4 plus 4. Go ahead and write 8.

(Write.)

What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as*.

Let's try another one. Clear all the cubes.

(Clear.)

Point to B.

This problem says blank plus 3 is the same as 5. Let's read that together.

Blank plus 3 is the same as 5.

This problem looks a little different, but we can solve it. All we need to do is make the sides the same.

To solve this problem with cubes, place 3 cubes on this side (point) **of the mat.**

(Place cubes.)

Now, place 5 cubes of that side of the equal sign (point)**.**

(Place cubes.)

The equal sign acts as a balance. We need to make these sides the same. How many cubes can we add to this side (point) **to make the sides the same? Let's add 1 cube at a time. Let's use different colored cubes to make it easy to see how many cubes we added.**

(Add cubes.)

Are the sides the same?

Yes.

You have 3 cubes on this side of the equal sign (point)**, and 5 cubes on that side of the equal sign** (point)**.**

How many cubes did you add to make the sides the same?

2.

That's right. You added 2 cubes. So, 2 plus 3 is the same as 5. Go ahead and write 2.

(Write.)

Let's read the number sentence together.

2 plus 3 is the same as 5.

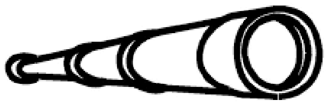
What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as*.

When you see a problem like this (point to B)**, don't worry! All you need to do is make the sides the same!**

Today, we'll work on word problems where we have to make the sides the same, and we'll use our Equation Quest skills!

 3: Buccaneer Problems

Today, we'll work more on math word problems where the important information is in a <u>story</u>. We read the story carefully to find the important information.

Yesterday we worked on Total problems. Total means the <u>entire</u> amount, or the <u>whole</u> amount. In a Total problem, two or more parts are <u>put together</u> into a <u>total</u>.

Remember, Pirate Math Equation Quest is all about solving word problems. When there's a missing number in the story, it's a word <u>problem</u>. We have to find the X and solve the problem. We figure out what the missing number is.

When we solve word problems, what two things do we have in our answer?

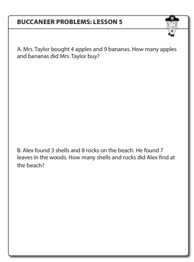
A number and a label.

Very good. You must have a number *and* a label. What's a label?

A word that tells us about our number.

Excellent. A label is a word that tells us about our missing information.

Point to A.



BUCCANEER PROBLEMS: LESSON 5

A. Mrs. Taylor bought 4 apples and 9 bananas. How many apples and bananas did Mrs. Taylor buy?

B. Alex found 3 shells and 8 rocks on the beach. He found 7 leaves in the woods. How many shells and rocks did Alex find at the beach?

Display RUN poster.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

What should we do anytime we see a table or graph with a word problem?

Number it.

<u>*Solution to Problem A:*</u>

Mrs. Taylor bought 4 apples and 9 bananas. How many apples and bananas did Mrs. Taylor buy?

Problem Type:	*Total*
Relevant Information:	*P1 = 4; P2 = 9; T = X*
Number Sentence:	*4 + 9 = X*
Answer:	*X = 13 apples and bananas*

Now let's solve this word problem. When we see a word problem, what's the first thing we do?

RUN through it!

Let's run through the problem: What does R stand for?

Read the problem.

Good! Listen as I read the problem. "Mrs. Taylor bought 4 apples and 9 bananas. How many apples and bananas did Mrs. Taylor buy?"

What does U stand for?

Underline the label and cross out irrelevant information.

Good. Where do we look to find the label?

In the question sentence.

Excellent! Now this problem is different from the problems we worked last time. Look here (point to question)**, the question says, "How many apples and bananas did Mrs. Taylor buy?"**

The question asks about apples *and* bananas. It's not just asking about apples. It's not just asking about bananas. It's asking about apples *and* bananas. So we need to underline both labels. We underline apples and we underline bananas.

If we just underlined apples, would that be correct?

No.

If we just underlined bananas, would that be correct?

No.

Why not?

Because the story is about apples and bananas.

That's right. Two different things are important in this problem: apples and bananas. So we underline apples *and* bananas. Be careful. Sometimes we have 1 word for our label. Sometimes we need 2 words for our label.

(Write.)

After we underline the label, we have to check for irrelevant information. Sometimes we have extra numbers in a problem that are not about the label. We do not need these numbers to answer the question, so we call this irrelevant information. If there is irrelevant information, we should cross it out.

Is there any irrelevant information?

No.

Are all of the numbers about the label we underlined?

Yes.

What does N stand for?

Name the problem type.

After you read the problem, underline the labels, and check for irrelevant information, you name the problem type. A Total problem puts parts together into a total. Does this problem put parts together into a total?

Yes.

Right. This is a Total problem because we have two parts, apples and bananas. The parts are put together into a total number of apples and bananas. (Make hand motions.)

This is a Total problem. What should we write next to the problem to remind us it is a Total problem?

T.

That's right. Write a T next to the word problem.

(Writes.)

The RUN poster helped us organize our paper to solve the problem! We said this is a Total problem. (Point to the T.) **We use the Total poster to solve it.**

Display Total poster.

Let's look at the five steps. What's Step 1?

Write P1 + P2 = T.

Go ahead and write the Total equation.

(Write.)

Good. In a Total problem, parts are put together into a total. The Total equation, P1 plus P2 is the same as T, helps us organize our work. Equation is a fancy word for number sentence. Equation is what high school students say when they solve math problems. P1 plus P2 is the same as T is the Total equation.

Step 2 is "Find T." What does T stand for?

The total.

Let's look at the problem to see if it gives us the total or if we need to find the total. The problem says, "Mrs. Taylor bought 4 apples and 9 bananas. How many apples and bananas did Mrs. Taylor buy?"

We have two parts: the apple part and the banana part. This problem tells us the number of apples (point)**. There are 4 apples. That's part 1. The problem also tells us the number of bananas** (point)**. There are 9 bananas. That's part 2.**

The question asks, "How many apples and bananas did Mrs. Taylor buy?" Is the question asking us to find T or one of the parts?

T.

The question asks us to find T because it asks us to find the number of apples *and* bananas. It doesn't ask us to find part 1: the number of apples. It doesn't ask us to find part 2: the number of bananas. It asks us to find the number of apples *and* bananas. So, we have to find the total, or T.

T is missing. In number sentences, how do we mark missing information?

With an X.

Right. Write X in the number sentence under the T.

(Write.)

Step 3 is "Find P1 and P2." What do P1 and P2 stand for?

Part 1 and part 2.

Very good. Let's work on part 1, or P1. The problem (point) **says, "Mrs. Taylor bought 4 apples." We already underlined the word "apples" to help us remember this problem is talking about apples and bananas. Is 4 talking about apples or bananas?**

Apples.

4 is talking about apples. So, it's an important number. The apples are P1. What number stands for P1?

4.

4 is P1. Let's check off 4 in the problem and write 4 in the number sentence underneath P1.

(Write.)

Let's think about part 2, or P2. We have the apples part. What part do we need to do now?

The bananas part.

That's right. This problem isn't just about apples, it's also about bananas. How many bananas did Mrs. Taylor buy?

9.

9 is talking about bananas, so it's an important number for solving the problem. The bananas are P2. What number stands for P2?

9.

9 is P2. We check off 9 in the problem and write 9 in the number sentence underneath P2.

(Write.)

Have we found all the important pieces of information?

Yes.

Right. We also have one piece of missing information, T, and it's marked with X. We know P1 and P2 from the story. What's Step 4?

Write the signs.

Good. Step 4 is write the signs. For Total problems, we always use P1 plus P2 is the same as T. That's why we wrote our Total equation this way (point)**. We filled in the numbers and X, but we still don't have any math signs. What math signs do we need to complete our number sentence?**

Plus sign and the same as.

Right. We still need our plus sign and our same as sign. Go ahead and write the plus and same as sign in the number sentence.

(Write.)

4 stands for part 1. 9 stands for part 2. X stands for Total. Now it's time to find X!

To solve this problem, we need to balance the two sides. Let's use our cubes. Place 4 cubes and 9 cubes.

(Place.)

If we have 4 cubes and 9 cubes on this side (point)**, how many cubes do you need to place on that side to make the sides the same** (point)**?**

13.

Yes. 4 plus 9 is the same as 13. Go ahead and write 4 plus 9 is the same as 13.

(Write.)

So, X is 13. Let's write X is the same as 13.

(Write.)

Our answer to a word problem must have a number. But that's not all. What else do we need to write in our answer?

A label.

Yes. Our answer to a word problem must have a number and a label. Think about what the problem is about. Look at the labels we underlined. What's a good label for the number 13?

Apples and bananas.

Right! The question is asking about apples and bananas. So that's the best label for our number 13. We underlined apples *and* bananas earlier to help us remember what the problem is about.

We can't label with just apples or just bananas because that's not what's missing. X stands for apples *AND* bananas. We have to use both words! Our label is apples and bananas. Let's write our label, apples and bananas, next to

our number answer. Do that now.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Let's see if the answer makes sense. "Mrs. Taylor bought 4 apples and 9 bananas. How many apples and bananas did Mrs. Taylor buy?" Does 13 apples and bananas make sense?

Yes.

Yes. This is a Total problem. The total is always more than the numbers in parts 1 and 2. Is 13 more than 4 and is it more than 9?

Yes.

Did we answer the question, "How many apples and bananas did Mrs. Taylor buy?"

Yes.

We did because she bought 13 apples and bananas. Our answer is 13 apples and bananas. The answer has a number and a word label.

Good job working this Total problem. Let's look at the next one.

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem B:*</u>

Alex found 3 shells and 8 rocks on the beach. He found 7 leaves in the woods. How many shells and rocks did Alex find on the beach?

Problem Type:	*Total*
Relevant Information:	*P1 = 3; P2 = 8; T = X*
Irrelevant Information:	~~*He found 7 leaves in the woods*~~
Number Sentence:	*3 + 8 = X*
Answer:	*X = 11 shells and rocks*

Now let's solve this word problem. What's the first thing we do every time we see a word problem?

RUN through it!

Let's run through the problem. What does R stand for?

Read the problem.

Yes. Listen as I read the problem. "Alex found 3 shells and 8 rocks on the beach. He found 7 leaves in the woods. How many shells and rocks did Alex find at the beach?"

U. What does U stand for?

Underline the label and cross out irrelevant information.

Let's think about what to underline. We need to decide what the problem is about. Usually, the question gives hints as to what the problem is about. The question says, "How many shells and rocks did Alex find on the beach?"

Is this problem talking about shells?

Yes.

Let's underline shells.

(Writes.)

Is this problem talking about anything else?

Yes.

What else does the problem talk about? It's not just about shells.

Rocks.

That's right. The question also is asking about rocks. Let's underline rocks.

(Write.)

Now, I see the word "leaves" (point) **here. Does the question ask about leaves?**

No.

The question asks about how many rocks and shells Alex found. This 7 (point to 7) **in the story doesn't tell about rocks or shells. We call this number <u>irrelevant information</u>. We see the words "irrelevant information" here** (point) **on the RUN poster.**

Listen carefully. Sometimes you find extra numbers in a problem that you don't need to answer the question. We call this <u>irrelevant information</u>.

Are leaves a kind of rock or a kind of shell?

No.

That's right. Leaves are not rocks or shells. We don't even find leaves on the beach! The number of leaves is irrelevant information. We don't need it to solve the word problem. So I put a line through "He found 7 leaves in the woods." This shows I don't need that information. It's irrelevant information, so I cross it out.

Cross out: ~~He found 7 leaves in the woods.~~

Remember, sometimes you don't use <u>every</u> piece of information or <u>every</u> number in a problem. You have to be picky and choose only the information you really need. The labels help you decide which numbers are important information and which numbers are irrelevant information. Always cross out irrelevant information.

N. What does N stand for?

Name the problem type.

Good. After you read the problem, underline the labels, and check for irrelevant information, you name the problem type. A Total problem puts parts together into a total. Does this problem put parts together into a total?

Yes.

Right. This problem puts parts together into a total. This is a Total problem. What are the two parts?

Shells and rocks.

Great. The problem is putting together shells and rocks. What should I do to help me remember this is a Total problem?

Write T next to the problem.

Yes. Write T next to the problem to remind us it's a Total problem.

(Write.)

Before we move to the Total poster, let's look at the word problem. We said the problem is about shells and rocks. Is this number about shells and rocks? (Point to 7 leaves in the story.)

No.

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Total problem. (Point to T.) **Now we use the Total poster to solve it.**

Let's look at the five steps. What's Step 1?

Write P1 + P2 = T.

Good. P1 plus P2 is the same as T is our Total equation. The Total equation helps us organize our work.

(Write.)

Step 2: "Find T." We have to decide the total. Let's first look at the question to see if the problem tells us the total or if the problem tells us to find the total.

The question says, "How many shells and rocks did Alex find on the beach?" Is the question just asking us to find the number of shells?

No.

Is the question just asking us to find the number of rocks?

No.

Is the question asking us to find the number of shells and rocks?

Yes.

The question is asking us to find the total number of shells *and* rocks. The total, or T, is missing.

In number sentences, how do we mark missing information?

With an X.

Right. Put an X in the number sentence. Where do write the X?

Under the T.

Good. Write an X under the T because the total is what's missing.

(Write.)

Step 3: "Find P1 and P2." Let's think about the two parts. In the question, we underlined shells and rocks. So, one part is the number of shells. The other part is the number of rocks. We ONLY want to find information that tells us about shells and rocks. P1 is shells. P2 is rocks. We only want those numbers.

How many shells did he find?

3 shells.

Right. The story tells us he found 3 shells. We know he found 3 shells because 3 is next to the word shells. Check off the 3 in the problem and write the number 3 in the number sentence underneath P1. We check off the 3 to remember we've already used it.

(Write.)

Have we found all the important information we need?

No.

What do we still need to find?

Part 2.

We still need to find P2, which is the number of rocks. Take a minute and look in the story.

What's P2?

8 rocks.

Right. The story tells us he found 8 rocks. We know he found 8 rocks because 8 is next to the word rocks.

Check off the 8 in the problem and write the number 8 in the number sentence underneath P2. We check off 8 to remember we've already used it.

(Write.)

Have we found all the important information we need?

Yes.

Right. We only have one piece of missing information, T, and it's marked with X. We found P1 and P2 in the story.

What's Step 4?

Write the signs.

Good. This is easy. Look at the signs in P1 plus P2 is the same as T. We filled in the numbers and missing information, but we still need math signs. What math signs do we need to complete our number sentence?

Plus and the same as signs.

Right. We still need our plus sign and our same as sign. Go ahead and write the plus and same as signs.

(Write.)

3 stands for P1. 8 stands for P2. X stands for T. Does this look like a number sentence we know how to solve?

Yes!

To solve this problem, we need to balance the two sides. Let's use our cubes. Place 3 cubes and 8 cubes.

(Place.)

If we have 3 cubes and 8 cubes on this side (point)**, how many cubes do you need to place on that side to make the sides the same** (point)**?**

11.

Yes. 3 plus 8 is the same as 11. Go ahead and write 3 plus 8 is the same as 11.

(Write.)

So, the answer is 11. Let's write X is the same as 11.

(Write.)

Great! In word problems, our answer must have a number, but that's not enough. What else do we need in our answer?

A label.

Yes. We always need a number and a label. If we don't write a label, the number will be lonely! We know the number answer is 11. Now we have to figure out what the label for 11 should be. Think about what the problem is about. Look at what we underlined. What did we underline?

Shells and rocks.

Right! The question asks us about shells and rocks, so that's the best label. We can't label with just shells or just rocks because that's not what's missing. The missing piece is shells AND rocks so we have to use both! Our label is shells and rocks. Write your label next to the number 11.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Let's see if the answer makes sense. "Alex found 3 shells and 8 rocks on the beach. He found 7 leaves in the woods. How many shells and rocks did Alex find on the beach?" Does 11 shells and rocks make sense?

Yes.

Yes. This is a Total problem. So, the Total is always more than the numbers in parts 1 and 2. Is 11 more than 3 and 8?

Yes.

Does our answer make sense? Did we answer the question, "How many shells and rocks did Alex find at the beach?"

Yes.

We did because he found 11 shells and rocks. We have a number and a label in the answer.

Good job working this Total problem.

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

For a building project, the carpenter needs 32 nails and 56 screws. The carpenter has 2 hammers. How many nails and screws does the carpenter need altogether?

Problem Type:	*Total*
Relevant Information:	*P1 = 32; P2 = 56; T = X*
Irrelevant Information:	*~~The carpenter has 2 hammers.~~*
Number Sentence:	*32 + 56 = X*
Answer:	*X = 88 nails and screws*

Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

When you see a word problem, what's the first thing you do? (Point to RUN poster.)

RUN through the problem.

Good. What does R stand for?

Read the problem.

U?

Underline the label and cross out irrelevant information.

N?

Name the problem type.

You earn a treasure coin!

4: Shipshape Sorting

Starts Lesson 7.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on

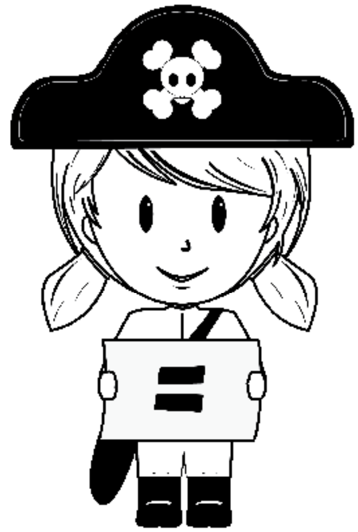
your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 6



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total with P1 or P2 missing
4. ~~Shipshape Sorting~~
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 6	Cubes
Buccaneer Problems: Lesson 6	Treasure Map
Jolly Roger Review: Lesson 6	

Tutor Materials

Math Fact Flash Cards	Gold coins
Timer	Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

5 plus blank is the same as 8. Let's say that together.

5 plus blank is the same as 8.

Every number sentence has two sides. One side is here, on this side of the equal sign (point to 5 + __)**. The other side is there, on that side of the equal sign** (point to 8)**.**

Your job is to make the sides the same. To solve this problem with cubes, we can place 5 cubes of one color on this side (point) **of the equal sign.**

(Place cubes.)

Then, we place 8 cubes of another color on that side (point) **of the equal sign.**

(Place cubes.)

Now, the equal sign (point to =) **acts as a balance. We need to make these sides the same. Add 1 cube at a time. Use different colored cubes to make it easy to see how many cubes you added.**

(Add cubes.)

Are the sides the same?

Yes.

You have 8 cubes on this side of the equal sign (point)**, and 8 cubes on that side of the equal sign** (point)**.**

How many cubes did you add to make the sides the same?

3.

That's right. You added 3 cubes. So, 5 plus 3 is *the same as* 8. Go ahead and write 3.

(Write.)

Let's read the number sentence together.

5 plus 3 is the same as 8.

Let's try another one. Clear all the cubes.

(Clear.)

Point to B.

This problem says blank plus 3 is *the same as* 5. Let's read that together.

Blank plus 3 is the same as 5.

This problem looks a little different, but we can solve it. All we need to do is make the sides the same.

To solve this problem with cubes, place 3 cubes on this side (point) **of the mat.**

(Place cubes.)

Now, place 5 cubes of that side of the equal sign (point)**.**

(Place cubes.)

The equal sign acts as a balance. We need to make these sides the same. How many cubes can we add to this side (point) **to make the sides the same? Let's add 1 cube at a time. Let's use different colored cubes to make it easy to see how many cubes we added.**

(Add cubes.)

Are the sides the same?

Yes.

You have 5 cubes on this side of the equal sign (point)**, and 5 cubes on that side of the equal sign** (point)**.**

How many cubes did you add to make the sides the same?

2.

That's right. You added 2 cubes. So, 2 plus 3 is *the same as* 5. Go ahead and write 2.

(Write.)

Let's read the number sentence together.

2 plus 3 is the same as 5.

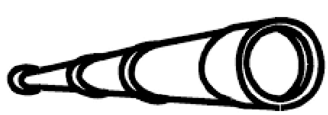
What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as*.

When you see a problem like this (point to B)**, don't worry! All you need to do is make the sides the same!**

Today, we'll work on word problems where we have to make the sides the same, and we'll use our Equation Quest skills!



3: Buccaneer Problems

Last time, we worked on Total problems. Let's review.

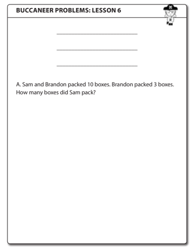
What's a Total problem?

When parts are put together into a total.

In a Total problem two parts are put together to make a total.

***All* Total problems have the same Total equation. What's the Total equation?**

P1 + P2 = T.


BUCCANEER PROBLEMS: LESSON 6

A. Sam and Brandon packed 10 boxes. Brandon packed 3 boxes. How many boxes did Sam pack?

That's right. The Total equation is part 1 plus part 2 is the same as the total. Let's practice writing the Total equation from memory.

On these lines (point)**, write the Total equation 3 times.**

(Write.)

Remind me. When we solve word problems, what two things do we have in our answer?

A number and a label.

Very good. You must have a number *and* a label. What is a label?

A word that tells us what the problem is mostly about.

Excellent. A label is a word that tells us what the problem is mostly about. Now let's practice solving word problems!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Point to A.

<u>Solution to Problem A:</u>

Sam and Brandon packed 10 boxes. Brandon packed 3 boxes. How many boxes did Sam Pack?

Problem Type:	*Total*
Relevant Information:	*P1 = 3; P2 = X; T = 10*
Number Sentence:	*3 + X = 10*
Answer:	*X = 7 boxes*

What's the first thing we do every time we see a word problem?

RUN through it!

Good. What does R stand for?

Read the problem.

Listen as I read the problem. "Sam and Brandon packed 10 boxes. Brandon packed 3 boxes. How many boxes did Sam pack?"

What does U stand for?

Underline the label and cross out irrelevant information.

First, look at the question to see if it helps with the label. The question is, "How many boxes did Sam pack?" What's this problem mostly about?

Boxes.

This story is mostly about boxes. Let's underline the word boxes in the question. This will help us remember we're looking for numbers that talk about boxes.

(Underline.)

Is there any irrelevant information?

No.

Are all of the numbers about the label we underlined?

Yes.

What does N stand for?

Name the problem type.

After you read the problem and underline the label, you name the problem type. How do we know when it's a Total problem?

When parts are put together into a total.

Does this problem put parts together into a total?

Yes.

What are the parts?

Sam's boxes and Brandon's boxes.

That's right. This problem is about Sam's boxes. That's one part. This problem also is about Brandon's boxes. That's the other part. Two parts are put together for a total. This is a Total problem.

So far, we've solved Total problems when the missing information is the total. We've gotten pretty good at doing these Total problems. Today I'll teach you about Total problems that are trickier.

In these Total problems, the story gives you T, or the Total number. The <u>missing</u> number is one of the parts. The question asks us to find one of the parts.

To figure out whether the problem is a Total problem, always ask yourself: Are parts put together into a total? Remember. What's missing might be the total. But what's missing might be one of the parts. Either way, the problem is still a Total problem. It's still about parts being put together into a total.

Let me read the problem again.

Reread Problem A.

This problem is about two parts: one part is Sam's boxes; the other part is Brandon's boxes. The problem also is about a total. The total is the number of boxes the boys packed together. But the total is not in the question, like we're used to. To figure out if a problem is a Total problem, you can't just look at the question.

Sometimes the story gives you the total in another part of the story, and the question asks you to find one of the parts. This makes it harder to name the problem type. You have to think hard to decide whether a problem is talking about parts being put together to make a total.

In a few weeks, we'll learn about other types of problems. Then, we'll have to work even harder to figure out whether the problem is a Total problem or another type of problem. We need to get really good at naming Total problems so when we learn about other problems, we know what we're doing.

Let me read the problem one more time. Listen for the parts and the total, no matter where they are in the story. Think: Are parts put together into a total?

Reread Problem A.

Yes.

Right. In this problem, there are two parts and a total. This is a little tricky. The first sentence says that Sam and Brandon packed 10 boxes. Does this mean that Sam packed 10 boxes?

No.

Does this mean that Brandon packed 10 boxes?

No.

That's right. This sentence tells the number of boxes that Sam and Brandon packed *altogether*. It's not just talking about Sam's boxes. It's not just talking about Brandon's boxes. It's talking about the boxes they packed *together*. It's talking about the total.

This problem is different from the Total problems we've worked before. Those other problems always asked us to find the total. This problem (point) **tells us the total. Today, we have to find one of the parts.**

Since this problem is about putting parts together into a total, we know it's a Total problem. What should I put next to the problem?

T.

Right. I put T next to the problem to remind me it's a Total problem.

(Write.)

Good! The RUN poster helped us organize our paper so we can solve the problem! We said this is a Total problem. (Point to the T.) **We use the Total poster to solve it.**

Display Total poster.

What's Step 1?

Write P1 + P2 = T.

Good. We write the Total equation: P1 plus P2 is the same as T.

(Write.)

Step 2: "Find T." In the problems we've worked on before today, the missing information was always the total. This problem is different. The first sentence says, "Sam and Brandon packed 10 boxes." This sentence tells us the total number of boxes Sam and Brandon packed. It's not talking about the number of boxes Sam packed. It's not talking about the number of boxes Brandon packed. It's talking about the boxes Sam *and* Brandon packed altogether.

If Sam and Brandon packed 10 boxes, the total is 10. This problem tells us the total. It asks us to find one of the parts.

The total, or T, is 10. Check off the 10 in the problem, and write the number 10 in the number sentence underneath T, like this. We check off the 10 so I remember I've already used it.

(Write.)

Step 3 says, "Find P1 and P2." We know the total is 10. Now we have to find the parts. Sam's boxes is a part. Brandon's boxes is a part. How many boxes did Sam pack?

We don't know.

That's right. We know the Total number of boxes the boys packed together, and we know how many Brandon packed. The missing information is how many Sam packed. The missing information is one of the parts. When one of the parts is missing, we mark P2 with an X. We need to find P2. That's what's missing.

Where do I mark the X?

Under P2.

Good. Write X under P2 because part 2 is missing.

(Write.)

In Total problems, when one of the parts is missing, it doesn't matter if we call the missing part P1 or P2. We get the same answer whether we call the missing part P1 or P2. Let's solve this problem with P2 missing. Then I'll show you what I mean.

We still need to fill in part 1. Remember, the missing part is how many boxes Sam packed. We decided to call Sam's missing part "part 2". Brandon's boxes will be part 1. How many they packed together is the total.

How many boxes did Brandon pack? What does the problem tell us?

3.

The problem says, "Brandon packed 3 boxes." Part 1 is 3. Check off the 3 in the problem and write the number 3 in the number sentence underneath P1, like this.

(Write.)

Have we found all the important information we need?

Yes.

Right. We only have one piece of missing information, P2, and it's marked with an X. We found T and P1 in the story. Now let's go to Step 4. What's Step 4?

Write the signs.

Good. What math signs do we need to complete our number sentence?

Plus and the same as signs.

Let's write them in the number sentence.

(Write.)

3 stands for part 1. X stands for part 2. 10 stands for total.

Let's find X!

We want to get the X by itself on this side (point) **of the equal sign. To do that, I need to move 3 to that side of the equal sign. We want to make this side zero.**

If you have 3 and want to get zero, you can subtract 3. Because 3 minus 3 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 3 from this side of the equal sign, so we have to subtract 3 from this side of the equal sign.

(Write minus 3 and subtract number.)

X is *the same as* 7.

So, write X is the same as 7.

(Write.)

Great! In word problems, our answer must have a number and a label. We know the number answer is 7. Now we have to figure out what the label for 7 should be. Think about what the problem is mostly about. Start by looking in the question sentence. What did we underline?

Boxes.

Right! The question is asking about boxes, so that's the best label. We write boxes for the label!

(Write.)

The last thing we need to do is check to see if our answer makes sense. Let's see if the answer makes sense. "Sam and Brandon packed 10 boxes. Brandon packed 3 boxes. How many boxes did Sam pack?" Does 7 boxes make sense?

Yes.

Why does it make sense?

(Students.)

Yes. This is a Total problem. The total is always more than the numbers in parts 1 and 2. 10 is more than 7 and more than 3. Did we answer the question, "How many boxes did Sam pack?"

Yes.

We did because he packed 7 boxes. We have a number and a label in the answer.

Remember, I told you that when one of the parts is missing in a Total problem, it doesn't matter if you mark P1 or P2 with an X. Let me show you what I mean. Let's write our Total equation again.

(Write.)

When we just solved this, we marked P2 with an X (point to first number sentence)**. This time, let's mark P1 with an X. Let's see if we get the same answer.**

(Write.)

Let's solve it. The total is still how many boxes Sam and Brandon packed together. How many did they pack together?

10.

(Write.)

Good. We're trying to find the number that Sam packed, that's X. How many did Brandon pack? Look at the problem.

3.

(Write.)

Right. Now I put the plus and same as sign like before.

(Write.)

What's our answer?

7.

Good! X is the same as 7. Is this the same answer we got the first time we solved the problem?

Yes.

Good. When one of the parts is missing in Total problems, it doesn't matter if we mark P1 or P2 with an X. Let's always mark P2 with an X. This will make checking our work and finding the X easier. Let's solve the next problem!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do anytime we see a table or graph with a word problem?

Number it.

<u>Solution to Problem B:</u>

> *The table shows the animals on Farmer Mack's farm. If he has 15 cows and horses, how many cows does he have?*
> *Problem Type:* *Total*
> *Relevant Information:* *P1 = 7; P2 = X; T = 15*
> *Number Sentence:* *7 + X = 15*

Answer: *X = 8 cows*

Every time we see a word problem, what's the first thing we do?

RUN through it!

Follow Activity Guide: RUN.
When you get to "N" begin script again.

Remember, sometimes you have to think hard to decide whether a problem is a Total problem. Look for the total and the parts anywhere in the story. Sometimes the total is not in the question. Whenever you think a problem might be a Total problem, ask yourself: Are there parts put together into a total? If the answer is yes, it's a Total problem.

This problem talks about two parts: one part is horses; the other part is cows. There's also a total. The total is the horses and cows Farmer Mack has already put together.

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Total problem. (Point to the T.) **We use the Total poster to solve it.**

What's Step 1?

Write P1 + P2 = T.

Good. We write the Total equation: P1 plus P2 is the same as T.

(Write.)

Step 2: "Find T." The problem says, "If he has 15 cows and horses, how many cows does he have?"

This is where students sometimes get confused. Let's talk about this. The first part of the sentence says, "If he has 15 cows and horses." 15 is not just about cows. 15 is not just about horses. 15 is about cows *and* horses. This word "and" (point) **is really important here because it shows that 15 talks about both cows *and* horses.**

If 15 is about cows *and* horses, is 15 one of the parts or is 15 the total?

Total.

That's right.15 is about the Total number of cows and horses altogether. 15 is the total. It's T. Check off 15 in the problem and write 15 under T.

(Write.)

Step 3: "Find P1 and P2." We already know the total, 15. There are 15 cows *and* horses. The cows are one part. The horses are the other part. Which part do we know?

The horses.

We do know the horses part. How many horses does Farmer Mack have?

7.

Where should we write 7?

Under P1.

In a Total problem that tells us T, the problem always tells us one part and asks us to find the other part. What do we call the part that's missing?

P2.

Right. We always call the missing part P2. We always call the part we know P1. In this problem, we know the horses part, which is 7. What do we call this, P1 or P2?

P1.

Right. We'll call the horses part 1 because that's the part the problem tells us.

P1 is 7. Remember, in Total problems with a missing part, we always call the part we know part 1. X is part 2.

What's P1 again?

7.

I check off the 7 in the problem and write the number 7 in the number sentence underneath P1, like this. Check off the 7 so I remember I've already used it.

(Write.)

Part 2 is the number of cows. How many cows does Farmer Mack have?

We don't know.

The question asks, "How many cows does he have?" We have to find the cows part. P2 is missing. How do we mark missing information?

With an X.

P2 is missing. Write an X under P2.

(Write.)

Now let's go to Step 4. What's Step 4?

Write the signs.

Good. What math signs do we need to complete our number sentence?

Plus and the same as signs.

Let's write them in the number sentence.

(Write.)

7 stands for part 1. X stands for part 2. 15 stands for total.

Let's find X!

We want to get the X by itself on this side (point) **of the equal sign. To do that, I need to move 7 to that side of the equal sign. We want to make this side zero.**

If you have 7 and want to get zero, you can subtract 7. Because 7 minus 7 is what?

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 7 from this side of the equal sign, so we have to subtract 7 from this side of the equal sign.

(Write minus 7 and subtract number.)

So, X is the same as 8. Go ahead and write X is the same as 8.

(Write.)

Great! In word problems, our answer must have a number and a label. We know the number answer is 8. Now we have to figure out what the label for 8 should be. Think about what the problem is mostly about. Start by looking in the question sentence.

What did we underline?

Cows.

Right! We underlined cows because cows is the word that tells us about our missing information. What do we write for our label?

Cows.

Right! We write cows for the label!

(Write.)

The last thing we need to do is check to see if our answer makes sense. Let's see if the answer makes sense. "If he has 15 horses and cows, how many cows does he have?" Why does 8 cows make sense?

(Students.)

Yes. This is a Total problem. The total is always more than the numbers in parts 1 and 2. 15 is more than 7 and more than 8. Did we answer the question, "How many cows does he have?"

Yes.

We did because he has 8 cows. We have a number and a label in the answer.

Excellent work on this Total problem!

Let's solve the next problem!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or table?

No.

Point to C.

Solution to Problem C:

The baker has 42 chocolate and strawberry cupcakes. If 26 of the cupcakes are chocolate, how many are strawberry?

Problem Type:	*Total*
Relevant Information:	*P1 = 26; P2 = X; T =42*
Number Sentence:	*26 + X = 42*
Answer:	*X = 16 strawberry cupcakes*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to "find X" begin script again.

In this problem, we have 26 plus X is the same as 42.

We want to get the X by itself on this side (point) **of the equal sign. To do that, I need to move 26 to that side of the equal sign. We want to make this side zero.**

If you have 26 and want to get zero, you can subtract 26. Because 26 minus 26 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 26 from this side of the equal sign, so we have to subtract 26 from this side of the equal sign.

(Write minus 26 and subtract.)

X is *the same as* 16.

Great! In word problems, our answer must have a number and a label. We know the number answer is 16. Now we have to figure out what the label for 16 should be. Think about what the problem is mostly about. Start by looking in the question sentence.

What did we underline?

Strawberry cupcakes.

Right! We underlined strawberry cupcakes because strawberry cupcakes tells us about our missing information. What do we write for our label?

Strawberry cupcakes.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Starts Lesson 7.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

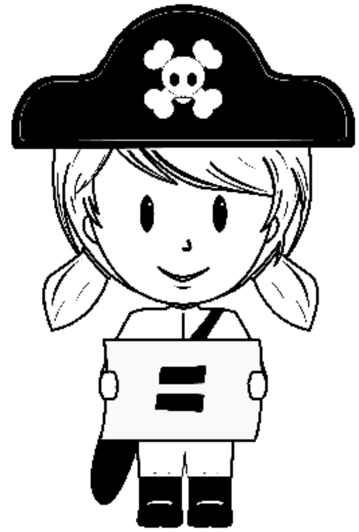
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 7

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total with P1 or P2 missing
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 7
Buccaneer Problems: Lesson 7
Jolly Roger Review: Lesson 7
Cubes
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

7 is the same as 4 plus blank. Let's say that together.

7 is the same as 4 plus blank.

Every number sentence has two sides. One side is here, on this side of the equal sign (point to 7)**. The other side is there, on that side of the equal sign** (point to 4 + __)**.**

Your job is to make the sides the same by drawing pictures. How many should you draw on this side (point)**?**

7.

(Draw.)

How many should you draw on that side (point)**?**

4.

(Draw.)

Now, the equal sign acts as a balance. We need to make these sides the same. How many can we draw on that side (point) **to make the sides the same? Draw circles one at a time.**

(Draw.)

So, are the sides the same?

Yes.

You have 7 on this side of the equal sign (point)**, and 7 on that side of the equal sign** (point)**. So, 7 is the same as 4 plus what?**

3.

Go ahead and write 3.

Point to B.

This problem says blank is the same as 3 plus 2. Let's read that together.

Blank is the same as 3 plus 2.

Look at this side (point)**. We don't know how many to draw just yet. So, let's look at that side** (point)**.**

Draw 3 and 2.

(Draw.)

Remember, the equal sign acts as a balance. We need to make these sides the same. Draw triangles on that side (point) **until the sides are the same.**

(Draw.)

So, what is the same as 3 plus 2?

5.

Go ahead and write 5.

(Write.)

Let's do one more problem.

Point to C.

Blank plus 5 is the same as 9. How many circles should you draw in this box (point)**?**

5.

(Draw.)

How many circles on that side (point)**?**

9.

(Draw.)

Now, make the sides the same. Draw triangles until the sides are balanced.

(Draw.)

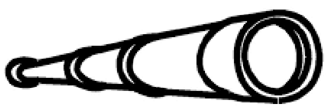
So, what plus 5 is the same as 9?

4.

Write 4.

(Write.)

Good work! Today, you'll use your Equation Quest skills to balance equations within word problems.



3: Buccaneer Problems

Last time, we worked on Total problems. Let's review.

What's a Total problem?

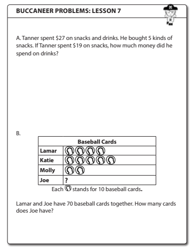
When parts are put together into a total.

In a Total problem parts are put together to make a total. *All* Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total. Sometimes the part is missing; sometimes the total is missing. We can use our Total equation to help us solve the problem.

Point to A.



BUCCANEER PROBLEMS: LESSON 7

A. Tanner spent $27 on snacks and drinks. He bought 5 kinds of snacks. If Tanner spent $19 on snacks, how much money did he spend on drinks?

B.

Baseball Cards	
Lamar	
Katie	
Molly	
Joe	?

Each stands for 10 baseball cards.

Lamar and Joe have 70 baseball cards together. How many cards does Joe have?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

Tanner spent $27 on snacks and drinks. He bought 5 kinds of snacks. If Tanner spent $19 on snacks, how much money did he spend on drinks?

