

ICUE math



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Scholarly references:

McNeil, N. M., Hornburg, C. B., Brletic-Shiple, H. & Matthews, J. M. (2019). Improving children’s understanding of mathematical equivalence via an intervention that goes beyond nontraditional arithmetic practice. *Journal of Educational Psychology*, 111(6), 1023–1044. <https://doi.org/10.1037/edu0000337>

Hornburg, C. B., Brletic-Shiple, H., Matthews, J. M., & McNeil, N. M. (2021). Improving understanding of mathematical equivalence. *Mathematics Teacher: Learning and Teaching PK–12*, 114(1), 16–26. <https://doi.org/10.5951/MTLT.2020.0109>

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Lesson Sessions

The manual includes scripted lesson plans for each session; however, you do NOT need to follow the scripts verbatim. You should study the script before teaching each lesson and simply use it as a guide during the actual instructional period. Also, check the list of materials needed for the session at the top of the lesson plan. At the beginning of each session, distribute workbooks to all students. The dialogue you will use during instruction is always in bold font in the lesson plans. After direct questions to students, the desired response is provided in parentheses and italics. Additional instruction, such as placement of manipulatives, is provided in regular font. When appropriate, some lessons contain pictures of the placement of objects used during instruction to help guide you through the setup process.

A typical lesson will begin with students following along in their workbooks as you explain problems and tasks to them. The lesson will end with an independent practice component or review section. Images of the pages students are looking at in their workbooks are provided within the lesson plans, so you can see what the students' workbooks contain.

The correct solutions to the independent practice components are indicated in red in your manual. After students have completed the independent practice, always either write these correct solutions to the problems on the board, or go over each solution with the class if time permits. If you are writing the solutions on the board, then you may also want to encourage "pair sharing" where students compare their solutions and strategies for solving the problems with their neighbors'. As a reminder, you should only spend about 15 minutes on each session of ICUE. Please do not spend more than 20 minutes, even if you aren't finished going over the solutions with the students.

Throughout the lesson scripts you will see gray boxes labeled "Clarifying Questions." These are additional questions and/or prompts for you to provide if students do not give the desired response, or if they seem confused after the scripted questions. You may use these clarifying questions when appropriate; you do not have to ask these questions if students are absorbing the content of the lesson.

ICUE: Weekly Organizer

	Day 1	Day 2	
Week 1	Session 1: Frog and Monkey 1 Outside the context of arithmetic <i>*includes manipulatives (additional prep time)</i>	Session 2: Balance Bears 1 Outside the context of arithmetic <i>*includes manipulatives (additional prep time)</i>	
Week 2	Session 3: Equal or Not Equal 1 Outside the context of arithmetic	Session 4: Word Problems 1 Outside the context of arithmetic	
Week 3	Session 5: Frog and Monkey 2 Problems in nontraditional format (one side) <i>*includes manipulatives (additional prep time)</i>	Session 6: Minute Math Sums of 6	
Week 4	Session 7: Balance Bears 2 Problems in nontraditional format (one side) <i>*includes manipulatives (additional prep time)</i>	S8: Minute Math Sums of 7	S8: Guided Problem Solving 1 Practice
Week 5	Session 9: Complete the Equation 1 Introduce math equivalence problems <i>*gesture during mini-lesson (additional prep time)</i>	S10: Minute Math Sums of 6 & 7 <i>*gesture practice first</i>	S10: Dominoes Practice
Week 6	Session 11: Equal or Not Equal 2 Easy math equivalence problems	S12: Minute Math Sums of 8 <i>*gesture practice first</i>	S12: Apples for Jada and Joe 1 Practice
Week 7	Session 13: Complete the Equation 2 Easy math equivalence problems	S14: Minute Math Sums of 9	S14: Missing Numbers 1 Practice
Week 8	Session 15: Word Problems 2 Easy math equivalence problems connected to Frog/Monkey & Balance Scale	S16: Minute Math Sums of 8 & 9	S16: Mary and Juan 1 Practice
Week 9	Session 17: Equal or Not Equal 3 Easy math equivalence problems	S18: Minute Math Sums of 6-9	S18: Number Connections 1 Practice
Week 10	Session 19: Complete the Equation 3 Easy math equivalence problems	S20: Minute Math Sums of 10	S20: Apples for Jada and Joe 2 Practice
Week 11	Session 21: Complete the Equation 4 Easy math equivalence problems	S22: Minute Math Sums of 11	S22: Mary and Juan 2 Practice
Week 12	Session 23: Word Problems 3 Easy math equivalence problems	S24: Minute Math Sums of 10 & 11	S24: Choose the Correct Number 1 Practice
Week 13	Session 25: Compare Strategies 1 Incorrect strategy vs. equalize strategy	S26: Minute Math Sums of 12	S26: Missing Numbers 2 Practice
Week 14	Session 27: Compare Strategies 2 Incorrect strategies vs. equalize strategy	S28: Minute Math Sums of 13	S28: Mary and Juan 3 Practice
Week 15	Session 29: Word Problems 4 Difficult math equivalence problems	S30: Minute Math Sums of 12 & 13	S30: Missing Numbers 3 Practice
Week 16	Session 31: Equal or Not Equal 4 Difficult math equivalence problems	S32: Minute Math Sums of 6-13	S32: Choose the Correct Number 2 Practice

LEARNING OBJECTIVES

- Understand that the equal sign means “is the same amount as” or “is equal to”
- Identify instances in which the equal sign can be used to indicate that two numbers are the same

MATERIALS

- Frog and Monkey badges
- Bag of stickers
- *Frog* (green) & *Monkey* (blue) sticker collectors
- Large equal sign/same amount card
- Student workbook
- Student stickers

INSTRUCTIONAL PLAN

Before starting the first lesson, have a short class discussion by asking students: **What does it mean for two things to be equal?** (Ask several students and encourage varied responses, in any context.) **By the end of the lesson, you’re going to be able to understand that the equal sign means “is the same amount as” or “is equal to” and use it to show that two numbers are the same.**

Have two student volunteers come up and act as Frog and Monkey and give them badges. **Today you’re going to help Frog and Monkey share stickers. This is Frog’s sticker collector** (give “Frog” student the sticker collector with 5 stickers on it to hold facing the class). **How many stickers does Frog have?** (*five*)

This is Monkey’s sticker collector (give “Monkey” student the blank sticker collector to hold facing the class). **But Monkey wants to have the same number of stickers as Frog!**



Raise your hand if you know how many stickers to give Monkey (point), **so Monkey will have the same number of stickers as Frog** (point). (Select a student volunteer and give the student stickers to place on Monkey’s sticker collector.)

- **Do Frog and Monkey have the same number of stickers now?** (*yes*)

Clarifying Questions (Incorrect Response)

- **How many stickers does Frog have?**
- **And how many stickers did you give Monkey?**
- **So, do Frog and Monkey have the same number of stickers?**
- **Remember, Frog and Monkey want to have the same number of stickers** (remove incorrect sticker collector and replace with the extra blank sticker collector provided). **Let’s try again. Raise your hand if you know how many stickers Monkey needs to have the same number of stickers as Frog.**

Now Frog has 5 stickers (point) **and Monkey has 5 stickers** (point). **They both have the same number of stickers.**

- **What is another word we could use to say the two amounts are the same?** (*equal*)
- **Good, Frog and Monkey have an equal number of stickers.**

- **What math symbol do we use to show that two amounts are the same? (*equal sign*)**
- **Raise your hand if you know where to stand with the equal sign** (hold up equal sign card) **to tell others that the two amounts are equal** (give student volunteer the equal sign card to hold standing between Monkey's and Frog's sticker collectors and ask them to hold it with the equal sign facing the class).



Great job! This tells us that 5 (motion to Monkey's sticker collector) **is equal to** (motion to student with equal sign) **5** (motion to Frog's sticker collector). **Now it's your turn to read this equation with me. All together now: 5 is equal to 5** (students say aloud with teacher).

Have student holding equal sign flip over card so that "is the same amount as" faces the class. **We can also read this equation as five is the same amount as five. Why can we read this equation as five is equal to five OR five is the same amount as five? (*The equal sign means "is the same amount as."*) Another way we can think about the equal sign is that it means "is the same amount as."** I want you to remember these words "is the same amount as" because we are going to keep using those when we talk about equations. **So, this tells us that five** (motion to student with Monkey's sticker collector) **is the same amount as** (motion to student with "is the same amount as" card) **five** (motion to student with Frog's sticker collector). **Now it's your turn to read this equation with me. All together now: 5 is the same amount as 5** (students say aloud with teacher).

Let's try another one (call up two different students to act as Frog and Monkey and give them the second set of badges).