Problem Type:	*Total*
Relevant Information:	*P1 = $19; P2 = X; T = $27*
Irrelevant Information:	*~~He bought 5 kinds of snacks.~~*
Number Sentence:	*19 + X = 27*
Answer:	*X = $8 on drinks*

Follow Activity Guide: RUN
When you get to "N" begin script again.

Last time, we learned that you have to think hard to decide whether a problem is a Total problem. Look for the total and the parts anywhere in the story. Sometimes the total is not in the question. Whenever you think a problem might be a Total problem, ask yourself: Are there parts put together into a total? If the answer is yes, it's a Total problem.

This problem talks about two parts: one part is Tanner's snacks; the other part is Tanner's drinks. There's also a total. The total is the amount that Tanner spent on snacks and drinks.

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Total problem. (Point to the T.) **We use the Total poster to solve it.**

What's Step 1?

Write P1 + P2 = T.

Good. We write the Total equation: P1 plus P2 is the same as T.

(Write.)

Step 2: "Find T." Does this problem give us the total or ask us to find the total?

Gives us the total.

The first sentence says, "Tanner spent $27 on snacks and drinks." 27 is not just about snacks. 27 is not just about drinks. 27 is about snacks *and* drinks. This word "and" (point) **is really important here because it shows that 27 talks about both snacks *and* drinks.**

If 27 is about snacks *and* drinks, is 27 one of the parts or is 27 the total?

Total.

That's right. 27 is about the Total amount of snacks *and* drinks. 27 is the total. It's T. Check off 27 in the problem and write 27 under T.

(Write.)

Step 3: "Find P1 and P2." We already know the total, 27. The snacks are one part. The drinks are the other part. Which part do we know?

The snack amount.

We do know the snack amount. How much did Tanner spend on snacks?

19.

Where should we write 19?

Under P1.

In a Total problem that tells us T, the problem always tells us one part and asks us to find the other part. What do we call the part that's missing?

P2.

Right. We always call the missing part P2. We always call the part we know P1.

In this problem, we know the snack amount. What do we call this, P1 or P2?

P1.

Right. We'll call the snacks part 1 because that's the part the problem tells us. P1 is 19. Remember, in Total problems with a missing part, we always call the part we know part 1. X is part 2.

What's P1 again?

19.

Check off the 19 in the problem and write the number 19 in the number sentence underneath P1.

(Write.)

Part 2 is the amount for drinks. How much did Tanner spend on drinks?

We don't know.

The question asks, "How much money did he spend on drinks?" We have to find the drinks amount. P2 is missing. How do we mark missing information?

With an X.

P2 is missing. Write an X under P2.

(Write.)

Now let's go to Step 4. What's Step 4?

Write the signs.

Good. What math signs do we need to complete our number sentence?

Plus and the same as signs.

Let's write them in the number sentence.

(Write.)

Let's find X!

19 stands for part 1. X stands for part 2. 27 stands for total. We get the X by itself on this side (point) **of the equal sign. Let's first circle the X so we remember to get the X by itself. To get the X by itself, I need to move the 19 to that side of the equal sign. We want to make this side zero.**

If you have 19 and want to get zero, you can subtract 19. Because 19 minus 19 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 19 from this side of the equal sign, so we have to subtract 19 from this side of the equal sign.

(Write minus 19 and subtract 27 minus 19.)

So, X is the same as 8. Go ahead and write X is the same as 8.

So, how much did Tanner spend on drinks?

$8.

So, 19 plus 8 is *the same as* 27.

(Write.)

Great! In word problems, our answer must have a number and a label. We know the number answer is 8. What's a good label for 8?

Dollars.

Yes! 8 is about dollars. Go ahead and write "dollars" or the dollar sign.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Excellent work. Let's try another problem!

Point to B.

Here's a table (point). **What do we do before working on the word problem?**

Number the table or graph.

Let's number this table. The key says that each baseball stands for 10 baseball cards. So, let's count by tens.

<u>Solution to Problem B:</u>

Lamar and Joe have 70 baseball cards together. How many cards does Joe have?

Problem Type:	*Total*
Relevant Information:	*P1 = 40; P2 = X; T = 70*
Number Sentence:	*40 + X = 70*
Answer:	*X = 30 baseball cards*

Now, we can RUN! through the problem!

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

Let's find X!

We want to get the X by itself on this side (point) **of the equal sign. Let's first circle the X so we remember to get the X by itself. To get the X by itself, I need to move the 40 to that side of the equal sign. We want to make this side zero.**

If you have 40 and want to get zero, you can subtract 40. Because 40 minus 40 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 40 from this side of the equal sign, so we have to subtract 40 from this side of the equal sign.

(Write minus 40 and subtract 70 minus 40.)

X is *the same as* 30.

So, 40 plus 30 is *the same as* 70.

So, X is the same as 30. Go ahead and write X is the same as 30.

(Write.)

Remember, we must have a label. What's a good label for 30? What did we underline?

Baseball cards.

Right! We underlined baseball cards because baseball cards is the word that tells us about our missing information. What do we write for our label?

Baseball cards.

(Write.)

Let's see if the answer makes sense. "How many baseball cards does Joe have?" If Lamar has 40 cards and Joe has 30 cards, does it make sense that they have 70 cards together? Why?

(Students explain.)

Let's solve the next problem!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a

table. Is there a graph or a table?

No.

<u>*Solution to Problem C:*</u>

The Oz family has 3 children. They also have 9 cats and dogs. If the family has 4 cats, how many dogs does the family have?

Problem Type:	*Total*
Relevant Information:	*P1 = 4; P2 = X; T = 9*
Irrelevant Information:	*~~The Oz family has 3 children~~.*
Number Sentence:	*4 + X = 9*
Answer:	*X = 5 dogs*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to "find X" begin script again.

In this problem, we have 4 plus X is the same as 9.

We want to get the X by itself on this side (point) **of the equal sign. Let's first circle the X so we remember to get the X by itself. To get the X by itself, I need to move the 4 to that side of the equal sign. We want to make this side zero.**

If you have 4 and want to get zero, you can subtract 4. Because 4 minus 4 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 4 from this side of the equal sign, so we have to subtract 4 from this side of the equal sign.

(Write minus 4 and subtract 9 minus 4.)

X is *the same as* 5.

So, 4 plus 5 is *the same as* 9.

So, X is the same as 5. Go ahead and write X is the same as 5.

(Write.)

Remember, we must have a label. What's a good label for 5? What did we underline?

Dogs.

Right! We underlined dogs because dogs is the word that tells us about our missing information. What do we write for our label?

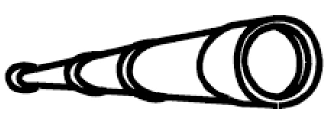
Dogs.

(Write.)

The last thing we need to do is check if our answer makes sense. Did we answer the questions, "How many dogs does the family have? Why?"

(Students explain.)

**You earn a treasure coin!**



4: Shipshape Sorting

Shipshape Sorting

T	D
C	?

Each day, we'll play Shipshape Sorting.

Display Sorting Cards.
Display Sorting Mat.

I'll show these cards. On each sorting card, there's a word problem. I'll read the problem out loud. Your job is to decide what type of problem it is, and sort it on this mat (point)**. You don't solve the problem, you just decide what type of problem it is.**

So far, we've learned about Total problems, so you'll only use the T or Total box (point) **and the question mark box** (point). **If you think the problem is a Total problem, put the card here** (point). **If it's NOT a Total problem, put the card in this question mark box** (point)**. Just like with Math Fact Flash Cards, we will play Shipshape Sorting using a round robin.**

You'll have 1 minute to listen to as many problem as you can and sort them in the correct boxes. Do you have any questions?

Begin.

Great! You did a nice job with the sorting. Let's see how many are correct.

Go through cards (answers on back of each card).
Review up to 3 incorrect cards by saying:

Look at the question. Does the word problem tell a story about two or more amounts combined for a total? Does the word problem tell a story about two amounts being compared? Or does the word problem tell a story about an amount that increases or decreases?

(Respond.)

Affirm correct response.
Review incorrect response.

Nice work with Shipshape Sorting!

You earn a treasure coin!

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

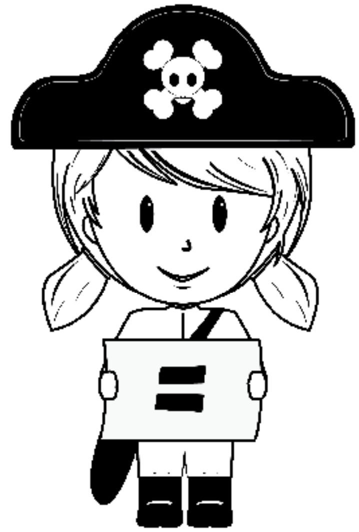
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box.

Lesson 8

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total with three parts
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 8
Buccaneer Problems: Lesson 8
Jolly Roger Review: Lesson 8
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Today we will work on isolating the X. Look here.

Point to A.

This picture shows isolating the X. See how the X (point to right side) **is mixed with all these numbers?**

Yes.

When we isolate the X, we draw a circle around the X (point to circle) **and we separate, or isolate, the X from all the numbers. What does it mean to isolate the X?**

Separate the X from the numbers.

Let's isolate the X with this problem.

Point to B.

How do you read this number sentence?

X plus 3 is the same as 7.

When you see the equal sign like this, the first thing we'll do is draw a line down from the equal sign. What's the first thing?

Draw a line down from the equal sign.

Go ahead and draw the line coming down from the equal sign.

(Draw.)

This line (point) **will help us remember to balance the two sides of the equal sign. What do you want to do?**

Balance the two sides of the equation.

Now, we'll balance this equation by doing a fancy thing called isolating the X. Say that with me.

Isolating the X.

To isolate something means to put it by itself. What does isolate mean?

Put something by itself.

And what do we want to isolate?

X.

First, where's the X?

(Point.)

Circle the X to make it easy to see.

(Circle.)

Now, let's isolate the X. Say that with me.

Isolate the X.

Let's say it again.

Isolate the X.

We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X.**

To isolate the X, we need to move this 3 (point) **to that side of the equal sign. By moving the 3, we make this side** (point) **zero. If you have 3** (point) **and want to get to zero, you can subtract 3. Because 3 minus 3 is what?**

0.

That's right. 3 minus 3 is the same as 0. So, write minus 3.

(Write.)

Now remember the important thing. The equal sign means the same as. You need to do the same thing to that side (point) **of the equal sign. Whatever you do to this side of the equal sign, we have to do the same thing to the other side.**

For this problem, we subtracted 3 from this side (point to left side) **of the equal sign, so you need to subtract 3 from this side** (point to the right side) **of the equal sign. Go ahead and write minus 3 on the that side** (point)**.**

(Write.)

Now, let's do the math. What's 3 minus 3 (point)**?**

0.

3 minus 3 is the same as 0. When it's an answer of 0, cross out 3 minus 3.

(Cross out.)

Now, let's do the math on that side. What's 7 minus 3 (point)**?**

4.

Write 4 right here.

Write 4.

We isolated the X. X is the same as 4. Write X is the same as next to 4.

(Write.)

Now, let's check the number sentence. You solved that X is the same as 4. Re-write the number sentence using 4 for X.

(Write.)

Is 4 plus 3 the same as 7?

Yes.

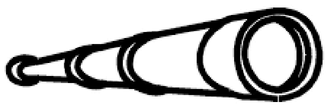
4 plus 3 is the same as 7.

So, what did we do here? You isolated the X. Tell me how you did that.

(Students explain.)

Yes. You drew a line down from the equal sign to help you remember to balance this number sentence. Then, you isolated the X by circling the X and subtracting 3 from both sides of the equal sign.

You solved for X! Great pirate skills!



3: Buccaneer Problems

We've learned about Total problems. What's a Total problem?

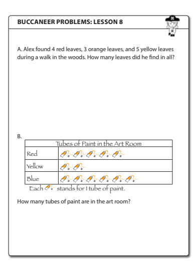
When parts are put together into a total.

In a Total problem parts are put together to make a total. Now, sometimes Total problems can have *more* than two parts! And that's okay. It's still a Total problem, and we can still use the Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total. But when we have three parts, we can change the Total equation to be P1 plus P2 plus P3 is the same as T. Let me show you how this works!

Point to A.


BUCCANEER PROBLEMS: LESSON 8

A. Alex found 4 red leaves, 3 orange leaves, and 5 yellow leaves during a walk in the woods. How many leaves did he find in all?

B.

Tubes of Paint in the Art Room	
Red	
Yellow	
Blue	

Each stands for 1 tube of paint.

How many tubes of paint are in the art room?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

Alex found 4 red leaves, 3 orange leaves, and 5 yellow leaves during a walk in the *woods. How many leaves did he find in all?*

Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 4; P2 = 3; P3 = 5; T = X*
Number Sentence:	*5 + 4 + 3 = X*
Answer:	*X = 12 leaves*

What's the first thing we do every time we see a word problem?

RUN through it!

Good. What does R stand for?

Read the problem.

Listen as I read the problem. "Alex found 4 red leaves, 3 orange leaves, and 5 yellow leaves during a walk in the woods. How many leaves did he find in all?"

What does U stand for?

Underline the label and cross out irrelevant information.

What is this problem mostly about?

Leaves.

This problem is mostly about leaves: Red leaves, orange leaves, and yellow leaves. Let's underline the word "leaves."

(Underline.)

Now let's check for irrelevant information. We ONLY want to find information that tells us about leaves. What is irrelevant information?

Information we don't need.

Good. A number that tells about other things is <u>irrelevant information</u>. We have to be picky. We only use numbers that tell about leaves. We cross out irrelevant information.

Let's look at the problem together. Listen as I read the first sentence. "Alex found 4 red leaves, 3 orange leaves, and 5 yellow leaves during a walk in the

woods." This sentence tells a lot of information. Think about which numbers tell about leaves.

Give about 15 seconds for students to think about the information.

Is there any irrelevant information?

No.

Are all of the numbers about the label we underlined? Are all the numbers about leaves?

Yes.

To decide if information is important or irrelevant, you must figure out if you're putting together 2 things or 3 things. If all these numbers are about the label (point)**, then all three numbers are important. None of these numbers are irrelevant information. All of these numbers are about leaves** (point to label)**.**

Don't let irrelevant information trick you. But remember: Figure out which numbers are important. You use all the important numbers to answer the question. Figure out which numbers are irrelevant. Cross out irrelevant information. In this problem, all the numbers are about leaves. We use all three numbers.

What does N stand for?

Name the problem type.

After you read the problem and underline the question, you name the problem type. How do we know when it's a Total problem?

When parts are put together into a total.

Is that what is happening in this problem?

Yes.

How do you know?

(Students explain.)

Right. This problem puts <u>parts</u> together into a total. The question is "How many leaves did he find in all?" It tells us that we're putting the leaves together. We know this is a Total problem because we're putting the leaves he found together.

What should I put next to the problem to remind me it's a Total problem?

T.

Right. Write T next to the problem to remind you it's a Total problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Total problem. (Point to the T.) **Use the Total poster to solve it.**

Display Total poster.

Let's look at the five steps. What's Step 1?

Write P1 + P2 = T.

Good. We write the Total equation: P1 plus P2 is the same as T. In a Total problem, two parts are put together to make a Total. The Total equation, P1 plus P2 is the same as T, helps us remember how to write our number sentence for a Total problem.

(Write.)

Step 2: "Find T." Let's first look at the question to see if the problem tells us the total or if the problem asks us to find the total.

The question says, "How many leaves did he find in all?" Is the question asking us to find the total number of leaves?

Yes.

If the question is asking us to find the total number of leaves, what is missing? T or one of the parts?

T.

Right. The missing information asks about ALL the leaves. We know the missing information is the total. We need to find the total, or T. That's what's missing.

In number sentences, how do we mark missing information?

With an X.

Right. I put X in the number sentence. Where do I mark the X?

Under the T.

Good. Put an X under the T because the total is what's missing.

(Write.)

Step 3: "Find P1 and P2." We need to think about the story and figure out what numbers P1 and P2 are. Remember, the total is how many leaves he found in all. If we're putting together leaves, we want to find the numbers that tell about leaves. Those will be part 1 and part 2.

Which numbers are about leaves? Let's look at the first number. It says "4 red leaves." Is this about leaves?

Yes.

Good. That's P1. Check off the 4 in the problem and write the number 4 in the number sentence underneath P1.

(Write.)

Let's look at the next number. It says "3 orange leaves." Is this about leaves?

Yes.

Good. That's P2. Check off the 3 in the problem and write the number 3 in the number sentence underneath P2, like this.

(Write.)

Let's look at the next number. It says "5 yellow leaves." Is this about leaves?

Yes.

Do we have a place to put the 5 in the Total equation?

No.

You're right! In this Total problem, we're putting together 3 things instead of 2 things. The question asks, "How many leaves did he find in all?" He found 4 red leaves, 3 orange leaves, AND 5 yellow leaves. To answer the question we need to put 3 things together.

Let's add another part to the Total equation.

Write P3 at the beginning of our Total equation and write an extra plus sign. We need P3 because we're adding a third part to the Total equation.

(Write.)

Work should look like this:

$$\begin{array}{ccccccc} P3 & + & P1 & + & P2 & = & T \\ & & 4 & & 3 & & X \end{array}$$

Now, what's P3?

5.

Good. That's P3. Check off the 5 in the problem and write the number 5 in the number sentence underneath P3, like this.

(Write.)

Sometimes Total problems put 3 things together to find the total. We still name these problems Total problems because we're still putting things together.

Now let's go to Step 4. What's Step 4?

Write the signs.

Good. What math signs do we need to complete our number sentence?

+ and + and =.

Right. We need two plus signs and a same as sign. Let's write them in the number sentence.

(Write.)

5 stands for part 3. 4 stands for part 1. 3 stands for part 2. X stands for total. Does this look like a number sentence we know how to solve?

Yes.

Don't let the number sentence trick you. X is at the end. We solve it! We're going to add to find X.

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

Exactly, the X already is by itself on this side (point) **of the equal sign, so you just solve.**

Do you add or subtract?

Add.

That's right. The X already is isolated because it's T, so you can just add P1 plus P2 plus P3 to find T.

(Add.)

X is the same as 12. Are the two sides the same?

Yes.

Great! In word problems, our answer must have a number and a label. We

know the number answer is 12. Now we have to figure out what the label for 12 should be. Think about what the problem is mostly about. Start by looking in the question sentence. Look at what we underlined. What did we underline?

Leaves.

Right! The question is asking about leaves, so that's the best label. X stands for the total leaves.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense?

(Students explain.)

Let's see if the answer makes sense. "Alex found 4 red leaves, 3 orange leaves, and 5 yellow leaves during a walk in the woods. How many leaves did he find in all?" Does 12 leaves make sense?

Yes.

Why does it make sense?

(Students explain.)

Did we answer the question, "How many leaves did he find in all?"

Yes.

We did because he found 12 leaves. We have a number and a label in the answer. Great job!

Excellent work. Let's try another problem!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do anytime we see a table or graph with a word problem?

Number it.

Let's number this graph before working on the problem!

(Students number graph.)

<u>Solution to Problem B:</u>

How many tubes of paint are in the art room?

Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 5; P2 = 2; P3 = 6 T = X*
Number Sentence:	*6 + 5 + 2 = X*
Answer:	*X = 13 tubes*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

Let's find X!

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

Exactly, the X already is by itself on this side (point) **of the equal sign, so you just solve.**

Do you add or subtract?

Add.

That's right. The X already is isolated because it's T, so you can just add P1 plus P2 plus P3 to find T.

(Add.)

X is *the same as* 13. Are the two sides the same?

Yes.

So, X is the same as 13.

(Write.)

Remember, we must have a label. What's a good label? What did we underline?

Tubes.

So what do we write for our label?

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Let's solve the next problem!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do anytime we see a table or graph with a word problem?

Number it.

Let's number this graph before working on the problem!

(Students number graph.)

Solution to Problem C:

The table shows how much money each person spent at the grocery store. How much did Carter, Truman, and Lincoln spend?
Problem Type: *Total, three parts*
Relevant Information: *P1 = 13; P2 = 32; P3 = 40; T = X*

Irrelevant Information: ~~*Jackson*~~
Number Sentence: $40 + 13 + 32 = X$
Answer: $X = \$85$

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

Exactly, the X already is by itself on this side (point) **of the equal sign, so you just solve.**

Do you add or subtract?

Add.

That's right. The X already is isolated because it's T, so you can just add P1 plus P2 plus P3 to find T.

(Add.)

X is *the same as* 85. Are the two sides the same?

Yes.

So, X is the same as 85. Write a label for 85.

(Write.)

Did we answer the question?

Yes.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

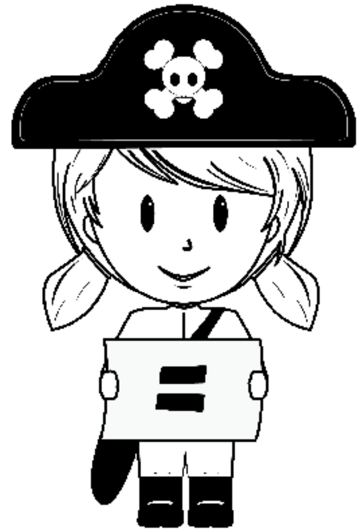
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 9



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 9
Buccaneer Problems: Lesson 9
Jolly Roger Review: Lesson 9
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Time for Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Last time, we worked on isolating the X. What does it mean to isolate the X?

To get the X by itself.

When we isolate the X, we need to get the X by itself. Let's try that!

Point to A.

How do you read this number sentence?

4 plus X is the same as 10.

When you see the equal sign like this, the first thing we'll do is draw a line down from the equal sign. What's the first thing?

Draw a line down from the equal sign.

Go ahead and draw the line coming down from the equal sign.

(Draw.)

This line (point) **will help us remember to balance the two sides of the equal sign. What do you want to do?**

Balance the two sides of the equation.

Now, we'll balance this equation by doing a fancy thing called isolating the X. Say that with me.

Isolating the X.

What does isolate mean?

Put something by itself.

And what do we want to isolate?

X.

First, where's the X?

Circle the X to make it easy to see.

(Circle.)

Now, let's isolate the X. Say that with me.

Isolate the X.

We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 4** (point) **to that side of the equal sign. How could we move this 4?**

Subtract 4 from both sides.

To move this 4, we need to subtract 4. But we don't only subtract 4 from this side (point)**, we have to subtract 4 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write minus 4 on both sides.

(Write.)

Time to do the math. What's 4 minus 4 (point)**?**

0.

4 minus 4 is the same as 0. When it's an answer of 0, cross out the 4 minus 4.

(Cross out.)

Now, let's do the math on that side. What's 10 minus 4 (point)**?**

6.

Write 6 right here.

(Write.)

So, you isolated the X. X is the same as what?

6.

Write X is the same as next to 6.

(Write.)

Now, check the number sentence. You solved that X is the same as 6. Rewrite the number sentence using 6 for X.

(Write.)

Is 4 plus 6 the same as 10?

Yes.

4 plus 6 is the same as 10.

Excellent work on isolating the X.

Point to B.

Look at this problem. 6 plus 9 is the same as X.

First, there's an equal sign. When you see an equal sign, always draw a line down from it.

(Draw.)

Now, it's time to isolate the X. Where's the X? Circle it.

(Circle.)

We need to isolate the X or get the X by itself. Look at this number sentence. Do we need to isolate the X?

No.

Why don't we need to isolate the X?

Because the X is already isolated. It's already by itself!

In this problem, the X already is isolated on that side (point) **of the equal sign. To solve this, all you have to do is add 6 plus 9. What's 6 plus 9?**

15.

So, write 15 is the same as X.

(Write.)

Now, check the number sentence. You solved that X is the same as 15. Rewrite the number sentence using 15 for X.

(Write.)

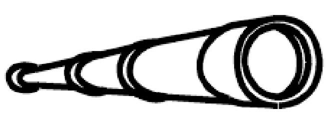
Is 6 plus 9 the same as 15?

Yes.

Excellent work!

It's important to always think about what you need to do. Sometimes, when you isolate the X, you need to move numbers from one side of the equal sign to the other. Other times, when you isolate the X, you just need to add or subtract.

Be a smart math pirate and think about how to isolate the X!



3: Buccaneer Problems

We've learned about Total problems. What's a Total problem?

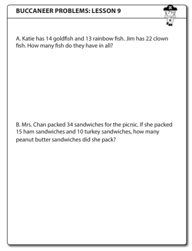
When parts are put together into a total.

In a Total problem two parts are put together to make a total. *All* Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total. Sometimes the part is missing; sometimes the total is missing; sometimes we have three parts. We can use our Total equation to help us solve the problem.

Point to A.



BUCCANEER PROBLEMS: LESSON 9

A. Katie has 14 goldfish and 13 rainbow fish. Jim has 22 clown fish. How many fish do they have in all?

B. Mrs. Chan packed 34 sandwiches for the picnic. If she packed 15 ham sandwiches and 10 turkey sandwiches, how many peanut butter sandwiches did she pack?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

Katie has 14 goldfish and 13 rainbow fish. Jim has 22 clown fish. How many fish do they have in all?

Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 14; P2 = 13; P3 = 22; T = X*
Number Sentence:	*22 + 14 + 13 = X*
Answer:	*X = 49 fish*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to "find X" begin script again.

Let's find X!

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

Exactly, the X already is by itself on this side (point) **of the equal sign, so you just solve.**

Do you add or subtract?

Add.

That's right. The X already is isolated because it's T, so you can just add 14, 13, and 22 to find T.

(Add.)

X is *the same as* 49. Are the two sides the same?

Yes.

(Write.)

What does our number need?

A label.

What's a good label for 49?

Fish.

Yes! 49 is about fish. Go ahead and write fish.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Excellent work. Let's try another problem!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

Mrs. Chan packed 34 sandwiches for the picnic. If she packed 15 ham sandwiches and 10 turkey sandwiches, how many peanut butter sandwiches did she pack?

Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 15; P2 = 10; P3 = X; T = 34*
Number Sentence:	*15 + 10 + X = 34*
Answer:	*X = 9 peanut butter sandwiches*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to "find X" begin script again.

Let's find X!

We want to isolate the X, or get the X by itself on this side (point) **of the equal sign. Let's first circle the X so we remember to isolate it. To get the X by itself, I first need to see if there are any numbers I can add on the left side of the equal sign. I need to add 15 plus 10. What is 15 plus 10?**

15 plus 10 is 25.

Exactly! Now I need to move the 25 to that side of the equal sign. We want to make this side zero.

If you have 25 and want to get zero, you can subtract 25. Because 25 minus 25 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 25 from this side of the equal sign, so we have to subtract 25 from that side of the equal sign.

(Write minus 25 and subtract 34 minus 25.)

We isolated the X. X is *the same as* 9.

So, 15 plus 10 plus 9 is *the same as* 34.

So, X is the same as 9.

(Write.)

Remember, we must have a label. What's a good label for 9? What did we underline?

Peanut butter sandwiches.

We underlined peanut butter sandwiches, so what do we write for our label?

Peanut butter sandwiches.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Let's solve the next problem!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do?

Number the graph.

Exactly! Go ahead and number the graph.

(Students number the graph.)

<u>*Solution to Problem C:*</u>

Jamie spent $7 on a burger and a soda. How much did the soda cost?

Problem Type: *Total*
Relevant Information: *P1 = 4; P2 = X; T = 7*
Irrelevant Information: ~~*fries*~~
Number Sentence: *4 + X = 7*
Answer: *X = $3*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to "find X" begin script again.

In this problem, we have 4 plus X is the same as 7.

We want to get the X by itself on this side (point) **of the equal sign.**

We want to isolate the X, or get the X by itself on this side (point) **of the equal sign. Let's first circle the X so we remember to isolate it. To get the X by itself, I need to move the 4 to that side of the equal sign. We want to make this side zero.**

If you have 4 and want to get zero, you can subtract 4. Because 4 minus 4 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 4 from this side of the equal sign, so we have to subtract 4 from this side of the equal sign.

(Write minus 4 and subtract 7 minus 4.)

We isolated the X. X is *the same as* 3.

So, 4 plus 3 is *the same as* 7.

So, X is the same as 3. Write a label for 3.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

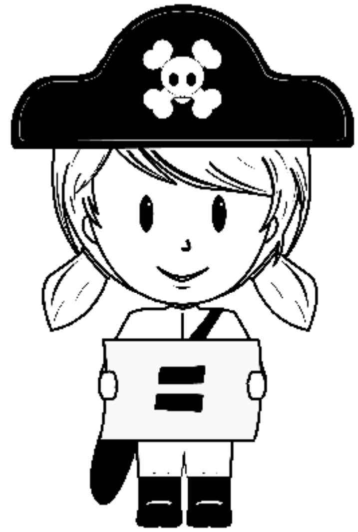
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 10



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total

Student Materials

Equation Quest: Lesson 10
Buccaneer Problems: Lesson 10
Jolly Roger Review: Lesson 10
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Equation Quest time! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point).

We've worked on isolating the X. What does it mean to isolate the X?

To get the X by itself.

When we isolate the X, we need to get the X by itself. Let's try that!

Point to A.

How do you read this number sentence?

5 plus X is the same as 9.

When you see the equal sign like this, what should you draw down from the equal sign?

Draw a line down from the equal sign.

Draw the line coming down from the equal sign.

(Draw.)

This line (point) **will help us remember to balance the two sides of the equal sign. What do you want to do?**

Balance the two sides of the equation.

Now, we'll balance this equation by doing a fancy thing called isolating the X. What does isolate mean?

Put something by itself.

And what do we want to isolate?

X.

First, where's the X?

(Point.)

Now, we'll balance this equation by isolating the X. Where's the X?

(Point.)

Circle the X to make it easy to see.

(Circle.)

Now, let's isolate the X. Say that with me.

Isolate the X.

We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 5** (point) **to that side of the equal sign. How could we move this 5?**

Subtract 5 from both sides.

To move this 5, we need to subtract 5. But we don't only subtract 5 from this side (point)**, we have to subtract 5 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do what?**

The same to that side.

So, write minus 5 on both sides.

(Write.)

Time to do the math. What's 5 minus 5 (point)**?**

0.

5 minus 5 is the same as 0. When it's an answer of 0, cross out 5 minus 5.

(Cross out.)

Now, let's do the math on that side. What's 9 minus 5 (point)**?**

4.

Write 4.

(Write.)

So, you isolated the X. X is *the same as* what?

4.

Write X is the same as next to 4.

(Writes.)

Check the number sentence. You solved that X is the same as 4. Rewrite the number sentence using 4 for X.

(Write.)

Is 5 plus 4 *the same as* 9?

Yes.

5 plus 4 is *the same as* 9.

Excellent work on isolating the X.

Point to B.

Look at this problem. 14 plus X is the same as 25. This problem has numbers that are greater, but you isolate the X in the same way. Let's do that.

What should you draw down from the equal sign?

Draw a line down from the equal sign.

Draw the line coming down from the equal sign.

(Draw.)

This line (point) **will help us remember to balance the two sides of the equal sign. What do you want to do?**

Balance the two sides of the equation.

Now, let's isolate the X. To isolate the X, we need to move this 14 (point) **to that side of the equal sign. How could we move this 14?**

Subtract from both sides.

To move 14, we need to subtract 14. We have to subtract 14 from both sides (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do what?**

The same to that side.

So, write minus 14 on both sides.

(Write.)

Time to do the math. What's 14 minus 14 (point)**?**

0.

Cross out 14 minus 14.

(Cross out.)

Do the math on that side (point)**. What's 25 minus 14** (point)**?**

11.

Write 11.

(Write.)

So, you isolated the X. X is the same as what?

11.

Write X is the same as next to 11.

(Write.)

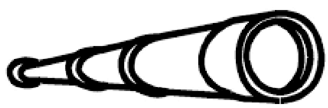
Check the number sentence. Rewrite the number sentence using 11 for X.

(Write.)

Great. 14 plus 11 is *the same as* X.

So, it doesn't matter if numbers are less (point to A) **or greater** (point to B)**. You always can isolate the X.**

You can use your isolating the X strategy in word problems. Let's practice that now.



3: Buccaneer Problems

We've learned about Total problems. What's a Total problem?

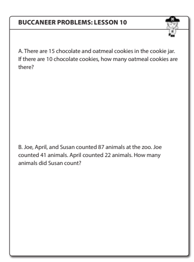
When parts are put together into a total.

In a Total problem parts are put together to make a total. *All* Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total. Sometimes the part is missing; sometimes the total is missing. We can use our Total equation to help us solve the problem.

Point to A.



BUCCANEER PROBLEMS: LESSON 10

A. There are 15 chocolate and oatmeal cookies in the cookie jar. If there are 10 chocolate cookies, how many oatmeal cookies are there?

B. Joe, April, and Susan counted 87 animals at the zoo. Joe counted 41 animals. April counted 22 animals. How many animals did Susan count?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem A:

There are 15 chocolate and oatmeal cookies in the cookie jar. If there are 10 chocolate cookies, how many oatmeal cookies are there?

Problem Type:	*Total*
Relevant Information:	*P1 = 10; P2 = X; T = 15*
Number Sentence:	*10 + X = 15*
Answer:	*X = 5 oatmeal cookies*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to “find X” begin script again.

Let’s find X!

We want to isolate the X, or get the X by itself on this side (point) **of the equal sign. Let’s first circle the X so we remember to isolate it. To get the X by itself, I need to move the 10 to that side of the equal sign. We want to make this side zero.**

If you have 10 and want to get zero, you can subtract 10. Because 10 minus 10 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 10 from this side of the equal sign, so we have to subtract 10 from this side of the equal sign.

(Write minus 10 and subtract 15 minus 10.)

We isolated the X. X is *the same as* 5.

So, 10 plus 5 is *the same as* 15.

So, X is the same as 5.

(Write.)

What does our number need?

A label.

What's a good label?

Oatmeal cookies.

Yes! 5 is about oatmeal cookies. Go ahead and write oatmeal cookies.

(Write.)

So, how many oatmeal cookies are there?

5 oatmeal cookies.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Excellent work. Let's try another problem!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem B:

Joe, April, and Susan counted 87 animals at the zoo. Joe counted 41 animals. April counted 22 animals. How many animals did Susan count?

Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 41; P2 = 22; P3 = X; T = 87*
Number Sentence:	*41 + 22 + X = 87*
Answer:	*X = 24 animals*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

When you get to "find X" begin script again.

Let's find X!

We want to isolate the X, or get the X by itself on this side (point) **of the equal sign. Let's first circle the X so we remember to isolate it. To get the X by itself, I need to first see if there are any numbers I can add. We can add 41 plus 22.**

What is 41 plus 22?

63.

Exactly. 41 plus 22 is 63. Now I want to move the 63 to that side of the equal sign. We want to make this side zero.

If you have 63 and want to get zero, you can subtract 63. Because 63 minus 63 is what?

0.

(Write, subtract below the number, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we subtracted 63 from this side of the equal sign, so we have to subtract 63 from this side of the equal sign.

(Write minus 63 and subtracts 87 minus 63.)

We isolated the X. X is *the same as* 24.

So, 41 plus 22 plus 24 is *the same as* 87.

So, X is the same as 24.

(Write.)

Remember, we must have a label. What's a good label for 24? What did we underline?

Animals.

So what do we write for our label?

Animals.

(Write.)

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Let's solve the next problem!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do anytime we see a table or graph with a word problem?

Number it.

<u>*Solution to Problem C:*</u>

How many Lego people do Darian, Becky, and Molly have altogether?

Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 24; P2 = 15; P3 = 12; T = X*
Number Sentence:	*24 + 15 + 12 = 51*
Answer:	*X = 51 Lego people*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.
When you get to "find X" begin script again.

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

Exactly, the X already is by itself on this side (point) **of the equal sign, so you just solve.**

Do you add or subtract?

Add.

That's right. The X already is isolated because it's T, so you can just add 24 and 15 and 12 to find T.

(Add.)

X is *the same as* 51. Are the two sides the same?

Yes.

So, X is the same as 51. Write a label for 51.

(Write.)

Did we answer the question?

Yes.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

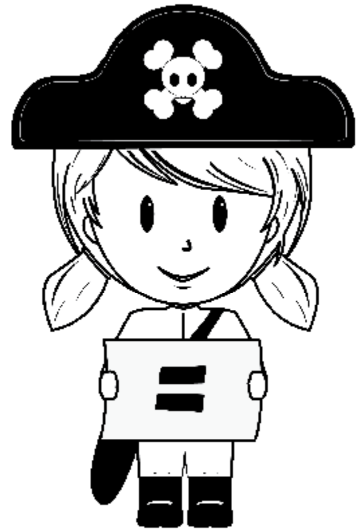
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 11

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Difference
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 11
Buccaneer Problems: Lesson 11
Jolly Roger Review: Lesson 11
Cubes
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

10 minus 6 is *the same as* 4.

Up to this point, we've worked on addition number sentences. Today, we'll start to work on subtraction number sentences.

What makes this (point to A) **a subtraction number sentence?**

The minus sign.

That's right. Here is the minus sign (point)**. The minus sign tells us to subtract.**

How would we read this number sentence?

10 minus 6 is the same as 4.

Even though this has a minus sign, we still use the same as when you see the same as sign. Let's read it together.

10 minus 6 is the same as 4.

Great. Now, let's use the cubes to solve a few problems.

Point to B.

5 minus 2 is *the same as* blank. Blank can be *the same as* X. Because we've been isolating the X, write an X in the blank space.

(Write.)

To solve this problem with cubes, we can place 5 cubes (place 5 cubes of one color) **on this side of the equal sign.**

Place 5 cubes.

Now, the minus sign tells us that we need to subtract. How many cubes do we need to subtract?

2.

We need to subtract 2.

Subtract 2 cubes from the 5 cubes.

Now, on that side of the equal sign (point)**, we have an X.**

Place X.

So, 3 cubes is *the same as* X. So, X is the same as what?

3.

Yes, 5 minus 2 is *the same as* 3.

What does the equal sign mean?

The same as.

That's right. The equal sign means the same as.

Let's try another one.

Point to C.

This problem says blank is *the same as* 8 minus 3. Let's read that together.

Blank is the same as 8 minus 3.