This is Monkey's sticker collector (give "Monkey" student the sticker collector with 4 stickers on it to hold facing the class). **How many stickers does Monkey have? (*four*)**
This is Frog's sticker collector (give "Frog" student the blank sticker collector to hold facing the class). **But Frog wants to have the same number of stickers as Monkey!**



Raise your hand if you know how many stickers to give Frog (point), **so Frog will have the same number of stickers as Monkey** (point). (Select a student volunteer and give the student stickers to place on Frog's sticker collector.)

- **Do Frog and Monkey have the same number of stickers now? (*yes*)**

Now Monkey has 4 stickers (point) and Frog has 4 stickers (point). They both have the same number of stickers.

- What is another word we could use to say the two amounts are the same? (*equal*)
- What math symbol do we use to show that two amounts are the same? (*equal sign*)
- Raise your hand if you know where to put the equal sign to tell others that the two amounts are equal (give student volunteer the equal sign card to hold standing between Monkey's and Frog's sticker collectors).



Great job! This tells us that 4 (motion to Monkey's sticker collector) **is equal to** (motion to student with equal sign) **4** (motion to Frog's sticker collector). **Now it's your turn to read this equation with me. All together now: 4 is equal to 4** (students say aloud with teacher).

Does anyone remember the words we used for the equal sign instead of "is equal to"? (*"is the same amount as"*) **Right, "is the same amount as."** (Have student flip over equal sign card so "is the same amount as" is facing class.) **Let's read this equation together: 4 is the same amount as 4** (students say aloud with teacher).

Now we're going to play the same game on paper. Open your workbook to page 3. Point to the first problem. Pass out one sheet of stickers to each student.

Frog and Monkey 1 **Session 1**

Place the correct number of stickers in each problem. Make sure Frog and Monkey share the stickers equally.

1.



●
●
●
●

Place Frog's stickers.

=



●
●
●
●

Here are Monkey's stickers.

2.



●
●
●

Here are Frog's stickers.

=



●
●
●

Place Monkey's stickers.

➔

- **Point to Monkey's sticker collector. How many stickers does Monkey have?** (*seven*)
- **Remember, Frog and Monkey want to have an equal number of stickers. Can you figure out how many stickers you should place on Frog's sticker collector, so Frog and Monkey will have an equal number of stickers? Go ahead and place them.** Students place stickers.
- **How many stickers did you place on Frog's sticker collector?** (*seven*)
- **Can you put a math symbol between Frog and Monkey to show they have the same number of stickers?** Students draw equal sign.

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3

3

- Now look at the equation in your book as I read it. This tells us that 7 is equal to 7. Now it's your turn to read it with me. All together now: 7 is equal to 7 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same amount as" or similar relational wording.) That's right. We could say 7 is the same amount as 7.

Clarifying Questions (Incorrect Response)

- How many stickers did you place on Frog's sticker collector?
- How many stickers does Monkey have on his sticker collector?
- Remember, Frog and Monkey want to have an equal number of stickers. Equal means "the same amount as." So do Frog and Monkey have the same number of stickers?

Point to the second problem. As a class, complete the second problem using the standard prompts above. Use clarifying questions only if needed. Collect students' sticker sheets after the second problem.

Turn the page in your workbook. Now we're going to play the same game, but this time you'll write the number of stickers instead of placing them. Point to the first problem.

Frog and Monkey 1 Session 1

Now write the number of stickers in each problem instead of placing them. Make sure Frog and Monkey share the stickers equally.

1.



10

How many does Frog need?

=



10

Here are Monkey's stickers.

2.



8

Here are Frog's stickers.

=



8

How many does Monkey need?

➔

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- Point to Monkey's sticker collector. How many does Monkey have? (*ten*)
- Can you figure out what number to write on Frog's sticker collector, so Frog and Monkey will have an equal number of stickers? Students write number.
- What number did you write on Frog's sticker collector? (*ten*)
- Can you put a math symbol between Frog and Monkey to show they have the same number of stickers? Students draw the equal sign.
- Now look at the equation in your book as I read it. This tells us that 10 is equal to 10. Now it's your turn to read it with me. All together now: 10 is equal to 10 (students say aloud with teacher).

- What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 10 is the same as 10.

Clarifying Questions (Incorrect Response)

- What number did you write on Frog’s sticker collector?
- What number does Monkey have on his sticker collector?
- So do Frog and Monkey have the same number of stickers?

Point to the second problem. As a class, complete the second problem using the standard prompts above. Use clarifying questions only if needed.

Turn to page 5 in your workbook. Now I want you to think about Frog and Monkey’s sharing game to help you solve some math problems. Point to the first problem.

Frog and Monkey 1 Session 1

Now think about that sharing game to help you solve the math problems. Write the correct number in the blank.

1. 6 = 6
How many does Frog need? Here are Monkey's stickers.

2. 9 = 9
Here are Frog's stickers. How many does Monkey need?

3. 15 is equal to 15
Here are Frog's stickers. How many does Monkey need?

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- **Frog’s stickers are on the left side of the equal sign** (circle hand over the left side) **and Monkey’s stickers are on the right side of the equal sign** (circle hand over the right side).
- **I want you to figure out what number goes in the blank** (point to the blank), **so Frog and Monkey have an equal number.**
- Wait for students to fill in the blank. **Let’s read this equation together. 6 is equal to 6** (students say aloud with teacher).

Clarifying Questions (Incorrect Response)

- What number did you write in the blank?
- What number is on the right side of the equal sign?
- So do you have the same amount on both sides of the equal sign?

I want you to do the next two problems on this page by yourself.

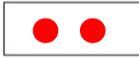
We’ve reached the end of the lesson. What have we learned today? Students respond. **Now you’ve learned that the equal sign means “is the same amount as” or “is equal to” and we can use it to show that two numbers are the same.**

(Independent Practice on following page)

INDEPENDENT PRACTICE

Frog and Monkey 1 Session 1

Frog and Monkey want to share the stickers equally. Fill in the missing values below.

1.  
 = 
Draw the dots.

2. $4 = \underline{4}$

3. $\underline{1}$ is the same amount as 1

4. $5 = \underline{5}$

➔

6

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- Now I want you to solve some more problems by yourself. Turn to page 6 in your workbook.
- Think about Frog and Monkey sharing stickers to help you solve each problem.

Go over solutions to the independent practice before going through the review on the following page.

REVIEW

Frog and Monkey 1 Session 1

Let's review all the ways you helped Frog and Monkey.

First we drew dots

 
 = 

Then we wrote numbers

 
 = 

Last we wrote equations

$3 = 3$



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- You've done a great job today. Now it's time to review all the ways you helped Frog and Monkey. Turn to page 7 in your workbook.
- First we drew dots (point) for Frog's and Monkey's stickers.
- Then we wrote the number (point) of stickers Frog and Monkey had.
- And last, we wrote equations (point) to show the relation between their stickers.
- How are all of these things the same? (they all show that Frog and Monkey have an equal number of stickers)

LEARNING OBJECTIVES

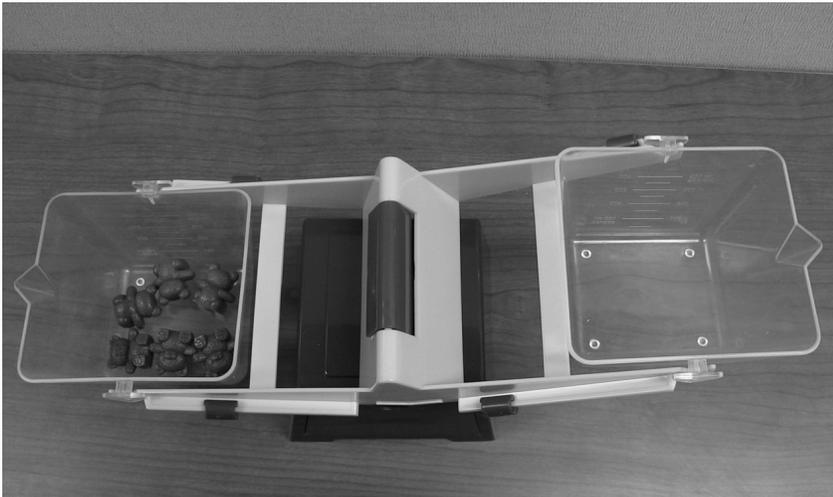
- Understand that the equal sign means “is the same amount as” or “is equal to”
- Identify instances in which the equal sign can be used to indicate that two numbers are the same

MATERIALS

- Student workbook
- Balance scales for teacher & each group
- 3 bags for teacher & each group
- Label and setup bags: A with 6 blue bears, B with 6 yellow bears, and C with equal sign card

INSTRUCTIONAL PLAN

Today you're going to play a new game with this scale and some bears (give each small group a balance scale and 3 bags and set up a balance scale in the front of the room). **I will tell you when it is time to open each of the bags. You are going to use the bears to make the scale balance. By the end of the lesson, you will know that the equal sign means “is the same amount as” or “is equal to” and use it to show that two numbers are the same.**



Balance scale setup

- I'm going to put **6** bears on the left side of the balance scale (put 6 blue bears on the left side of the scale). **Open Bag A** now and count out 6 blue bears. Then put 6 bears on the left side of the balance scale.
- What happened to the balance scale when you put the bears on this side (point)? (*that side of the scale went down*)

We want the scale to balance. (Important: Stress the word “balance” and gesture like a balanced scale with both palms up at your sides and flat. Be sure to keep your palms level. Pause and hold that gesture for a moment.) **Talk to your group members, and have one person raise their hand if you know how many bears you should put on the right side of the scale (point) so that the number of bears on the right side (point) will be the same as the number of bears on the left side (point).** (At this point, make sure each group is setting up the balance scale correctly.)

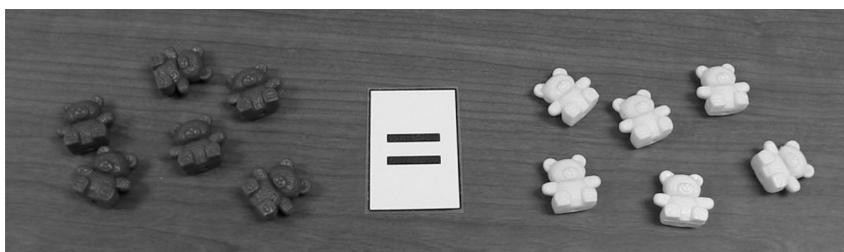
- **Why should you put 6 bears on the right side of the scale?** (*there are 6 bears on the other side*)
- **Open Bag B** now and count out 6 yellow bears. Then put 6 yellow bears on the right side of the balance scale.
- **The scale looks different now. What is different about the scale?** (*it's balanced*)
- **Why do you think it changed?** (*the number of bears on each side is the same*)

Clarifying Questions (Incorrect Response)

- **How many blue bears did you put on the left side (point) of the scale?**
- **How many yellow bears are there on the right side (point) of the scale?**
- **Is the scale balanced?**
- **Remember, we want the scale to balance (make balance gesture), so we need the same amount on both sides. Let's take out the yellow bears and try again. Talk to your group members, and have one person raise their hand if you know how many bears you should put on the right side of the scale (point) so that the number of bears on the right side (point) will be the same as the number of bears on the left side (point).**

When the two sides of the scale are at the same level – neither side is higher or lower – the scale is balanced. That happens when we have the same amount on both sides of the scale. See, there are 6 bears on the left side (take blue bears out of the tub on the left and set on the left) and there are 6 bears on the right side (take yellow bears out of the tub on the right and set on the right). Both sides have the same number of bears. (Move scale out of the way).

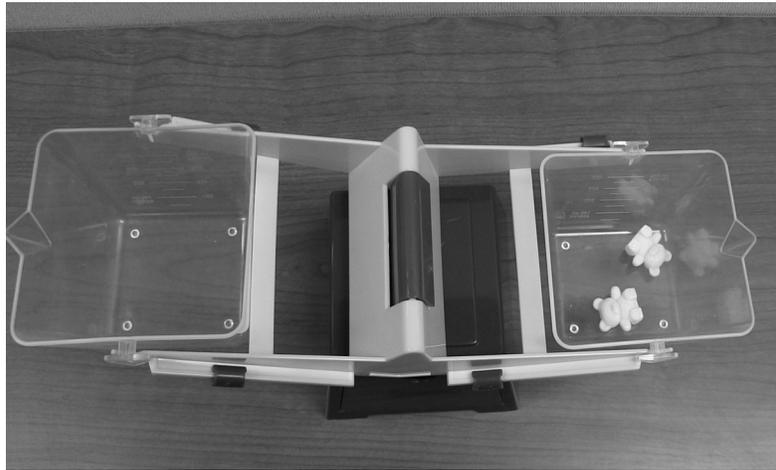
- **Now take the 6 blue bears out of the tub on the left side and set them on the left, and take the 6 yellow bears out of the tub on the right and set them on the right.**
- **What is another word we could use to say that the two amounts are the same? (*equal*)**
- **Good, the two groups have an equal number of bears.**
- **What math symbol do we use to show that two amounts are the same? (*equal sign*)**
- **Open Bag C now and take out the equal sign card.**
- **Talk to your group members, and have one person raise their hand if you know where to put the equal sign (hold up equal sign card) to tell others that the two amounts are the same.**
- **Now, put the equal sign between the two amounts to show that they are the same. (At this point, make sure each group is setting up the equation correctly.)**



- **Great job! This tells us that 6 (point to blue bears on the left) is equal to (point to the equal sign) 6 (point to yellow bears on the right). Now it's your turn to read this equation with me. All together now: 6 is equal to 6 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 6 is the same as 6.**

Put the blue bears back in Bag A, the yellow bears back in Bag B, and the equal sign back in Bag C (wait while students return materials to bags). Now let's try another one.

- I'm going to put **2 bears** on the **right side** of the **balance scale** (put 2 yellow bears on the right side of the scale). **Open Bag B** now and count out 2 yellow bears. Then put 2 bears on the right side of the balance scale.
- **What happened to the balance scale when you put the bears on this side** (point)? (*that side of the scale went down*)



Balance scale setup

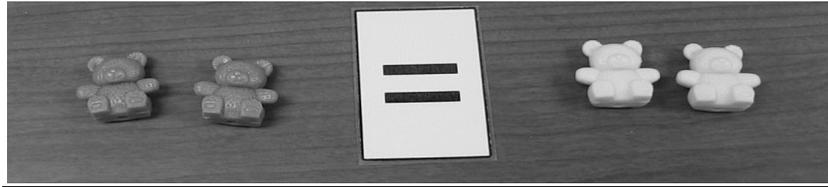
We want the scale to balance. (Important: Stress the word “balance” and gesture like a balanced scale with both palms up at your sides and flat. Be sure to keep your palms level. Pause and hold that gesture for a moment.) **Talk to your group members, and have one person raise their hand if you know how many bears you should put on the left side of the scale** (point) **so that the number of bears on the left side** (point) **will be the same as the number of bears on the right side** (point). (At this point, make sure each group is setting up the balance scale correctly.)

- **Why should you put 2 bears on the left side of the scale?** (*there are 2 bears on the other side*)
- **Open Bag A** now and count out 2 blue bears. Then put 2 blue bears on the left side of the balance scale.
- **The scale looks different now. What is different about the scale?** (*it's balanced*)
- **Why do you think it changed?** (*the number of bears on each side is the same*)

When the two sides of the scale are at the same level – neither side is higher or lower – the scale is balanced. That happens when we have the same amount on both sides of the scale. **See, there are 2 bears on the left side** (take blue bears out of the tub on the left and set on the left) **and there are 2 bears on the right side** (take yellow bears out of the tub on the right and set on the right). **Both sides have the same number of bears.** (Move scale out of the way).

- **Now take the 2 blue bears out of the tub on the left side and set them on the left, and take the 2 yellow bears out of the tub on the right and set them on the right.**
- **What is another word we could use to say that the two amounts are the same?** (*equal*)
- **Good, the two groups have an equal number of bears.**
- **What math symbol do we use to show that two amounts are the same?** (*equal sign*)
- **Open Bag C** now and take out the equal sign card.

- Talk to your group members, and have one person raise their hand if you know where to put the equal sign (hold up equal sign card) to tell others that the two amounts are the same.
- Now, put the equal sign between the two amounts to show that they are the same. (At this point, make sure each group is setting up the equation correctly.)



- **Great job! This tells us that 2** (point to blue bears on the left) **is equal to** (point to the equal sign) **2** (point to yellow bears on the right). **Now it's your turn to read this equation with me. All together now: 2 is equal to 2** (students say aloud with teacher).

Now we're going to play the same game on paper. Open your workbook to page 9. Point to the first problem.

Balance Bears 1 Session 2

Draw the correct number of bears in each problem. Make sure the scale has an equal number on both sides.

1.

•
•

=

•
•

Draw the bears on the left side.
Here are the bears on the right side.

2.

•
•
•
•

=

•
•
•

Draw the bears on the left side.
Here are the bears on the right side.

→

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- Point to the right side of the balance scale. How many bears are there on that side of the scale? (*two*)
- Remember, we want the scale to balance (make level balance gesture), so we need to have the same amount on both sides. Can you figure out how many bears you need to draw on the left side so that there will be an equal amount on both sides? Go ahead and draw them. Students draw bears.
- How many bears did you draw on the left side? (*two*)
- Can you put a math symbol between the two sides of the balance scale to show there is the same amount on both sides of the scale? Students draw the equal sign.