This problem looks a little different, but we can solve it. All we need to do is make the sides the same.

First, how can we mark the blank space?

With an X.

Blank and X mean the same thing. So, you can write an X in the blank space.

(Write.)

To solve this problem with cubes, place an X on this side (point)**.**

(Place X.)

Now, on that side (point)**, place 8 cubes.**

(Place cubes.)

But you're not finished. The minus sign tells you to subtract how many?

3.

So, subtract 3 cubes from the 8.

(Subtract cubes.)

The equal sign acts as a balance. X is *the same as* what?

5.

That's right. If you plug in 5 for X, 5 is *the same as* 8 minus 3. Let's read the number sentence together.

5 is the same as 8 minus 3.

Good work for today!

3: Buccaneer Problems

Let's review. What's a Total problem?

When parts are put together into a total.

In Total problems, parts are put together to make a total.

***All* total problems have the same Total equation. What's the Total equation?**

P1 + P2 = T.

When we solve word problems, what two things do we have in our answer?

A number and a label.

Very good. You must have a number *and* a label. What is a label?

A word that tells us about our missing information.

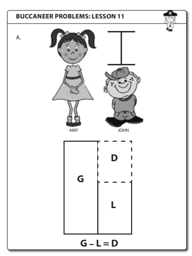
Excellent. A label is a word that tells us about our missing information. Now let's practice solving word problems!

Today, we'll learn a new type of problem. We call these Difference problems.

Difference means the difference between two amounts. In a Difference problem, you compare two amounts. When you compare, you put two amounts side by side to see which amount is greater and which amount is less. You compare two numbers and you find the difference between the amount that's greater and the amount that's less.

Let me show you what I mean.

Point to A.



Look at this picture. This is Amy. Her name is written here (point) **under her picture. And this is John** (point)**. His name is written here under his picture. In this picture, Amy is taller than John. In a Difference problem, our job is to figure out how *much* taller Amy is than John. The difference between Amy and John is this much.**

Point to the difference in the heights.

When we compare Amy and John, this is the difference between their heights.

Who is taller?

Amy.

That's right. Amy is taller. Who is shorter?

John.

Right. When we <u>compare</u> how tall they are, Amy is taller. John is shorter.

When you compare two things, like people, or two amounts of something, one amount is greater, and one amount is less. In Difference problems, our job is to figure out how *much* greater/taller or less/smaller one amount is compared to the other amount. Look up here. Let me show you another example.

Point to Difference Picture.

This box is the amount that's greater (point and trace around entire "G" box)**. It's like Amy** (write Amy's name in the greater box)**. This box is the amount that's less** (point and trace around the entire "L" box)**. It's like John** (write John's name in the less box)**. This is the difference between Amy and John** (Point and trace around the box with the dotted line.)

In Difference problems, we compare two amounts to find the difference. One thing is greater. The other thing is less.

To find the difference, we <u>subtract</u>. What signs do we use in subtraction number sentences?

A minus sign and a same as sign.

That's right. To find the difference, we subtract. In our Difference equation, we use a minus sign and a same as sign.

Let's think back to Total problems. In Total problems, we put parts together into a total. What signs do we use in our Total equation, P1 plus P2 is the same as T?

A plus sign and a same as sign.

Right. For our Total equation, we always use a plus sign and a same as sign.

In Difference problems, we compare two amounts to find the difference. In our Difference equation, we use a minus sign and a same as sign, like this.

Point to the bottom of Difference Chart.

The Difference equation is G minus L is the same as D. The amount that's greater minus the amount that's less is the same as the difference. Here is the minus sign (point) **and here is the same as sign** (point)**.**

Let me show you how the Difference equation is like the picture. G is the amount that's greater or Amy. Let's say Amy is 5 feet tall. I write 5 underneath G and put 5 in the box with G.

Write 5 underneath G and put 5 in the box with G.

L is the amount that's less or John. Let's say John is 3 feet tall. I write 3 underneath L and put 3 in the box with L.

Write 3 underneath L and put 3 in the box with L.

We're finding the difference between Amy and John. That's this much.

Show with your hands the amount between Amy and John.

This is what's missing. So I write an X underneath D and put an X in the box with D.

Write an X underneath D and put an X in the box with D.

Now I put the minus and same as sign into the number sentence. Now I can find X! When X is at the end, I solve it. I need to subtract. What's 5 minus 3?

2.

Right. 5 minus 3 is the same as 2. X is the same as 2. The difference between Amy and John is 2 feet. Amy is 2 feet taller than John. John is 2 feet shorter than Amy.

2 feet is the difference between Amy and John. In the picture, it's this (trace your finger around the box with D.) **In Difference problems, the story is about one amount being greater or less than another amount. The story is about the difference between these amounts.**

You earn a treasure coin!

Let's solve a Difference problem!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem B:*</u>

Kim scored 7 goals in Friday's soccer game. She scored 5 goals in Saturday's soccer game. How many more goals did she score on Friday?

Problem Type:	*Difference*
Relevant Information:	*G = 7; L = 5; D = X*
Number Sentence:	*7 – 5 = X*
Answer:	*X = 2 (more) goals*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type. Before today, we've been learning about Total problems. We look for the total and the parts anywhere in the story. Always ask yourself, are parts put together into a total? If the answer is yes, it's a Total problem.

Today we learned about Difference problems. In Difference problems, we look for two things compared in the story. Sometimes the question asks us to find how much greater or how much less. Either way, the problem is asking about the difference.

Let's decide. Is this problem about parts and a total, or is the problem about two amounts or numbers being compared? Listen as I read the problem again!

"Kim scored 7 goals in Friday's soccer game. She scored 5 goals in Saturday's soccer game. How many more goals did she score on Friday?"

This problem talks about the number of goals Kim scored: She scored some on Friday, and she scored some on Saturday. The question asks how many more

goals she scored on Friday. Is this a Total problem or a Difference problem?

Difference problem.

This problem is a Difference problem because we compare how many goals she scored on Friday to how many goals she scored on Saturday. She scored an amount that's greater on one night (hold one hand face level) **and an amount that's less on the other night** (hold other hand chest level)**. We're looking for the difference** (move hands back and forth)**. We're not finding a total because we're not putting the goals together into a total.**

Difference problems use words like *more, fewer*, and *less* to tell us the amount that's greater and the amount that's less.

What does *more* mean?

Greater.

That's right. *More* means greater. What does *fewer* mean?

Smaller.

Yes. *Fewer* means smaller. What does *less* mean?

Smaller.

Very good. *Fewer* and *less* actually mean the same thing. Both *fewer* and *less* mean smaller.

The words *more, fewer*, and *less* help us decide the amount that's greater and the amount that's less.

Difference problems are not like Total problems because Difference problems have a compare sentence. Look at the problem again.

"Kim scored 7 goals in Friday's soccer game. She scored 5 goals in Saturday's soccer game. How many more goals did she score on Friday?"

Do you see the words *more, fewer,* or *less* in the problem?

Yes.

Read the sentence that has the word *more* in it.

How many more goals did she score on Friday?

The question is our compare sentence. It asks, "How many more goals did she score on Friday?"

This is the compare sentence because it has the compare word *more*. It is really asking us, "How many more goals did she score on Friday *than* on Saturday?" It helps us decide the amount that's greater and the amount that's less. It helps us decide the numbers that are greater and the numbers that are less.

When the compare sentence asks us to find the difference, we know the number that's greater and the number that's less are in the problem. The number that's greater will be G. The number that's less will be L.

Whenever I find a compare sentence, I put brackets around the sentence to help me remember it's a compare sentence. It has our compare word.

Put brackets around compare sentence.

This compare sentence asks us to find the difference between Friday's goals and Saturday's goals. The problem tells us the amount that's greater and the amount that's less. We have to find the difference.

Display Difference Picture.

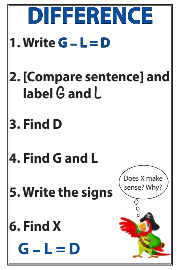
It's like this (point to the D box). **The goals she scored Friday is the number that's greater or the amount that's greater. The goals she scored Saturday is the number that's less or the amount that's less. The story is about one amount being greater or less than another amount. The story is about the difference between these amounts. It's about the difference between the two numbers. The question asks us to compare these amounts. It asks us to compare these numbers** (point) **and find the difference or D. I put D next to the problem to remind me it's a Difference problem.**

Write D next to the problem. Monitor that the students do this as well.

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Difference problem (Point to the D). **We use the Difference poster**

to solve it.

Display Difference poster.



To solve a Difference problem, we have six steps. Step 1. "Write G minus L is the same as D." In a Difference problem, the story is about one amount being greater or less than another amount. This G stands for the number that's greater. This L stands for the number that's less. We subtract G minus L. G minus L is the same as the difference, D. Once we know the problem is a Difference problem, we write G minus L is the same as D. (Point.) **This is the Difference equation.**

Write G – L = D.

What does G stand for?

The amount or number that's greater.

What does L stand for?

The amount or number that's less.

What does D stand for?

Difference.

Step 2: "[Compare sentence] and label G and L." We talked about this earlier. What's the compare sentence in this problem?

How many more goals did she score on Friday?

That's right. We put brackets around our compare sentence to help us remember.

Now let's go ahead and label the amount that's greater (G) and the amount

that's less (L) in our word problem.

(Write.)

I write G above Friday because Friday is talking about the number that's greater. G stands for greater. I write L above Saturday because Saturday is talking about the number that's less. L stands for less. Remember. Don't write G and L over the numbers, like this (write and then erase)**. <u>Write G and L above the words that represent the greater and less numbers</u>** (demonstrate).

Write G above Friday and L above Saturday.

Over which day did we write G?

Friday.

Over which day did we write L?

Saturday.

Look at Step 3: "Find D."

D is the difference. It's always with words like *more, fewer,* and *less*. We have to find out whether the difference is given or whether you have to find the difference. If the difference were given, it might say "Kim scored 2 more goals on Friday" or "Kim scored 4 fewer goals on Saturday."

In this problem, the difference is not given. Do you see a number written next to *more*?

No.

The question is asking us how many more, so we have to *find* the difference.

If the difference is not given, then you write X under D.

(Write.)

Step 4: "Find G and L." G stands for the number that's greater. L stands for the number that's less. If the difference, or D, is missing, it's really easy to find G and L.

Remember, this problem is talking about goals. We underlined the word "goals" to help us remember to use numbers that talk about goals. What numbers in this problem talk about goals?

7 and 5.

That's right. 7 talks about the goals on Friday. 5 talks about the goals on Saturday. Both of these numbers talk about goals. They are both important numbers.

Good. And how many goals did Kim score on Friday?

7.

Excellent. 7 is the number that's greater. That's why we wrote G above Friday. Friday is G because Kim scored more goals on Friday. Check off 7 in the story and write 7 under G.

Check off 7 in the story and write 7 under G.

Over which day did we write L?

Over Saturday.

Good. And how many goals did Kim score on Saturday?

5.

Yes. On Saturday, Kim scored fewer goals. 5 is the number that's less. That's why we wrote L above Saturday. Saturday is L because Kim scored fewer goals on Saturday. I check off 5 in the story and write 5 under L.

Check off 5 in the story and write 5 under L. Monitor that the students do this as well.

Now we have G, L, and D filled in the Difference equation. Look at Step 5.

Step 5: "Write the signs." For Difference problems, what math signs do we need to complete our number sentence?

Minus and the same as signs.

Right. We still need our minus sign and our same as sign. I write these in the number sentence like this.

Write the minus sign and same as sign.

7 stands for the number that's greater, or G. 5 stands for the number that's less, or L. X stands for the difference, or D. Does this look (point) **like a number sentence we know how to solve?**

Yes!

Let's read the number sentence together.

7 minus 5 is the same as X.

Step 6: "Find X!" You know how to do this!

Great! In word problems, our answer must have a number and a label. We know the number answer is 2. Now we have to figure out what the label for 2 should be. Think about what the problem is about. Look at what we underlined. What did we underline?

Goals.

Right! The question is asking about goals, so that's the best label. We write goals for the label! Goals is the word that tells us about our missing information.

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

The X is by itself on that side (point) **of the equal sign, so we can go ahead and solve.**

Do you add or subtract?

Subtract.

That's right. The X is isolated because it's D, so you can just subtract 7 minus 5 to find D.

(Subtract.)

X is *the same as* 2.

Are the two sides the same?

Yes.

Write "goals" next to 2.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

"Kim scored 7 goals in Friday's soccer game. She scored 5 goals in Saturday's soccer game. How many more goals did she score on Friday?" Does 2 goals make sense?

Yes.

The Difference story is about one amount being greater or less than another amount. The story is about the difference between these amounts. The answer, 2 goals, makes sense. It's the difference between Friday's and Saturday's goals. Let me show you why. Let's look at our Difference Picture with G, L, and D.

Display Difference Picture.

Friday's goals is the number that's greater, so that's like this box.

Write 7 in the box.

Saturday's goals is the number that's less, so that's like this box.

Write 5 in the box.

The difference between Friday and Saturday is the difference, so that's like this

box.

Write 2 in the box.

The number that's greater is 7, so the number that's less and the difference cannot be greater than 7. Is 2 greater than 7?

No.

Right. 2 makes sense.

Good. We have a number and a label in the answer. Good job working this Difference problem.

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

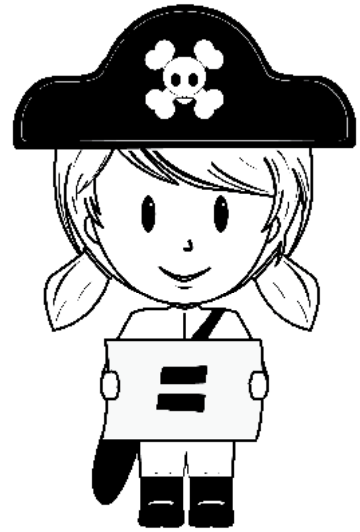
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 12

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Difference; Compare sentences
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 12
Buccaneer Problems: Lesson 12
Jolly Roger Review: Lesson 12
Cubes
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's do our Equation Quest! What does the equal sign mean?

The same as.

The equal sign means *the same as* (point)**.**

We've worked on isolating the X. What does it mean to isolate the X?

To get the X by itself.

When we isolate the X, we need to get the X by itself. Let's try that!

Point to A.

Follow Activity Guide: Equation Quest – Addition.

Point to B.

Look at this problem. 8 minus 3 is *the same as* X.

We've solved addition equations. Now, it's time to learn how to solve subtraction equations. What makes this (point to B) **a subtraction equation?**

The minus sign.

This is a subtraction equation because of the minus sign. Even though the problem is about subtraction, what should you draw down from the equal sign?

Draw a line down from the equal sign.

Draw the line coming down from the equal sign.

(Draw.)

This line (point) **will help us remember to balance the two sides of the equal sign. What do you want to do?**

Balance the two sides of the equation.

Now, we'll balance this equation by isolating the X. Where's the X?

Circle the X to make it easy to see.

(Circle.)

Do you need to isolate the X?

No!

The X already is isolated (point)**. So, all you need to do is 8 minus 3. What's 8 minus 3?**

5.

Write 5.

(Write.)

So, X is *the same as* what?

5.

Write X is *the same as* next to 5.

(Write.)

Check the number sentence. Rewrite the number sentence using 5 for X.

(Write.)

Excellent. 8 minus 3 is *the same as* 5.

You should use your isolating the X skill in word problems. Let's practice that now.

3: Buccaneer Problems

Let's review Total problems.

What's a Total problem?

When parts are put together into a total.

In a Total problem, parts are put together to make a total. All Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total.

Now let's review Difference problems. In Difference problems, we compare two amounts to find the difference. What does it mean to compare two amounts?

(Students explain.)

Good. One amount is greater. The other amount is less.

The Difference equation is G minus L is the same as D (point)**. The amount that's greater minus the amount that's less is the same as the difference. What's the Difference equation?**

G – L = D.

Let's say the equation together, one more time.

G – L = D.

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

Now say the Difference equation again.

G – L = D.

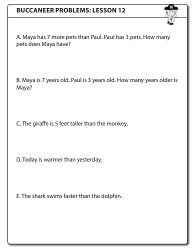
Excellent. Now let's practice solving word problems!

So far, we've talked about how Difference problems use words like *more*, *fewer*, and *less* to tell us the amount that is greater and the amount that is less. We call *more*, *fewer*, and *less* compare words.

Difference problems always use compare words, but the compare words aren't

always *more*, *fewer*, or *less*.

Point to A.



BUCCANEER PROBLEMS: LESSON 12

A. Maya has 7 more pets than Paul. Paul has 3 pets. How many pets does Maya have?

B. Maya is 7 years old. Paul is 3 years old. How many years older is Maya?

C. The giraffe is 5 feet taller than the monkey.

D. Today is warmer than yesterday.

E. The shark swims faster than the dolphin.

Look at this problem. "Maya has 7 more pets than Paul. Paul has 3 pets. How many pets does Maya have?"

Point to B.

Now look at this problem. "**Maya is 7 years old. Paul is 3 years old. How many years older is Maya?"**

What's the same about these problems?

They are both about Maya and Paul.

Right. Both problems are about Maya and Paul. And the numbers in both problems are the same. But these problems are not the same in an important way. Let me show you. This problem (point) **says, "Maya has 7 more pets than Paul. Usually, the word *more* helps us know it's a Difference problem. Do you see the word *more* in this other problem?** (Point.)

No.

That's right. This problem (point) **does not have the word *more*. But it's still a Difference problem. The question asks, how many years older is Maya** (emphasize "er")**? Let's talk about the word *older*** (emphasize "er")**. The "er" in *older* is like saying *more*. Older is the same as saying "more old." How many more years old is Maya than Paul? Older (emphasize "er") is a compare word. Words that end in "er," like older, are usually compare words. Think about the word tall. How can you make tall into a compare word?**

Change tall to taller.

Yes. We make tall into a compare word by changing tall to taller. Taller is like saying what?

More tall than.

We can say Mary is taller than Harry. That's like saying Mary is more tall than Harry. How can we make thick into a compare word?

Change thick to thicker.

Yes. We make thick into a compare word by changing thick to thicker. Thicker is like saying what?

More thick than.

We can say ice cream is thicker than water. That's like saying ice cream is more thick than water.

Thicker is like saying what?

More thick than.

So if you see a problem with a word that has "er" at the end, ask yourself, Is this a Difference problem? When you see a word that ends in "er," try to say the sentence with the word *more*.

Look at this sentence.

Point to C.

"The giraffe is 5 feet taller than the monkey."

Do you see a compare word?

Yes. Taller.

Good. Let's say the sentence in a different way. Let's use the word *more*.

The giraffe is 5 feet more tall than the monkey.

This is the compare sentence because things are compared in this sentence.

Whenever you see a compare sentence, draw brackets around the sentence, like this.

Draw bracket at beginning and end of sentence.
[The giraffe is 5 feet taller than the monkey.]

In this compare sentence, we're going to label the amount that's greater and the amount that's less. If the giraffe is taller, is the giraffe greater or less than the monkey?

Greater.

The giraffe is greater. So, write G above giraffe. G stands for greater.

(Write.)

If the giraffe is the amount that's taller or greater, then the monkey is the amount that's less. Write L above monkey. L stands for less.

(Write.)

Excellent work marking that compare sentence.

Point to D.

"Today is warmer than yesterday."

Do you see a compare word?

Yes. Warmer.

Tell me another way to say that sentence.

Today is more warm than yesterday.

This is the compare sentence because things are compared in this sentence. Whenever you see a compare sentence, draw brackets around the sentence.

(Draw brackets.)

In this compare sentence, we're going to label the amount that's greater and

the amount that's less. If today is warmer than yesterday, then which day has the temperature that's greater?

Today.

Today has the temperature that's greater. So, write G above today. G stands for greater.

(Write.)

If today has the temperature that's greater, then yesterday has the temperature that's less. Write L above yesterday. L stands for less.

(Write.)

Great job! Let's try one more. Look at this sentence.

Point to E.

"The shark swims faster than the dolphin."

What's the compare word?

Faster.

How can you say this sentence in a different way? Remember to use the word more.

The shark swims more fast than the dolphin.

Excellent! What do you do to the compare sentence?

Draw brackets.

Go ahead and draw brackets around the compare sentence.

(Draw.)

If the shark swims faster, does the shark have the amount that's greater or the amount that's less?

The amount that's greater.

The shark swims faster, so the shark is the amount that's greater. So, write G above today. G stands for greater.

(Write.)

If the shark is the amount that's greater, then what is the amount that's less?

Dolphin.

Write L above dolphin. L stands for less.

(Write.)

Now, you should look for compare words and a compare sentence. Remember, compare words are words like *more* or *less*. Compare words are also words that end in "er" that mean more than or less than. Words like *thicker*, *faster*, *smaller* (emphasize "er") **are all compare words.**

You earn a treasure coin!

Let's go look at Problem F about Maya and Paul.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem F:

Maya is 7 years old. Paul is 3 years old. How many years older is Maya?

Problem Type:	*Difference*
Relevant Information:	*G = 7; L = 3; D = X*
Number Sentence:	*7 – 3 = X*
Answer:	*X = 4 years (older)*

Let's RUN through the word problem. What does R stand for?

Read the problem.

Listen as I read the problem. "Maya is 7 years old. Paul is 3 years old. How many years older is Maya?"

What does U stand for?

Underline the label and cross out irrelevant information.

What's this problem mostly about?

Years.

Yes. Let's underline years.

(Underline.)

Is there any irrelevant information?

No.

How do you know?

All the numbers are talking about the label.

What does N stand for?

Name the problem type.

What kind of problem is it? Is it a Difference problem or a Total problem?

Difference.

How do you know it's a Difference problem?

(Students explain.)

What word helped us to decide that it's a Difference problem?

Older.

Good. This problem has the word *older*, which is a compare word. The problem compares the number of years old Paul is to the number of years old Maya is. It

asks how many years older is Maya. That's why it's a Difference problem.

What should I put next to the problem to remind me it's a Difference problem?

D.

Right. I put D next to the problem, like this, to remind me it's a Difference problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Difference problem. (Point to the D.) **We use the Difference poster to solve it.**

Display Difference poster.

Let's look at the six steps. What's Step 1?

Write G – L = D.

Good. Write the Difference equation, G minus L is the same as D.

(Write.)

Step 2: "[Compare sentence] and label G and L."

What's the compare sentence in this problem?

How many years older is Maya?

Good. This is a compare sentence because it has the compare word older. Let's put brackets around the compare sentence to remind us that it is the compare sentence.

(Bracket.)

Now let's label G and L in the word problem.

(Write.)

Who has the amount that's greater?

Maya.

So we'll write a G above Maya's name.

(Write.)

Who has the amount that's less?

Paul.

So we'll write an L above Paul's name.

(Write.)

Step 3 says, "Find D." We always have to have an "X" or a number under D in our Difference equation.

Does the compare sentence give the difference or ask us to find the difference?

Asks us to find the difference.

When the compare sentence asks us to find the difference, we know that the numbers that are greater and less are in the problem. The number that's greater will be G. The number that's less will be what?

L.

That's right! The number that's less is L. This compare sentence asks us to find the difference between Paul's and Maya's age. The question asks us to find how many years older Maya is. So we have to find the difference. If there were a number next to our compare word, then we would know the difference.

If the difference is missing, what do we write under D?

X.

That's right. D is the missing information. We write an X under D.

(Write.)

Step 4 is "Find G and L."

How old is Maya?

7 years old.

How old is Paul?

3 years old.

Who has the number that's greater?

Maya.

Check 7 off and then write 7 under G.

(Write.)

Who has the number that's less?

Paul.

Check 3 off and then write 3 under L.

(Write.)

Do we have all the information we need?

Yes.

Step 4 says, "Write the signs." What signs do you write in a Difference problem?

Minus and the same as signs.

Write the minus and same as signs. Remember, you always use a minus sign in Difference problems.

(Write.)

Does this look like a number sentence we know how to solve?

Yes!

What do we do now?

Find X!

We want to get the X by itself on this side (point) **of the equal sign.**

Is the X by itself?

Yes.

The X is by itself on that side (point) **of the equal sign, so we can go ahead and solve.**

Do you add or subtract?

Subtract.

That's right. The X is isolated because it's D, so you can just subtract 7 minus 3 to find D.

(Subtract.)

X is *the same as* 4.

Are the two sides the same?

Yes.

In word problems, our answer must have a number and a label. Look at what we underlined. What did we underline?

Years.

Right! The question is asking about years, so that's the best label. Write your label.

(Write.)

Let's see if the answer makes sense. "Maya is 7 years old. Paul is 3 years old. How many years older is Maya?" Does 4 years make sense?

Yes.

Why?

(Students explain.)

The Difference story is about one amount being greater or less than another amount. The story is about the difference between these amounts. The answer, 4 years, makes sense.

Good job working this Difference problem.

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Please note, students may work on compare sentences on the Jolly Roger Review. Students should (1) bracket the compare sentence, (2) write G for the amount that's greater, and (3) write L for the amount that's less.

Treasure Map

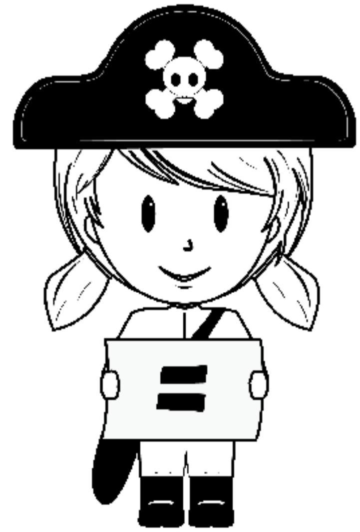
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 13



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Difference
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 13
Buccaneer Problems: Lesson 13
Jolly Roger Review: Lesson 13
Cubes
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

6 minus 4 is *the same as* blank. Let's say that together.

6 minus 4 is the same as blank.

Today, let's draw to make the sides the same. To solve this problem with pictures, draw 6 circles on this side (point)**.**

(Draw.)

Now, we subtract 4. To subtract 4, cross out 4 circles.

(Draw.)

Now, the equal sign acts as a balance. We need to make these sides the same. How many can we draw on that side (point) **to make the sides the same? Let's draw circles one at a time.**

(Draw.)

So, are the sides the same?

Yes.

You have 2 on this side of the equal sign (point)**, and 2 on that side of the equal sign** (point)**. So, 6 minus 4 is the same as what?**

2.

Go ahead and write 2.

(Write.)

Point to B.

This problem says blank is the same as 6 minus 2. Let's read that together.

Blank is the same as 6 minus 2.

This problem looks a little different, but we can solve it. All we need to do is make the sides the same.

To solve this problem with drawing, draw 6 circles on that side (point)**.**

(Draw.)

Now, you need to subtract 2 from 6. So, cross out 2 of the circles.

(Draw.)

The equal sign acts as a balance. We need to make these sides the same. Draw triangles on that side (point) **until the sides are the same.**

(Draw.)

So, what is the same as 6 minus 2?

4.

Go ahead and write 4.

(Write.)

Let's do one more problem.

Point to C.

4 plus blank is the same as 7. Start by drawing 4 circles.

(Draw.)

Now, how many squares should you draw in that box (point)**?**

7.

Draw 7 squares.

(Draw.)

Now, make the sides the same. Draw triangles until the sides are balanced.

(Draw.)

So, 4 plus what is *the same as* 7?

3.

Write 3.

(Write.)

Good work! Remember to always balance both side of the equal sign!

3: Buccaneer Problems

Let's review Total problems.

What's a Total problem?

When parts are put together into a total.

In a Total problem, parts are put together to make a total. *All* Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total.

Now let's review Difference problems. In Difference problems, we <u>compare</u> two amounts to find the difference. One amount is greater. The other amount is less.

The Difference equation is G minus L is the same as D (point).**The amount that's greater minus the amount that's less is the same as the difference. What's the Difference equation?**

G – L = D.

Let's say the equation together, one more time.

G – L = D.

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

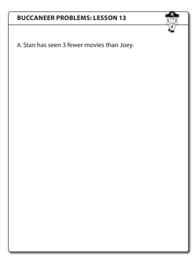
P1 + P2 = T.

Now say the Difference equation again.

G – L = D.

Compare words help us find the compare sentence. The compare sentence helps us find the amount that's greater and the amount that's less.

Point to A.



Listen: "Stan has seen 3 fewer movies than Joey."

First, is this a compare sentence? Is something being compared in this sentence?

Yes.

Whenever you see a compare sentence, draw brackets around the sentence.

(Draw brackets.)

Let's think about who has the amount that's greater and who has the amount that's less. Listen: "Stan has seen fewer movies than Joey." Who has the amount that's greater?

Joey.

Good. The problem tells us that Joey has the amount that's greater. I write G over Joey to remind me that he has the amount that's greater.

(Write.)

Who has the amount that's less?

Stan.

Good. The problem tells us Stan has fewer. I write L over Stan to remind me he has the amount that's less.

(Write.)

That was good practice to help us think about Difference problems!

You earn a treasure coin!

Point to B.

Let's practice solving word problems!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B</u>:

8 dogs are running in the park. 4 dogs are sleeping in the grass. How many more dogs are running than sleeping?
Problem Type: *Difference*
Relevant Info: *G = 8; L = 4; D = X*
Number Sentence: *8 – 4 = X*
Answer: *X = 4 (more) dogs*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type.

If you think it's a Total problem, ask: Are parts put together for a total?

We've also learned about Difference problems. If you think it's a Difference problem, ask: Are two amounts compared for a difference? Difference problems compare two amounts for a difference. When we compare two amounts, you find the amount that's greater and the amount that's less.

Let's decide. Is this problem about parts put together into a total, or is it about two amounts compared for a difference? Listen as I read the problem again.

"8 dogs are running in the park. 4 dogs are sleeping in the grass. How many more dogs are running than sleeping?"

What type of problem is this?

Difference.

How do you know it's a Difference problem?

(Students explain.)

That's right. What amounts are we comparing?

Running dogs and sleeping dogs.

That's right. The story is about two amounts being compared: running dogs and sleeping dogs. The story is about the difference between these amounts. Write D to remind me it's a Difference problem.

(Write.)

To figure out if this is a Difference problem, it's helpful to look for a compare sentence. A compare sentence usually has the words *more, fewer,* or *less.* Do you see a compare sentence in this problem?

Yes.

What's the compare sentence?

How many more dogs are running than sleeping?

That's right. There is a compare sentence. It says, "How many more dogs are running than sleeping?" The question is asking us to compare the running dogs to the sleeping dogs. We know the problem is asking us to compare because it asks how many *more*. I put brackets around the compare sentence to help me remember this is where it is.

(Write.)

Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

8 dogs are running in the park. 4 dogs are sleeping in the grass. How many dogs are there?

Problem Type:	*Total*
Relevant Info:	*P1 = 8; P2 = 4; T = X*
Number Sentence:	*8 + 4 = X*
Answer:	*X = 12 dogs*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

How are these problems the same? How are they not the same?

They are the same because they are both about 8 dogs running and 4 dogs sleeping. The questions are not the same.

Good. The question is different. The question in Problem C says, "How many dogs are there?"

If you think it's a Total problem, ask yourself: Are parts put together into a total?

If you think it's a Difference problem, ask yourself: Are two amounts compared for a difference?

Point to Problem B.

Problem B compared the dogs. We knew that from the question: "How many *more* dogs are running than sleeping?"

In Problem C, the question says, "How many dogs are there?" Does this question ask us to compare the dogs?

No.

In Problem C, the question doesn't ask us to compare the dogs. Does it ask us to put them together into a total?

Yes.

Good, the question is "How many dogs are there?" This means the sleeping and running dogs are put together into a total. The parts are the running dogs and the sleeping dogs. It's a Total problem. I put T next to the problem to remind me it's a Total problem.

(Write.)

Let's solve this Total problem.

Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does

our answer make sense? Why?

(Students explain.)

We've learned a lot about Total and Difference problems. Every time you name the problem type, you have to think: Is this a Total or Difference problem? When you name the problem type think about the question and what's missing.

Then, ask yourself: Are parts put together into a total? If your answer is yes, then it's a Total problem. If your answer is no, ask yourself: Are two amounts compared for a difference? If the answer is yes, then it's a Difference problem.

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Please note, students may work on compare sentences on the Jolly Roger Review. Students should (1) bracket the compare sentence, (2) write G for the amount that's greater, and (3) write L for the amount that's less.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

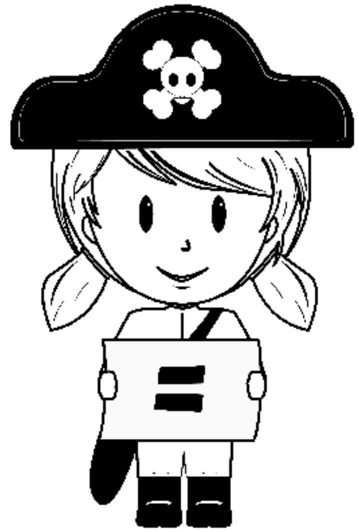
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out

of the treasure box!

Lesson 14



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Difference
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 14
Buccaneer Problems: Lesson 14
Jolly Roger Review: Lesson 14
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Follow Activity Guide: Equation Quest – Addition.

Look at B.

Point to B.

Follow Activity Guide: Equation Quest – Subtraction.

3: Buccaneer Problems

Let's review Total problems.

What's a Total problem?

When parts are put together into a total.

In a Total problem, parts are put together to make a total. All Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total.

Now let's review Difference problems. In Difference problems, we compare two amounts to find the difference. What does it mean to compare two amounts?

(Students.)

Good. One amount is greater. The other amount is less.

The Difference equation is G minus L is the same as D (point)**. The amount that's greater minus the amount that's less is the same as the difference.**

What's the Difference equation?

G – L = D.

Let's say the equation together, one more time.

G – L = D.

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

Now say the Difference equation again.

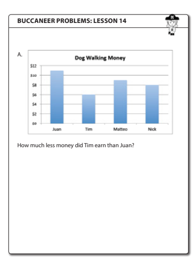
G – L = D.

Excellent. Now let's practice solving word problems!

So far, we've talked about how Difference problems use words like *more*, *fewer*, and *less* to tell us the amount that's greater and the amount that's less. We call *more*, *fewer*, and *less* compare words.

Difference problems always use compare words, but the compare words aren't always *more*, *fewer*, or *less*.

Point to A.



Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do before solving the word problem?

Number it.

Go ahead and number this graph!

(Number.)

<u>Solution to Problem A:</u>

How much less money did Tim earn than Juan?
Problem Type: *Difference*
Relevant Information: *G = 11, L = 6, D = X*
Number Sentence: *11 – 6 = X*
Answer: *X = $5 (less)*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

The monkey ate 26 bananas. The gorilla ate 18 bananas. ~~Each banana was 7 inches long.~~ How many fewer bananas did the gorilla eat?
Problem Type: *Difference*
Relevant Information: *G = 26, L = 18, D = X*
Irrelevant Information: *~~Each banana was 7 inches long.~~*
Number Sentence: *26 – 18 = X*
Answer: *X = 8 (fewer) bananas*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What should we do before solving the word problem?

Number it.

Go ahead and number this graph!

(Number.)

<u>*Solution to Problem C:*</u>

This graph shows the number of books some students have read. How many books have Josh and Pedro read?

Problem Type:	*Total*
Relevant Information:	*P1 = 35; P2 = 25; T = X*
Number Sentence:	*35 + 25 = X*
Answer:	*X = 60 books*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Your group earns a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Please note, students may work on compare sentences on the Jolly Roger Review. Students should (1) bracket the compare sentence, (2) write G for the amount that's greater, and (3) write L for the amount that's less.

Treasure Map

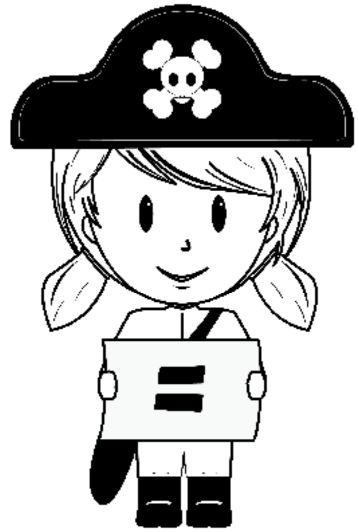
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 15



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Difference
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 15
Buccaneer Problems: Lesson 15
Jolly Roger Review: Lesson 15
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

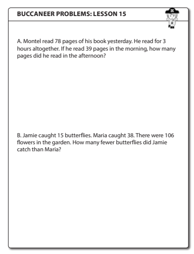
Look at A-C.

Point to A-C.

Follow Activity Guide: Equation Quest – Subtraction.

3: Buccaneer Problems

Point to A.



BUCCANEER PROBLEMS: LESSON 15

A. Montel read 78 pages of his book yesterday. He read for 3 hours altogether. If he read 39 pages in the morning, how many pages did he read in the afternoon?

B. Jamie caught 15 butterflies. Maria caught 38. There were 106 flowers in the garden. How many fewer butterflies did Jamie catch than Maria?

Let's solve some word problems!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

Montel read 78 pages of his book yesterday. He read for 3 hours altogether. If he read 39 pages in the morning, how many pages did he read in the afternoon?

Problem Type:	*Total*
Relevant Information:	*P1 = 39; P2 = X; T = 78*
Irrelevant Information:	*~~He read for 3 hours altogether.~~*
Number Sentence:	*39 + X = 78*
Answer:	*X = 39 pages*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

Let's try the next problem.

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem B:*</u>

Jamie caught 15 butterflies. Maria caught 38 butterflies. There were 106 flowers in the garden. How many fewer butterflies did Jamie catch than Maria?

Problem Type:	*Difference*
Relevant Info:	*G = 38; L = 15; D = X*
Irrelevant Information:	~~*There were 106 flowers in the garden.*~~
Number Sentence:	*38 – 15 = 23*
Answer:	*X = 23 fewer butterflies*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do when we see a graph or table?

Number it.

(Students number graph.)

<u>*Solution to Problem C:*</u>

How many nests did Silvia, Denny, and John find?