Clarifying Questions (Incorrect Response)

- How many bears did you draw on the left side of the scale?
- How many bears are on the right side of the scale?
- Remember, we want the scale to balance, so we need to have the same amount on both sides. Is the scale balanced?

Now look at the equation in your book as I read it. This tells us that 2 is equal to 2. Now it's your turn to read it with me. All together now: 2 is equal to 2 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as"). That's right. We could say 2 is the same as 2.

Point to the second problem. Repeat above prompts for the second problem.

Turn the page in your workbook. Now we're going to play the same game, but this time you'll write the number of bears instead of drawing them. Point to the first problem.

Balance Bears 1 **Session 2**

Now write the number of bears in each problem instead of drawing them. Make sure the scale has an equal number on both sides.

1.

8

=

8

Here are the bears
on the left side.

How many does the
right side need?

2.

6

=

6

How many does the
left side need?

Here are the bears
on the right side.

→

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- Point to the left side of the scale. How many bears are on the left side of the scale? (*eight*)
- Can you figure out what number to write on the right side of the scale, so there will be an equal amount on both sides of the scale? Students write number.
- What number did you write on the right side? (*eight*)
- Can you put a math symbol between the two sides of the balance scale to show there is the same amount on both sides of the scale? Students draw the equal sign.
- Now look at the equation in your book as I read it. 8 is equal to 8. Now it's your turn to read it with me. All together now: 8 is equal to 8 (students say aloud with teacher).

Clarifying Questions (Incorrect Response)

- What number did you write on the right side of the scale?
- What number is on the left side of the scale?
- Is the scale balanced?

What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 8 is the same as 8.

Point to the second problem. Repeat above prompts for the second problem.

Turn to page 11 in your workbook. Now I want you to think about balancing the scale to help you solve some math problems. Point to the first problem.

Balance Bears 1 **Session 2**

Now think about balancing the scale to help you solve the math problems. Write the correct number in the blank.

1.

4 = 4

How many does the left side need? Here are the bears on the right side.

2.

5 is the same amount as 5

How many does the left side need? Here are the bears on the right side.

3.

3 = 3

Here are the bears on the left side. How many does the right side need?

➔

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- This is the left side of the balance scale (circle hand over the left side) and this is the right side of the balance scale (circle hand over the right side). So, I want you to figure out what number goes in the blank (point to the blank), so that both sides will have an equal amount and the scale will balance.
- Wait for students to fill in the blank. **Let's read this equation together. 4 is equal to 4** (students say aloud with teacher).

Clarifying Questions (Incorrect Response)

- What number did you write in the blank?
- What number is on the right side of the equal sign?
- So do you have the same amount on both sides of the equal sign?

I want you to do the next two problems on this page by yourself.

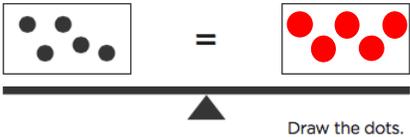
We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned that the equal sign means "is the same amount as" or "is equal to" and you can use it to show that two numbers are the same.

(Independent Practice on following page)

INDEPENDENT PRACTICE

Balance Bears 1 Session 2

The scale needs the same amount on both sides to balance. Fill in the missing values below.

1. 

2. 4 is equal to 4

3. 5 = 5

4. 3 = 3

➔

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- Now I want you to solve some more problems by yourself. Turn to page 12 in your workbook.
- Think about balancing the scale to help you solve each problem.

Go over solutions to the independent practice before going through the review on the following page.

REVIEW

Balance Bears 1 Session 2

Let's review all the ways you made the scale balance.

First we drew dots



Then we wrote numbers



Last we wrote equations

5 = 5

➔

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You've done a great job today. Now it's time to review all the ways you made the scale balance. Turn to page 13 in your workbook.

First we drew dots (point) for bears on the balance scale.

Then we wrote the number (point) of bears on the sides of the scale instead of drawing them.

Last, we wrote equations (point) to show the relation between the two sides.

How are all of these things the same? (they all show an equal number of bears on each side of the balance scale)

What has to be true for the scale to balance? (there has to be the same amount on each side)

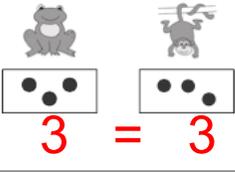
MAKING THE CONNECTION

Now we are going to think about the two activities we did before. First we helped Frog and Monkey share stickers. Then we used bears to make the scale balance. I want you to answer some questions to help you think about how these two activities are the same. Turn to page 14 in your workbook.

Balance Bears 1
Session 2

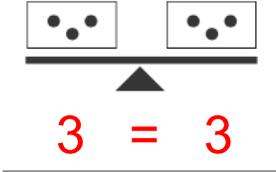
Write the equation that goes with each picture.

1.



$3 = 3$

2.



$3 = 3$

Fill in the blanks to answer the questions.

3. What do you notice about the two equations you just wrote?
Both equations are the same.

4. What do both equations tell us? Can you think of two ways to describe this?
Three is equal to three.
Three is the same amount as three.

5. In what way is using the bears to balance the scale like helping Frog and Monkey share stickers? Can you think of another way to describe it?
In both cases, we need to make two amounts the same.
In both cases, we need to make two amounts equal.



- Look at the pictures of Frog and Monkey. Point to Frog's stickers. How many stickers does Frog have? (*three*)
- Ok, now write the number 3 underneath Frog's sticker collector. Write 3 on the board.
- Now point to Monkey's stickers. How many stickers does Monkey have? (*three*)
- Ok, now write the number 3 underneath Monkey's sticker collector. Write 3 on the board.
- Now, can you put a math symbol between those numbers to show that they are equal? Students draw equal sign. Write = on the board also.
- Now watch me as I read this equation. Three (point to left side) is equal to (point to equal sign) three (point to right side). Now it's your turn to read the equation. (*3 is equal to 3*).

Now look at the balance scale. Repeat the prompts above with the balance scale example. Ask students to point to the left side, write 3, point to the right side, write 3, and then put an equal sign between the numbers).

- **Now watch me as I read this equation.** Three (point to left side) is equal to (point to equal sign) three (point to right side). **Now it's your turn to read the equation.** (*3 is equal to 3*)

Read Question 3 aloud and allow time for class discussion. After the concept has been discussed, ask students to fill in the blank before moving on to the next question.

Read Question 4 aloud. **What do both equations tell us? Can you think of two ways to describe this? Try your best to fill in both blanks on Question 4.**

Discuss the question as a class. Encourage students to fill in BOTH blanks before moving on. Some possible correct responses are: is equal to, is the same amount as, is equivalent

to. Read both sentences aloud to remind students that both filled-in sentences mean the same thing: “**Three is equal to three. Three is the same amount as three.**”

Read Question 5 aloud: **In what way is using the bears to balance the scale like helping Frog and Monkey share stickers? Can you think of another way to describe it? Try your best to fill in both blanks on Question 5.**

Discuss the question as a class before ending the lesson. Encourage students to fill in BOTH blanks. Some possible correct responses are: equal, the same, equivalent. Read both sentences aloud: **In both cases, we need to make two amounts equal. In both cases, we need to make two amounts the same.**

Key concept: Frog and Monkey and the Balance Scale are two different examples of equality. Frog and Monkey want to have an equal number of stickers and the balance scale has to have an equal number of bears on each side to balance.

LEARNING OBJECTIVES

- Understand that the equal sign means “is the same amount as” or “is equal to”
- Determine whether equations demonstrate equality

MATERIALS

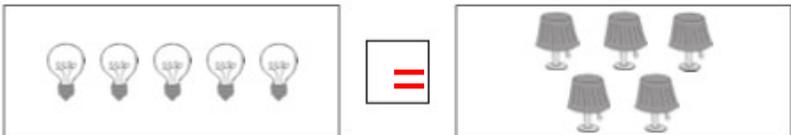
- Student workbook
- Classroom board
- Red colored pencil

INSTRUCTIONAL PLAN

Today you’re going to hear statements about groups of objects and determine whether the statements are true or false. By the end of the lesson, you’re going to know that the equal sign means “is the same amount as” or “is equal to” and decide if equations are true or false.

- What does it mean if something is true? (*correct*)
- What does it mean if something is false? (*incorrect*)

Open your workbook to page 16. Let’s look at the first set of pictures together. Point to the light bulbs. Now point to the lamps.

1. 

We have one light bulb for every lamp (pause). Is that statement true or false? (*true*)

Why did you say true? (*there are 5 light bulbs and 5 lamps*)

- If we have one light bulb for every lamp, then what do we know about the number of light bulbs and lamps? (*they are the same*)
- What is another word that means “the same amount as?” (*equal*)

Clarifying Questions (Incorrect Response)

- Let’s look at the pictures together. How many light bulbs are there? (*five*)
- How many lamps are there? (*five*)
- There are 5 light bulbs and 5 lamps, so we have the same number of light bulbs and lamps. That means we have one light bulb for every lamp, so the statement is true.

Now, point to the small box between the light bulbs and lamps. You’re going to put a math symbol in that box. If the number of light bulbs is the same as the number of lamps, you will put an equal sign in the box (draw an equal sign on the board) . If the number of light bulbs is not the same as the number of lamps, you will put a not-equal sign in the box (draw a not-equal sign on the board). You may not have seen this symbol before (point to the not-equal sign). The not-equal sign looks like the equal sign except it has a slash through it to let you know that the two amounts are not the same.

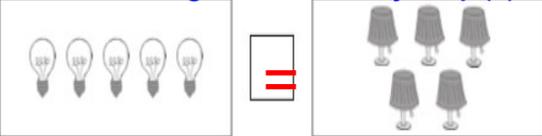
- Which of those math symbols should you put between the light bulbs and lamps (point to the equal sign, then the not-equal sign)? (*equal sign*) Students write.

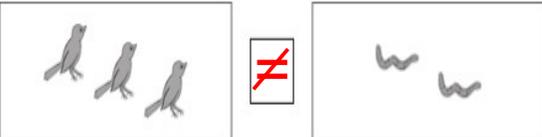
- **Why did you choose the equal sign?** (*the numbers of light bulbs and lamps are the same*)
- **Now look at the equation in your book as I read it. This tells us that 5 is equal to 5. Now it's your turn to read it with me. All together now: 5 is equal to 5** (students say aloud with teacher).
- **What else could we say for the equal sign instead of “is equal to”?** (Wait for responses... encourage “is the same as” or similar relational wording.) **That's right. We could say 5 is the same as 5.**

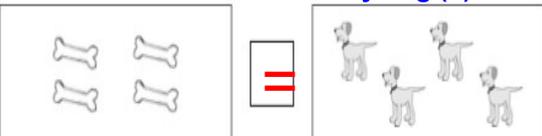
Equal or Not Equal 1 **Session 3**

Fill in the box with the equal sign or the not-equal sign (\neq).

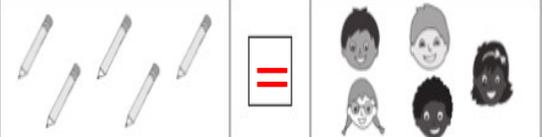
- We have one light bulb for every lamp (T)**

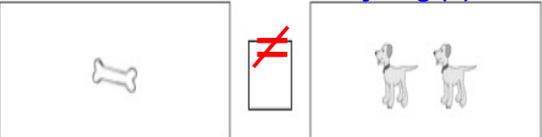

- We have one worm for every bird (F)**


- We have one bone for every dog (T)**


- We have one light bulb for every lamp (F)**


- We have one pencil for every student (T)**


- We have one bone for every dog (F)**

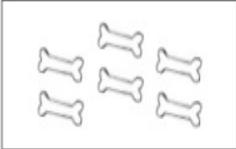


➔

Let's look at the next problem. For each problem, read the statement in blue aloud to the students. After each statement provide the following prompts:

- **Is that statement true or false? Tell your neighbor if you think it is true or false, and why.** Give students a little time to share then select a student volunteer to explain.
- **What symbol should you put in the little box between the two groups of objects?**
- **Let's read this equation together** (*...is equal to...; ...is not equal to...*) (students read aloud with teacher).

We have one bone for every dog (T)

7.  = 

We have one pencil for every student (F)

8.  \neq 

We have one light bulb for every lamp (F)

9.  \neq 

Nine is equal to nine (T)

10.  = 

Eleven is equal to four (F)

11.  \neq 

Two is equal to three (F)

12.  \neq 



Great job! Turn to the next page in your workbook. We're going to play the same game, but this time some of the boxes will have numbers in them instead of objects.

For problems 7-9, read the statement in blue aloud to the students. After each statement provide the following prompts:

- Is that statement true or false? Tell your neighbor if you think it is true or false, and why. Give students a little time to share, then select student volunteer to explain.
- What symbol should you put in the little box between the two groups of objects?
- Let's read this equation together (...is equal to...; ...is not equal to...) (students read aloud with teacher).

Let's look at the next set of problems. We're going to play the same game, but this time there will be a number in both boxes. For problems 10-12, read the statement in blue aloud to the students. After each statement provide the following prompts:

- Is that statement true or false? Tell your neighbor if you think it is true or false, and why. Give students a little time to share, then select student volunteer to explain.
- What symbol should you put in the little box between the two groups of objects?
- Let's read this equation together (...is equal to...; ...is not equal to...) (students read aloud with teacher).

For $9 = 9$: What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as"). That's right. We could say 9 is the same as 9.

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned that the equal sign means "is the same amount as" or "is equal to" and you can decide if equations are true or false.

INDEPENDENT PRACTICE

Equal or Not Equal 1 **Session 3**

Fill in the box with the equal sign or the not-equal sign (\neq).

- 7 7
- ★ ★ ★ ★ ★
- 6 ▲ ▲
- ● ● ● 4

→

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Now I want you to solve some problems by yourself. Turn to page 18 in your workbook. For each problem you will see a number or group of objects on the left and a number or group of objects on the right with an empty box between them. You need to determine the relation between the numbers and objects and put the equal sign or not-equal sign in the empty box. Remember, you are grading on whether the amounts are equal, not whether they are the same in appearance. Do you understand the directions? Allow time for students to complete the worksheet and go over solutions before moving on.

For $4 = 4$: What else could we say for the equal sign instead of "is equal to"? (*is the same as*). That's right. We could say 4 is the same as 4.

Now it's your turn to be the teacher! Turn to page 19 in your workbook and take out a red colored pencil. These are the same types of problems you just did on the previous page, but the answers have already been filled in by another student. So, it's your job to be the teacher and grade the worksheet. Look at each problem, and decide if the student got it right or wrong. Draw a check mark next to the problem (point) if the student got it right and an X if the student got it wrong. If the student got it wrong, you should also write the correct symbol above the box. Do you have any questions?

Equal or Not Equal 1 **Session 3**

Another student filled in the boxes. Make a check if the answer is correct or an X if the answer is wrong.

- ☺ 17 17
- ● ● ● ● ● ● ● ● ●
- ☺ ★ ★ 2
- X 6 ▲ ▲ ▲ ▲

→

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Equal or Not Equal 1 **Session 3**

- X ▲ ▲ ▲ ▲ ▲ ▲
- X 13 31
- ☺ ● ● ● ● ● ● 5
- ☺ ★ ★ ★ ★ ★ ★ ★ ★ 8

STOP

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LEARNING OBJECTIVES

- Understand that the equal sign means “is the same amount as” or “is equal to”
- Determine the relation between pairs of students

MATERIALS

- Student workbook
- Classroom board

INSTRUCTIONAL PLAN

Today we’re going to compare information about pairs of children. By the end of the lesson, we will know that the equal sign means “is the same amount as” or “is equal to” and figure out the relation between pairs of children.

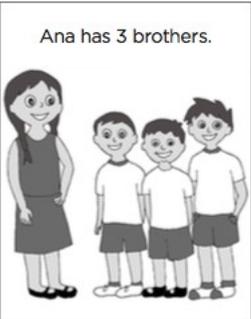
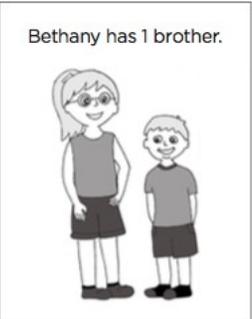
Sometimes the given information will make the two children have the same amount, and you’ll write the equal sign (draw an equal sign on the board). Sometimes the given information will make the children have a different amount. If the children have a different amount then they are not equal, and you’ll write the not-equal sign (draw a not-equal sign on the board). The not-equal sign looks like the equal sign except it has a slash through it to let you know that the two amounts are not the same.

Now open your workbook to page 22. Let’s look at the first set of pictures together. Point to the first picture. This is Juan. Juan has 2 dogs. Now point to the second picture. This is Mary. Mary has 2 dogs.

Word Problems 1 **Session 4**

Put the appropriate symbol in the box to show the relation between the children.