Problem Type:	*Total, three parts*
Relevant Info:	$P1 = 6; P2 = 6; P3 = 3; T = X$
Number Sentence:	$6 + 6 + 3 = X$
Answer:	$X = 15$ *nests*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

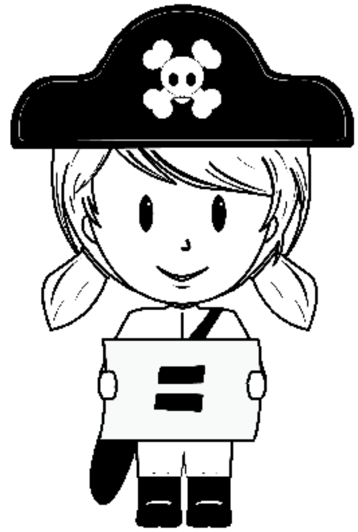
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 16

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Difference
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 16
Buccaneer Problems: Lesson 16
Jolly Roger Review: Lesson 16
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Follow Activity Guide: Equation Quest – Addition.

Look at B.

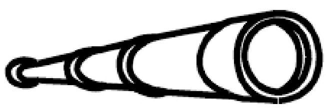
Point to B.

Follow Activity Guide: Equation Quest – Subtraction.

Look at C.

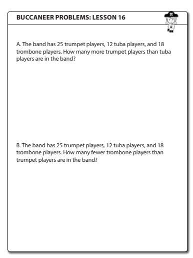
Point to C.

Follow Activity Guide: Equation Quest – Addition.



3: Buccaneer Problems

Point to A.



BUCCANEER PROBLEMS: LESSON 16

A. The band has 25 trumpet players, 12 tuba players, and 18 trombone players. How many more trumpet players than tuba players are in the band?

B. The band has 25 trumpet players, 12 tuba players, and 18 trombone players. How many fewer trombone players than trumpet players are in the band?

Let's solve some word problems!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem A:

> *The band has 25 trumpet players, 12 tuba players, and 18 trombone players. How many more trumpet players than tuba players are in the band?*
> *Problem Type:* *Difference*

Relevant Info: *G = 25; L = 12; D = X*
Irrelevant Information: *~~18 trombone players~~*
Number Sentence: *25 – 12 = 13*
Answer: *X = 13 more trumpet players*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Let's try the next problem.

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem B:

The band has 25 trumpet players, 12 tuba players, and 18 trombone players. How many fewer trombone players than trumpet players are in the band?
Problem Type: *Difference*
Relevant Info: *G = 25; L = 18; D = X*
Irrelevant Information: *~~12 tuba players~~*
Number Sentence: *25 – 18 = 7*
Answer: *X = 7 fewer trombone players*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem C:*</u>

The band has 25 trumpet players, 12 tuba players, and 18 trombone players. What is the total number of trumpet and trombone players?

Problem Type:	*Total*
Relevant Info:	*P1 = 25; P2 = 18; T = X*
Irrelevant Information:	~~*12 tuba players*~~
Number Sentence:	*25 + 18 = 43*
Answer:	*X = 43 trumpet and trombone players*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

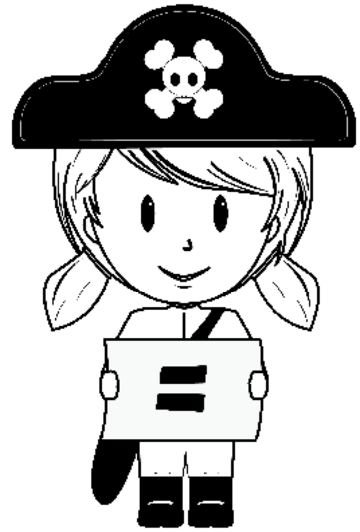
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 17



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Difference
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 17
Buccaneer Problems: Lesson 17
Jolly Roger Review: Lesson 17
Cubes
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

X minus 6 is *the same as* 3. Let's say that together.

X minus 6 is the same as 3.

When you see the equal sign like this, the first thing we'll do is draw a line down from the equal sign. What's the first thing?

Draw a line down from the equal sign.

Go ahead and draw the line coming down from the equal sign.

(Draw.)

This line (point) **will help us remember to balance the two sides of the equal sign. What do you want to do?**

Balance the two sides of the equation.

Now, we'll balance this equation by isolating the X. Say that with me.

Isolating the X.

To isolate something means to put it by itself. What does isolate mean?

Put something by itself.

And what do we want to isolate?

X.

First, where's the X?

(Point.)

Circle the X to make it easy to see.

(Circle.)

To isolate the X (point to X)**, we need to move the 6. Look at this 6. It's not plus 6, it's minus 6** (point to minus sign)**. If we want to move the 6 to that side of the equal sign** (point)**, we need to add 6. We add 6 because minus 6 and plus 6 is the same as zero.**

So, write plus 6 under the minus 6.

(Write.)

And if you add 6 to this side (point)**, what do you have to do to that side?**

Add 6.

You have to add 6 to that side of the equal sign.

(Write.)

Now, it's time to do the math. What's minus 6 and plus 6 (point)**?**

0.

Cross out minus 6 plus 6.

(Cross out.)

Do the math on this side (point)**. What's 3 plus 6** (point)**?**

9.

Write 9.

(Write.)

So, you isolated the X. X is *the same as* what?

9.

Write X is *the same as* next to 9.

(Write.)

Check the number sentence. Rewrite the number sentence using 9 for X.

(Write.)

Excellent. 9 minus 6 is *the same as* 3.

Look at this problem.

Point to B.

This problem is 8 minus X is *the same as* 2. In this problem, we need to isolate the X.

When you see the equal sign like this, draw a line down from the equal sign.

(Draw.)

Now, we'll balance this equation by isolating the X. Where's the X?

(Point.)

Circle the X to make it easy to see.

(Circle.)

To isolate the X (point to the X) **in this problem, we do something different than before. Look at the X. Is there a plus sign or minus sign in front of the X?**

Minus sign.

When there is a minus sign in front of the X, we isolate the X by doing two things.

First, we move the X to the other side of the number sentence. To do that, I cross out this X and write it over here.

Write X on the right side.

Second, we move the number on that side, in this case it's a 2, to this side of the equal sign. To do that, I write minus 2 on that side.

Write – 2 below 2.

But if I subtract 2 from that side (point)**, I have to subtract 2 from this side** (point)**.**

Write – 2.

Now, it's time to do the math. What's 2 minus 2 (point)**?**

0.

Cross out 2 minus 2.

(Cross out.)

Do the math on this side (point)**. What's 8 minus 2** (point)**?**

6.

Write 6.

(Write.)

So, you isolated the X. X is the same as what?

6.

Write 6 is *the same as* X.

(Write.)

Check the number sentence. Rewrite the number sentence using 6 for X.

(Write.)

Excellent. 8 minus 6 is *the same as* 2.

Now, you *only* isolate the X in that way when it's a minus X problem. We'll work more on that next time!

3: Buccaneer Problems

Let's review Total problems.

What's a Total problem?

When parts are put together into a total.

In a Total problem, parts are put together to make a total. All Total problems have the same Total equation. What's the Total equation?

P1 + P2 = T.

That's right. The Total equation is part 1 plus part 2 is the same as the total.

Now let's review Difference problems. In Difference problems, we compare two amounts to find the difference. What does it mean to compare two amounts?

(Students explain.)

Good. One amount is greater. The other amount is less.

The Difference equation is G minus L is the same as D (point)**. The amount that's greater minus the amount that's less is the same as the difference. What's the Difference equation?**

G – L = D.

Let's say the Difference equation together, one more time.

G – L = D.

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

Now say the Difference equation again.

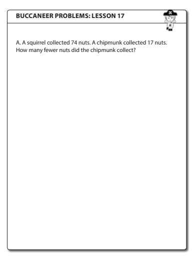
G – L = D.

Excellent. Now let's practice solving word problems!

So far, we've talked about how Difference problems use words like *more*, *fewer*, and *less* to tell us the amount that's greater and the amount that's less. We call *more*, *fewer*, and *less* compare words.

Difference problems always use compare words, but the compare words aren't always more, fewer, or less.

Point to A.


BUCCANEER PROBLEMS: LESSON 17

A. A squirrel collected 74 nuts. A chipmunk collected 17 nuts. How many fewer nuts did the chipmunk collect?

Let's solve some word problems!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

> *A squirrel collected 74 nuts. A chipmunk collected 17 nuts. How many fewer nuts did the chipmunk collect?*
> *Problem Type:* *Difference*
> *Relevant Information:* *G = 74; L = 17; D = X*
> *Number Sentence:* *74 – 17 = X*
> *Answer:* *X = 57 fewer nuts*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Let's try the next problem.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do when we see a graph or table?

Number it.

(Students number graph.)

Point to B.

<u>*Solution to Problem B:*</u>

How many more card games did Kate win than Michael?
Problem Type: *Difference*
Relevant Info: *G = 32; L = 16; D = X*
Number Sentence: *32 – 16 = X*
Answer: *X = 16 more card games*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do when we see a graph or table?

Number it.

(Students number graph.)

<u>Solution to Problem C:</u>

How many fewer card games did Le win than Amanda?

Problem Type:	*Difference*
Relevant Info:	*G = 24; L = 22; D = X*
Number Sentence:	*24 – 22 = X*
Answer:	*X = 2 fewer card games*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

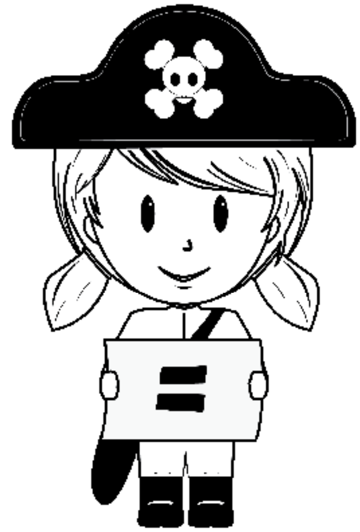
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 18

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Difference
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 18
Buccaneer Problems: Lesson 18
Jolly Roger Review: Lesson 18
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

This problem is 9 minus X is *the same as* 4. In this problem, we need to isolate the X.

When you see the equal sign like this, draw a line down from the equal sign.

(Draw.)

Now, we'll balance this equation by isolating the X. Where's the X?

(Point.)

Circle the X to make it easy to see.

(Circle.)

To isolate the X (point to the X)**, in this problem, we do something different than before. Look at the X. Is there a plus sign or minus sign in front of the X?**

Minus sign.

Where there is a minus sign in front of the X, we isolate the X by doing something different.

First, we move the X to the other side of the number sentence. To do that, cross out this X and write it over here.

(Write.)

Second, we move the number on that side, in this case it's a 4, to this side of the equal sign. To do that, write minus 4 on that side.

(Write.)

But if you subtract 4 from that side (point)**, you subtract 4 from this side** (point)**.**

(Write.)

Now, it's time to do the math. What's 4 minus 4 (point)**?**

0.

Cross out 4 minus 4.

(Cross out.)

Do the math on this side (point)**. What's 9 minus 4** (point)**?**

5.

Write 5.

(Write.)

So, you isolated the X. X is *the same as* what?

5.

Write 5 is *the same as* X.

(Write.)

Check the number sentence. Rewrite the number sentence using 5 for X.

(Write.)

Excellent. 9 minus 5 is *the same as* 4.

Now, you only isolate the X in that way when it's a minus X problem. Look at this problem.

Point to B.

X minus 6 is *the same as* 4. Let's say that together.

X minus 6 is the same as 4.

What should you draw?

Draw a line down from the equal sign.

Go ahead and draw the line coming down from the equal sign.

(Draw.)

We'll balance this equation by isolating the X. What does isolate mean?

Put something by itself.

And what do we want to isolate?

X.

First, where's the X?

(Point.)

Circle the X to make it easy to see.

(Circle.)

To isolate the X (point to X)**, we need to move the 6 . Look at this 6. It's not plus 6, it's minus 6** (point to minus sign)**. If we want to move the 6 to that side of the equal sign** (point)**, we need to add 6. We add 6 because minus 6 and plus 6 is the same as zero.**

So, write plus 6 under the minus 6.

(Write.)

And if you add 6 to this side (point)**, what do you have to do to that side?**

Add 6.

You have to add 6 to that side of the equal sign.

(Write.)

Now, it's time to do the math. What's minus 6 and plus 6 (point)**?**

0.

Cross out the minus 6 plus 6.

(Cross out.)

Do the math on this side (point)**. What's 4 plus 6** (point)**?**

10.

Write 10.

(Write.)

So, you isolated the X. X is *the same as* what?

10.

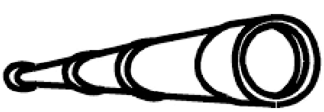
Write X is *the same as* next to 10.

(Write.)

Check the number sentence. Rewrite the number sentence using 10 for X.

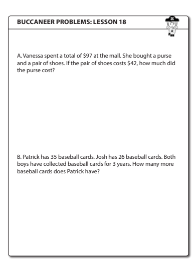
(Write.)

Excellent. 10 minus 6 is *the same as* 4. Good work!



3: Buccaneer Problems

Point to A.



BUCCANEER PROBLEMS: LESSON 18

A. Vanessa spent a total of $97 at the mall. She bought a purse and a pair of shoes. If the pair of shoes costs $42, how much did the purse cost?

B. Patrick has 35 baseball cards. Josh has 26 baseball cards. Both boys have collected baseball cards for 3 years. How many more baseball cards does Patrick have?

Let's solve some word problems!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

> *Vanessa spent a total of $97 at the mall. She bought a purse and a pair of shoes. If the pair of shoes costs $42, how much did the purse cost?*
>
> *Problem Type:* *Total*
> *Relevant Information:* *P1 = 42; P2 = X; T = 97*
> *Number Sentence:* *42 + X = 97*
> *Answer:* *X = $55*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Let's try the next problem.

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

> *Patrick has 35 baseball cards. Josh has 26 baseball cards. Both boys have collected baseball cards for 3 years. How many more baseball cards does Patrick have?*
>
> *Problem Type:* *Difference*
> *Relevant Info:* *G = 35; L = 26; D = X*
> *Irrelevant Info:* ~~*Both boys have collected baseball cards for 3 years.*~~
> *Number Sentence:* *35 – 26 = X*

Answer: *X = 9 baseball cards*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

Julian went to the store and spent $65. Brooke went to the store and spent $29. How much less money did Brooke spend than Julian?

Problem Type:	*Difference*
Relevant Info:	*G = 65; L = 29; D = X*
Number Sentence:	*65 – 29 = X*
Answer:	*X = $36*

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

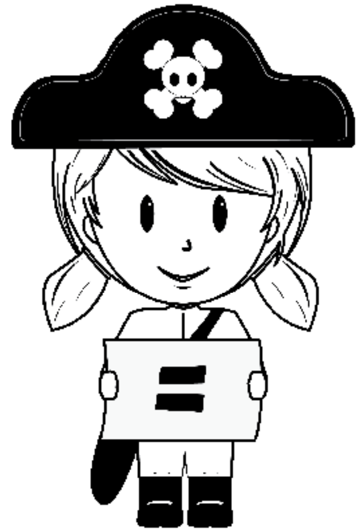
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 19



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change problems: End missing
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 19
Buccaneer Problems: Lesson 19
Jolly Roger Review: Lesson 19
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point).

Look at A.

Point to A.

Follow Activity Guide: Equation Quest – Subtraction.

Look at B.

Point to B.

Follow Activity Guide: Equation Quest – Addition.

Look at C.

Point to C.

Follow Activity Guide: Equation Quest – Subtraction.

3: Buccaneer Problems

Over the last few weeks, we've learned about Total and Difference problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

Today, we'll learn about a new type of problem. We call these Change problems.

Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What does the word *increase* mean?

To make bigger or greater.

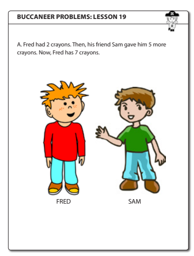
Yes, the word *increase* means to make bigger or greater. What does the word *decrease* mean?

To make smaller or less.

Great. The word *decrease* means to make smaller or less. So, Change problems tell us a starting amount. At a different time, something happens to make the amount you started with greater or less.

Look at this problem.

Point to A.



"Fred had 2 crayons. Then, his friend Sam gave him 5 more crayons. Now, Fred has 7 crayons."

This is a Change story because the story tells us the number of crayons Fred started with. Then his friend, Sam, changed Fred's amount by giving Fred some more. So Fred ends with a new number of crayons.

Circle 2, 5, and 7 in the story.

Here's the number sentence that goes with this story: 2 plus 5 is the same as 7.

Write $2 + 5 = 7$.

This number sentence stands for what's happening in this Change story. Fred starts with 2 crayons. Then something happens to change Fred's amount.

What happens?

His friend gives him more.

Right. His friend gives him 5 more. So Fred ends with 7. That's like the number sentence: 2 plus 5 is the same as 7. Let me show you how this works.

This is a picture of Fred (point)**. Fred's name is written here** (point)**. How many crayons should Fred start with?**

2.

That's right. Let's count 2 crayons. 1, 2. I'll put them here under Fred's picture.

Place 2 crayons under Fred's picture.

This is Fred's friend, Sam. Sam's name is written here (point)**. How many crayons should the friend have?**

5.

That's kind of right. We know Sam has at least 5 crayons because that's how many Sam gives to Fred. I'll give him a bunch of crayons because we don't know how many his friend has exactly. I'll put them here under Sam's picture.

Place approximately 7-10 crayons under Sam's picture.

The story says Fred has 2 crayons. That means 2 is how many crayons Fred starts with (point)**.**

In Change problems, the story tells us a starting amount. At a different time, something happens to change the starting amount. We end with a new amount. In this problem, Fred's 2 crayons is the starting amount. What happens to change the starting amount?

His friend gives him some.

Right. The change amount is how many his friend, Sam gives him (point)**. How many does the story say his friend gives him?**

5.

Good. If Fred gets 5 crayons from his friend, does his amount increase or decrease?

Increase.

Good. To find the new amount, we start with 2. When his friend Sam gives him 5 more, the starting amount increases by 5. I'll take 5 crayons from Sam and give them to Fred.

Count 5 crayons one at a time as the "friend" gives "Fred" 5 and put them under Fred.

Let's review. Fred starts with 2. Then Sam gives him 5. The starting amount *increases* when the friend gives him 5 more.

So I ADD. Fred's 2 crayons plus the 5 crayons Sam gave him makes 7. Fred ends with 7 crayons. This is like the number sentence 2 plus 5 is the same as 7. (Point to 2 + 5 = 7.)

When a Change problem increases, I have a starting amount. Then I add the change amount. This gives me the end amount.

Take 2 crayons from underneath Fred and place them under 2 in the number sentence. Then take the remaining 5 crayons and place them under the 5 in the number sentence.

The Change equation for this problem is ST plus C is the same as E.

Write ST + C = E.

ST (point) **stands for the starting amount. C** (point) **stands for the change amount. And E** (point) **stands for the end amount.**

What does ST (point) **stand for?**

The starting amount.

What does C (point) **stand for?**

The change amount.

What does E (point) **stand for?**

The end amount.

Sometimes the Change equation has a plus sign. Other times, it has a minus sign. If the change amount is increasing, we use a plus sign. If the change amount is decreasing, we use a minus sign. Let me show you what I mean.

Point to B.

"Harry had 9 crayons. Then he gave 3 crayons to Will. Now, Harry has 6 crayons."

This is a Change story because it tells us the number of crayons Harry started with. Then something happened to change the amount he started with. What happened?

He gave some crayons to Will.

Yes. That's what happened. Harry gave some crayons to Will. Did this increase or decrease the number of crayons Harry started with?

Decrease.

That right. He gave crayons away. This decreased the number of crayons Harry had. Harry ends with less crayons.

Circle 9, 3, and 6 in the story.

Here's the number sentence that goes with this story: 9 minus 3 is the same as 6.

Write 9 – 3 = 6.

This number sentence stands for what's happening in this Change story. Harry starts with 9 crayons. Then something happens to change his amount. What happens?

He gives some to Will.

Right. He gives some to Will. So Harry ends up with 6 crayons. That's like the

number sentence: 9 minus 3 is the same as 6. Let me show you how this works.

This is Harry (point)**. Harry's name is here** (point)**. How many crayons does Harry start with?**

9.

That's right. Let's count 9 crayons. 1, 2, 3, 4, 5, 6, 7, 8, 9. I'll put them here, under Harry's picture.

This is Will (point)**. How many crayons does Will have?**

0.

That's right. Will doesn't have any crayons yet.

In Change problems, the story tells us a starting amount. At a different time, something happens to change the starting amount. So we end with a new amount. In this problem, Harry starts with 9 crayons (point)**. What happens to change this starting amount?**

He gives some to Will.

Right. The change amount is how many Harry gives to Will. How many does the story say Harry gives to Will?

3.

Good. When Harry gives 3 crayons to Will, does his number of crayons increase or decrease?

Decrease.

Good. When Harry gives crayons away, his number of crayons decreases. So he ends up with a new amount. To find the new amount, we start with 9 and then Harry gives 3 crayons to Will.

Take 3 crayons from underneath Harry's picture and place them under Will's picture.

So I SUBTRACT. 9 crayons minus the 3 crayons he gave away. 9 minus 3 is the same as 6. So Harry ends with 6 crayons (count 6 crayons under Harry's picture)**.**

This is like the number sentence 9 minus 3 is the same as 6 (Point to 9 – 3 = 6)**.**

When a Change problem decreases, I have a starting amount. Then I subtract the change amount. This gives me the end amount.

The Change equation for this problem is ST minus C is the same as E.

Write ST – C = E.

Remind me. What does ST stand for?

The starting amount.

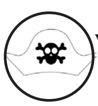
What does C (point) **stand for?**

The change amount.

What does E (point) **stand for?**

The end amount.

Sometimes the Change equation has a plus sign. Other times, it has a minus sign. If the change amount is increasing, we use a plus sign. If the change amount is decreasing, we use a minus sign.

 **You earn a treasure coin!**

Let's practice solving a Change problem!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem C:*</u>

There were 9 apples on the apple tree. Then 5 apples fell off. How many apples are on the tree now?

Problem Type: *Change, decrease*

Relevant Information: $ST = 9; C = 5; E = X$
Number Sentence: $9 - 5 = X$
Answer: $X = 4$ *apples*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type. Before today, we only knew about Total and Difference problems. If you think it's a Total problem, ask yourself: Are parts put together into a total? If you think it's a Difference problem, ask yourself: Are two amounts compared for a difference?

In Change problems, the story tells us a starting amount. Something happens in the story to CHANGE the starting amount. If you think it's a Change problem, ask yourself: Does a starting amount increase or decrease to a new amount?

In Change problems, the starting amount can <u>increase</u>, which means we add, or the starting amount can <u>decrease</u>, which means we subtract.
Let's decide. Is this problem about parts and a total? Or is it about two amounts compared for a difference? Or is it about a starting amount that increases or decreases to a new amount?

Listen as I read the problem again.

"There were 9 apples on the apple tree. Then 5 apples fell off. How many apples are on the tree now?"

This problem talks about apples: There are 9 on the apple tree, then some fell off. The question asks how many are on the tree now. Is this a Total, Difference, or a Change problem?

Change.

This problem is a Change problem because the problem tells us a starting amount: the tree starts with 9 apples. Then something happens to change the amount. What happens?

Some fell off.

Good. Some fell off. If some got picked, did the starting amount increase or decrease?

Decrease.

Right. This is a Change problem. I'll write C next to the problem to help me remember it's a Change problem.

Write C.

Now, the tree starts with 9 apples. Then some fell off. It's a starting amount that decreases. If it's decreasing, do we add or subtract?

Subtract.

Right. Do we use a plus or a minus sign?

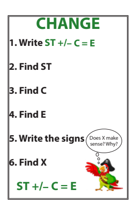
Minus sign.

Good. We use a minus sign. I write the minus sign before C to remind me it's a Change problem that decreases. I put the minus sign to remind me to subtract.

Write – next to C.

When we RUN through a problem, it helps us organize our paper so we can solve the problem! We said this is a Change problem. (Point to the –C.) **We use the Change poster to solve it.**

Display Change poster.



To solve a Change problem, we have six steps. The steps are a lot like the Total and Difference steps.

Step 1 is to write the Change equation. We write ST plus C is the same as E OR ST minus C is the same as E. The sign depends on whether the change is increasing or decreasing. Does this problem have an increase or decrease?

Decrease.

That's right. The change decreases. That's why we wrote a minus sign next to the C. If we wrote a minus sign, we use the Change equation ST minus C is the same as E.

We need to write the Change equation now.

Write ST – C = E.

Step 2: "Find ST." We have to decide the starting amount. Look at the problem. Does it tell us the starting amount of apples?

Yes.

How many apples did the tree start with?

9.

The starting amount, or ST, is 9. I check off the 9 and write 9 underneath ST.

Check off 9 in the story and write 9 underneath ST.

Step 3: "Find C." We have to decide the change amount. Sometimes the problem will tell us the change amount. Other times, the change amount is X. Look at the problem. Does it tell about a change to the number of apples?

Yes.

How many apples fell off the tree?

5.

That's right. 5 apples fell off. If some fell off, this describes a change in the number of apples. So, the change amount, or C, is 5. I check off the 5 and write 5 underneath C.

Check off 5 in the story and write 5 underneath C.

Step 4 says: "Find E." We have to decide the end amount. Sometimes the problem tells us the end amount. Other times, the end amount is X. Look at the problem. Does it tell about the end number of apples?

No.

The question asks, "How many apples are on the tree now?" We have to find the end amount of apples. How do we mark missing information?

With an X.

Right. We're missing the end amount, so I put X underneath E.

Write X underneath E.

Step 5: "Write the signs." Change problems can have a plus sign or a minus sign. In this problem, we said the starting amount decreased. To help us remember this, we wrote ST minus C is the same as E when we wrote the Change equation. This means we use a minus sign and a same as sign to complete the number sentence.

Write the minus sign and same as sign.

9 stands for the starting amount. 5 stands for the change amount. X stands for the end amount. Does this (point) **look like a number sentence we know how to solve?**

Yes!

Let's read the number sentence together.

Read number sentence aloud with students.

Let's find X! You know how to do this!

Great! In word problems, our answer must have a number and a label. We know the number answer is 4. Now we have to figure out what the label for 4 should be. Think about what the problem is mostly about. What did we underline?

Apples.

Right! The problem is mostly about apples, so that's the best label. We write apples for the label!

Write apples next to 4.

Let's see if the answer makes sense. "There were 9 apples on the apple tree. Then 5 apples fell off. How many apples are on the tree now?" Does 4 apples make sense?

Yes.

Right. 4 makes sense. Did we answer the question, "How many apples are on the tree now?"

Yes. There are 4 apples.

Good. We have a number and a label in the answer.

Good job working this Change problem!

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

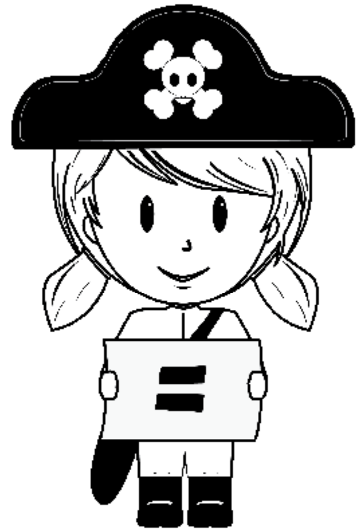
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 20



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change problems; *more* practice
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 20
Buccaneer Problems: Lesson 20
Jolly Roger Review: Lesson 20
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A-C.

Point to A-C.

Follow Activity Guide: Equation Quest – Addition.

3: Buccaneer Problems

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

Now say the Difference equation.

G – L = D.

Good. Say it again.

G – L = D.

Yesterday we learned about Change problems. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. You have to decide which Change equation to use. What are the two Change equations?

ST + C = E and ST – C = E.

Let's solve some word problems!

The past few weeks, we've learned about Total and Difference problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the

missing information is the total. Other times, the missing information is one of the parts.

How do you know if a problem is a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about Difference problems where the missing information is the difference.

Today, we'll work again on Change problems.

Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What does the word increase mean?

To make bigger or greater.

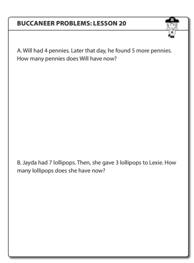
Yes, the word increase means to make bigger or greater. What does the word decrease mean?

To make smaller or less.

Great. The word decrease means to make smaller or less. So, Change problems tell us a starting amount. At a different time, something happens to make the amount you started with bigger or smaller.

Look at this problem.

Point to A.



BUCCANEER PROBLEMS: LESSON 20

A. Will had 4 pennies. Later that day, he found 5 more pennies. How many pennies does Will have now?

B. Jayda had 7 lollipops. Then, she gave 3 lollipops to Lexie. How many lollipops does she have now?

Whenever we see a word problem, we first have to check if there is a graph or a

table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

> *Will had 4 pennies. Later that day, he found 5 more pennies. How many pennies does Will have now?*
>
> *Problem Type:* *Change, increase*
> *Relevant Information:* *ST = 4; C = 5; E = X*
> *Number Sentence:* *4 + 5 = X*
> *Answer:* *X = 9 pennies*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type. Before today, we only knew about Total and Difference problems. If you think it's a Total problem, ask yourself: Are parts put together into a total? If you think it's a Difference problem, ask yourself: Are two amounts compared for a difference?

In Change problems, the story tells us a starting amount. Something happens in the story to CHANGE the starting amount. If you think it's a Change problem, ask yourself: Does a starting amount increase or decrease to a new amount?

Let's decide. Is this problem about parts and a total? Or, is it about two amounts compared for a difference? Or, is it about a starting amount that increases or decreases to a new amount? Listen as I read the problem again.

"Will had 4 pennies. Later that day, he found 5 more pennies. How many pennies does Will have now?"

This problem talks about pennies: Will had 4 pennies. Later that day, he found 5 more pennies. The question asks how many pennies does Will have now? Is this a Total, Difference, or a Change problem?

Change.

Is more a compare word or is more telling us about a change?

Change.

This problem is a Change problem because the problem tells us a starting amount: Will starts with 4 pennies. Then something happens to change the amount. What happens?

Will found more pennies.

Good. Will found more pennies. If Will found more pennies, did the starting amount increase or decrease?

Increase.

Right. This is a Change problem. I'll write C next to the problem to help me remember it's a Change problem.

Write C.

We said the starting amount increased. If it's increasing, do we add or subtract?

Add.

Right. Do we use a plus sign or a minus sign?

Plus sign.

Good. We use a plus sign. I write the plus sign before C to remind me it's a Change problem that increases. I put the plus sign to remind me to add.

Write + next to C.

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Change problem. (Point to C.) **Now we use the Change poster to solve it.**

Display Change poster.

To solve a Change problem, we have six steps. The steps are a lot like the Total and Difference steps.

Step 1 is to write the Change equation. We write ST plus C is the same as E OR ST minus C is the same as E. The sign depends on whether the change is increasing or decreasing. Does this problem have an increase or decrease?

Increase.

That's right. The change increases. That's why we wrote a plus sign next to the C. If we wrote a plus sign, we use the Change equation of ST plus C is the same as E.

We need to write the Change equation now.

Write ST + C = E.

Step 2: "Find ST." We have to decide the starting amount. Look at the problem. Does it tell us the starting amount of pennies?

Yes.

How many pennies did Will start with?

4.

The starting amount, or ST, is 4. I check off the 4 and write 4 underneath ST.

Check off 4 in the story and write 4 underneath ST.

Step 3: "Find C." We have to decide the change amount. Sometimes the problem will tell us the change amount. Other times, the change amount is X. Look at the problem. Does it tell about a change to the number of pennies?

Yes.

How many pennies did Will find?

5.

That's right. Will found 5 pennies. If Will found pennies, this describes a change

in the number of pennies. So, the change amount, or C, is 5. I check off the 5 and write 5 underneath C.

Check off 5 in the story and write 5 underneath C.

Step 4 says: "Find E." We have to decide the end amount. Sometimes the problem tells us the end amount. Other times, the end amount is X. Look at the problem. Does it tell about the end number of pennies?

No.

The question asks, "How many pennies does Will have now?" We have to find the end amount of pennies. How do we mark missing information?

With an X.

Right. We're missing the end amount, so I put X underneath E.

Write X underneath E.

Step 5: "Write the signs." Change problems can have a plus or a minus sign. In this problem, we said the starting amount increased. To help us remember this, we wrote ST plus C is the same as E when we wrote the Change equation. This means we use a plus sign and same as sign to complete the number sentence.

Write the plus sign and same as sign.

4 stands for the starting amount. 5 stands for the change. X stands for the end amount. Does this (point) **look like a number sentence we know how to solve?**

Yes!

Let's read the number sentence together.

Read number sentence aloud with student.

Let's find X! You know how to do this!

Great! In word problems, our answer must have a number and a label. We know the number answer is 9. Now we have to figure out what the label for

9 should be. Think about what the problem is mostly about. What did we underline?

Pennies.

Right! The problem is mostly about pennies, so that's the best label. We write pennies for the label!

(Write.)

The last thing we need to do is check to see if our answer makes sense. Let's see if the answer makes sense. "Will had 4 pennies. Later that day, he found 5 more pennies. How many pennies does Will have now?" Does 9 pennies make sense?

Yes.

Right. 9 pennies makes sense. Did we answer the question, "How many pennies does Will have now?"

Yes. Will has 9 pennies.

Good. We have a number and a label in the answer.

Good job working this Change problem!

Let's do another problem.

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem B:*</u>

> *Jayda had 7 lollipops. Then she gave 3 lollipops to Lexie. How many lollipops does she have now?*
>
> *Problem Type:* *Change, decrease*
>
> *Relevant Information:* *ST = 7; C = 3; E = X*
>
> *Number Sentence:* *7 – 3 = X*

Answer: *X = 4 lollipops*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type.

Are parts put together into a total? Are two amounts compared for a difference? Is there a starting amount that increases or decreases to a new amount?

Wait 10 seconds for students to think.

What type of problem is this?

Change.

You're right! It's a Change problem. How did you know it's a Change problem?

Jayda starts with 7 lollipops then gives some away.

That's right. The story is about Jayda's lollipops. She starts with 7. Then she gives some away. She ends with a new amount. The story is about a starting amount that changes.

What should we write to remind us it's a Change problem?

(Students explain.)

Write a C.

(Write.)

Does it increase or decrease?

Decrease.

How do you know it's a decrease?

(Students explain.)

Good. When Jayda gave the lollipops away, it decreased her amount. Will we add or subtract to find the end amount?

Subtract.

Right. Write the minus sign in front of C to remind me it's a Change problem that decreases.

(Write.)

Let's solve this Change problem.

Follow Activity Guide: Change.

The last thing we have to do is check to see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

Great job working Change problems today.

For the next problems (C-I), we need to determine if the problem is a Difference problem or a Change problem. If the problem is a Difference problem, we will put a D next to the sentence. If the problem is a Change problem, we will put a C next to the sentence.

When we talked about Difference problems, we learned that *more* is a compare word. *More* also can be used to describe a change. You need to pay close attention when you see the word *more* because *more* could be used to compare two amounts, like in a Difference problem, or it could be used to show a change in an amount, like in a Change problem. Let's practice!

C. Will had more pennies than Stan. (D)
D. Chris had 6 more trains than Bill. (D)
E. Bill gave 6 more trains to Chris. (C)
F. Jackson ate 7 more candy bars than Rebecca. (D)
G. Rebecca gave Jackson 7 more candy bars. (C)

H. Richard gave Jean 4 more toy cars. (C)
I. Jean had 4 more toy cars than Richard. (D)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

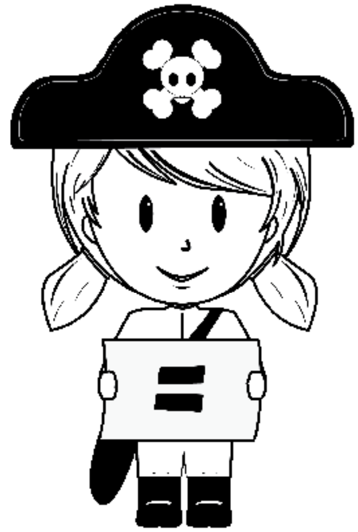
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 21

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Difference and Change with C missing
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change

Student Materials

Equation Quest: Lesson 21
Buccaneer Problems: Lesson 21
Jolly Roger Review: Lesson 21
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Follow Activity Guide: Equation Quest – Subtraction.

Look at B.

Point to B.

Follow Activity Guide: Equation Quest – Subtraction.

Look at C.

Point to C.

Follow Activity Guide: Equation Quest – Addition.

3: Buccaneer Problems

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

Now say the Difference equation.

G – L = D.

Good. Say it again.

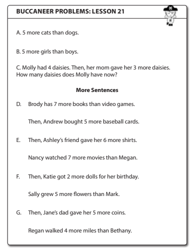
G – L = D.

This week we learned about Change problems. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. You have to decide which Change equation to use.

What are the two Change equations?

ST + C = E and ST – C = E.

Point to A.


BUCCANEER PROBLEMS: LESSON 21

A. 5 more cats than dogs.

B. 5 more girls than boys.

C. Molly had 4 daisies. Then, her mom gave her 3 more daisies. How many daisies does Molly have now?

More Sentences

D. Brody has 7 more books than video games.

Then, Andrew bought 5 more baseball cards.

E. Then, Ashley's friend gave her 6 more shirts.

Nancy watched 7 more movies than Megan.

F. Then, Katie got 2 more dolls for her birthday.

Sally grew 5 more flowers than Mark.

G. Then, Jane's dad gave her 5 more coins.

Regan walked 4 more miles than Bethany.

Before we solve some word problems, let's see if we can determine if the following problems are Difference problems or Change problems. For the problems (A-G), we need to determine if the problem is a Difference problem or a Change problem. If the problem is a Difference problem, we will put a D next to the sentence. If the problem is a Change problem, we will put a C next to the sentence.

When we talked about Difference problems, we learned that *more* is a compare word. *More* also can be used to describe a change. You need to pay close attention when you see the word *more* because *more* could be used to compare two amounts, like in a Difference problem, or it could be used to show a change in an amount, like in a Change problem. Let's practice!