1. Juan has 2 dogs.  = Mary has 2 dogs. 

2. Ana has 3 brothers.  ≠ Bethany has 1 brother. 



- What did you just learn about Juan and Mary? (*they both have dogs*)
- Do the pictures show that Juan and Mary have the same amount or different amounts? (*the same*)
- How are Juan and Mary the same? (*they both have 2 dogs*)
- What is another word that means “the same as?” (*equal*)
- What math symbol could you use to show that Juan and Mary have an equal number of dogs? Write the symbol in the box. (*equal sign*)
- This tells us that two (point to left box) is equal to (point to equal sign) two (point to right box). Now it’s your turn to read the equation just like I did (students read).

I want you to finish this page and complete the problems on the next two pages by yourself. If the information makes the children the same, put the equal sign in the box. If the information makes the children different, put the not-equal sign in the box. Raise your hand if you have any questions. Allow students time to complete pages 22–24 and then go over the answers before moving on to the next section.

Answers for page 23: =, =. Answers for page 24: ≠, ≠.

Now we're going to play the same game, but this time you'll write an equation to represent the relation you see. Now turn in your workbook to page 25 and let's look at the first set of pictures together. Point to the first picture. This is Fred. Fred read 5 books. Now point to the second picture. This is Patty. Patty read 1 book.

Word Problems 1 **Session 4**

Write an equation to show the relation between the two children.

1. Fred read 5 books.
 Patty read 1 book.


5 \neq 1

2. Rachel has 7 flowers.
 Lindsay has 4 flowers.


7 \neq 4

➔

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- Does that information make Fred and Patty the same or different? (*different*)
- How are Fred and Patty different? (*Fred read 5 books, but Patty only read 1 book*)
- What symbol do we use to show that two amounts are not the same? (*not-equal sign*)
- Can you use that symbol to write an equation to show that Fred and Patty read a different number of books? Put the number that Fred read on the left, the number that Patty read on the right, and the not-equal sign in the middle.
- Now look at the equation in your book as I read it. 5 is not equal to 1. Now it's your turn to read it with me. All together now: 5 is not equal to 1 (students say aloud with teacher).

I want you to finish this page and complete the problems on the next two pages by yourself. For each problem, write an equation to show the relation between the children. Raise your hand if you have any questions. Allow students time to complete pages 25–27 and then go over the answers before moving on to the next section.

Answers for page 26: $3 = 3$, $37 \neq 40$. Answers for page 27: $50 \neq 61$, $100 = 100$.

Now we're going to play the same game, but this time you'll learn two things about each student, so you'll write two equations to represent the relations you see. Now turn to page 28 in your workbook. Point to the first picture. This is Marvin. Marvin ate 2 carrots and 2 raisins. Now point to the second picture. This is Summer. Summer ate 2 carrots and 1 raisin.

Word Problems 1 **Session 4**

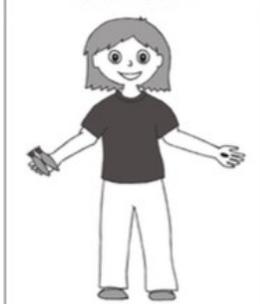
Write two equations: one to show how the children are the same and one to show how the children are different.

1.

Marvin ate 2 carrots and 2 raisins.



Summer ate 2 carrots and 1 raisin.



$$2 = 2$$

$$2 \neq 1$$

➔

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- How are Marvin and Summer the same? (*they both ate 2 carrots*)
- On the first line (point), I want you to write an equation to show that the number of carrots Marvin ate is equal to the number of carrots Summer ate.
- Now look at the equation in your book as I read it. This tells us that 2 is equal to 2. Now it's your turn to read it with me. All together now: 2 is equal to 2 (students say aloud with teacher).
- How are Marvin and Summer different? (*Marvin ate 2 raisins, but Summer only ate 1*)
- On the second line (point), I want you to write an equation to show that the number of raisins Marvin ate is not equal to the number of raisins Summer ate.

- Now look at the equation in your book as I read it. This tells us that 2 is not equal to 1. Now it's your turn to read it with me. All together now: 2 is not equal to 1 (students say aloud with teacher).

I want you to complete the problems on the next two pages by yourself. Write two equations on each page, one to show how the children are the same and another to show how the children are different. Raise your hand if you have any questions. Allow students time to complete pages 29–30 and then go over the answers before moving on.

Answers for page 29: $5 = 5$, $3 \neq 1$. Answers for page 30: $55 = 55$, $85 \neq 80$.

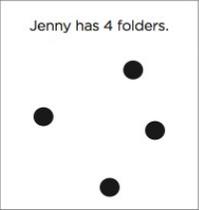
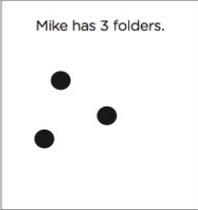
We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned that the equal sign means "is the same amount as" or "is equal to" and you can figure out the relation between pairs of children.

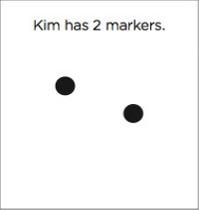
Now I want you to solve some more problems by yourself. Turn to page 31 in your workbook. If the information makes the children the same, put the equal sign in the box. If the information makes the children different, put the not-equal sign in the box. For the next page, you will write an equation to show the relation between the children. On the final practice page, you will first need to read each statement and determine whether the amounts are equal or not equal. Then you will write an equation to show the relation between the children. Do you have any questions? If time is limited, please at least cover page 33. Read the equations together and ask students "What else could we say for the equal sign instead of 'is equal to'?" (*is the same as*)

INDEPENDENT PRACTICE

Word Problems 1 **Session 4**

Put the appropriate symbol in the box to show the relation between the children.

1. Jenny has 4 folders.   Mike has 3 folders.

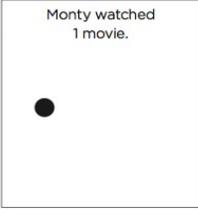
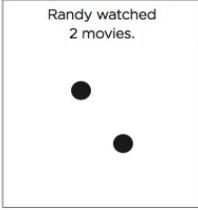
2. Kim has 2 markers.   Kelly has 2 markers.

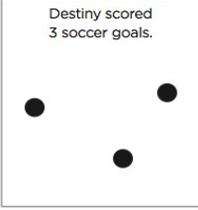
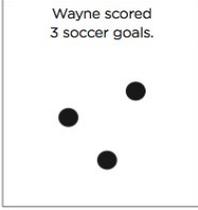
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Word Problems 1 **Session 4**

Write an equation to show the relation between the two children.

1. Monty watched 1 movie.  Randy watched 2 movies. 
1 ≠ 2

2. Destiny scored 3 soccer goals.  Wayne scored 3 soccer goals. 
3 = 3

→

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Word Problems 1 **Session 4**

Read the statement and determine whether the children are equal or not-equal. Then write an equation to show the relation between the two.

1. Tina has 4 apples. Billy has 4 apples.
4 = 4

2. Nell has 2 dogs. Tim has 3 dogs.
2 ≠ 3

3. Dan has 1 bike. Lisa has 1 bike.
1 = 1



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LEARNING OBJECTIVES

- Understand that the equal sign means “is the same amount as” or “is equal to”
- Use concrete objects and numbers to complete equations that express equality

MATERIALS

- Frog and Monkey badges
- Bag of stickers
- *Frog* (green) & *Monkey* (blue) sticker collectors
- Large equal sign/same amount card
- Large plus sign card necklace
- Student workbook

INSTRUCTIONAL PLAN

(Have two student volunteers come up and act as Frog and Monkey and give them badges):
Today you’re going to help Frog and Monkey share stickers again. By the end of the lesson, you’re going to be able to understand that the equal sign means “is the same amount as” or “is equal to” and use objects and numbers to complete equations.

This is Monkey’s sticker collector (give “Monkey” student the sticker collector with 6 stickers on it to hold facing the class). **How many stickers does Monkey have?** (*six*)

This is Frog’s sticker collector (give “Frog” student the sticker collector with 4 stickers on it to hold facing the class). **How many stickers does Frog have?** (*four*)

But Frog wants to have the same number of stickers as Monkey! Here is another sticker collector for Frog (give “Frog” student a blank sticker collector to hold in their right hand facing the class – see picture for setup).



Raise your hand if you know how many stickers to give Frog (point), **so Frog will have the same number of stickers as Monkey** (point.) (Give student volunteer stickers to place on Frog’s sticker collector.)

- **Do Frog and Monkey have the same number of stickers now?** (*yes*)

Clarifying Questions (Incorrect Response)

- **How many stickers does Monkey have** (point to Monkey’s sticker collector)?
- **And all together** (circle hand over both of Frog’s sticker collectors), **how many stickers does Frog have?**
- **So, do Frog and Monkey have the same number of stickers?**
- **Remember, Frog and Monkey want to have the same number of stickers** (remove incorrect sticker collector and replace with the extra blank sticker collector provided). **Let’s try again. Frog already has 4 stickers. So, raise your hand if you know how many more stickers Frog needs** (point to blank sticker collector) **so that all together,** (motion above both of Frog’s sticker collectors), **he will have the same number of stickers as Monkey** (point to Monkey’s sticker collector).

Now **Monkey** has **6 stickers** (point) and **all together Frog** has **6 stickers** (circular motion toward student with Frog's sticker collectors). **They both have the same number of stickers.**

- **What is another word we could use to say the two amounts are the same?** (*equal*) **Good, Frog and Monkey have an equal number of stickers.**
- **What math symbol do we use to show that two amounts are equal?** (*equal sign*)
- **Raise your hand if you know where to put the equal sign** (hold up equal sign card) **to tell others that the two amounts are the same** (give student volunteer the equal sign card and have them stand between "Frog" and "Monkey" students).

Look, Frog has two sticker collectors (motion to Frog's two sticker collectors).

- **Raise your hand if you know what math symbol we can use to show that we are adding these stickers** (point to Frog's first sticker collector) **together with these stickers** (point to Frog's second sticker collector) **to make one big group of stickers** (circular motion above both of Frog's sticker collectors). (*plus sign*)
- **Raise your hand if you know where to put the plus sign** (hold up plus sign card) **to tell others that we are adding these stickers together to make one big group of stickers** (give student volunteer the plus sign card to hang around Frog's neck).



Great job! This tells us that 6 (motion to student with Monkey's sticker collector) **is equal to** (motion to student with equal sign) **2 plus 4** (circular motion toward student with Frog's sticker collectors). **Now it's your turn to read this equation with me. All together now: 6 is equal to 2 plus 4** (students say aloud with teacher).

What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) **Right, "is the same amount as!"** (have student holding equal sign flip over card so "is the same amount as" sign is facing class). **So this tells us that 6** (motion to student with Monkey's sticker collector) **is the same amount as** (motion to student with "is the same amount as" card) **2 plus 4** (circular motion toward student with Frog's sticker collectors). **Now it's your turn to read this equation with me. All together now: 6 is the same amount as 2 plus 4** (students say aloud with teacher).

Let's try another one (call up two different students to act as Frog and Monkey and give them the second set of badges).

This is Frog's sticker collector (give "Frog" student the sticker collector with 8 stickers on it to hold facing the class). **How many stickers does Frog have?** (*eight*)

This is Monkey's sticker collector (give "Monkey" student the sticker collector with 3 stickers on it to hold facing the class). **How many stickers does Monkey have?** (*three*)

But Monkey wants to have the same number of stickers as Frog! Here is another sticker collector for Monkey (give “Monkey” student a blank sticker collector to hold in their left hand facing the class – see picture for setup).



Raise your hand if you know how many stickers to give Monkey (point), **so Monkey** (point) **will have the same number of stickers as Frog** (point.) (Give student volunteer stickers to place on Monkey’s sticker collector).

- **Do Frog and Monkey have the same number of stickers now?** (yes)

Now all together, Monkey has 8 stickers (circular motion toward student with Monkey’s sticker collectors) **and Frog has 8 stickers** (point). **They both have the same number of stickers.**

- **What is another word we could use to say the two amounts are the same?** (*equal*)
- **What math symbol do we use to show that two amounts are equal?** (*equal sign*)
- **Raise your hand if you know where to put the equal sign to tell others that the two amounts are the same** (give student volunteer the equal sign card and have them stand between “Frog” and “Monkey” students).

Look, Monkey has two sticker collectors (point).

- **Raise your hand if you know what math symbol we can use to show that we are adding these stickers** (point to Monkey’s first sticker collector) **together with these stickers** (point to Monkey’s second sticker collector) **to make one big group of stickers** (circular motion above both of Monkey’s sticker collectors). (*plus sign*)
- **Raise your hand if you know where to put the plus sign** (hold up plus sign card) **to tell others that we are adding these stickers together to make one big group of stickers** (give student volunteer the plus sign card to hang around “Monkey” student’s neck).



Great job! This tells us that 3 plus 5 (circular motion toward student with Monkey’s sticker collectors) **is equal to** (motion to student with equal sign) **8** (motion to student with Frog’s sticker collector). **Now it’s your turn to read this equation with me. All together now: 3 plus 5 is equal to 8** (students say aloud with teacher).

Does anyone remember the words we used for the equal sign instead of “is equal to”? (*is the same amount as*) Right, “**is the same amount as.**” (have student flip over equal sign card so “is the same amount as” is facing class). **Let’s read this equation together: 3 plus 5 is the same amount as 8** (students say aloud with teacher).

Now we’re going to play the same game on paper. Open your workbook to page 35. Point to the first problem.

Frog and Monkey 2 Session 5

Draw the correct number of stickers in each problem. Make sure Frog and Monkey share the stickers equally.

1.

Here are Frog's stickers. Finish drawing Monkey's stickers.

2.

Finish drawing Frog's stickers. Here are Monkey's stickers.

➔

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- Point to Frog’s sticker collector. How many stickers does Frog have? (*seven*)
- Now point to Monkey’s sticker collectors. How many stickers does Monkey have? (*four*)
- Remember, Frog and Monkey want to have an equal number of stickers. Can you figure out how many stickers you should draw on Monkey’s blank sticker collector, so Frog and Monkey will have an equal number of stickers? Go ahead and draw them. Students draw stickers.
- How many stickers did you draw on Monkey’s sticker collector? (*three*)
- Can you put a math symbol between Monkey’s sticker collectors to show that all of these stickers go together and they all belong to Monkey? Students draw plus sign.

- Can you put a math symbol between Frog and Monkey to show they have the same number of stickers? Students draw the equal sign.

Clarifying Questions (Incorrect Response)

- How many stickers does Frog have?
- And all together (circle hand over both of Monkey’s boxes), how many stickers does Monkey have?
- So, do Frog and Monkey have an equal number of stickers?
- Remember, Frog and Monkey want to have an equal number of stickers. Let’s try again. Frog has 7 stickers and Monkey already has 4 stickers. So, raise your hand if you know how many more stickers Monkey needs (point to blank box) so that all together (circle hand over both of Monkey’s boxes), Monkey will have the same number of stickers as Frog (point to Frog’s box).

- Now look at the equation in your book as I read it. This tells us that 7 is equal to 3 plus 4. Now it's your turn to read it with me. All together now: 7 is equal to 3 plus 4 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 7 is the same as 3 plus 4.

Point to the second problem on this page. I want you to do that problem by yourself. Turn the page in your workbook. Now we're going to play the same game, but this time you'll write the number of stickers instead of drawing them. Point to the first problem.

Frog and Monkey 2 **Session 5**

Now write the number of stickers in each problem instead of drawing them. Make sure Frog and Monkey share the stickers equally.

1.





1

+

7

=

8

How many more does Frog need?

Here are Monkey's stickers.

2.





6

=

1

+

5

Here are Frog's stickers.

How many more does Monkey need?

➔

- Point to Monkey's sticker collector. How many stickers does Monkey have? (*eight*)
- Now point to Frog's sticker collectors. How many stickers does Frog have? (*seven*)
- Can you figure out what number you should write on Frog's blank sticker collector, so Frog and Monkey will have an equal number of stickers? Students write number.
- What number did you write on Frog's sticker collector? (*one*)
- Can you put a math symbol between Frog's sticker collectors to show that all of these stickers go together and they all belong to Frog? Students draw plus sign.

- Can you put a math symbol between Frog and Monkey to show they have the same number of stickers? Students draw the equal sign.
- Now look at the equation in your book as I read it. This tells us that 1 plus 7 is equal to 8. Now it's your turn to read it with me. All together now: 1 plus 7 is equal to 8 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 1 + 7 is the same as 8.

Clarifying Questions (Incorrect Response)

- How many stickers does Monkey have?
- And all together (circle hand over both of Frog's boxes), how many stickers does Frog have?
- So, do Frog and Monkey have an equal number of stickers?

- Remember, Frog and Monkey want to have an equal number of stickers. Let's try again. Monkey has 8 stickers and Frog already has 7 stickers. So, raise your hand if you know how many more stickers Frog needs (point to black box) so that all together (circle hand over both of Frog's boxes). Frog will have the same number of stickers as Monkey (point to Monkey's box).

Point to the second problem on this page. I want you to do that problem by yourself.

Turn to page 37 in your workbook. Now I want you to think about the Frog and Monkey's sharing game to help you solve some math problems. Point to the first problem.

Frog and Monkey 2 Session 5

Now think about that sharing game to help you solve the math problems. Write the correct number in the blank.

1.