A. 5 more cats than dogs. (D).
B. 5 more girls than boys. (D).
C. Molly had 4 daisies. Then, her mom gave her 3 more daisies. How many daisies does Molly have now? (C).
D. Brody has 7 more books than video games. (D)
Then, Andrew bought 5 more baseball cards. (C).
E. Then, Ashley's friend gave her 6 more shirts (C).
Nancy watched 7 more movies than Megan. (D).
F. Then, Katie got 2 more dolls for her birthday. (C).
Sally grew 5 more flowers than Mark. (D).
G. Then, Jane's dad gave her 5 more coins. (C).
Regan walked 4 more miles than Bethany. (D).

Now that we have practiced identifying a problem as a Difference problem or a

Change problem, let's solve some word problems!

Point to H.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem H:</u>

Molly had 12 daisies. Then, she gave some to her mom for Mother's Day. Now, Molly has 4 left. How many daisies did Molly give to her mom?

Problem Type:	*Change, decrease*
Relevant Information:	*ST = 12; C = X; E = 4*
Number Sentence:	*12 – X = 4*
Answer:	*X = 8 daisies*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type.

Are parts put together into a total? Are two amounts compared for a difference? Is there a starting amount that increases or decreases to a new amount?

Wait 10 seconds for students to think.

Change.

You're right! It's a Change problem. This problem is tricky to name. It's a Change problem, but it doesn't ask us for the end amount.

The problem starts with 12 daisies. Then something happens to change that amount. What happens?

She gave some to her mom.

Right. This problem is about one thing that gets changed. Then the problem tells us she has 4 left. Does "4 left" tell us how many she gave to her mom?

No.

Right. That tells us the end amount, the amount she has left. This question asks how many she gave to her mom. It asks us to find the amount of the change.

We know there were 12 daisies to start. We know there were 4 daisies at the end. Change problems start with an amount and then, at a different time, something happens to change it to make a new end amount.

Let's ask ourselves: Is there a starting amount that increases or decreases to a new amount?

Yes.

The answer is yes, write C next to the problem to remind me it's a Change problem.

(Write.)

In Change problems, the missing amount can be the starting amount, the change amount, or the end amount. So far, we've been solving problems where the end amount was missing. This problem asks us to find the change amount.

Does the change increase or decrease?

Decrease.

Right. This is a decrease because she gives some of the daises to her mom. Write a minus sign before the C next to the problem to remind me it's a Change problem with a decrease.

(Write.)

Let's solve this Change problem! Let's use the six steps for a Change problem. What's Step 1?

Write ST – C = E.

Good. We write the Change equation: ST minus C is the same as E. We use the minus sign because this is a Change problem with a decrease.

Write ST – C = E. Monitor that the students do this as well.

Step 2: "Find ST." What's the starting amount of daisies?

12.

Yes. 12 is the starting amount of daisies. Where should I write 12?

Under ST.

Check off 12 and write 12 underneath ST.

Monitor that the students do this as well.

Step 3: "Find C." What's the change amount of daisies? Do we know how many daisies Molly gave to her mom?

No.

You're right. The change is what's missing. We mark missing information with an X.

(Write.)

Step 4: "Find E." What's the end amount of daisies?

4.

We know 4 is the end amount, because the problem tells us she had 4 daisies left. Where should I write 4?

Under E.

Check off 4 and write 4 underneath ST.

Monitor that the students do this as well.

Let's move to Step 5. What's Step 5?

Write the signs.

Good. What math signs do we use to complete our number sentence?

The minus sign and same as sign.

(Write.)

12 stands for the starting amount, or ST. X stands for change, or C. 4 stands for the end amount or E. Does this look like a number sentence we know how to solve?

Yes!

Let's read the number sentence together.

Read number sentence aloud with students.

Let's find X!

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Great job solving that Change problem. Let's try another one!

Point to I.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem I:</u>

> *The store had 30 t-shirts. The next day a truck brought more t-shirts. Now there are 50 t-shirts. How many t-shirts did the truck bring?*
> *Problem Type: Change, increase*

Relevant Information: *ST = 30; C = X; E = 50*
Number Sentence: *30 + X = 50*
Answer: *X = 20 t-shirts*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type.

If you think it's a Total problem, ask yourself: Are parts put together into a total? If you think it's a Difference problem, ask yourself: Is there a compare word or words? Are two amounts compared for a difference? If you think it's a Change problem, ask yourself: Is there a starting amount that increases or decreases to a new amount?

Wait 10 seconds for students to think.

Students respond. Use script language to assist students in identifying the correct problem type if they have trouble. Then continue.

You're right! It's a Change problem. How did you know it's a Change problem?

The store had 30 t-shirts, then the next day a truck brought more.

That's right. This story is about a starting amount that changes. Write C to remind yourself it's a Change problem.

(Write.)

Does it increase or decrease?

Increase.

Good. When the truck brought more t-shirts, it increased the amount of t-shirts in the store. Should we add or subtract to find the end amount?

Add.

Right. Write the plus sign in front of the C to remind me it's a Change problem that increases.

(Write.)

Let's solve this Change problem.

Follow Activity Guide: Change.

Check, does our answer make sense? Why?

(Students explain.)

Great job working Change problems today. Now it's time for our game.

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

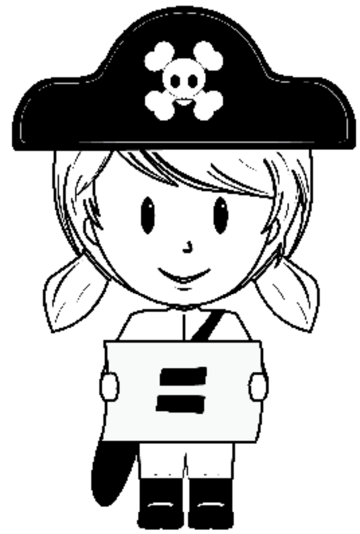
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 22



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change problems with C and E missing
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 22
Buccaneer Problems: Lesson 22
Jolly Roger Review: Lesson 22
Treasure Map

Tutor Materials

Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Follow Activity Guide: Equation Quest – Addition.

Look at B.

Point to B.

Follow Activity Guide: Equation Quest – Addition.

Look at C.

Point to C.

Follow Activity Guide: Equation Quest – Subtraction.

3: Buccaneer Problems

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

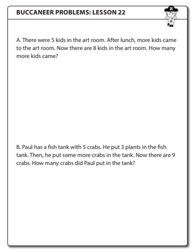
A few days ago we learned about Change problems. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Point to A.


BUCCANEER PROBLEMS: LESSON 22

A. There were 5 kids in the art room. After lunch, more kids came to the art room. Now there are 8 kids in the art room. How many more kids came?

B. Paul has a fish tank with 5 crabs. He put 3 plants in the fish tank. Then, he put some more crabs in the tank. Now there are 9 crabs. How many crabs did Paul put in the tank?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem A:

There were 5 kids in the art room. After lunch, more kids came to the art room. Now there are 8 kids in the art room. How many more kids came?

Problem Type:	*Change, increase*
Relevant Information:	*ST = 5; C = X; E = 8*
Number Sentence:	*5 + X = 8*
Answer:	*X = 3 kids*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type.

Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

Yes. Are two amounts compared for a difference? What helps you figure out if two amounts are compared for a difference?

A compare sentence.

Yes! To figure out if this is a Difference problem, look for a compare sentence. Remember. A compare sentence usually has *more*, *fewer*, *less*, or "er" words. But be careful. Change problems also have the word *more*.

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Is this a Total problem, a Difference problem, or a Change problem?

Change.

How do you know it's a Change problem?

There's a starting amount that increases to a new amount.

You're right! This problem is tricky. It's a Change problem, but it doesn't ask us for the end amount. Also, it has the word *more* here (point)**. What do we usually call the word *more*?**

A compare word.

Right. But in this problem, *more* is not a compare word. *More* tells us that there was a change. The problem starts with 5 kids. Then something happens to change that amount, to make more kids. What happens?

More kids came into the art room.

Right. This problem is about one thing that changes. The problem tells us

there are 8 kids in the art room. Does 8 tell us how many more kids came into the art room?

No.

Right. 8 tells us the end amount, the amount of kids that ended up in the art room. This question asks how many more kids came into the art room to make 8. In this problem, *more* is the change. The problem asks us to find the amount of the change.

We know there were 5 kids to start. We know there were 8 at the end. Change problems start with an amount and then, at a different time, something happens to change it to make a new end amount.

Let's ask ourselves: Is there a starting amount that increases or decreases to a new amount?

Yes.

The answer is yes. Write C next to the problem to remind me it's a Change problem.

(Write.)

In Change problems, the missing amount can be the starting amount, the change amount, or the end amount. This problem asks us to find the Change amount.

Does this change increase or decrease?

Increase.

Right. This is an increase because more kids come into the art room. Write a plus sign before the C next to the problem. This reminds me it's a Change problem with an increase.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Change problem. (Point to C.) **Now we use the Change poster to solve it.**

Follow Activity Guide: Change.

Great job solving a Change problem. Does the answer make sense? Why?

(Students explain.)

Good job! Let's try another problem!

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Point to B.

<u>Solution to Problem B:</u>

Paul has a fish tank with 5 crabs. He put 3 plants in the fish tank. Then, he put some more crabs in the tank. Now there are 9 crabs. How many crabs did Paul put in the tank?

Problem Type:	*Change, increase*
Relevant Information:	*ST = 5; C = X; E = 9*
Irrelevant Information:	~~*3 plants*~~
Number Sentence:	*5 + X = 9*
Answer:	*X = 4 crabs*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

Good. If it's a Total problem, ask yourself, Are parts are put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

Yes. Are two amounts compared for a difference? What helps you figure out if two amounts are compared for a difference?

A compare sentence.

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Is this a Total, Difference, or Change problem?

Change.

How do you know it's a Change problem?

There's a starting amount that increases to a new amount.

You're right! It's a Change problem. This problem is tricky. It's a Change problem, but it doesn't ask us for the end amount.

Listen as I read the problem again and look carefully: "Paul has a fish tank with 5 crabs. He put 3 plants in the fish tank. Then, he put some more crabs in the tank. Now there are 9 crabs. How many crabs did Paul put in the tank?" What happens to change Paul's amount?

Paul put more crabs in the fish tank.

Right. This problem is about one thing that gets changed. The problem tells us that there are 9 crabs in the fish tank. Does 9 tell us how many more crabs Paul put into the tank?

No.

Right. 9 tells us the end amount, the amount of crabs that ended up in the fish tank. This question asks how many more Paul put in the fish tank to make 9 crabs. In this problem, *more* is the change. The problem asks us to find the amount of the change.

We know there were 5 crabs to start. We know there were 9 at the end. Change problems start with an amount and then, at a different time, something happens to change it to make a new end amount.

Let's ask ourselves: Is there a starting amount that increases or decreases to a new amount?

Yes.

The answer is yes. Write C next to the problem to remind me it's a Change problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Change problem. (Point to C.) **Now we use the Change poster to solve it.**

Follow Activity Guide: Change.

Check, does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem C:*</u>

Pablo had 5 library books. After school, he returned 2 books and checked out 4 movies. How many books does Pablo have now?

Problem Type:	*Change, decrease*
Relevant Information:	*ST = 5; C = 2; E = X*
Irrelevant Information:	~~*4 movies*~~
Number Sentence:	*5 – 2 = X*
Answer:	*X = 3 books*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Follow Activity Guide: Change.

Check, does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

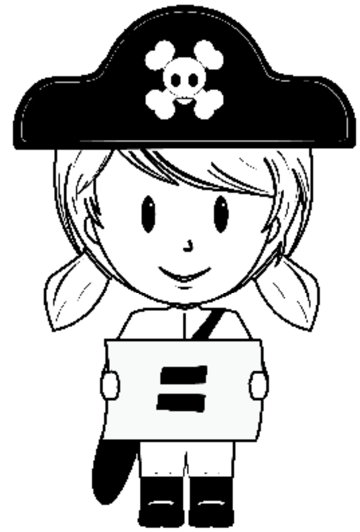
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 23

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change problems with ST missing
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 23
Buccaneer Problems: Lesson 23
Jolly Roger Review: Lesson 23
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

Follow Activity Guide: Equation Quest – Subtraction.

Look at B.

Point to B.

Follow Activity Guide: Equation Quest – Addition.

Look at C.

Point to C.

Follow Activity Guide: Equation Quest – Subtraction.

3: Buccaneer Problems

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

Recently we learned about Change problems. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

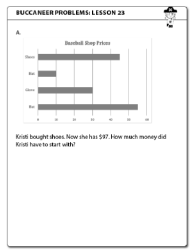
ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Let's solve some word problems!

Point to A.



Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>Solution to Problem A:</u>

Kristi bought shoes. Now she has $97. How much money did Kristi have to start with?

Problem Type:	*Change, decrease*
Relevant Info:	*ST = X; C = 45; E = 97*
Number Sentence:	*X – 45 = 97*
Answer:	*X = $142*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
After "U," check for irrelevant information.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Wait 10 seconds for students to think.

Let's name some problem types. Use your hands. How do you show a Total problem?

Student puts fingers in shape of T.

How do you show a Difference problem?

Student puts fingers in shape of D.

How do you show a Change problem?

Student puts finger in shape of C.

What type of problem is this?

C.

You're right! It's a Change problem. This problem is tricky to name. It's a Change problem, but it doesn't ask us for the end amount. Listen as I read the

problem again: Kristi bought some shoes. Now she has $97. How much money did Kristi have to start with?

Let's ask ourselves: Is there a starting amount that increases or decreases to a new amount? If the answer is yes, write C next to the problem to remind me it's a Change problem.

(Write.)

In Change problems, the missing amount can be the starting amount, the change amount, or the end amount. This problem is missing the starting amount. Does the change increase or decrease?

Decrease.

Right. This is a decrease because she bought shoes. Write a minus sign before the C next to the problem to remind me it's a Change problem with a decrease.

(Write.)

Let's solve this Change problem!

Let's use the six steps on our Change poster. What's Step 1?

Write the Change equation.

Do we write ST plus C is the same as E or ST minus C is the same as E?

ST – C = E.

We write the Change equation: ST minus C is the same as E.

(Write.)

Step 2: "Find ST." What's the starting amount of money?

We don't know.

That's right. The question asks, "How much money did Kristi have to start with?" We have to find the start amount, so ST is missing.

Where do we mark X?

Underneath ST.

Right. Put X underneath ST.

(Write.)

Step 3: "Find C." What's the change in the amount of money?

45.

Yes. We know from the graph that Kristi spent $45 on shoes, so $45 is telling about the change.

Check off 45 in the graph and write 45 underneath C.

(Write.)

Step 4: "Find E." What the end amount of money?

97.

The story says, "Now she has $97." This tells us how much money Kristi has now, so it's the end amount of money.

Check off 97 in the problem and write 97 underneath E.

(Write.)

Before we move to Step 5, let's make sure we have all the information we need. Are there any numbers we did not check off or use in our Change equation?

No.

You're right. We don't have any other numbers in our word problem. We can move to Step 5. What's Step 5?

Write the signs.

Good. What math signs do we use to complete our number sentence?

Minus and same as signs.

Write the minus and same as sign.

X stands for start. 45 stands for change. 97 stands for end. Does this look like a number sentence we know how to solve?

Yes!

Let's read the number sentence together.

(Read number sentence together.)

Great job solving that Change problem.

Before today, we worked on Change problems that asked us to find the end or change amount. Problem A was different. It asked us to find the starting amount.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

Mason went to the pool 5 times this week. In the morning, he swam some laps. Then, he swam 10 more laps. Altogether, he swam 30 laps. How many laps did he swim in the morning?

Problem Type:	*Change, increase*
Relevant Information:	*ST = X; C = 10; E = 30*
Irrelevant Information:	*~~went to the pool 5 times~~*
Number Sentence:	*X + 10 = 30*
Answer:	*X = 20 laps*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem C:

Lena earned some money raking leaves. Then, she spent $3 at the candy store and has $5 left. How much money did Lena have to start with?
Problem Type: Change, decrease

Relevant Information: *ST = X; C = 3; E = 5*
Number Sentence: *X – 3 = 5*
Answer: *X = $8*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

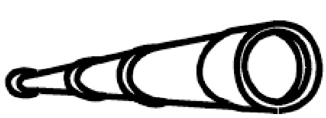
Is there a starting amount that increases or decreases to a new amount?

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)


You earn a treasure coin!



4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

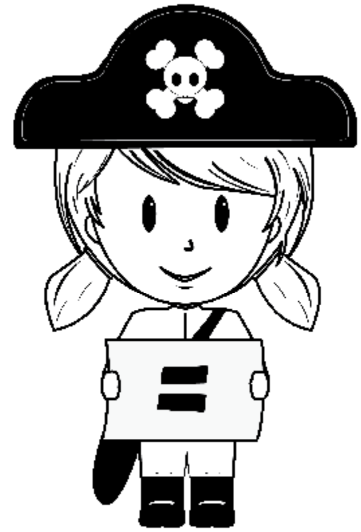
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 24

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Difference and Change
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 24
Buccaneer Problems: Lesson 24
Jolly Roger Review: Lesson 24
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Today, we'll learn how to solve different types of number sentences. Look here.

Point to A.

6 plus 2 is *the same as* blank plus 1. Say that with me.

6 plus 2 is the same as blank plus 1.

In this number sentence, there's a plus sign on both sides. There's a plus sign here (point) **and a plus sign here** (point)**. That's okay. You just need to think about balancing both sides of the equal sign. Let's do this problem with the cubes.**

On this side, you have 6 (place 6 cubes of one color) **and 2** (place 2 cubes of another color.)

On that side, you have X (place X) **plus 1** (place 1 cube)**.**

Now, on this side, we can add together 6 cubes and 2 cubes. What's 6 plus 2?

8.

So, there are 8 cubes on this side (point)**.**

On that side, we want to isolate the X. We have this 1 cube. How can I move this 1 cube? I can subtract 1 (subtract 1 cube)**. But, if I subtract 1 cube from that side** (point)**, then I subtract 1 cube from this side** (subtract 1 cube)**.**

Now, we have 7 cubes is *the same as* X. What is X *the same as*?

7.

Yes. X is *the same as* 7.

Let's use 7 for X in the number sentence. 6 plus 2 is *the same as* 7 plus 1. Does that make sense?

Yes!

6 plus 2 is 8. 7 plus 1 is 8. The sides are the same!

Look at this problem.

Point to B.

5 plus 4 *is the same as* 6 plus blank.

Let's use the cubes. Look at this side. Place 5 cubes and 4 cubes.

(Place cubes.)

Now, look at that side. You have an X and 6 cubes.

(Place X and cubes.)

Time to isolate the X.

You have how many cubes on this side (point)**?**

9.

There are 9 cubes here. Look at that side (point)**. You need to isolate the X. How can you isolate the X?**

Subtract 6 cubes.

If you subtract 6 cubes from that side (point)**, how many cubes do you subtract from this side** (point)**?**

6.

Subtract 6 cubes from both sides.

(Subtract cubes.)

So, X is *the same as* what?

3.

Let's plug that in and see if it works. 5 plus 4 is *the same as* 6 plus 3. Does that make sense?

Yes!

Great job using the cubes to isolate the X. Even if there are plus or minus signs on both sides, we still do the same thing. We balance the sides of the equal sign!

3: Buccaneer Problems

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

Recently we have been talking about Change problems. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

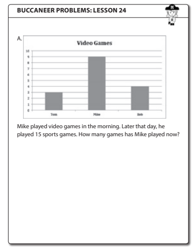
ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Let's solve some word problems!

Point to A.


BUCCANEER PROBLEMS: LESSON 24

A.

Mike played video games in the morning. Later that day, he played 15 sports games. How many games has Mike played now?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>Solution to Problem A:</u>

> *Mike played video games in the morning. Later that day, he played 15 sports games. How many games has Mike played now?*
> *Problem Type:* *Change, increase*
> *Relevant Info:* *ST = 9; C = 15 E = X*
> *Number Sentence:* *9 + 15 = X*
> *Answer:* *X = 24 games*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Change problem. (Point to C.) **Now we use the Change poster to solve it.**

Follow Activity Guide: Change.

Great job solving that Change problem. The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

Good job! Let's try another one!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

> *There were some puppies at the pet store. A family came to the pet store and bought 1 puppy. Now, there are 4 puppies left. How many puppies were at the pet store to start with?*
>
> *Problem Type:* *Change, decrease*
> *Relevant Information:* *ST = X; C = 1; E = 4*
> *Number Sentence:* *X – 1 = 4*
> *Answer:* *X = 5 puppies*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Change problem. (Point to C.) **Now we use the Change poster to solve it.**

Follow Activity Guide: Change.

Great job solving that Change problem. The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

> *Alma had a party. She invited 17 girls to the party. She invited 9 boys. How many more girls did she invite?*
> *Problem Type:* *Difference*

Relevant Information: $G = 17; L = 9; D = X$
Number Sentence: $17 - 9 = X$
Answer: $X = 8$ *more girls*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Look at this poster (point)**. This will help us to name the problem type.**

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

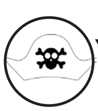
Is there a starting amount that increases or decreases to a new amount?

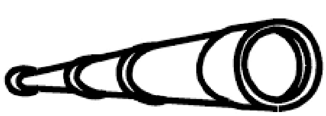
The RUN poster helped us organize our paper so we can solve the problem! We said this is a Difference problem. (Point to D.) **Now we use the Difference poster to solve it.**

Follow Activity Guide: Difference.

Great job solving that Difference problem. The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)


You earn a treasure coin!



4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

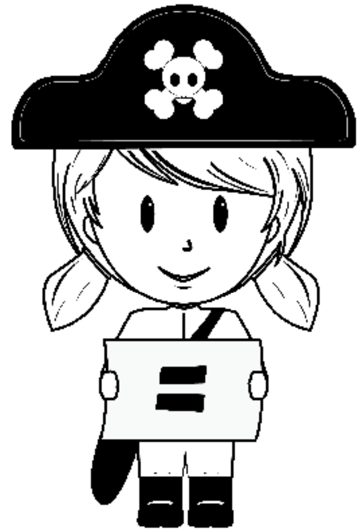
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 25

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change with two changes
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 25
Buccaneer Problems: Lesson 25
Jolly Roger Review: Lesson 25
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Follow Activity Guide: Equation Quest –Multi-Operational.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students explain.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students explain.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

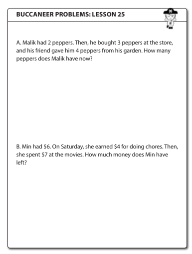
ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Let's solve some word problems!

Point to A.


BUCCANEER PROBLEMS: LESSON 25

A. Malik had 2 peppers. Then, he bought 3 peppers at the store, and his friend gave him 4 peppers from his garden. How many peppers does Malik have now?

B. Min had $6. On Saturday, she earned $4 for doing chores. Then, she spent $7 at the movies. How much money does Min have left?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

Malik had 2 peppers. Then, he bought 3 peppers at the store, and his friend gave him 4 peppers from his garden. How many peppers does Malik have now?

Problem Type:	*Change, two changes*
Relevant Info:	*ST = 2; C = + 3; C = + 4; E = X*
Number Sentence:	*2 + 3 + 4 = X*
Answer:	*X = 9 peppers*

What's the first thing we do every time we see a word problem?

RUN through it!

What's R?

Read the problem.

Let's read it!

Read the problem.

What's U?

Underline the label and cross out irrelevant information.

Let's do that now.

Underline the label. Monitor that the students do this as well.

Is there irrelevant information? Are all the numbers about the label?

There is no irrelevant information. All the numbers are about the label.

What's N?

Name the problem type.

Let's name the problem type. Is this a Total, Difference, or Change problem? Think about the problem.

Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

Yes. Let's think whether two amounts compared for a difference. What helps you figure out if two amounts are compared for a difference?

A compare sentence.

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Listen as I read the question again. Let's think about what the question is asking.

Repeat question.

This question asks, "How many peppers does Malik have now?" Let's ask ourselves: Is there a starting amount that increases or decreases to a new amount?

Yes.

The answer is yes. This is a Change problem. Write C to remind me it's a Change problem.

(Write.)

Now let's figure out if it's an increase or decrease. What happens in the story to change the amount of peppers Malik has?

He bought 3.

Yes. He bought 3. Look carefully though. Another thing happened in this story to change the starting amount. What is it?

His friend gave him 4.

That's right. In this problem, there are two changes! We have to figure out if these changes increased or decreased the amount. What happened in the story first?

He bought 3.

Is that an increase or decrease?

Increase.

Good. I put a plus sign in front of the C. We're not done, though. What happened next?

His friend gave him 4.

Is that an increase or decrease?

Increase.

Good. That's another change. I write another plus C next to the problem. This reminds me there are two changes, and both changes increase Malik's amount of peppers.

Write plus C plus C on my paper. This reminds me it's a Change problem with two changes.

(Write.)

Let's review. This is a Change problem because a starting amount, Malik's peppers, changes to a new end amount. So far, we've solved problems where only one thing happens to change the starting amount. In this problem, two things happen to change the starting amount. Let's look at the Change poster.

Display Change poster.

Here are the six steps for a Change problem. Step 1 says to write the Change equation.

We write ST plus C is the same as E or ST minus C is the same as E. Our Change equation sets up a problem when there's only one change. In this problem, though, there are two changes. Our Change equation should look like this:

Write ST + C + C = E.

We put two changes in the equation so we get the right end amount.

Step 2: "Find ST." What's Malik's starting amount of peppers?

2.

2 is the starting amount of peppers. So, check off 2 and write 2 under ST.

(Write.)

Step 3: "Find C." Remember, this problem talks about two changes. So, let's think about the first change.

Malik bought 3 peppers. So, what's the first change?

3.

Very good! First, Malik bought 3 peppers. Check off 3 in the story and write 3 under the first C.

(Write.)

There's still another C. So we can't move to Step 4 yet. What's the other change?

4.

Yes! Then Malik's friend gave him 4 peppers. The other change is 4. Check off 4 in the story, and I write 4 under the other C.

(Write.)

Now we can move to Step 4. "Find E." What's the end amount of peppers?

We don't know.

That's right. The question asks, "How many peppers does Malik have now?" We have to find the end amount of peppers. Write X underneath E.

(Write.)

Sometimes Change problems ask us to put two changes in the equation. These are still Change problems because there's still a starting amount that changes. It just changes more than once.

When a problem has extra numbers, it's easy to think there's irrelevant information. Don't be fooled. To decide if information is important or irrelevant, you must think carefully about the problem. Figure out if the amount you start with changes just one time or more than one time. If all the numbers are about the label (point), **then there's more than one Change. All of the numbers are important.**

Don't let irrelevant information trick you. You have to figure out which numbers are important information. In this problem, there is no irrelevant information. All of the numbers (point to each number) **are important.**

Let's go to Step 5. What's Step 5?

Write the signs.

Good. What math signs do we use to complete our number sentence?

+ and + and =.

(Write.)

2 stands for the start. 3 stands for the first change. 4 stands for the next change. X stands for the end. We had to be sure that we put the changes in the same order we see them in the problem. He bought peppers first, so that's the first change. His friend gave him some second, so that's the next change.

Does this look like a number sentence we know how to solve?

Yes/No.

Don't let the number sentence trick you. We solved some like this when we solved Total problems with three parts.

X is at the end, so we solve it! We add to find X.

Let's read the number sentence together.

Read number sentence aloud with students.

Let's find X!

Let's look at the first sign. Is this a plus or a minus sign?

Plus sign. We add.

Right. The plus sign tells us to add. I add 2 plus 3. What's 2 plus 3?

5.

Good. I write 5 underneath 2 plus 3 to remind me it's 5. I'm not finished though. What do we do next to find X?

Add 5 + 4.

Good. We know 2 plus 3 is the same as 5. We add 5 plus 4 to find X. What number does X stand for in 2 plus 3 plus 4 is the same as X?

9.

Right! You said 2 plus 3 is the same as 5. Then, 5 plus 4 is the same as 9. X is the same as 9. Let's put 9 in the problem for X.

Write 2 + 3 + 4 = 9, and then X = 9.

Right. 2 plus 3 plus 4 is the same as 9. That makes sense. So X is the same as 9. Great! In word problems, our answer must have a number and a label. We know the number answer is 9. Now we figure out what the label for 9 should be. Think about what the problem is mostly about. Start by looking in the question sentence. Look at what we underlined. What did we underline in the question?

Peppers.

Right! The problem is mostly about peppers, so that's the best label. X stands for the peppers Malik has at the end.

Write peppers next to 9.

Let's see if the answer makes sense. "Malik had 2 peppers. Then, he bought 3 peppers at the store, and his friend gave him 4 peppers from his garden. How many peppers does Malik have now?"

Did we answer the question, "How many peppers does he have now?

Yes.

We did because he has 9 peppers. We have a number and a label in the answer.

Let's review. This Change problem tells us about two changes. Two things happened to change the starting amount. We have to be careful when we see an extra number in a problem. Sometimes the extra number is irrelevant information. But other times, the extra number is important information, like in the problem we just solved. So be careful. You have to think hard to decide whether a number is irrelevant or important.

Great job solving that Change problem. Let's try another one!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

Min had $6. On Saturday, she earned $4 for doing chores. Then, she spent $7 at the movies. How much money does Min have left?

Problem Type:	*Change, two changes*
Relevant Info:	*ST = 6; C = + 4; C = – 7; E = X*
Number Sentence:	*6 + 4 – 7 = X*
Answer:	*X = $3*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Give students 10 seconds to decide.
Read problem to students. If students say C, continue. If students do not say C, assist them using script language to identify the correct problem type.
Then continue.

You said Change, you're right!

Follow Activity Guide: Change.

The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

Let's do one more problem.

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

Gina spent $34 at the grocery store. She spent $19 on fruit. Gina spent the rest on vegetables. How much did Gina spend on vegetables?

Problem Type:	*Total*
Relevant Info:	*P1 = 19; P2 = X; T = 34*
Number Sentence:	*19 + X = 34*
Answer:	*X = $15*

Follow Activity Guide: RUN.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Follow Activity Guide: Total.

The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

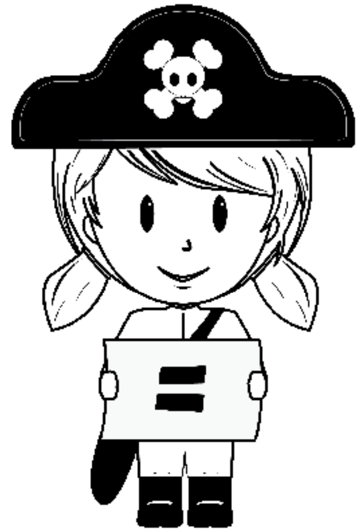
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 26

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change, two changes
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 26
Buccaneer Problems: Lesson 26
Jolly Roger Review: Lesson 26
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Follow Activity Guide: Equation Quest – Multi-Operational.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students explain.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students explain.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

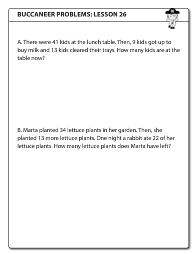
ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Let's solve some word problems!

Point to A.


BUCCANEER PROBLEMS: LESSON 26

A. There were 41 kids at the lunch table. Then, 9 kids got up to buy milk and 13 kids cleared their trays. How many kids are at the table now?

B. Marta planted 34 lettuce plants in her garden. Then, she planted 13 more lettuce plants. One night a rabbit ate 22 of her lettuce plants. How many lettuce plants does Marta have left?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

> *There were 41 kids at the lunch table. Then, 9 kids got up to buy milk and 13 kids cleared their trays. How many kids are at the table now?*
>
> *Problem Type:* *Change, two changes*
> *Relevant Info:* *ST = 41; C = – 9; C = – 13; E = X*
> *Number Sentence:* *41 – 9 – 13 = X*
> *Answer:* *X = 19 kids*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Let's name the problem type. Is this a Total, Difference, or Change problem? Think about the problem.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

Yes. Let's think whether two amounts compared for a difference. What helps you figure out if two amounts are compared for a difference?

A compare sentence.

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Give students 10 seconds to decide.
Read problem to students. If students say C, continue. If students do not say C, assist them using script language to identify the correct problem type.
Then continue.

You said Change, you're right!

Follow Activity Guide: Change.

The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

Great job solving that Change problem. Let's try another one!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

Marta planted 34 lettuce plants in her garden. Then, she planted 13 more lettuce plants. One night a rabbit ate 22 of her lettuce plants. How many lettuce plants does Marta have left?

Problem Type:	*Change, two changes*
Relevant Info:	*ST = 34; C = + 13; C = – 22; E = X*
Number Sentence:	*34 + 13 – 22 = X*
Answer:	*X = 25 lettuce plants*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Follow Activity Guide: Change.

The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

Let's do one more problem.

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>*Solution to Problem C:*</u>

Mariana had $20 in her piggy bank. Her grandma gave her $20 for her birthday. Then, she bought blocks. How much money does Mariana have now?

Problem Type:	*Change, two changes*
Relevant Info:	*ST = 20; C = + 20; C = – 5; E = X*
Number Sentence:	*20 + 20 – 5 = X*
Answer:	*X = $35*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Follow Activity Guide: Change.

The last thing we need to do is check and see if our answer makes sense. Does the answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

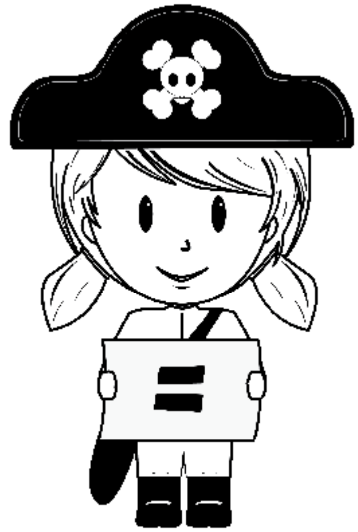
Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 27



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 27
Buccaneer Problems: Lesson 27
Jolly Roger Review: Lesson 27
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Follow Activity Guide: Equation Quest – Multi-Operational.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

Change problems tell us a starting amount. Then, something happens to

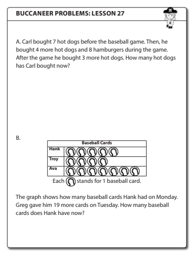
increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Point to A.


BUCCANEER PROBLEMS: LESSON 27

A. Carl bought 7 hot dogs before the baseball game. Then, he bought 4 more hot dogs and 8 hamburgers during the game. After the game he bought 3 more hot dogs. How many hot dogs has Carl bought now?

B.

The graph shows how many baseball cards Hank had on Monday. Greg gave him 19 more cards on Tuesday. How many baseball cards does Hank have now?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

> *Carl bought 7 hot dogs before the baseball game. Then, he bought 4 more hot dogs and 8 hamburgers during the game. After the game, he bought 3 more hot dogs. How many hot dogs has Carl bought?*
>
> *Problem Type:* *Change, two changes*
> *Relevant Info:* *ST = 7; C = + 4; C = + 3; E = X*
> *Irrelevant Info:* ~~*8 hamburgers*~~
> *Number Sentence:* *7 + 4 + 3 = X*
> *Answer:* *X = 14 hot dogs*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

What's the first thing we do every time we see a word problem?

RUN through it!

<u>Solution to Problem B:</u>

The graph shows how many baseball cards Hank had on Monday. Greg gave him 9 more cards on Tuesday. How many baseball cards does Hank have now?

Problem Type: *Change, increase*

Relevant Info: *ST = 5; C = 9; E = X*
Number Sentence: *5 + 9 = X*
Answer: *X = 14 baseball cards*

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem C:

Amari had some money. For his birthday, he got $15 and 3 games. Now, he has $32. How much money did Amari have to start with?
Problem Type: *Change, increase*
Relevant Info: *ST = X; C = 15; E = 32*
Irrelevant Info: *~~3 games~~*

Number Sentence: $X + 15 = 32$
Answer: $X = \$17$

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

Put up a T for Total, D for Difference, or C for Change.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

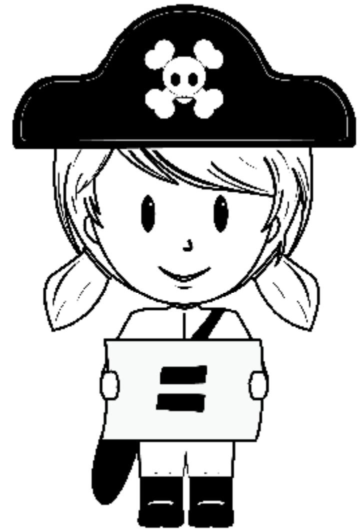
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 28

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups

Student Materials

Equation Quest: Lesson 28
Buccaneer Problems: Lesson 28
Jolly Roger Review: Lesson 28
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Display Math Fact Flash Cards.

Today we will start our lesson like we always do. We will do our Math Fact Flash Cards activity!

Today will be a little different. Before, our Math Fact Flash Cards had addition and subtraction problems. Now, our Math Fact Flash Cards have multiplication and division facts.

Have you started learning about multiplication and division in your math class?

(Students respond).

Just like before, we will complete the flash card activity as a round robin. In the round robin, I'll show the first person in the group one card. The first person will look at the problem, and tell me the answer as quickly as he/she can. Then, I will move to the second person and show him/her the second card. This person will look at the problem, and tell me the answer as quickly as he/she can. We will continue with the third and fourth person. We will repeat the pattern and your group will answer as many flash cards as you can in 1 minute.

Remember, these flash cards may be a little harder because they are multiplication and division facts. All I want for you to do is try your best.

What do I want you to do?

Try your best.

If you get the answer correct, I'll put it in a pile on the table.

Remember, as a group, you'll have 1 minute to answer as many flash cards as you can. I'll hold up a flash card for the first person. You'll give me the answer. Then I will hold up a flash card for the next person. And so on.

Let's practice. (Hold up multiplication flash card.) **What's the answer?**

(Each group member responds to complete one round of the round robin.)

Good! At the end of 1 minute, we'll count the number of cards in the pile. Are you ready? Let's try.

Show Math Fact Flash Cards in round robin for 1 minute.

Good! Let's count the cards in the pile.

Count cards with students.

Your group answered __ Math Fact Flash Cards correctly!

Let's try to beat that score. We'll use the same flash cards. I'll show you one card at a time. The first person will look at the problem, and tell me the answer

as quickly as he/she can. Then we will move to the second person. Remember, try to beat ___. You have 1 minute. Go!

Show Math Fact Flash Cards in round robin for 1 minute.

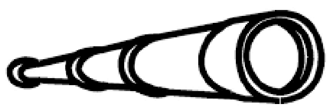
Let's count the cards in the pile.

Count cards with group.

Your group answered __ multiplication and division Math Fact Flash Cards correctly. You beat/did not beat your score.

Now, we'll graph your group's higher score for today on this graph.

We are going to continue working with multiplication and division facts, so we will have a lot of practice! Great work!



2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Today we will complete our Equation Quest activity like we always do. But today the problems look a little different.

What is different about today's problems (point)**?**

The problems are multiplication problems.

That's right! These problems are multiplication problems. We call multiplication problems Equal Groups problems and we will learn all about Equal Groups problems today. We can still solve this problem using the same steps we use to solve addition and subtraction equations.

We recently have talked about isolating the X. Remind me, what does it mean to isolate the X?

To get the X by itself.

Exactly! To isolate the X means to get the X by itself.

Look at A.

Point to A.

Let's read the problem. 3 times 5 is the same as X. Let's say that together.

3 times 5 is the same as X.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

The X already is isolated.

Exactly. The X already is isolated, so we can multiply the two numbers to make the two sides the same. What should we multiply?

3 and 5.

Yes! What is 3 times 5? If you are still learning your multiplication facts, you can count by 5 three times. Let's do that together (count)**.**

What is our answer?

15.

Exactly! 3 times 5 is 15. What is X the same as?

15.

(Write.)

Let's read the number sentence together.

3 times 5 is the same as 15.

Look at B.

Point to B.

Let's read the problem. 6 times 2 is the same as X. Let's say that together.

6 times 2 is the same as X.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

The X already is isolated.

Exactly. The X already is isolated, so we can multiply the two numbers to make the two sides the same. What should we multiply?

6 and 2.

Yes! What is 6 times 2? If you are still learning your multiplication facts, you can count by 2 six times. Let's do that together (count)**.**

What is our answer?

12.

Exactly! 6 times 2 is 12. What is X the same as?

12.

(Write.)

Let's read the number sentence together.

6 times 2 is the same as 12.

Nice job isolating the X today with these two multiplication or Equal Groups problems! Now we will talk more about Equal Groups problems.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Today, we'll learn about a new type of problem. We call these Equal Groups problems. Say that with me.

Equal Groups.

In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

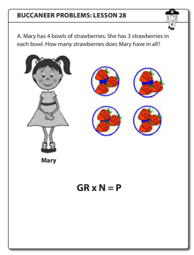
What does it mean to make an equal group?

(Students respond.)

Exactly. When we have equal groups, we have the same number in each group.

Let me show you what I mean. Look at this problem.

Point to A.



"Mary has 4 bowls of strawberries. She has 3 strawberries in each bowl. How many strawberries does Mary have in all?"

This is an Equal Groups story because the story tells us that Mary has 4 groups of strawberrries, and she has an equal number of strawberries in each group.

How many groups of strawberries does Mary have?

4.

Exactly. Mary has 4 groups of strawberries. Mary has an equal number of strawberries in each of the 4 groups.

Remind me what equal number means?

The same.

Exactly. Mary has the same number or an equal amount of strawberries in each of her 4 groups.

How many strawberries does Mary have in each group?

3.

Good! This is an Equal Groups story because Mary has 3 strawberries in each of her 4 groups.

Circle 4 and 3 in the story.

Here's the number sentence that goes with this story: 4 times 3 is the same as X.

Write $4 \times 3 = X$.

This number sentence stands for what's happening in this Equal Groups story. Mary has 4 groups, which are the 4 bowls of strawberries. How many groups does she have?

4.

Right. She has 4 groups, or bowls of strawberries.

She has an equal number of strawberries in each group. How many strawberries does she have in each group?

3.

Right. Mary has 3 strawberries in each of her 4 groups or bowls. That's like the number sentence: 4 times 3 is the same as X. Let me show you how this works.

This is a picture of Mary and her strawberries (point)**. Mary's name is written here** (point)**. Mary's strawberries are shown here** (point)**. Look at the bowls of strawberries outlined by the circles. Each bowl stands for one group. How many groups of strawberries or circles do you count?**

Count the 4 groups of strawberries with the students, using the picture as a guide.

4.

That's right. We know Mary has 4 groups of strawberries because we see the 4

bowls, which stand for 4 groups.

In Equal Groups problems, the story tells us the number of groups. The story also tells us the number *in* each group. In an Equal Groups story, there is an equal number, or the same number in each group. In this problem, Mary has the same number of strawberries in each of her groups, or bowls. How many strawberries does Mary have in each group?

Count the 3 strawberries in each group with the students, using the picture as a guide. Review that there are the same number of strawberries in each of the 4 groups.

3.

Right. There are 3 strawberries in each of Mary's 4 groups, or bowls.

Let's review. Mary has 4 groups of strawberries. She has 3 strawberries in each group. To find out how many strawberries Mary has in all, we can count the number of strawberries in the 4 groups.

Count the number of strawberries until you reach 12 strawberries, using the picture as a guide.

How many strawberries does Mary have in all?

12.

Exactly! Mary has 12 strawberries in all!

For Equal Groups stories, you always can draw a picture to show the number of groups and the equal number in each group.

An easier way to solve Equal Groups problems is to MULTIPLY.

Mary's 4 groups or bowls of strawberries times the 3 strawberries in each group or bowl gave her 12 strawberries in all. Mary has 12 strawberries. This is like the number sentence 4 times 3 is the same as 12.

Write $4 \times 3 = 12$ and $X = 12$ with students.

The Equal Groups equation for this problem is GR times N is the same as P.

Write $GR \times N = P$.

GR (point) **stands for the number of groups. N** (point) **stands for the number *in* each group. P** (point) **stands for the product. When we multiply, we call the answer the product.**

What do we call the answer when we multiply?

The product.

What does GR (point) **stand for?**

The number of groups.

What does N (point) **stand for?**

The number *in* each group.

What does P (point) **stand for?**

The product.

You earn a treasure coin!

Let's practice solving some Equal Groups problems!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem B:

Sarah bought 5 boxes of cookies. Each box contained 6 cookies. How many cookies did Sarah buy?

Problem Type:	*Equal Groups*
Relevant Information:	$GR = 5; N = 6; P = X$
Number Sentence:	$5 \times 6 = X$
Answer:	$X = 30$ *cookies*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Remember, you have to think hard to name the problem type. Before today, we only knew about Total, Difference, and Change problems. If you think it's a Total problem, ask yourself: Are parts put together into a total? If you think it's a Difference problem, ask yourself: Are two amounts compared for a difference? If you think it's a Change problem, ask yourself: Does a starting amount increase or decrease to a new amount?

In Equal Groups problems, there are groups with an equal number in each group. If you think it's an Equal Groups problem, ask yourself: Are there groups with an equal number in each group?

Let's decide. Is this problem about parts and a total? Or is it about two amounts compared for a difference? Or is it about a starting amount that increases or decreases to a new amount? Or are there groups with an equal number in each group?

Listen as I read the problem again.

"Sarah bought 5 boxes of cookies. Each box contained 6 cookies. How many cookies did Sarah buy?"

This problem talks about cookies: There are 5 boxes of cookies. Each box has 6 cookies. The question asks how many cookies Sarah bought in all. Is this a Total, Difference, Change, or Equal Groups problem?

Equal Groups.

Review Equal Groups dialogue again as needed. If students are having trouble understanding Equal Groups, use the whiteboards with painter's tape throughout the problem to illustrate the number of groups and the equal number in each group.

This problem is an Equal Groups problem because there are groups with an equal number in each group. How many groups do we have?

5.

Exactly. We have 5 groups or boxes of cookies.

How many do we have in each group?

6.

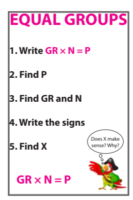
Right. We have 6 cookies in each of our 5 boxes or groups.

This is an Equal Groups problem. I'll write EG next to the problem to help me remember it's an Equal Groups problem.

Write EG.

When we RUN through a problem, it helps us organize our paper so we can solve the problem! We said this is an Equal Groups problem. (Point to the EG.) **We use the Equal Groups poster to solve it.**

Display Equal Groups poster.



To solve an Equal Groups problem, we have five steps. The steps are a lot like the Total, Difference, and Change steps.

Step 1 is to write the Equal Groups equation. We write GR times N is the same P. Let's write the Equal Groups equation now.

Write $GR \times N = P$.

Step 2: "Find P." What does P stand for?

The product.

That's right. We know P stands for the product because product starts with a P.

We have to determine if the problem gives us the answer or product or if the problem asks us to find the answer or product.

In an Equal Groups problem, there are groups with an equal number in each group. The question helps us figure out whether we're finding the product, the number of groups, or the number in each group.

Look at the word problem again. The first sentence (point) **says, "Sarah bought 5 boxes of cookies." The boxes are the number of groups.** (Demonstrate the Equal Groups gesture. Hold one hand out with your palm flat to show the number of groups.)

The next sentence (point) **says, "Each box contained 6 cookies." The cookies in each box are the equal number in each group.** (Demonstrate the Equal Groups gesture. With your one hand out with your palm flat, use your other hand to pretend to place an object in the palm of your hand. Show that for one group or box, there are 6 cookies. Repeat the gesture for the number of groups you want to show. For this problem, repeat the gesture 5 times to show 5 groups with 6 in each group.)

The question asks, "How many cookies did Sarah buy?" (Demonstrate the Equal Groups gesture again.)

We know the number of groups and the number in each group, so the question is asking us to find the product. The missing part is the product, or P (point)**.**

In number sentences, how do we mark missing information?

With an X.

Right. P is the missing information, so we put X in the number sentence under P. This helps to keep the work organized.

Write X under P.

Step 3: "Find GR and N." First, let's find GR. What does GR stand for again?

The number of groups.

How many groups do we have?

5.

Exactly. We have 5 groups, or 5 boxes of cookies.

Check off 5 in the story and write 5 underneath GR. Continue to use whiteboards with painter's tape to illustrate the groups as needed.

Next, let's find N. What does N stand for again?

The number *in* each group.

How many do we have in each group?

6.

Exactly. We have 6 cookies in each group, or in each box of cookies.

Check off 6 in the story and write 6 underneath N. Continue to use whiteboards with painter's tape to illustrate the equal number in each group as needed.

Step 4 says: "Write the signs." Equal Groups problems use a multiplication or times sign and the same as sign.

Write the multiplication sign and same as sign.

5 stands for the number of groups. 6 stands for the number *in* each group. X stands for the product. Does this (point) **look like a number sentence we know how to solve?**

Yes!

Let's read the number sentence together.

Read number sentence aloud with students.

Step 5 says: "Find X." Let's find X! You know how to do this! Let's isolate the X.

Remind students to circle the X and to draw a line down from the equal sign as a reminder to balance both of the sides.

Is X isolated or do we need to isolate the X?

The X already is isolated.

Exactly. The X already is isolated, so we can multiply the two numbers to make the sides the same. What should we multiply?

5 times 6.

Exactly. Let's do it!

Help students with multiplication by encouraging them to use their whiteboards and to count by fives 6 times. Monitor students as needed.

What is X?

30.

Great! In word problems, our answer must have a number and a label. We know the number answer is 30. Now we have to figure out what the label for 30 should be. Think about what the problem is mostly about. What did we underline?

Cookies.

Right! The problem is mostly about cookies, so that's the best label. We write cookies for the label!

Write cookies next to 30.

Let's see if the answer makes sense. "Sarah bought 5 boxes of cookies. Each box contained 6 cookies. How many cookies did Sarah buy?" Does 30 cookies make sense?

Continue to use whiteboards with painter's tape to illustrate the answer as needed.

Yes.

Right. 30 makes sense. Did we answer the question, "How many cookies did Sarah buy?"

Yes. There are 30 cookies.

Good. We have a number and a label in the answer.

Good job working this Equal Groups problem! Let's try one more!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

Mr. Brown's third-grade classroom has 4 rows of chairs. There are 6 chairs in each row. How many chairs are in Mr. Brown's classroom?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 4; N = 6; P = X*
Number Sentence:	$4 \times 6 = X$
Answer:	*X = 24 chairs*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

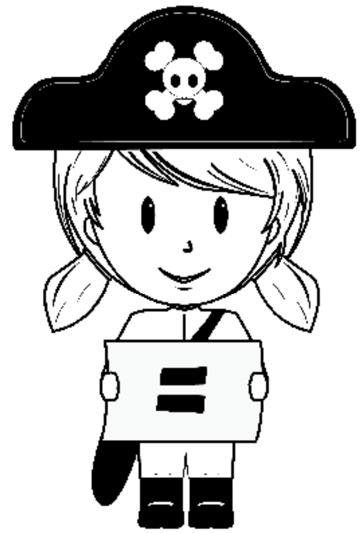
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 29



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 29
Buccaneer Problems: Lesson 29
Jolly Roger Review: Lesson 29
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let’s get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Today we will complete our Equation Quest activity like we always do. But today the problems look a little different.

What is different about today's problems (point)**?**

The problems are Equal Groups problems.

That's right! These problems are Equal Groups problems, but we can still solve them using the same steps we use to solve addition and subtraction equations.

We recently have talked about isolating the X. Remind me, what does it mean to isolate the X?

To get the X by itself.

Exactly! To isolate the X means to get the X by itself.

Look at A.

Point to A.

Let's read the problem. 4 times 4 is the same as X. Let's say that together.

4 times 4 is the same as X.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

The X already is isolated.

Exactly. The X already is isolated, so we can multiply the two numbers to make the two sides the same. What should we multiply?

4 and 4.

Yes! What is 4 times 4? If you are still learning your multiplication facts, you can draw 4 groups of 4 and count. Let's do that together (draw and count)**.**

What is our answer?

16.

Exactly! 4 times 4 is 16. What is X the same as?

16.

(Write.)

Let's read the number sentence together.

4 times 4 is the same as 16.

Look at B.

Point to B.

Let's read the problem. 7 times 1 is the same as X. Let's say that together.

7 times 1 is the same as X.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

The X already is isolated.

Exactly. The X already is isolated, so we can multiply the two numbers to make the two sides the same. What should we multiply?

7 and 1.

Yes! What is 7 times 1? If you are still learning your multiplication facts, you can think about the trick with the 1's. Remember, any number multiplied by 1 is the same as that number. So, 7 times 1 is what?

7.

Exactly! 7 times 1 is 7. What is X the same as?

7.

(Write.)

Let's read the number sentence together.

7 times 1 is the same as 7.

Nice job isolating the X today with these two Equal Groups problems!

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

Yesterday we started talking about Equal Groups problems. Today, we'll work on Equal Groups problems again. What kind of problem?

Equal Groups.

In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

What does it mean to make an equal group?

(Students respond.)

Exactly. When we have equal groups, we have the same number in each group. That's why these problems are called Equal Groups problems.

What is our Equal Groups equation?

GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

What does GR (point) **stand for?**

The number of groups.

What does N (point) **stand for?**

The number *in* each group.

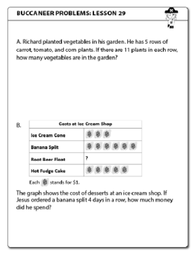
What does P (point) **stand for?**

The product.

Good! The product is just a fancy way to say the answer in a multiplication or Equal Groups problem.

Look at this problem.

Point to A.



BUCCANEER PROBLEMS: LESSON 29

A. Richard planted vegetables in his garden. He has 5 rows of carrot, tomato, and corn plants. If there are 11 plants in each row, how many vegetables are in the garden?

B.

Costs at Ice Cream Shop	
Ice Cream Cone	$ $ $
Banana Split	$ $ $ $ $ $
Root Beer Float	?
Hot Fudge Cake	$ $ $ $ $

Each $ stands for $1.

The graph shows the cost of desserts at an ice cream shop. If Jesus ordered a banana split 4 days in a row, how much money did he spend?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

Richard planted vegetables in his garden. He has 5 rows of carrot, tomato, and corn plants. If there are 11 plants in each row, how many vegetables are in the garden?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 5; N = 11; P = X*
Number Sentence:	$5 \times 11 = X$
Answer:	*X = 55 vegetables*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

Remember, you have to think hard to name the problem type. Before yesterday, we only knew about Total, Difference, and Change problems. If you think it's a Total problem, ask yourself: Are parts put together into a total? If you think it's a Difference problem, ask yourself: Are two amounts compared for a difference? If you think it's a Change problem, ask yourself: Does a starting amount increase or decrease to a new amount?

In Equal Groups problems, there are groups with an equal number in each group. If you think it's an Equal Groups problem, ask yourself: Are there groups with an equal number in each group?

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Let's decide. Is this problem about parts and a total? Or is it about two amounts compared for a difference? Or is it about a starting amount that increases or decreases to a new amount? Or are there groups with an equal number in each group?

Listen as I read the problem again.

"Richard planted vegetables in his garden. He has 5 rows of carrot, tomato, and corn plants. If there are 11 plants in each row, how many vegetables are in the garden?"

This problem talks about vegetables: There are 5 rows of vegetable plants, or

carrot, tomato, and corn plants. Each row has 11 plants. The question asks how many vegetables are in the garden. Is this a Total, Difference, Change, or Equal Groups problem?

Equal Groups.

Review Equal Groups dialogue again as needed. If students are having trouble understanding Equal Groups, use the whiteboards with painter's tape throughout the problem to illustrate the number of groups and the equal number in each group.

This problem is an Equal Groups problem because there are groups with an equal number in each group. How many groups do we have?

5.

Exactly. We have 5 groups or rows of vegetable plants.

How many do we have in each group?

11.

Right. We have 11 plants in each row.

This is an Equal Groups problem. I'll write EG next to the problem to help me remember it's an Equal Groups problem.

Write EG.

When we RUN through a problem, it helps us organize our paper so we can solve the problem! We said this is an Equal Groups problem. (Point to the EG.) **We use the Equal Groups poster to solve it.**

Display Equal Groups poster.

Step 1 is to write the Equal Groups equation. We write GR times N is the same P. Let's write the Equal Groups equation now.

Write $GR \times N = P$.

Step 2: "Find P." What does P stand for?

The product.

That's right. We know P stands for the product because product starts with a P. We have to determine if the problem gives us the answer or product or if the problem asks us to find the answer or product.

In an Equal Groups problem, there are groups with an equal number in each group. The question helps us figure out whether we're finding the product, the number of groups, or the number in each group.

Look at the word problem again. The first two sentences (point) **say, "Richard planted vegetables in his garden. He has 5 rows of carrot, tomato, and corn plants." The rows of vegetables are the number of groups.** (Demonstrate the Equal Groups gesture. Hold one hand out with your palm flat to show the number of groups.)

The next sentence (point) **says, "If there are 11 plants in each row, how many vegetables are there?" The plants in each row are the equal number in each group.** (Demonstrate the Equal Groups gesture. With your one hand out with your palm flat, use your other hand to pretend to place an object in the palm of your hand. Show that for one group or row, there are 11 plants. Repeat the gesture for the number of groups you want to show. For this problem, repeat the gesture 5 times to show 5 groups with 11 in each group.)

The question asks, "How many vegetables are there?" (Demonstrate the Equal Groups gesture again.)

We know the number of groups and the number in each group, so the question is asking us to find the product. The missing part is the product, or P (point)**.**

In number sentences, how do we mark missing information?

With an X.

Right. P is the missing information, so we put an X in the number sentence under P. This helps keep the work organized.

Write X under P.

Step 3: "Find GR and N." First, let's find GR. What does GR stand for again?

The number of groups.

How many groups do we have?

5.

Exactly. We have 5 groups, or 5 rows of plants.

Check off 5 in the story and write 5 underneath GR. Continue to use whiteboards with painter's tape to illustrate the groups as needed.

Next, let's find N. What does N stand for again?

The number in each group.

How many do we have in each group?

11.

Exactly. We have 11 plants in each group, or in each row.

Check off 11 in the story and write 11 underneath N. Continue to use whiteboards with painter's tape to illustrate the equal number in each group as needed.

Step 4 says: "Write the signs." Equal Groups problems use a multiplication or times sign and the same as sign.

Write the multiplication sign and same as sign.

5 stands for the number of groups. 11 stands for the number in each group. X stands for the product. Does this (point) **look like a number sentence we know how to solve?**

Yes!

Let's read the number sentence together.

Read number sentence aloud with students.

Step 5 says: "Find X." Let's find X! You know how to do this! Let's isolate the X.

Remind students to circle the X and to draw a line down from the equal sign as a reminder to balance both of the sides.

Is the X isolated or do we need to isolate the X?

The X already is isolated.

Exactly. The X already is isolated, so we can multiply the two numbers to make the sides the same. What should we multiply?

11 times 5.

Exactly. Let's do it!

Help students with multiplication by encouraging them to use their whiteboards and to use the trick for multiplying by 11's. Monitor students as needed.

What is X?

55.

Great! In word problems, our answer must have a number and a label. We know the number answer is 55. Now we have to figure out what the label for 55 should be. Think about what the problem is mostly about. What did we underline?

Vegetables.

Right! The problem is mostly about vegetables. Vegetables includes the carrot, tomato, and corn plants, so that's the best label. We write vegetables for the label!

Write vegetables next to 55.

Let's see if the answer makes sense. "Richard planted vegetables in his garden. He has 5 rows of carrot, tomato, and corn plants. If there are 11 plants in each row, how many vegetables are in the garden?" Does 55 vegetables make sense?

Continue to use whiteboards with painter's tape to illustrate the answer as needed.

Yes.

Right. 55 makes sense. Did we answer the question, "How many vegetables are in the garden?"

Yes. There are 55 vegetables.

Good. We have a number and a label in the answer.

Good job working this Equal Groups problem! Let's try another problem!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>*Solution to Problem B:*</u>

> *The graph shows the cost of desserts at an ice cream shop. If Jesus ordered a banana split 4 days in a row, how much money did he spend?*
>
> *Problem Type:* *Equal Groups*
> *Relevant Information:* *GR = 4; N = 6; P = X*
> *Number Sentence:* $4 \times 6 = X$
> *Answer:* $X = \$24$

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem C:

> *Juan spent $3 at the candy store. He bought 38 pieces of candy. Then he gave some to his sister. Now, he has 22 pieces of candy. How many pieces of candy did he give away?*

Problem Type:	*Change, decrease*
Relevant Information:	*ST = 38; C = X; E = 22*
Irrelevant Information:	~~*Juan spent \$3 at the candy store.*~~
Number Sentence:	*38 – X = 22*
Answer:	*X = 16 pieces of candy*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

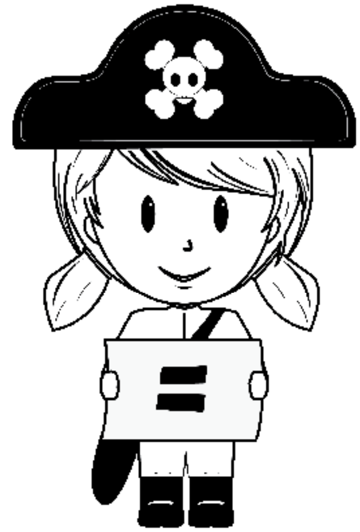
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 30



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 30
Buccaneer Problems: Lesson 30
Jolly Roger Review: Lesson 30
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

4 times 3 is the same as blank. Let's say that together.

4 times 3 is the same as blank.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

Let's isolate the X.

(Circle the X and draw a line down from the equal sign.)

Is X isolated or do we need to isolate the X?

X already is isolated.

Exactly! X already is isolated, so let's write an X in the box below to the right of the equal sign (point)**.**

(Write.)

Today, let's use cubes to make the sides the same. We know that X already is isolated, so what can we do?

Multiply the two numbers.

Exactly! When we multiply, we make groups with an equal number in each group. What do we do when we multiply?

Make groups with an equal number in each group.

Exactly! How many groups do we have?

4.

Nice! To solve this problem with cubes, we can place 4 cubes on the left side (point) **of the equal sign to show that we have 4 groups.**

(Place cubes.)

Now, we need to figure out how many cubes to put in each of our 4 groups. How many cubes should we put in each of our 4 groups?

3.

Because we are multiplying, we need put 3 cubes in each of our 4 groups. We don't just place 3 cubes. We place 3 cubes in *each* of our 4 groups.

What do we need to do?

Place 3 cubes in each of the 4 groups.

Great! Let's continue adding cubes until we have 3 cubes in each of the 4 groups on the same side (point) **of the equal sign.**

(Place cubes.)

Good! Now you can count the cubes to find X! Go ahead.

(Count cubes.)

How many cubes did you count?

12.

Exactly! 4 groups of 3 is the same as 12. Let's write 12 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

4 times 3 is the same as 12.

Let's try another one. Clear all the cubes.

(Clear.)

Look at B.

Point to B.

5 times 2 is the same as blank. Let's say that together.

5 times 2 is the same as blank.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

Let's isolate the X.

(Circle the X and draw a line down from the equal sign.)

Is X isolated or do we need to isolate the X?

X already is isolated.

Exactly! X already is isolated, so let's write an X in the box below to the right of the equal sign (point)**.**

(Write.)

Let's use cubes again to make the sides the same. We know that X already is isolated, so what can we do?

Multiply the two numbers.

Exactly! When we multiply, we make groups with an equal number in each group. What do we do when we multiply?

Make groups with an equal number in each group.

Exactly! How many groups do we have?

5.

Nice! To solve this problem with cubes, we can place 5 cubes on the left side (point) **of the equal sign to show that we have 5 groups.**

(Place cubes.)

Now, we need to figure out how many cubes to put in each of our 5 groups. How many cubes should we put in each of our 5 groups?

2.

Because we are multiplying, we need put 2 cubes in each of our 5 groups. We don't just place 2 cubes. We place 2 cubes in *each* of our 5 groups.

What do we need to do?

Place 2 cubes in each of the 5 groups.

Great! Let's continue adding cubes until we have 2 cubes in each of the 5 groups on the same side (point) **of the equal sign.**

(Place cubes.)

Good! Now you can count the cubes. Go ahead.

(Count cubes.)

How many cubes did you count?

10.

Exactly! 5 groups of 2 is the same as 10. Let's write 10 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

5 times 2 is the same as 10.

Nice work today!

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

What is our Equal Groups equation?

GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

What does GR (point) **stand for?**

The number of groups.

What does N (point) **stand for?**

The number *in* each group.

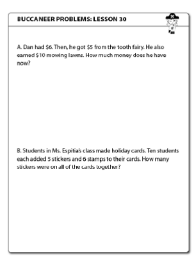
What does P (point) **stand for?**

The product.

Good! The product is just a fancy way to say the answer in a multiplication or Equal Groups problem.

Look at this problem.

Point to A.


BUCCANEER PROBLEMS: LESSON 30

A. Dan had $6. Then, he got $5 from the tooth fairy. He also earned $10 mowing lawns. How much money does he have now?

B. Students in Ms. Espitia's class made holiday cards. Ten students each added 5 stickers and 6 stamps to their cards. How many stickers were on all of the cards together?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

> *Dan had $6. Then, he got $5 from the tooth fairy. He also earned $10 mowing lawns. How much money does he have now?*

Problem Type:	*Change, two changes*
Relevant Information:	*ST = 6; C = + 5; C = + 10; E = X*
Number Sentence:	*6 + 5 + 10 = X*
Answer:	*X = $21*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a

table. Is there a graph or a table?

No.

<u>*Solution to Problem B:*</u>

Students in Ms. Espitia's class made holiday cards. Ten students each added 5 stickers and 6 stamps to their cards. How many stickers were on all of the cards together?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 10; N = 5; P = X*
Irrelevant Information:	~~*6 stamps*~~
Number Sentence:	*$10 \times 5 = X$*
Answer:	*X = 50 stickers*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

You are right. This problem does not have a graph or a table, but it does have a picture. Let's number the flowers in each row to help us solve the problem.

(Students number picture, writing 1, 2, and 3 next to each of the 3 rows of flowers.)

<u>*Solution to Problem C:*</u>

The picture shows the rows of flowers in Xin's garden. If Xin picked 4 flowers in each row, how many flowers did she pick?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 3; N = 4; P = X*
Number Sentence:	$3 \times 4 = X$
Answer:	*X = 12 flowers*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed. If needed, assist students by circling 4 flowers in each of the 3 rows and counting until you reach 12.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

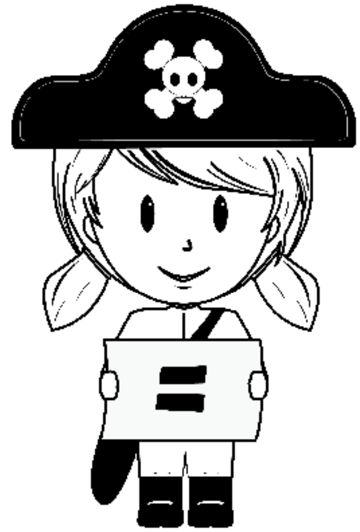
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 31

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 31
Buccaneer Problems: Lesson 31
Jolly Roger Review: Lesson 31
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

3 times 3 is the same as blank. Let's say that together.

3 times 3 is the same as blank.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

Let's isolate the X.

(Circle the X and draw a line down from the equal sign.)

Is X isolated or do we need to isolate the X?

X already is isolated.

Exactly! X already is isolated, so let's write an X in the box to the right of the equal sign (point)**.**

(Write.)

Today, let's draw to make the sides the same. We know that X already is isolated, so what can we do?

Multiply the two numbers.

Exactly! When we multiply, we make groups with an equal number in each group. What do we do when we multiply?

Make groups with an equal number in each group.

Exactly! How many groups do we have?

3.

Nice! To solve this problem with drawing, let's draw 3 triangles on the left side (point) **of the equal sign to show that we have 3 groups.**

(Draw.)

Now, we need to figure out how many triangles to put into each of our 3 groups. How many triangles do we need in each of our 3 groups?

3.

Because we are multiplying, we need 3 triangles in each of our 3 groups. We don't just draw 3 triangles. We make sure there are 3 triangles in *each* of our 3 groups.

What do we need to do?

Make sure there are 3 triangles in each of our 3 groups.

Great! Let's continue drawing until we have 3 groups of triangles with 3 triangles in each group.

(Draw.)

Good! Now you can count the number of triangles to find X! Go ahead.

(Count triangles.)

How many triangles did you count?

9.

Exactly! 3 groups of 3 is the same as 9. Let's write 9 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

3 times 3 is the same as 9.

Let's try another one.

Look at B.

Point to B.

8 times 2 is the same as blank. Let's say that together.

8 times 2 is the same as blank.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

Let's isolate the X.

(Circle the X and draw a line down from the equal sign.)

Is X isolated or do we need to isolate the X?

X already is isolated.

Exactly! X already is isolated, so let's write an X in the box to the right of the equal sign (point)**.**

(Write.)

This time, let's draw circles to make the sides the same. We know that X already is isolated, so what can we do?

Multiply the two numbers.

Exactly! When we multiply, we make groups with an equal number in each group. What do we do when we multiply?

Make groups with an equal number in each group.

Exactly! How many groups do we have?

8.

Nice! To solve this problem with drawing, let's draw 8 circles on the left side (point) **of the equal sign to show that we have 8 groups.**

(Draw.)

Now, we need to figure out how many circles to put into each of our 8 groups. How many circles do we need in each of our 8 groups?

2.

Because we are multiplying, we need 2 circles in each of our 8 groups. We don't just draw 2 circles. We make sure there are 2 circles in *each* of our 8 groups.

What do we need to do?

Make sure there are 2 circles in each of our 8 groups.

Great! Let's continue drawing until we have 8 groups of circles with 2 circles in each group.

(Draw.)

Good! Now you can count the number of circles to find X! Go ahead.

(Count circles.)

How many circles did you count?

16.

Exactly! 8 groups of 2 is the same as 16. Let's write 16 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

8 times 2 is the same as 16.

Nice job today!

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

What is our Equal Groups equation?

GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

What does GR (point) **stand for?**

The number of groups.

What does N (point) **stand for?**

The number *in* each group.

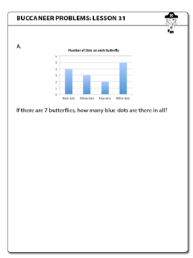
What does P (point) **stand for?**

The product.

Good! The product is just a fancy way to say the answer in a multiplication or Equal Groups problem.

Look at this problem.

Point to A.


BUCCANEER PROBLEMS: LESSON 31

A.

If there are 7 butterflies, how many blue dots are there in all?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>Solution to Problem A:</u>

If there are 7 butterflies, how many blue dots are there in all?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 7; N = 2; P = X*
Number Sentence:	*$7 \times 2 = X$*
Answer:	*X = 14 blue dots*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups *problem.*

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

Gabriela had 24 M&Ms and 12 Skittles. At lunch, she ate some M&Ms. If Gabriela has 6 M&Ms left, how many did she eat?

Problem Type:	*Change, decrease*
Relevant Information:	*ST = 24; C = X; E = 6*
Irrelevant Information:	~~*12 Skittles*~~
Number Sentence:	*24 – X = 6*
Answer:	*X = 18 M&Ms*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem C:*</u>

Brenda has a bookshelf that is 10 feet wide. If she has 7 books on each of her 3 shelves, how many books does she have?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 7; N = 3; P = X*
Irrelevant Information:	~~*10 feet wide*~~
Number Sentence:	$7 \times 3 = X$
Answer:	*X = 21 books*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

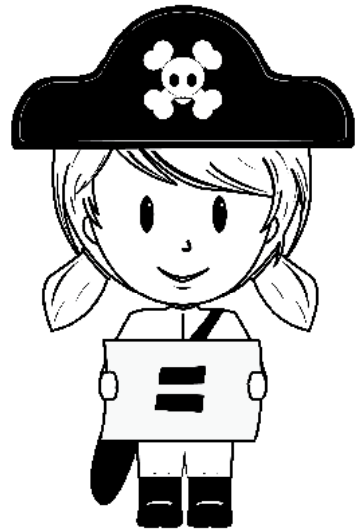
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 32

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 32
Buccaneer Problems: Lesson 32
Jolly Roger Review: Lesson 32
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A-B.

Point to A-B.

Follow Activity Guide: Equation Quest – Equal Groups.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

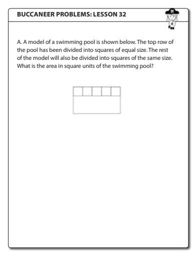
What is our Equal Groups equation?

GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

Point to A.



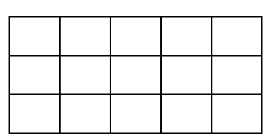
Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

There is not a graph or a table, but there is a picture of a swimming pool. Some of the squares have been added for us. Let's complete the picture by adding the rest of the squares.

(Students add 2 rows with 5 squares in each row.)

Monitor students as they complete the model of the swimming pool. Assist them as needed and check that their picture resembles the one below.



<u>*Solution to Problem A:*</u>

A model of a swimming pool is shown below. The top row of the pool has been divided into squares of equal size. The rest of the model will also be divided into squares of the same size. What is the area in square units of the swimming pool?

Problem Type: *Equal Groups*
Relevant Information: *GR = 3; N = 5; P = X*
Number Sentence: $3 \times 5 = X$
Answer: *X = 15 square units*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

This problem has a new word in it. The problem says: What is the area in square units of the swimming pool? Have any of you heard the word "area" before?

(Students respond.)

The area of a figure simply means the number of squares required to cover a figure completely, like the squares of this swimming pool. Area is measured in "square" units.

To find the area of a figure like the swimming pool, we can multiply one side of

the swimming pool times the other side of the swimming pool, or the length of the swimming pool times the width of the swimming pool.

How many squares are across the top or length of the swimming pool?

5.

Exactly. The length of the swimming pool is 5 square units.

How many squares are on the side or width of the swimming pool?

3.

Exactly. The width of the swimming pool is 3 square units.

So, to find the area, we can multiply the length times the width, or 5 times 3.

What is 5 times 3?

15.

Exactly. The area of the swimming pool is 15. Remember, the area of a figure means the number of squares required to cover the figure, so we can check our answer by counting the number of squares inisde the swimming pool.

(Students count the number of squares inside the figure of the swimming pool.)

How many squares did you count?

15.

Is our answer correct?

Yes.

Great job!

What is the area of a figure again?

(Students explain.)

Do you want to hear a trick?

Yes!

When you are asked to find the area of a square or rectangle, like with the swimming pool, you are really being asked to solve an Equal Groups problem! The width of the swimming pool is like the number of groups and the length of the swimming pool is like the number in each group.

Let's solve this problem again, but this time let's follow our Equal Groups steps!

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem B:

Anthony puts 5 candy bars into 7 bags. How many candy bars does Anthony have in all?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 7; N = 5; P = X*
Number Sentence:	$7 \times 5 = X$
Answer:	*X = 35 candy bars*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor that students correctly follow the steps to isolate the X with an Equal Groups problem.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a

table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>Solution to Problem C:</u>

How many home runs did Dan, Lamar, and Adam hit?	
Problem Type:	*Total, three parts*
Relevant Information:	*P1 = 3; P2 = 5; P3 = 3; T = X*
Number Sentence:	*3 + 5 + 3 = 11*
Answer:	*X = 11 home runs*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

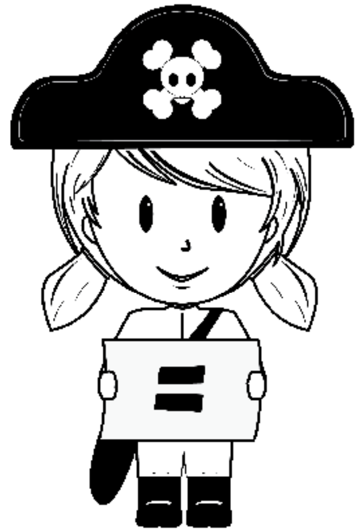
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 33



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Equal Groups with N missing
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 33
Buccaneer Problems: Lesson 33
Jolly Roger Review: Lesson 33
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

So far, we have solved Equal Groups problems with the product missing. Today, we will work on solving Equal Groups problems with the groups or the number in each group missing. Let me show you what I mean.

Look at A.

Point to A.

Let's read the problem. 4 times X is the same as 12. Let's say that together.

4 times X is the same as 12.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

We need to isolate the X.

You're right! We need to isolate the X. What number is next to the X?

4.

Exactly. We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 4** (point) **to that side of the equal sign. To move this 4, we need to do the opposite of multiply, which is divide. We need to write divide 4 under the multiply 4 because times 4 divided by 4 will give us 1. In multiplication, any number multiplied by 1 gives us that number. So, 4 divided by 4 gives us 1 and 1 times X is the same as X.**

Remind me, how could we move this 4?

Divide 4 from both sides.

To move this 4, we need to divide 4. But we don't only divide 4 from this side (point)**, we have to divide 4 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write divide 4 on both sides.

(Write.)

Time to do the math. What's 4 divided by 4 (point)**?**

1.

4 divided by 4 is the same as 1. When it's an answer of 1, we can cross out the 4 divided by 4 because any number times 1 is the same as that number. So, X times 1 is the same as X.

(Cross out.)

Now, let's do the math on that side. What's 12 divided by 4 (point)**?**

Remember, if you are still working on your division facts, you can ask yourself, "4 times what gives me 12?"

3.

Write 3 right here.

(Write.)

So, you isolated the X. X is the same as what?

3.

Write X is the same as next to 3.

(Write.)

Now, check the number sentence. You solved that X is the same as 3. Rewrite the number sentence using 3 for X.

(Write.)

Is 4 times 3 the same as 12?

Yes.

Great work! 4 times 3 the same as 12. Let's try another problem!

Point to B.

Let's read the problem. X times 2 is the same as 6. Let's say that together.

X times 2 is the same as 6.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

We need to isolate the X.

You're right! We need to isolate the X. What number is next to the X?

2.

Exactly. We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 2** (point) **to that side of the equal sign. To move this 2, we need to do the opposite of multiply, which is divide. We need to write divide 2 under the multiply 2 because times 2 divided by 2 will give us 1. In multiplication, any number multiplied by 1 gives us that number. So, 2 divided by 2 gives us 1 and 1 times X is the same as X.**

Remind me, how could we move this 2?

Divide 2 from both sides.

To move this 2, we need to divide 2. But we don't only divide 2 from this side (point)**, we have to divide 2 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write divide 2 on both sides.

(Write.)

Time to do the math. What's 2 divided by 2 (point)**?**

1.

2 divided by 2 is the same as 1. When it's an answer of 1, we can cross out the 2 divided by 2 because any number times 1 is the same as that number. So, X times 1 is the same as X.

(Cross out.)

Now, let's do the math on that side. What's 6 divided by 2 (point)**?**

Remember, if you are still working on your division facts, you can ask yourself, "What times 2 gives me 6?"

3.

Write 3 right here.

(Write.)

So, you isolated the X. X is the same as what?

3.

Write X is the same as next to 3.

(Write.)

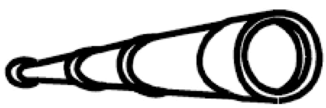
Now, check the number sentence. You solved that X is the same as 3. Rewrite the number sentence using 3 for X.

(Write.)

Is 3 times 2 the same as 6?

Yes.

3 times 2 the same as 6. Great job on your Equation Quest today!



3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

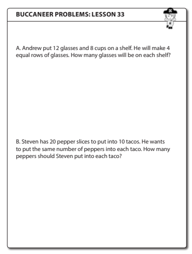
What is our Equal Groups equation?

GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

Point to A.


BUCCANEER PROBLEMS: LESSON 33

A. Andrew put 12 glasses and 8 cups on a shelf. He will make 4 equal rows of glasses. How many glasses will be on each shelf?

B. Steven has 20 pepper slices to put into 10 tacos. He wants to put the same number of peppers into each taco. How many peppers should Steven put into each taco?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

Andrew put 12 glasses and 8 cups on a shelf. He made 4 equal rows of glasses. How many glasses are on each shelf?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 4; N = X; P = 12*
Irrelevant Information:	~~*8 cups*~~
Number Sentence:	*4 × X = 12*
Answer:	*X = 3 glasses*

What's the first thing we do every time we see a word problem?

RUN through it!

Good. What does R stand for?

Read the problem.

Listen as I read the problem. "Andrew put 12 glasses and 8 cups on a shelf. He made 4 equal rows of glasses. How many glasses are on each shelf?"

What does U stand for?

Underline the label and cross out irrelevant information.

First, look at the question to see if it helps with the label. The question is, "How many glasses are on each shelf?" What's this problem mostly about?

Glasses.

This story is mostly about glasses. Let's underline the word glasses in the question. This will help us remember we're looking for numbers that talk about glasses.

(Underline.)

Is there any irrelevant information?

Yes.

Are all of the numbers about the label we underlined?

No.

You're right! What information is irrelevant?

8 cups.

Exactly! 8 cups is not about glasses. 8 cups is irrelevant. Go ahead and cross it out.

(Students cross out 8 cups.)

What does N stand for?

Name the problem type.

After you read the problem and underline the label, you name the problem type.

When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

You're right! This is an Equal Groups problem because we have groups and an equal number in each group.

This problem is a little different from the other Equal Groups problems we have solved before. Let me show you what I mean.

Let me read the problem again.

Reread Problem A.

This problem is about 12 glasses that are put into 4 equal rows. We know that there are 4 groups, which are the 4 rows of glasses. And we know that there are 12 glasses in all. We do not know how many glasses are in each group or row. So, we know the number of groups, which is the 4 rows of glasses. We also know the product, which is the 12 glasses in all. We don't know the number *in* each group, which is the number of glasses on each shelf.

Look at this whiteboard so you can see what I mean.

Use whiteboard with painter's tape to draw a picture of 4 groups, placing 4 horizontal dots to show that one dot represents each group. One by one, add a dot to each of the 4 rows until you get to 12. Illustrate the 4 groups and 12 glasses to show that we are missing the number in each group.

This problem is different from the Equal Groups problems we've worked on before. Those other problems always asked us to find the product. This problem (point) **tells us the product of 12. Today, we have to find the number in each group.**

Because this problem is about groups with an equal number in each group, we know it's an Equal Groups problem. What should I put next to the problem?

EG.

Right. I put EG next to the problem to remind me it's an Equal Groups problem.

(Write.)

Good! The RUN poster helped us organize our paper so we can solve the problem! We said this is an Equal Groups problem. (Point to the EG.) **We use the Equal Groups poster to solve it.**

Display Equal Groups poster.

Step 1 is to write the Equal Groups equation. We write GR times N is the same P. Let's write the Equal Groups equation now.

Write $GR \times N = P$.

Step 2: "Find P." What does P stand for?

The product.

That's right. We know P stands for the product because product starts with a P. We have to determine if the problem gives us the answer or product or if the problem asks us to find the answer or product.

In an Equal Groups problem, there are groups with an equal number in each group. The question helps us figure out whether we're finding the product, the number of groups, or the number in each group.

Look at the word problem again. The first sentence (point) **says, "Andrew put 12 glasses on a shelf." The 12 glasses is the product. We know Andrew has 12 glasses in all. The product is like the total number. But don't confuse that with a Total problem!**

The next sentence (point) **says, "He made 4 equal rows of glasses." The 4 rows of glasses are the number of groups.** (Demonstrate the Equal Groups gesture. With your one hand out with your palm flat, show one group. Show that we have one group, or row of glasses, but we don't know how many glasses are in each row. Repeat the gesture for the number of groups you want to show. For this problem, repeat the gesture 4 times to show 4 groups and explain that we are looking for the number in each group.)

The question asks, "How many glasses are on each shelf?" (Demonstrate the Equal Groups gesture again.)

We know the product and the number of groups, so the question is asking us to find the number *in* each group. The missing part is the number in each group, or N (point)**.**

What's the product?

12.

Good! Write 12 under the P.

Write 12 under P.

Step 3: "Find GR and N." First, let's find GR. What does GR stand for again?

The number of groups.

How many groups do we have?

4.

Exactly. We have 4 groups, or 4 rows of glasses.

Check off 4 in the story and write 4 underneath GR. Continue to use whiteboards with painter's tape to illustrate the groups as needed.

Next, let's find N. What does N stand for again?

The number in each group.

How many do we have in each group?

We don't know.

Exactly! We are looking for the number in each group. In number sentences, how do we mark missing information?

With an X.

Right. N is the missing information, so we put an X in the number sentence under N. This helps to keep the work organized.

Write X under N.

Continue to use whiteboards with painter's tape to illustrate the equal number in each group as needed.

Step 4 says: "Write the signs." Equal Groups problems use a multiplication or times sign and the same as sign.

Write the multiplication sign and same as sign.

4 stands for the number of groups. X stands for the number in each group. 12 stands for the product. Does this (point) **look like a number sentence we know how to solve?**

Yes!

In this problem, the times sign and the X are right next to each other, so make sure you write a BIG X so we don't confuse the times sign and the X.

Monitor students to make sure they write the times sign and a BIG X.

Let's read the number sentence together.

Read number sentence aloud with students.

Step 5 says: "Find X." Let's find X! You know how to do this! Let's isolate the X.

Monitor students as they circle the X and draw a line down from the equal sign as a reminder to isolate the X.

Is the X isolated or do we need to isolate the X?

We need to isolate the X.

You're right! We need to isolate the X. What number is next to the X?

4.

Exactly. We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 4** (point) **to that side of the equal sign. To move this 4, we need to do the opposite of multiply, which is divide. We need to write divide 4 under multiply 4 because times 4 divided by 4 will give us 1. In multiplication, any number multiplied by 1 gives us that number. So, 4 divided by 4 gives us 1 and 1 times X is the same as X.**

Remind me, how could we move this 4?

Divide 4 from both sides.

To move this 4, we need to divide 4. But we don't only divide 4 from this side (point)**, we have to divide 4 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write divide 4 on both sides.

(Write.)

Time to do the math. What's 4 divided by 4 (point)**?**

1.

4 divided by 4 is the same as 1. When it's an answer of 1, we can cross out the 4 divided by 4 because any number times 1 is the same as that number. So, X times 1 is the same as X.

(Cross out.)

Now, let's do the math on that side. What's 12 divided by 4 (point)**? Remember, if you are still working on your division facts, you can ask yourself, "What times 4 gives me 12?"**

3.

Write 3 right here.

(Write.)

So, you isolated the X. X is the same as what?

3.

Write X is the same as next to 3.

(Write.)

Now, check the number sentence. You solved that X is the same as 3. Rewrite the number sentence using 3 for X.

(Write.)

Is 4 times 3 the same as 12?

Yes.

4 times 3 the same as 12.

Another way we can check or solve our problem is to draw on our whiteboards.

Help students with multiplication by encouraging them to use their whiteboards. Assist students in drawing 1 big circle around the first set of 4 dots, a second big circle around the second set of 4 dots, and a third big circle around the third set of 4 dots.

How many big circles did we draw around our dots?

3.

Good! So, what is X?

3.

Great! In word problems, our answer must have a number and a label. We know the number answer is 3. Now we have to figure out what the label for 3 should be. Think about what the problem is mostly about. What did we underline?

Glasses.

Right! The problem is mostly about glasses, so that's the best label. We write glasses for the label!

Write glasses next to 3.

Let's see if the answer makes sense. "Andrew put 12 glasses and 8 cups on a shelf. He made 4 equal rows of glasses. How many glasses are on each shelf?" Does 3 glasses make sense?

Continue to use whiteboards with painter's tape to illustrate the answer as needed.

Yes.

Right. 3 makes sense. Did we answer the question, "How many glasses are on each shelf?"

Yes. There are 3 glasses on each shelf.

Good. We have a number and a label in the answer.

Good job working this Equal Groups problem! Let's try another one!

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a

table. Is there a graph or a table?

No.

<u>*Solution to Problem B:*</u>

> *Steven has 20 pepper slices to put into 10 tacos. He wants to put the same number of peppers into each taco. How many peppers should Steven put into each taco?*
>
> *Problem Type:* *Equal Groups*
> *Relevant Information:* *GR = 10; N = X; P = 20*
> *Number Sentence:* $10 \times X = 20$
> *Answer:* *X = 2 peppers*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

You're right! This is an Equal Groups problem because we have groups and an equal number in each group.

This problem is a little different from the other Equal Groups problems we have solved before. Let me show you what I mean.

Let me read the problem again.

Reread Problem B.

This problem is about 20 pepper slices that are put into 10 tacos. We know that there are 10 groups, which are the 10 tacos. And we know that there are 20 pepper slices in all. We do not know how many peppers are in each group or taco. So, we know the number of groups, which is the 10 tacos. We also know the product, which is the 20 pepper slices in all. We don't know the number *in* each group, which is the number of pepper slices in each taco.

Look at this whiteboard so you can see what I mean.

Use whiteboard with painter's tape to draw a picture of 10 groups, placing 10 horizontal dots to show that one dot represents each group. One by one, add a dot to each of the 10 rows until you get to 20. Illustrate the 10 groups or tacos and the 20 pepper slices to show that we are missing the number in each group.

This problem is different from the Equal Groups problems we've worked on before. Those other problems always asked us to find the product. This problem (point) **tells us the product. Today, we have to find the number in each group.**

Because this problem is about groups with an equal number in each group, we know it's an Equal Groups problem. What should I put next to the problem?

EG.

Right. I put EG next to the problem to remind me it's an Equal Groups problem.

(Write.)

Good! The RUN poster helped us organize our paper so we can solve the problem! We said this is an Equal Groups problem. (Point to the EG.) **We use the Equal Groups poster to solve it.**

Display Equal Groups poster.

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Step 2: "Find P." What does P stand for?

The product.

That's right. We know P stands for the product because product starts with a P. We have to determine if the problem gives us the answer or product or if the problem asks us to find the answer or product.

In an Equal Groups problem, there are groups with an equal number in each group. The question helps us figure out whether we're finding the product, the number of groups, or the number in each group.

Look at the word problem again. The first part of the first sentence (point) **says, "Steven has 20 pepper slices." The 20 pepper slices are the product. We know Steven has 20 pepper slices in all.**

The next part of the first sentence (point) **says, "To put into 10 tacos." The 10 tacos are the number of groups.** (Demonstrate the Equal Groups gesture. With your one hand out with your palm flat, show one group. Show that we have one group, or taco, but we don't know how many peppers are in each taco. Repeat the gesture for the number of groups you want to show. For this problem, repeat the gesture 10 times to show 10 groups and explain that we are looking for the number in each group.)

The question asks, "How many peppers should Steven put into each taco?" (Demonstrate the Equal Groups gesture again.)

We know the product and the number of groups, so the question is asking us to find the number in each group. The missing part is the number in each group, or N (point)**.**

What's the product?

20.

Good! Write 20 under the P.

Write 20 under P.

Step 3: “Find GR and N.” First, let’s find GR. What does GR stand for again?

The number of groups.

How many groups do we have?

10.

Exactly. We have 10 groups, or 10 tacos.

Check off 10 in the story and write 10 underneath GR. Continue to use whiteboards with painter’s tape to illustrate the groups as needed.

Next, let’s find N. What does N stand for again?

The number in each group.

How many do we have in each group?

We don’t know.

Exactly! We are looking for the number in each group. In number sentences, how do we mark missing information?

With an X.

Right. N is the missing information, so we put X in the number sentence under N. This helps keep the work organized.

Write X under N.

Continue to use whiteboards with painter’s tape to illustrate the equal number in each group as needed.

Step 4 says: “Write the signs.” Equal Groups problems use a multiplication or times sign and the same as sign.

Write the multiplication sign and same as sign.

In this problem, the times sign and the X are right next to each other again, so make sure you write a BIG X so we don't confuse the times sign and the X.

Monitor students to make sure they write the times sign and a BIG X.

Continue to remind students to write a BIG X for Equal Groups problems. Emphasize this point when students solve Equal Groups problems with the number in each group missing.

10 stands for the number of groups. X stands for the number in each group. 20 stands for the product. Does this (point) **look like a number sentence we know how to solve?**

Yes!

Let's read the number sentence together.

Read number sentence aloud with students.

Step 5 says: "Find X." Let's find X! You know how to do this! Let's isolate the X.

Monitor students as they circle the X and draw a line down from the equal sign as a reminder to isolate the X.

Is the X isolated or do we need to isolate the X?

We need to isolate the X.

You're right! We need to isolate the X. What number is next to the X?

10.

Exactly. We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 10** (point) **to that side of the equal sign. To move this 10, we need to do the opposite of multiply, which is divide. We need to write divide 10 under the multiply 10 because times 10 divided by 10 will give us 1. In multiplication, any number multiplied by 1 gives us that number. So, 10 divided by 10 gives us 1 and 1 times X is the same as X.**

Remind me, how could we move this 10?

Divide 10 from both sides.

To move this 10, we need to divide 10. But we don't only divide 10 from this side (point)**, we have to divide 10 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write divide 10 on both sides.

(Write.)

Time to do the math. What's 10 divided by 10 (point)**?**

1.

10 divided by 10 is the same as 1. When it's an answer of 1, we can cross out the 10 divided by 10 because any number times 1 is the same as that number. So, X times 1 is the same as X.

(Cross out.)

Now, let's do the math on that side. What's 20 divided by 10 (point)**? Remember, if you are still working on your division facts, you can ask yourself, "What times 10 gives me 20?"**

2.

Write 2 right here.

(Write.)

So, you isolated the X. X is the same as what?

2.

Write X is the same as next to 2.

(Write.)

Now, check the number sentence. You solved that X is the same as 2. Rewrite the number sentence using 2 for X.

(Write.)

Is 10 times 2 the same as 20?

Yes.

10 times 2 the same as 20.

Another way we can check or solve our problem is to draw on our whiteboards.

Help students with multiplication by encouraging them to use their whiteboards. Assist students in drawing 1 big circle around the first set of 10 dots and a second big circle around the second set of 10 dots.

How many big circles did we draw around our dots?

2.

Good! So, what is X?

2.

Great! In word problems, our answer must have a number and a label. We know the number answer is 2. Now we have to figure out what the label for 2 should be. Think about what the problem is mostly about. What did we underline?

Peppers.

Right! The problem is mostly about peppers, so that's the best label. We write peppers for the label!

Write peppers next to 2.

Let's see if the answer makes sense. "Steven has 20 pepper slices to put into 10 tacos. He wants to put the same number of peppers in each taco. How many

peppers should Steven put into each taco?" Does 2 peppers make sense?

Continue to use whiteboards with painter's tape to illustrate the answer as needed.

Yes.

Right. 2 makes sense. Did we answer the question, "How many peppers should Steven put into each taco?"

Yes. There are 2 peppers in each taco.

Good. We have a number and a label in the answer.

Good job working this Equal Groups problem! Let's try another one!

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem C:</u>

Phaedra practiced for the track team and ran 3 laps per minute. How many minutes did it take Phaedra to run 12 laps?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 3; N = X; P = 12*
Number Sentence:	$3 \times X = 12$
Answer:	*X = 4 minutes*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups

As needed, use the language from Problems A and B and the whiteboards to explain how to solve Equal Groups problems where the number in each group is missing.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

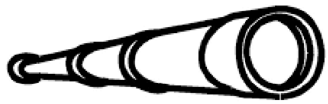
You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.



Treasure Map

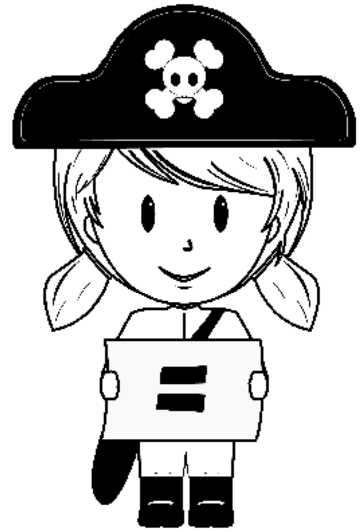
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 34



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Difference and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

- Counting Up
- RUN/Total
- Difference/Change
- Equal Groups
- What Do You Ask Yourself?

Student Materials

- Equation Quest: Lesson 34
- Buccaneer Problems: Lesson 34
- Jolly Roger Review: Lesson 34
- Treasure Map

Tutor Materials

- Crayons
- Math Fact Flash Cards
- Timer
- Sorting Cards
- Sorting Mat
- Gold coins
- Treasure box
- Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

So far, we have solved Equal Groups problems with the product missing. Yesterday, we worked on solving Equal Groups problems with the groups or the number in each group missing. Let's continue this work today!

Look at A.

Point to A.

Let's read the problem. 6 times X is the same as 18. Let's say that together.

6 times X is the same as 18.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

We need to isolate the X.

You're right! We need to isolate the X. What number is next to the X?

6.

Exactly. We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 6** (point) **to that side of the equal sign. To move this 6, we need to do the opposite of multiply, which is divide. We need to write divide 6 under the multiply 6 because times 6 divided by 6 will give us 1. In multiplication, any number multiplied by 1 gives us that number. So, 6 divided by 6 gives us 1 and 1 times X is the same as X.**

Remind me, how could we move this 6?

Divide 6 from both sides.

To move this 6, we need to divide 6. But we don't only divide 6 from this side (point)**, we have to divide 6 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write divide 6 on both sides.

(Write.)

Time to do the math. What's 6 divided by 6 (point)**?**

1.

6 divided by 6 is the same as 1. When it's an answer of 1, we can cross out the 6 divided by 6 because any number times 1 is the same as that number. So, X times 1 is the same as X.

(Cross out.)

Now, let's do the math on that side. What's 18 divided by 6 (point)**?**

Remember, if you are still working on your division facts, you can ask yourself, "6 times what gives me 18?"

3.

Write 3 right here.

(Write.)

So, you isolated the X. X is the same as what?

3.

Write X is the same as next to 3.

(Write.)

Now, check the number sentence. You solved that X is the same as 3. Rewrite the number sentence using 3 for X.

(Write.)

Is 6 times 3 the same as 18?

Yes.

Great work! 6 times 3 the same as 18. Let's try another problem!

Point to B.

Let's read the problem. X times 2 is the same as 20. Let's say that together.

X times 2 is the same as 20.

Let's isolate the X. What do we need to do?

Circle the X and draw a line down from the equal sign.

Great! Let's circle the X and draw a line down from the equal sign to remind us to balance the two sides.

(Students circle the X and draw the line down from the equal sign.)

Is the X isolated or do we need to isolate the X?

We need to isolate the X.

You're right! We need to isolate the X. What number is next to the X?

2.

Exactly. We want to get the X by itself on this side (point) **of the equal sign. We want to isolate the X. To isolate the X, we need to move this 2** (point) **to that side of the equal sign. To move this 2, we need to do the opposite of multiply, which is divide. We need to write divide 2 under the multiply 2 because times 2 divided by 2 will give us 1. In multiplication, any number multiplied by 1 gives us that number. So, 2 divided by 2 gives us 1 and 1 times X is the same as X.**

Remind me, how could we move this 2?

Divide 2 from both sides.

To move this 2, we need to divide 2. But we don't only divide 2 from this side (point)**, we have to divide 2 from both sides** (point)**. Remember, anything you do to this side of the equal sign** (point)**, you have to do where?**

To that side.

So, write divide 2 on both sides.

(Write.)

Time to do the math. What's 2 divided by 2 (point)**?**

1.

2 divided by 2 is the same as 1. When it's an answer of 1, we can cross out the 2 divided by 2 because any number times 1 is the same as that number. So, X times 1 is the same as X.

(Cross out.)

Now, let's do the math on that side. What's 20 divided by 2 (point)**?**

Remember, if you are still working on your division facts, you can ask yourself, "What times 2 gives me 20?"

10.

Write 10 right here.

(Write.)

So, you isolated the X. X is the same as what?

10.

Write X is the same as next to 10.

(Write.)

Now, check the number sentence. You solved that X is the same as 10. Rewrite the number sentence using 10 for X.

(Write.)

Is 10 times 2 the same as 20?

Yes.

10 times 2 the same as 20. Great job on your Equation Quest today!

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

What is our Equal Groups equation?

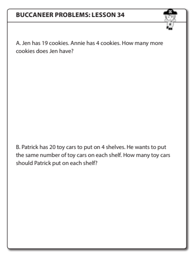
GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

Look at this problem.

Point to A.


BUCCANEER PROBLEMS: LESSON 34

A. Jen has 19 cookies. Annie has 4 cookies. How many more cookies does Jen have?

B. Patrick has 20 toy cars to put on 4 shelves. He wants to put the same number of toy cars on each shelf. How many toy cars should Patrick put on each shelf?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

Jen has 19 cookies. Annie has 4 cookies. How many more cookies does Jen have?

Problem Type:	*Difference*
Relevant Information:	*G = 19; L = 4; D = X*
Number Sentence:	*19 – 4 = X*
Answer:	*X = 15 more cookies*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.

Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem B:

Patrick has 20 toy cars to put on 4 shelves. He wants to put the same number of toy cars on each shelf. How many toy cars should Patrick put on each shelf?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 4; N = X; P = 20*
Number Sentence:	$4 \times X = 20$
Answer:	*X = 5 toy cars*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

You're right. There is not a graph or a table, but we do have a picture in this problem. We can use this picture like we use our whiteboard to help us solve the problem.

Let's read the problem and I will show you what I mean.

Solution to Problem C:

The picture below shows the fish bowls for 18 saltwater fish. If Phoenix wants to put the same number of fish in each bowl, how many fish should she put in each bowl?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 3; N = X; P = 18*
Number Sentence:	$3 \times X = 18$
Answer:	*X = 6 saltwater fish*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Instead of having students use the whiteboards with painter's tape, have students draw one fish in each of the 3 bowls, one at a time, until they draw 18 fish. Once students draw 18 fish, have them count the number of fish in each bowl. Students should count 6 fish in each bowl.

Continue to explain the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

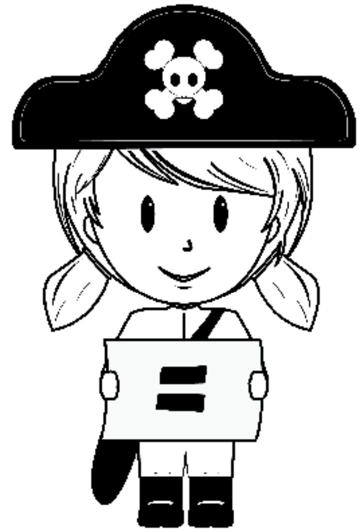
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 35



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 35
Buccaneer Problems: Lesson 35
Jolly Roger Review: Lesson 35
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

2 times blank is the same as 8. Let's say that together.

2 times blank is the same as 8.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

Today, let's do something different. Instead of isolating the X by dividing, let's use cubes to make the sides the same.

Let's look at our product. What is our product?

8.

Exactly. 8 is our product, so let's place 8 cubes of one color on the right side (point) **of the equal sign to show that we have 8 in all.**

(Place cubes.)

Now, we need to figure out how many cubes to put on the left side (point) **of the equal sign.**

How many groups do we have?

2.

Exactly! We have 2 groups. Let's place 2 cubes of a different color on the left side (point) **of the equal sign to show that we have 2 groups.**

(Place 2 cubes with 1 cube in each row.)

What information are we missing?

The number in each group.

Exactly, we don't know the number in each group. To find out the number in each group, let's add cubes, one at a time, until we have 8 cubes. What should we do?

Add cubes, one at a time, until we have 8 cubes.

Remember, as we add the cubes, we need to add one cube to the first group (point) **and the next cube to the second group** (point)**. We need to add a cube to the first group and then a cube to the second group until we have 8 cubes. We want to make sure we have the same number of cubes in each group.**

Let's add the cubes.

(Students add cubes to the 2 groups, or rows, one at a time. Students add the first cube to the first group and the next cube to the second group until 8 cubes are on the left side of the equal sign.)

Nice work! You added the cubes, one at a time, to the 2 groups. Now we have 8 cubes. Are the two sides balanced?

Yes.

Great! We have 8 cubes on this side (point) **of the equal sign and 8 cubes on this side** (point) **of the equal sign.**

To figure out how many are in each group, all we need to do is count. How many cubes are in the first group?

(Count.)

4.

Good! How many cubes are in the second group?

(Count.)

4.

Exactly! There are 4 cubes in each group. So what is X?

4.

Nice work! Let's write 4 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

2 times 4 is the same as 8.

Let's try another one. Clear all the cubes.

(Clear.)

Look at B.

Point to B.

5 times blank is the same as 15. Let's say that together.

5 times blank is the same as 15.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

For this problem, let's use cubes to make the sides the same.

Let's look at our product. What is our product?

15.

Exactly. 15 is our product, so let's place 15 cubes of one color on the right side (point) **of the equal sign to show that we have 15 in all.**

(Place cubes.)

Now, we need to figure out how many cubes to put on the left side (point) **of the equal sign.**

How many groups do we have?

5.

Exactly! We have 5 groups. Let's place 5 cubes of a different color on the left side (point) **of the equal sign to show that we have 5 groups.**

(Place 5 cubes with 1 cube in each row.)

What information are we missing?

The number in each group.

Exactly, we don't know the number in each group. To find out the number in each group, let's add cubes, one at a time, until we have 15 cubes. What should we do?

Add cubes, one at a time, until we have 15 cubes.

Remember, as we add the cubes, we need to add one cube to the first group (point)**, the next cube to the second group** (point), **the next cube to the third group** (point), **the next cube to the fourth group** (point)**, and the next cube to the fifth group** (point). **We add 1 cube to each of the 5 groups, one at a time, until we have 15 cubes. We want to make sure we have the same number of cubes in each group.**

Let's add the cubes.

(Students add cubes to the 5 groups, or rows, one at a time. Students add the first cube to the first group and the next cube to the second group, and so on, until 15 cubes are on the left side of the equal sign.)

Nice work! You added the cubes, one at a time, to the 5 groups. Now we have

15 cubes. Are the two sides balanced?

Yes.

Great! We have 15 cubes on this side (point) **of the equal sign and 15 cubes on this side** (point) **of the equal sign.**

To figure out how many are in each group, all we need to do is count. How many cubes are in each group?

(Count.)

3.

Good! There are 3 cubes in each of the 5 groups. So what is X?

3.

Nice work! Let's write 3 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

5 times 3 is the same as 15.

Nice work today on our Equation Quest!

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate

Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it’s a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

What is our Equal Groups equation?

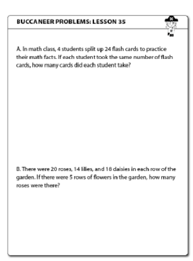
GR × N = P.

Great job! Let’s say our Equal Groups equation again.

GR × N = P.

Look at this problem.

Point to A.


BUCCANEER PROBLEMS: LESSON 35

A. In math class, 4 students split up 24 flash cards to practice their math facts. If each student took the same number of flash cards, how many cards did each student take?

B. There were 20 roses, 14 lilies, and 18 daisies in each row of the garden. If there were 5 rows of flowers in the garden, how many roses were there?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

In math class, 4 students split up 24 flash cards to practice their math facts. If each student took the same number of flash cards, how many cards did each student take?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 4; N = X; P = 24*
Number Sentence:	$4 \times X = 24$
Answer:	*X = 6 cards*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

There were 20 roses, 14 lilies, and 18 daisies in each row of the garden. If there were 5 rows of flowers in the garden, how many roses were there?

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 5; N = 20; P = X*
Irelevant Information:	~~*14 lilies and 18 daisies*~~
Number Sentence:	$5 \times 20 = X$
Answer:	*X = 100 roses*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the product is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

You're right. There is not a graph or a table, but we do have a picture in this problem. We can use this picture like we use our whiteboard to help us solve the problem.

Let's read the problem and I will show you what I mean.

<u>Solution to Problem C:</u>

The picture shows the number of cupcakes Manuel bought at the store. Manuel would like to divide the cupcakes evenly between him and his friend Demetrius. How many cupcakes will each boy receive?

Problem Type: *Equal Groups*

Relevant Information: *GR = 2; N = X; P = 16*
Number Sentence: $2 \times X = 16$
Answer: *X = 8 cupcakes*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Instead of having students use the whiteboards with painter's tape, have students draw one big circle around half of the cupcakes and a second big circle around the other half of the cupcakes. Once students draw the 2 big circles, have them count the number of cupcakes in each circle. Students should count 8 cupcakes in each circle.

Continue to explain the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

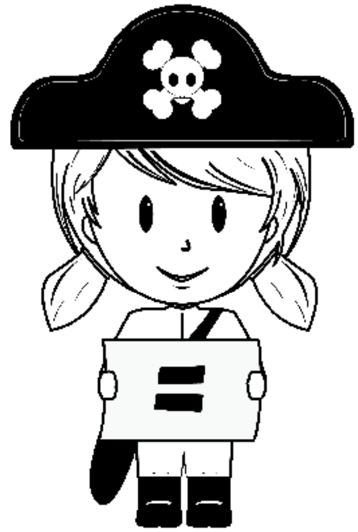
Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 36

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups
What Do You Ask Yourself?

Student Materials

Equation Quest: Lesson 36
Buccaneer Problems: Lesson 36
Jolly Roger Review: Lesson 36
Treasure Map

Tutor Materials

Crayons
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box
Whiteboards, markers, erasers

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.
Use multiplication and division flashcards for Lessons 28-39.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A.

Point to A.

3 times blank is the same as 15. Let's say that together.

3 times blank is the same as 15.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

Today, let's draw to make the sides the same.

Let's look at our product. What is our product?

15.

Exactly. 15 is our product. And how many groups do we have?

3.

Yes! We have 3 groups and 15 is our product. What information is missing?

We don't know the number in each group.

Exactly! We are looking for the number in each group. To find the number in each group, we can create 3 groups with the same number in each group until we count 15.

How many groups do we have?

3.

Exactly! We have 3 groups. So let's draw 3 squares to show 3 groups. As you

draw, make sure to draw the 3 squares in 3 separate rows to show the number of groups.

(Students draw 3 squares as 3 rows to represent the number of groups.)

Remind me, what is our product?

15.

Exactly, 15 is our product and we are looking for the number in each group. To find the number in each group, let's draw squares, one at a time in each of the 3 groups, until we have 15 squares. What should we do?

Draw squares, one at a time, in each of the 3 groups until we have 15 squares.

Remember, as we draw the squares, we need to draw one square in the first group (point)**, the next square in the second group** (point)**, and the third square in the third group** (point)**.**

What do we need to do?

We need to draw a square in the first group, a square in the second group, and a square in the third group until we have 15 squares.

Exactly! We want to make sure we have the same number of squares in each group.

Let's draw the squares.

(Students draw squares in the 3 groups, or rows, one at a time. Students draw the first square in the first group, the next square in the second group, and the third square in the third group, and so on, until 15 squares have been drawn.)

Nice work! You drew the squares, one at a time, in the 3 groups. Now we have 15 squares.

To figure out how many are in each group, all we need to do is count. How many squares are in each group?

(Count.)

5.

Exactly! There are 5 squares in each group. So what is X?

5.

Nice work! Let's write 5 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

3 times 5 is the same as 15.

Let's try another one.

Look at B.

Point to B.

2 times blank is the same as 8. Let's say that together.

2 times blank is the same as 8.

What can we write in the blank?

An X.

Excellent! Let's write an X in the blank.

(Write.)

For this problem, let's draw circles to make the sides the same.

Let's look at our product. What is our product?

8.

Exactly. 8 is our product. And how many groups do we have?

2.

Yes! We have 2 groups and 8 is our product. What information is missing?

We don't know the number in each group.

Exactly! We are looking for the number in each group. To find the number in each group, we can create 2 groups with the same number in each group until we count 8.

How many groups do we have?

2.

Exactly! We have 2 groups. So let's draw 2 circles to show 2 groups. As you draw, make sure to draw the 2 circles in 2 separate rows to show the number of groups.

(Students draw 2 circles as 2 rows to represent the number of groups.)

Remind me, what is our product?

8.

Exactly, 8 is our product and we are looking for the number in each group. To find the number in each group, let's draw circles, one at a time in each of the 2 groups, until we have 8 circles. What should we do?

Draw circles, one at a time, in each of the 2 groups until we have 8 circles.

Remember, as we draw the circles, we need to draw one circle in the first group (point) **and the next circle in the second group** (point)**.**

What do we need to do?

We need to draw a circle in the first group and a circle in the second group until we have 8 circles.

Exactly! We want to make sure we have the same number of circles in each group.

Let's draw the circles.

(Students draw circles in the 2 groups, or rows, one at a time. Students draw the first circle in the first group and the next circle in the second group, and so on, until 8 circles have been drawn.)

Nice work! You drew the circles, one at a time, in the 2 groups. Now we have 8 circles.

To figure out how many are in each group, all we need to do is count. How many circles are in each group?

(Count.)

4.

Exactly! There are 4 circles in each group. So what is X?

4.

Nice work! Let's write 4 in the space above where we wrote the X.

(Write.)

Let's read the number sentence together.

2 times 4 is the same as 8.

Excellent job working these Equation Quest problems today!

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your

Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Over the last few weeks, we've learned about Total, Difference, and Change problems. When you see a word problem, how do you know if it's a Total problem?

When you put parts together into a total.

Good. In Total problems, parts are put together into a total. Sometimes the missing information is the total. Other times, the missing information is one of the parts.

What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

How do you know if it's a Difference problem?

When you compare two amounts for a difference.

Good. In Difference problems, you compare two amounts for a difference. We have talked about problems where the missing information is the difference.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

How do you know if it's a Change problem?

When you have a starting amount that increases or decreases to a new amount.

Good. Change problems tell us a starting amount. Then, something happens to increase or decrease the amount we started with. What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

We recently started talking about Equal Groups problems. In Equal Groups problems, we make groups with an equal number in each group to find an answer, which we call the product.

What is our Equal Groups equation?

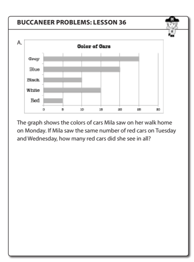
GR × N = P.

Great job! Let's say our Equal Groups equation again.

GR × N = P.

Look at this problem.

Point to A.



Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>Solution to Problem A:</u>

> *The graph shows the colors of cars Mila saw on her walk home on Monday. If Mila saw the same number of red cars on Tuesday and Wednesday, how many red cars did she see in all?*

Problem Type:	*Equal Groups*
Relevant Information:	*GR = 3; N = 5; P = X*
Number Sentence:	*3 × 5 = X*
Answer:	*X = 15 red cars*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Continue to use whiteboards with painter's tape to illustrate the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

> *Linda bought 13 paintings. She sold 9 paintings. Then, she bought 3 more paintings. How many paintings does Linda have now?*

Problem Type:	*Change, two changes*
Relevant Information:	*ST = 13; C = – 9; C = + 3 ; E = X*
Number Sentence:	*13 – 9 + 3 = X*
Answer:	*X = 7 paintings*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

You're right. There is not a graph or a table, but we do have a picture in this problem. We can use this picture like we use our whiteboard to help us solve the problem.

Let's read the problem and I will show you what I mean.

<u>*Solution to Problem C:*</u>

> *The picture shows the buckets of apples Mrs. Rocha set up for bobbing for apples. Mrs. Rocha has 16 apples for bobbing. If she puts the same number of apples in each bucket, how many apples are in each bucket?*
> *Problem Type:* *Equal Groups*

Relevant Information: *$GR = 4; N = X; P = 16$*
Number Sentence: *$4 \times X = 16$*
Answer: *$X = 4$ apples*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
When you get to the "N" follow script below.
Display "What Do You Ask Yourself?" poster.

If you think it's a Total problem, what do you ask yourself? (Point.)

Are parts put together into a total?

If you think it's a Difference problem, what do you ask yourself? (Point.)

Are two amounts compared for a difference?

If you think it's a Change problem, what do you ask yourself? (Point.)

Is there a starting amount that increases or decreases to a new amount?

If you think it's an Equal Groups problem, what do you ask yourself? (Point.)

Are there groups with an equal number in each group?

Wait 10 seconds for students to think.

Follow Activity Guide: Equal Groups.

Instead of having students use the whiteboards with painter's tape, have students draw one apple in each of the 4 buckets, one at a time. Once students draw 16 apples in the 4 buckets, have them count the number of apples in each bucket. Students should count 4 apples in each bucket.

Continue to explain the groups and the equal number in each group as needed.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

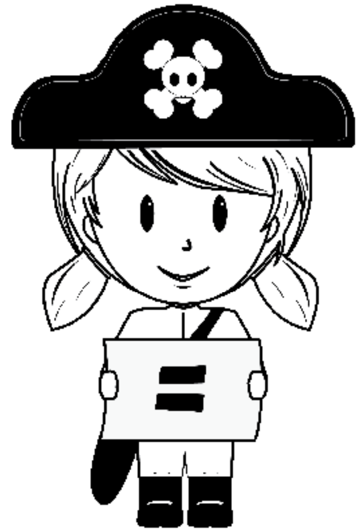
Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Remember, once you fill up your Treasure Map, you'll each choose a prize out of the treasure box!

Lesson 37



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total and Change
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups

Student Materials

Equation Quest: Lesson 37
Buccaneer Problems: Lesson 37
Jolly Roger Review: Lesson 37
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A-B.

Point to A-B.

Follow Activity Guide: Equation Quest – Equal Groups.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

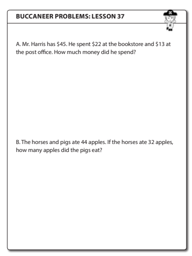
What's the Equal Groups equation?

GR × N = P.

Good. Say it again.

GR × N = P.

Point to A.


BUCCANEER PROBLEMS: LESSON 37

A. Mr. Harris has $45. He spent $22 at the bookstore and $13 at the post office. How much money did he spend?

B. The horses and pigs ate 44 apples. If the horses ate 32 apples, how many apples did the pigs eat?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>*Solution to Problem A:*</u>

Mr. Harris has $45. He spent $22 at the bookstore and $13 at the post office. How much money did he spend?

Problem Type:	*Change, two changes*
Relevant Info:	*ST = 45; C = – 22; C = – 13; E = X*
Number Sentence:	*45 – 22 – 13 = X*
Answer:	*X = $10*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

The horses and pigs ate 44 apples. If the horses ate 32 apples, how many apples did the pigs eat?

Problem Type:	*Total*
Relevant Info:	*P1 = X ; P2 = 32; T = 44*
Number Sentence:	*X + 32 = 44*
Answer:	*X = 12 apples*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a

table. Is there a graph or a table?

No.

<u>*Solution to Problem C:*</u>

Xavier had some cookies. Then, he baked 49 more cookies. Now he has 85 cookies. How many cookies did he have to start with?

Problem Type:	*Change, increase*
Relevant Info:	*ST = X; C = 49; E = 85*
Number Sentence:	*X + 49 = 85*
Answer:	*X = 36 cookies*

Follow Activity Guide: RUN.
Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

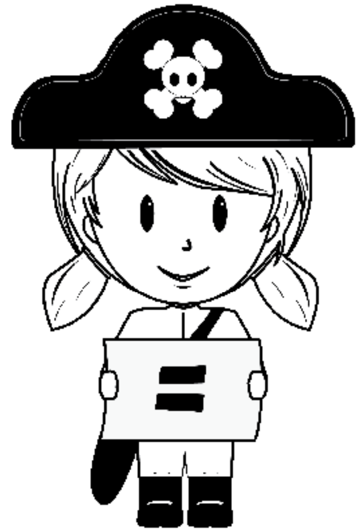
Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 38

ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Total, Difference, and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review



Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups

Student Materials

Equation Quest: Lesson 38
Buccaneer Problems: Lesson 38
Jolly Roger Review: Lesson 38
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let’s get started with our Equation Quest! What does the equal sign mean?

The same as.

That’s right. The equal sign means *the same as* (point)**.**

Look at A-B.

Point to A-B.

Follow Activity Guide: Equation Quest – Equal Groups.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

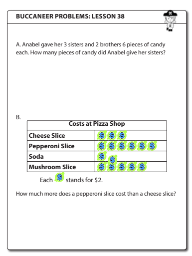
What's the Equal Groups equation?

GR × N = P.

Good. Say it again.

GR × N = P.

Point to A.



Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

> *Anabel gave her 3 sisters and 2 brothers 6 pieces of candy each. How many pieces of candy did Anabel give her sisters?*
>
> *Problem Type:* *Equal Groups*
> *Relevant Info:* *GR = 3; N = 6; P = X*
> *Irrelevant Info:* *~~2 brothers~~*
> *Number Sentence:* *3 × 6 = X*
> *Answer:* *X = 18 pieces of candy*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Equal Groups.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the product is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

Solution to Problem B:

How much more does a pepperoni slice cost than a cheese slice?

Problem Type:	*Difference*
Relevant Info:	*G = 12 ; L = 6; D = X*
Number Sentence:	*12 – 6 = X*
Answer:	*X = $6 more*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Difference.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

Yes.

What do we need to do?

Number it.

(Students number graph.)

<u>Solution to Problem C:</u>

How many snowy days were there in December, January, and February?

Problem Type:	*Total, three parts*
Relevant Info:	*P1 = 6; P2 = 11; P3 = 9; T= X*
Number Sentence:	*6 + 11 + 9 = X*
Answer:	*X = 26 snowy days*

Follow Activity Guide: RUN.
Follow Activity Guide: Total.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

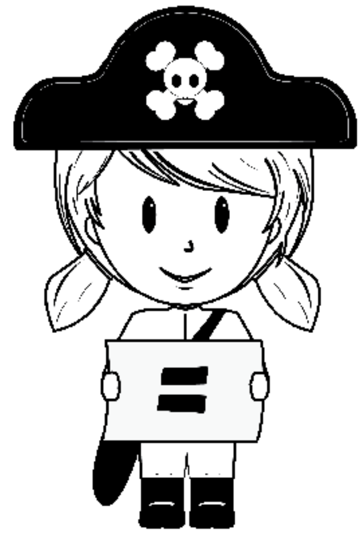
Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Lesson 39



ACTIVITIES

1. Math Fact Flash Cards
2. Equation Quest
3. Buccaneer Problems
   Change and Equal Groups
4. Shipshape Sorting
5. Jolly Roger Review

Materials

Posters

Counting Up
RUN/Total
Difference/Change
Equal Groups

Student Materials

Equation Quest: Lesson 39
Buccaneer Problems: Lesson 39
Jolly Roger Review: Lesson 39
Treasure Map

Tutor Materials

Cubes
Math Fact Flash Cards
Timer
Sorting Cards
Sorting Mat
Gold coins
Treasure box

1: Math Fact Flash Cards

Use Activity Guide: Math Fact Flash Cards.

2: Equation Quest

Let's get started with our Equation Quest! What does the equal sign mean?

The same as.

That's right. The equal sign means *the same as* (point)**.**

Look at A-B.

Point to A-B.

Follow Activity Guide: Equation Quest – Equal Groups.

3: Buccaneer Problems

Before we get started today, let's talk about when you solve word problems. We solve word problems when we meet. When else do you solve word problems?

(Students.)

That's right! You solve word problems with your math teacher in class, when you take a test, and when you do your homework. It's important to use your Pirate Math Equation Quest skills whenever you solve a word problem. Pirate Math Equation Quest can help you solve any word problem!

When can you use your Pirate Math Equation Quest skills?

(Students.)

That's right! Be sure to use your Pirate Math Equation Quest skills when you see a word problem anywhere!

Let's review. What's the Total equation?

P1 + P2 = T.

Good. Say it again.

P1 + P2 = T.

What's the Difference equation?

G – L = D.

Now say the Difference equation again.

G – L = D.

What are the two Change equations?

ST + C = E and ST – C = E.

Great job! Say the two Change equations again.

ST + C = E and ST – C = E.

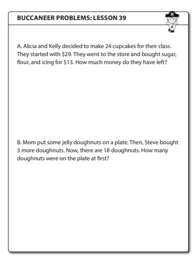
What's the Equal Groups equation?

GR × N = P.

Good. Say it again.

GR × N = P.

Point to A.


BUCCANEER PROBLEMS: LESSON 39

A. Alicia and Kelly decided to make 24 cupcakes for their class. They started with $29. They went to the store and bought sugar, flour, and icing for $13. How much money do they have left?

B. Mom put some jelly doughnuts on a plate. Then, Steve bought 3 more doughnuts. Now, there are 18 doughnuts. How many doughnuts were on the plate at first?

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem A:</u>

> *Alicia and Kelly decided to make 24 cupcakes for their class. They started with $29. They went to the store and bought sugar, flour, and icing for $13. How much money do they have left?*
>
> *Problem Type:* *Change, decrease*
> *Relevant Info:* *ST = 29; C = 13; E = X*
> *Irrelevant Info:* *~~24 cupcakes~~*

Number Sentence: *29 – 13 = X*
Answer: *X = $16*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to B.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

<u>Solution to Problem B:</u>

Mom put some jelly doughnuts on a plate. Then, Steve bought 3 more doughnuts. Now, there are 18 doughnuts. How many doughnuts were on the plate at first?

Problem Type:	*Change, increase*
Relevant Info:	*ST = X ; C = 3; E = 18*
Number Sentence:	*X + 3 = 18*
Answer:	*X = 15 doughnuts*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Change.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

Point to C.

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

No.

Solution to Problem C:

Diego painted a fence around his house with 4 equal sides. If Diego used 16 cans of paint in all, how many cans did he use on each side?

Problem Type:	*Equal Groups*
Relevant Info:	*GR = 4; N = X; P = 16*
Number Sentence:	$4 \times X = 16$
Answer:	*X = 4 cans of paint*

What's the first thing we do every time we see a word problem?

RUN through it!

Follow Activity Guide: RUN.
Follow Activity Guide: Equal Groups.

Monitor students as they follow the steps for isolating the X in an Equal Groups problem where the number in each group is missing.

The last thing we need to do is check to see if our answer makes sense. Does our answer make sense? Why?

(Students explain.)

You earn a treasure coin!

4: Shipshape Sorting

Use Activity Guide: Shipshape Sorting.

5: Jolly Roger Review

Use Activity Guide: Jolly Roger Review.

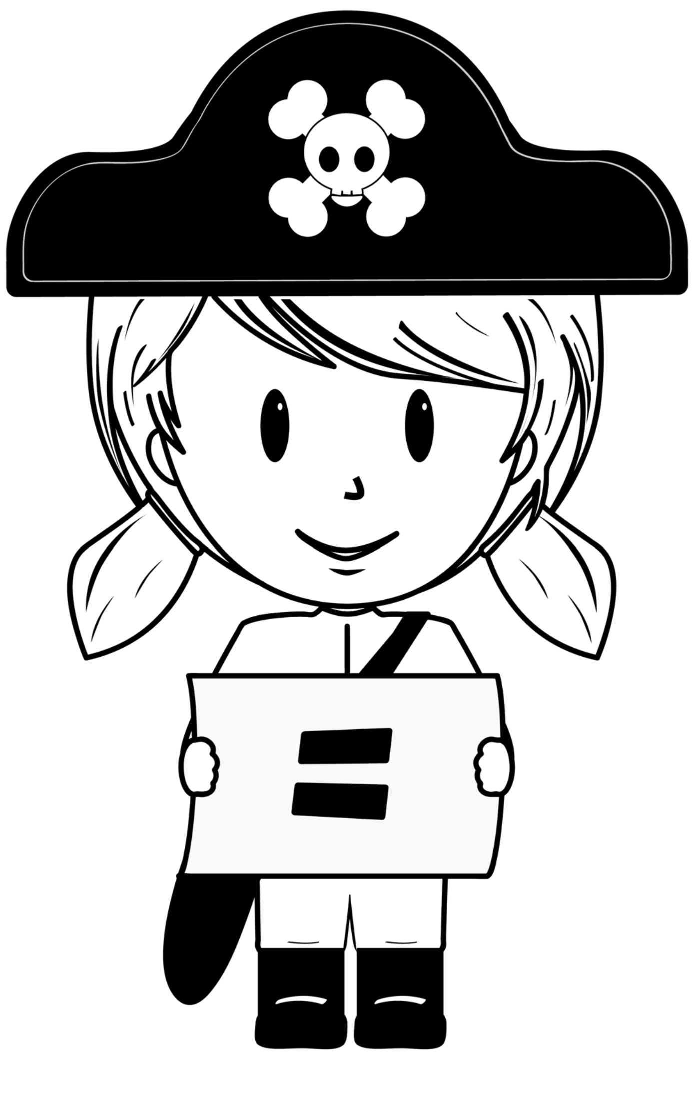
Treasure Map

Let's count the number of coins your group earned today and mark them on your Treasure Map.

Count coins.

Go ahead and color __ places on your Treasure Map! (Students color.)

Activity Guides



Math Fact Flash Cards
ACTIVITY GUIDE

The first activity we'll do every day is round robin Math Fact Flash Cards.

Display Math Fact Flash Cards.

The first person in the group will look at the problem and tell me the answer as quickly as he/she can. If he/she answers the problem correctly, I'll put it in a pile on the table. If the student answers the problem incorrectly, I will say, "count up," and the student will answer the problem again by counting up. I'll put the card in the pile once the student answers the problem correctly, then it will be the next person's turn. We will continue the round robin with the third and fourth person. We will repeat the pattern and your group will answer as many flash cards as you can in 1 minute.

You have 1 minute. Are you ready?

Show Math Fact Flash Cards for 1 minute.

Good! Let's count the cards in the pile.

Count cards with students.

Your group answered __ Math Fact Flash Cards correctly! Let's try to beat that score. You have 1 minute. Go!

Show Math Fact Flash Cards for 1 minute.

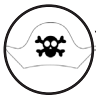
Let's count the cards in the pile.

Count cards with students.

Your group answered __ Math Fact Flash Cards correctly. You beat/did not beat your score. Now, we'll graph your group's higher score for today on your graph.

Help students color graph.

Every day we'll warm up our brain with these flash cards. As you get better in math, your graph will get higher and higher!

 **Your group did a nice job. You earn a treasure coin!**

**For Lessons 1-30, we recommend teachers use the addition and subtraction flash cards. For Lessons 31-39, we recommend teachers use the multiplication and division flash cards. However, teachers always should assess students' needs and ability levels before determining which flash cards are most appropriate.*

Equation Quest ACTIVITY GUIDE

It's time to solve some equations!

When we are solving an addition, subtraction, multiplication, or division problem, we can follow a few steps to help us solve any equation.

Can you remind me what the equal sign means?

The same as.

Exactly! The equal sign means the same as. Whenever we see the equal sign, what do we need to do?

Make the sides the same.

That's right. The equal sign acts as a balance, so what is on one side of the equal sign (point) **must be the same as what is on the other side of the equal sign** (point)**.**

We need to balance the sides and find the missing information.

Now let's read the number sentence.

(Read number sentence, saying "the same as" in place of "equals.")

The first step to solving an equation is to draw a line down from the equal sign.

(Draw line coming down from the equal sign.)

This line (point) **helps us remember to balance the two sides of the equation.**

The second step is to isolate the X. Say that with me.

Isolate the X.

Say it again with me.

Isolate the X.

What does it mean to isolate the X?

To get X by itself.

That's right.

When we solve an equation, we need to isolate the X, or get the X by itself.

What do we need to do to see the X?

Circle the X.

That's right! We need to circle the X.

We circle the X so it's easy to see and so we remember that we need to get X by itself.

(Circle X.)

Now let's isolate the X.

Remind me again, what does it mean to isolate the X?

To get X by itself.

We drew a line down from the same as sign and we circled the X. Now we can do what?

Isolate the X.

Great job! Let's solve our equation by isolating the X!

Use the language in the tables that follow to assist students in solving the equations. The first table includes language for Total problems and Change increase problems. The second table includes language for Difference problems and Change decrease problems. The third table includes language for Multi-Operational problems. The fourth table includes language for Equal Groups problems.

TOTAL PROBLEMS; CHANGE INCREASE PROBLEMS	
<u>*If X is P1 or P2*</u> **We want to get the X by itself on this side** (point) **of the equal sign. To do that, I need to move** __ (point to P1 or P2, whichever has the number) **to that side of the equal sign. We want to make this side zero.** **If you have** ____ (point to part number) **and want to get zero, you can subtract** ___ (say part number)**. Because** __ (say part number) **minus** ___ (say part number) **is what?** 0. (Write, subtract below the number, and cross out the numbers.) **Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.** **For this problem, we subtracted** ___ (say part number and point to the left side of the equal sign) **from this side of the equal sign**, **so we have to subtract** ___ (say part number and point to the right side of the equal sign) **from this side of the equal sign.** (Write minus ___ and subtract number.) **We isolated the X. X is the same as ___.**	<u>*If X is T*</u> **We want to get the X by itself on this side** (point) **of the equal sign.** **Is the X by itself?** Yes. **Exactly, the X already is by itself on this side** (point) **of the equal sign, so you just solve.** **Do you add or subtract?** Add. **That's right. The X already is isolated because it's T, so you can just add P1 and P2 to find T.** (Add.) **X is the same as ___. Are the two sides the same?** Yes.

<table>
<tr><th colspan="3">DIFFERENCE PROBLEMS; CHANGE DECREASE PROBLEMS</th></tr>
<tr>
<td><u>If X is G: Add</u>
We want to get the X by itself on this side (point) of the equal sign. To do that, you move __ (point to L) to that side of the equal sign. This is not plus __ (say L). It's minus __(say L and point to the minus sign).

If you move the __(say L) to that side of the equal sign (point), we need to add __ (say L). We add __ (say L) because minus ___ (say L) and plus __ (say L) is the same as zero.

(Write, add below the number, and cross out the numbers.)

And if you added __ to this side (point), what do you have to do to that side?

Add __.

(Add.)

We isolated the X. X is the same as ___.</td>
<td><u>If X is L: Subtract</u>
We want to get the X by itself on this side (point) of the equal sign. Because this problem has a minus sign, we need to figure out how to subtract from ___ (say G) to make the sides the same. Let's use some cubes to help us out.

We have___(point to D) on that side, so subtract cubes from ___(say G) until you get to ___ (say D).

(Subtract cubes.)

How many cubes did you subtract?

(Answer.)

So, __ (say G) minus __ (say D) is the same as __.

X is the same as ___.

Are the two sides the same?

Yes.</td>
<td><u>If X is D: Subtract</u>
We want to get the X by itself on this side (point) of the equal sign.

Is the X by itself?

Yes.

The X is by itself on that side (point) of the equal sign, so we can go ahead and solve.

Do you add or subtract?

Subtract.

That's right. The X is isolated because it's D, so you can just subtract G minus L to find D.

(Subtract.)

X is the same as ___.

Are the two sides the same?

Yes.</td>
</tr>
</table>

MULTI-OPERATIONAL PROBLEMS
Let's look at the left side of the equal sign. Are there any numbers we can add/subtract? (Respond and add/subtract when applicable.) **Look at the right side of the equal sign. Are there any numbers we can add/ subtract?** (Respond and add/subtract when applicable.) **Now that you added/subtracted the numbers, let's look at our equation. Does this look like an equation we know how to solve?** Yes. **Can you find the X?** (Points to X.) **We need to isolate the X.** *Based on the problem type and the location of X, follow the appropriate steps provided in the previous tables for solving the equations.*

<table>
<tr><th colspan="2">EQUAL GROUPS PROBLEMS</th></tr>
<tr><td><u>If X is GR or N</u>
We want to get the X by itself on this side (point) of the equal sign. To do that, I need to move __ (point to GR or N, whichever has the number) to that side of the equal sign. We want to make this side zero.

If you have ____ (point to GR or N number) and want to get zero, you can divide ___ (say GR or N number). Because __ (say GR or N number) divided by ___ (say GR or N number) is what?

1.

Now we have X times 1. Any number times 1 is the same as that number.

(Write, divide below the number, write 1, and cross out the numbers.)

Now we need to balance the sides of the equal sign, so we have to do the same thing to the other side.

For this problem, we divided_ (say GR or N number and point to the left side of the equal sign) from this side of the equal sign, so we have to divide ___ (say GR or N number and point to the right side of the equal sign) from this side of the equal sign.

(Write divide ___ and divide number.)

We isolated the X. X is the same as ___.</td>
<td><u>If X is P</u>
We want to get the X by itself on this side (point) of the equal sign.

Is the X by itself?

Yes.

Exactly, the X already is by itself on this side (point) of the equal sign, so you just solve.

What operation should we use?

Multiplication.

That’s right. The X already is isolated because it’s P, so you can just multiply GR and N to find P.

(Multiply.)

X is the same as ___. Are the two sides the same?

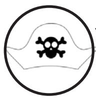
Yes.</td></tr>
</table>

Read number sentence aloud with students.

Let's go back and review what we did.

Review the same as sign, circling the X, and isolating the X aloud with students.

Nice work with Equation Quest!

 **You earn a treasure coin!**

RUN
ACTIVITY GUIDE

Whenever we see a word problem, we first have to check if there is a graph or a table. Is there a graph or a table?

If yes: Number the graph.
If no: Move on to R.

Follow the RUN poster.

What does R stand for?

Read the problem.

Let's read it!

Read the problem or allow a student to read the problem, if time permits.

Great! What does U stand for?

Underline the label and cross out irrelevant information.

First, let's look at the question sentence to identify the label. The question sentence is the sentence that starts with the capital letter and ends with the question mark. Then, let's underline the label.

Let's do that now.

(Write.)

Before we move to the N in RUN, we need to check for irrelevant information. We only use numbers in the problem that tell us about ___ (fill in blank with label)**. A number that tells about other things is irrelevant information. In this problem, do you see any number that is not about our label?**

Yes/No.

If students say no and are correct: **That's right. We need all the numbers in this problem to find our answer.**

If students say no but are incorrect: **One of the numbers in this problem is irrelevant. You don't need one of these numbers** (point) **to find the answer. Look again more carefully and explain to me which number is irrelevant.**

If students say yes and are correct: **Right. The number of** ___ (fill in blank with irrelevant information) **is irrelevant information.**

If students say yes but are incorrect: **Let's look again at this problem.** *Explain why we need each number, one at a time. As you explain, engage the students by asking questions.*

If there is irrelevant information: **So we've figured out that**___ (fill in blank with irrelevant information) **is irrelevant. We don't need this number** (point) **to solve the word problem. What do we do with irrelevant information?**

Cross it out.

Excellent. Let's do that now. What does N stand for?

Name the problem type.

What's the problem type?

Total/Difference/Change/Equal Groups.

Depending on the problem type, skip to appropriate section.

T

TOTAL

Is this a Total problem? Are parts put together into a total?

Yes.

You're right. The problem puts ___ and ___ together. It's a Total problem. The question wants us to find how many ___ altogether. So we're putting ___ together. What kind of problem puts parts together?

Total.

Right. So what kind of problem is this?

Total.

Good. This is a Total problem because it puts ___ together. We ask ourselves: Are parts put together into a total? If the answer is yes, it's a Total problem. I put T next to the problem to remind me it's a Total problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Total problem. (Point to T.) **Now we can use the Total poster to solve it.**

Follow the Total Poster Activity Guide.

D

DIFFERENCE

Is this a Difference problem? Are two amounts compared for a difference?

Yes.

Right. The problem compares ___ and ___. It's about a difference. I put D next to the problem to remind me it's a Difference problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Difference problem. (Point to D.) **Now we use the Difference poster to solve it.**

Follow the Difference Poster Activity Guide.

C

CHANGE

Is this a Change problem? Is there a starting amount that increases or

decreases to a new amount?

Yes.

You're right. This question gives/asks for a starting amount. The amount changes to a new end amount. I put C next to the problem to remind me it's a Change problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Change problem. (Point to C.) **Now we use the Change poster to solve it.**

Follow the Change Poster Activity Guide.

EG

EQUAL GROUPS

Is this an Equal Groups problem? Do we have groups with an equal number in each group?

Yes.

You're right. The problem has ___ groups with ___ in each group. It's an Equal Groups problem. We have groups with an equal number in each group. What kind of problem has groups with an equal number in each group?

Equal Groups.

Right. So what kind of problem is this?

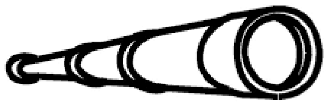
Equal Groups.

Good, it's an Equal Groups problem because we have groups with an equal number in each group. I put EG next to the problem to remind me that it's an Equal Groups problem.

(Write.)

The RUN poster helped us organize our paper so we can solve the problem! We said this is a Equal Groups problem. (Point to GR.) **Now we use the Equal Groups poster to solve it.**

Follow the Equal Groups Poster Activity Guide.



Total
ACTIVITY GUIDE

Let's use the Total poster to solve our word problem!

Let's look at the five steps. What's Step 1?

Write P1 + P2 = T.

Good. We write the Total equation: P1 plus P2 is the same as T. In a Total problem, parts are put together into a total. The Total equation, P1 plus P2 is the same as T, helps us remember how to write our number sentence for a Total problem.

(Write.)

Step 2: "Find T." Does the problem give us the total or ask us to find the total?

___.

If T is missing: **This problem asks us to find the total. That's what's missing. We have to find T. What should we write under T?** X. (Write.)	*If T is a number:* **This problem tells us the total is ___. Where should we write ___?** Underneath T. (Write.)

Step 3: "Find P1 and P2." We need to think about the story and figure out the parts. What are the parts?

___ and ___.

If P1 is a number and P2 is missing:	*If P1 and P2 are numbers:*
This problem tells us about one of the parts and asks us to find the other part. So, ___ is P1. Where should we write ___? Under P1. (Write and check off the number.) **The other part is missing. We have to find P2. What should we write under P2?** X. (Write.)	**This problem tells us P1 and P2. Where should we write ___ and ___?** Underneath P1 and P2. (Write and check off the numbers.)

Now let's go to Step 4. What's Step 4?

Write the signs.

Good. What math signs do we need to complete our number sentence?

+ and =.

Does this look like a number sentence we know how to solve?

Yes!

Let's read the number sentence together.

Read number sentence aloud with the students.

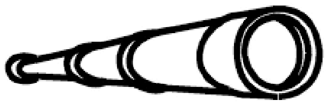
Let's solve for X!

After you find X, be sure to label the number answer with the word underlined in the problem. Ask students if they "answered the question."

The last thing we need to do is check to see if our answer makes sense. Does

this answer make sense? Why?

(Students explain.)



Difference ACTIVITY GUIDE

Here are the six steps for a Difference problem. What's Step 1?

Write G – L = D.

Good. We write the Difference equation: G minus L is the same as D.

(Write.)

Step 2: "[Compare sentence] and label G and L." A compare sentence usually has the words *more, fewer, less,* or "er" words. Let's find the compare word. What's the compare word?

___.

Good. What's the compare sentence in this problem?

___.

Great job. Let's put brackets around our compare sentence.

(Bracket.)

Now let's label G and L in the word problem.

(Write.)

Who/What is the amount that's greater?

___.

So we'll write a G above ___..

Who/What is the amount that's less?

___.

So we'll write an L above ___.

Step 3 says, "Find D."

This compare sentence asks us to find the difference between G and L. The difference is what's missing. We write X under D.

(Write.)

Step 4: "Find G and L."

We know that ___ has the amount that's greater and ___has the amount that's less when we look at the compare sentence. Let's review. Who's/What's G?

___.

That's right. ___ is the amount that's greater. To help us remember that, we wrote a G above ___.

(Write.)

Who's/What's L?

___.

___ is the amount that's less. To help us remember that, we wrote an L above ___.

(Write.)

Now, let's think. What numbers go with G and L?

What's the number that's greater?

___.

This problem tells us the amount that's greater is ___. Where do we write ___?

Underneath G.

(Write and check off the number.)

What's the amount that's less?

___.

This problem tells us the amount that's less is ___. Where do we write ___?

Underneath L.

(Write and check off the number.)

What's Step 5?

Write the signs.

Good. What math signs do we use to complete our number sentence?

– and =.

(Write.)

___ stands for G. ___ stands for L. ___ stands for the Difference. Does this look like a number sentence we know how to solve?

Yes!

Let's read the number sentence together.

Read number sentence aloud with students.

Let's solve for X!

After you find X, be sure to label the number answer with the word underlined in the problem. Ask student if he/she "answered the question."

The last thing we need to do is check to see if our answer makes sense. Does this answer make sense? Why?

(Students explain.)

Change
ACTIVITY GUIDE

Here are the six steps for a Change problem. What's Step 1?

Write ST +/– C = E.

Good. We write the Change equation: ST plus or minus C is the same as E.

(Write.)

Is this a Change increase or Change decrease?

Increase/decrease.

Remember, if it's a Change increase, we'll use the plus sign. If it's a Change decrease, we'll use the minus sign.

Step 2: "Find ST." We have to decide the starting amount. Look at the problem. Does it tell us the starting amount?

If ST is a number:	*If ST is missing:*
Very good. ____ is the starting amount. The problem gives us ST. We write ____ under ST. (Write and check off the number.)	**That's right. In this problem, we have to figure out the starting amount. The starting amount is missing. We write X under ST.** (Write.)

Step 3: "Find C." We have to decide the change amount. Sometimes the problem will tell us the change amount. Other times, the change amount is X. Look at the problem. Does it tell about a change?

If C is a number: **Yes! ____ is the change. We write ____ under C.** (Write and check off the number.)	*If C is missing:* **Yes. We have to find the change. The change is what's missing. We write X under C.** (Write.)

Step 4 says: "Find E." We have to decide the end amount. Sometimes the problem tells us the end amount. Other times, the end amount is X. Look at the problem. Does it tell us the end amount?

If E is a number: **Yes! ____ is the end amount. We write ____ under E.** (Write and check off the number.)	*If E is missing:* **Yes. We have to find the end amount. The end amount is what's missing. We write X under E.** (Write.)

What's Step 5?

Write the signs.

Good. What math signs do we use to complete our number sentence?

+/– and =.

(Write.)

___ stands for ST. ___ stands for C. ___ stands for E. Does this look like a number sentence we know how to solve?

Yes!

Let's read the number sentence together.

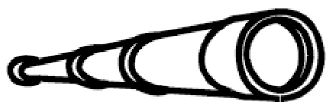
Read number sentence aloud with students.

Let's solve for X!

After you find X, be sure to label the number answer with the word underlined in the *problem. Ask students if they "answered the question."*

The last thing we need to do is check to see if our answer makes sense. Does this answer make sense? Why?

(Students explain.)



Equal Groups ACTIVITY GUIDE

Let's use the Equal Groups poster to solve our word problem!

Let's look at the five steps. What's Step 1?

Write GR × N = P

Good. We write the Equal Groups equation: GR times N is the same as P. In an Equal Groups problem, we make groups with an equal number in each group to find a product. The Equal Groups equation, GR times N is the same as P, helps us remember how to write our number sentence for an Equal Groups problem.

(Write.)

Step 2: "Find P." Does the problem give us the product or ask us to find the product?

___.

If P is a number: **This problem tells us the product is ___. Where should we write ___?** Underneath P. (Write.)	*If P is missing:* **This problem asks us to find the product. That's what's missing. We have to find P. What should we write under P?** X. (Write.)

Step 3: "Find GR and N." We need to think about the story and figure out the number of groups and the number in each group. Do we know how many groups there are?

___.

If GR is a number and N is missing:	*If GR is missing and N is a number:*	*If GR and N are numbers:*
This problem tells us about the number of groups and asks us to find how many are in each group. So, ___ is the number of groups. Where should we write ___? Under GR. (Write and check off the number.) **The number in each group is missing. We have to find N. What should we write under N?** X. (Write.)	**This problem asks us to find the number of groups and tells us how many are in each group. So, the number of groups is missing. What should we write under GR?** X. (Write.) **The problem tells us how many are in each group. Where should we write ____?** Under N. (Write and check off the number.)	**This problem tells us GR and N. Where should we write ___ and ___?** Underneath GR and N. (Write and check off the numbers.)

Now let's go to Step 4. What's Step 4?

Write the signs.

Good. What math signs do we need to complete our number sentence?

$\times$ and =.

Does this look like a number sentence we know how to solve?

Yes!

Let's read the number sentence together.

Read number sentence aloud with the students.

Let's solve for X!

After you find X, be sure to label the number answer with the word underlined in the problem. Ask students if they "answered the question."

The last thing we need to do is check to see if our answer makes sense. Does this answer make sense? Why?

(Students explain.)

Shipshape Sorting ACTIVITY GUIDE

It's time for Shipshape Sorting!

Shipshape Sorting

T	**D**
C	**?**

Display Sorting Cards.
Display Sorting Mat.

I'll show these cards. On each sorting card, there's a word problem. I'll read the word problem aloud. Your job is to decide what type of problem is on the card and to sort the card on this mat (point)**. You don't solve the problem, you decide what type of problem it is.**

For Total lessons: **So far, we've learned about Total problems, so you'll only use the T or Total box** (point) **and the question mark box** (point). **If you think the problem is a Total problem, put the card here** (point). **If it's NOT a Total problem, put the card in this question mark box** (point)**.**

For Difference lessons: **So far, we've learned about Total problems and Difference problems, so you'll use the Total, Difference, and question mark boxes. If you think the problem is a Total problem, put the card here** (point)**. If you think it's a Difference problem, put the card here** (point). **If it's NOT a Total or Difference problem, put the card in the question mark box** (point).

For Change lessons: **Now, we've learned about Total, Difference, and Change problems. If the problem is a Total problem, put the card in the Total box** (point). **If it's a Difference problem, put the card in the Difference box** (point). **If it's a Change problem, put the card in the Change box** (point). **You don't need to use the question mark box because all of the problems are Total, Difference, or Change.**

Do you have any questions? Begin.

Hold up and read cards to students in a round robin for 1 minute.

Great! You did a nice job with the sorting. Let's see how many are correct.

Go through cards (answers are on the back of each card).

Review up to 3 incorrect cards with students by saying:

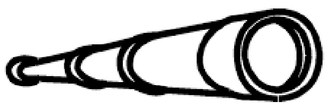
Look at the question. Does the word problem tell a story about two or more amounts combined for a total? Does the word problem tell a story about two amounts being compared? Or does the word problem tell a story about a starting amount that increases or decreases?

> *<u>If correct:</u>* **That's right.**
> *<u>If incorrect:</u>* **Let's look at this card together** (Review problem)**.**

Nice work with Shipshape Sorting!

 **You earn a treasure coin!**

**Note: For the group tutoring program, we introduce Equal Groups problems during Lesson 28. We did not develop Equal Groups sorting cards or a sorting mat that includes EG. If desired, teachers can develop their own Equal Groups sorting cards and update the sorting mat to include an EG box for Shipshape Sorting during Lessons 28-39.*



Jolly Roger Review
ACTIVITY GUIDE

The last activity we do every day is practice problems. We call these problems our Jolly Roger Review.

Display Jolly Roger Review.

On the top are addition and subtraction problems. On the bottom is a word problem.

You have 1 minute to work on the addition and subtraction problems. Go ahead and get started.

Set timer for 1 minute.

GRADING PROCEDURE FOR ADDITION AND SUBTRACTION
Correct answer: 1 point
Students can earn 1 point for each correctly answered problem.

If you got the correct answer, circle it. (Quickly scan student responses.)

Have students circle answer if correct.

Choose 3 incorrect responses (from whole group) and demonstrate correct addition/subtraction.

If incorrect addition: **I start with the greater number, __, and count up the number that's less, __.** (Count up.) **The sum is the last number I said, __. __ plus __ equals __.**

If incorrect subtraction: **I start with the minus number, __, and count up the number you start with, __.** (Count up.) **The difference is the number of fingers I have up, __. __ minus __ equals __.**

Now, you have 2 minutes to work on the word problem. Go ahead.

Set timer for 2 minutes.

GRADING PROCEDURE FOR WORD PROBLEM

Correct answer response: 1 point
Correct label response 1 point
Students can earn a total of 2 points for answering the word problem with a correct number and label answer.

In this problem, we:

If Total: **show a total when two or more parts are added together. This problem is a Total problem.**

If Difference: **compare two amounts to find the difference. This problem is a Difference problem.**

If Change: **show an increase/decrease in the starting amount. This problem is a Change problem.**

If Equal Groups: **show groups with an equal number in each group. This is an Equal Groups problem.**

To solve the problem, we find the important information, cross out irrelevant information, write the number sentence, and solve for X.

Demonstrate how to solve the problem correctly by quickly following the RUN and Total, Difference, Change, or Equal Groups poster steps.

Great job! Your group earned another treasure coin!