9	$=$	$5 + \underline{4}$	
Here are Frog's stickers.		How many more does Monkey need?	

2.

$2 + \underline{8}$	$=$	10	
How many more does Frog need?		Here are Monkey's stickers.	

3.

4	$=$	$\underline{2} + 2$	
Here are Frog's stickers.		How many more does Monkey need?	

➔

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- Frog's stickers are on the left side of the equal sign (circle hand over the left side) and Monkey's stickers are on the right side of the equal sign (circle hand over the right side). So, I want you to figure out what number goes in the blank (point to the blank), so Frog and Monkey have an equal number.
- Wait for students to fill in the blank. Can someone tell me what number you wrote in the blank? (*four*)
- Let's read this equation together. 9 is equal to 5 plus 4 (students say aloud with teacher).
- What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 9 is the same as 5 plus 4.

Clarifying Questions (Incorrect Response)

- How much do you have on the left side of the equal sign (point)?
- How much do you have on the right side of the equal sign (point)?
- So do you have the same amount on both sides of the equal sign?

I want you to do the next two problems on this page by yourself.

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned that the equal sign means "is the same amount as" or "is equal to" and you can use objects and numbers to complete equations.

(Independent Practice on following page)

INDEPENDENT PRACTICE

Frog and Monkey 2 Session 5

Frog and Monkey want to share stickers equally. Fill in the missing values below.

1.  
 $\boxed{\begin{array}{c} \bullet \\ \bullet \\ \bullet \end{array}}$ is equal to $\boxed{\bullet} + \boxed{\begin{array}{c} \bullet \\ \bullet \end{array}}$
 Draw the dots.

2. $\underline{4} + 3 = 7$

3. $3 + \underline{5}$ is the same amount as 8

4. $6 = \underline{3} + 3$

➔

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- Now I want you to solve some more problems by yourself. Turn to page 38 in your workbook.
- Think about Frog and Monkey sharing stickers to help you solve each problem.

Go over solutions to the independent practice before going through the review on the following page.

REVIEW

Frog and Monkey 2 Session 5

Let's review all the ways you helped Frog and Monkey.

First we drew dots

 
 $\boxed{\begin{array}{c} \bullet \\ \bullet \\ \bullet \end{array}} = \boxed{\begin{array}{c} \bullet \\ \bullet \end{array}} + \boxed{\begin{array}{c} \bullet \\ \bullet \end{array}}$

Then we wrote numbers

 
 $\boxed{4} = \boxed{2} + \boxed{2}$

Last we wrote equations

$4 = 2 + 2$



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- Now it's time to review all the ways you helped Frog and Monkey. Turn to page 39 in your workbook.
- First we drew dots (point) for Frog's and Monkey's stickers.
- Then we wrote the number (point) of stickers Frog and Monkey had.
- Last, we wrote equations (point) to show the relation between their stickers.
- How are all of these equations the same? (they all show that Frog and Monkey have an equal number of stickers)

Practice Sessions

Now that students have had several lessons, they will practice what they have learned during practice sessions. For the rest of this sequence students will alternate between lesson days and practice days. Each practice session contains Minute Math and Guided Problem Solving, with the exception of Session 6. For Minute Math, students will solve two sets of math problems with 1 minute for each set. Students will try to improve the number correctly solved between Set 1 and Set 2. We have found this to be a very motivating activity for students.

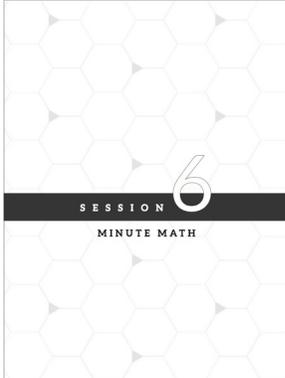
For Guided Problem Solving, read the instructions at the top of the first page to the entire class, and then let students work independently (with you providing individual help as needed) for 5 minutes. Instructions are written on the top of every page in the student book. These instructions often change a little bit after several pages. However, the changes within a given session are minor, and you are NOT expected to read each new set of instructions aloud to the class. Because students will be working at their own pace, there is always an example problem to help students out when the instructions change. After 5 minutes, please go over only the first 6 pages with your class (noted at the end of each practice session).

MINUTE MATH**LEARNING OBJECTIVES**

- Practice simple addition problems with sums of 6

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN

Now we get to do Minute Math! Open your workbook to Session 6 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

The first few Minute Math sessions include two sets of 14 problems on 2 pages. There is a stop sign at the end of each set. Most students should not be able to solve all 14 problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

Minute Math - Round 1 Session 6

Write the missing value in each equation. See how many you can solve in a minute!

a. $1 + \underline{\quad} = 6$

b. $\underline{\quad} = 3 + 1 + 2$

c. $6 = 5 + \underline{\quad}$

d. $\underline{\quad} = 2 + 2 + 2$

e. $6 = 3 + \underline{\quad}$

f. $2 + 1 + 3 = \underline{\quad}$

g. $2 + 4 = \underline{\quad}$

→

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Minute Math - Round 1 Session 6

h. $1 + 4 + 1 = \underline{\quad}$

i. $6 = \underline{\quad} + 4$

j. $\underline{\quad} = 2 + 3 + 1$

k. $\underline{\quad} + 2 = 6$

l. $6 = \underline{\quad} + 1$

m. $\underline{\quad} = 2 + 4$

n. $\underline{\quad} = 1 + 1 + 4$

STOP

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OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 5 in the blank because $1 + 5$ is equal to 6! If you put a 5 in the blank, you can put a check mark next to problem a.
2. Now look at problem b. You should have put 6 in the blank because $3 + 1 + 2$ is equal to 6! If you put a 6 in the blank, you can put a check mark next to problem b.

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 5	b. 6	c. 1	d. 6	e. 3	f. 6	g. 6
PAGE 2	h. 6	i. 2	j. 6	k. 4	l. 5	m. 6	n. 6

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the "Round 1" column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.

Minute Math - Score Sheet Session 6

Fill in the bars in the chart with the number of problems you solved correctly during Round 1 and Round 2.

14
13
12
11
10
9
8
7
6
5
4
3
2
1

Round 1

14
13
12
11
10
9
8
7
6
5
4
3
2
1

Round 2

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You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you'll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Please read through each sentence below so that students can hear the correct equations in their entirety.

KEY: PROBLEM SET 2

Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 5 in the blank because $1 + 5$ is equal to 6! If you put a 5 in the blank, you can put a check mark next to problem a.
2. Now look at problem b. You should have put 6 in the blank because $3 + 1 + 2$ is equal to 6! If you put a 6 in the blank, you can put a check mark next to problem b.

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 5	b. 6	c. 1	d. 6	e. 3	f. 6	g. 6
PAGE 2	h. 6	i. 2	j. 6	k. 4	l. 5	m. 6	n. 6

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

LEARNING OBJECTIVES

- Understand that the equal sign means “is the same amount as” or “is equal to”
- Use concrete objects and numbers to complete equations that express equality

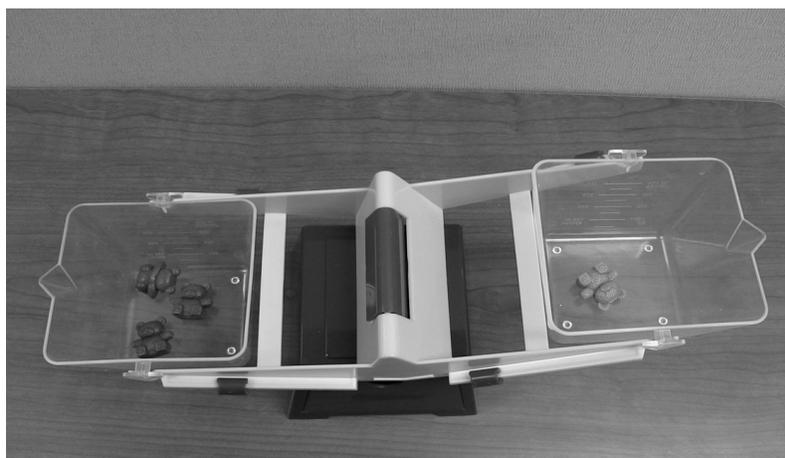
MATERIALS

- Student workbook
- Balance scales for teacher & each group
- 5 bags for teacher & each group
- Label and setup bags: A with 6 blue bears, B with 6 green bears, C with 6 yellow bears, D with equal sign card, and E with plus sign card

INSTRUCTIONAL PLAN

Before the lesson, make sure each bag has the correct materials in it – these bags are set up slightly differently from the bags used in Session 2, so make sure the materials are in the correct order.

Today you’re going to play a game with this scale and some bears again (give each small group a balance scale and 5 bags, and set up a balance scale in the front of the room). **I will tell you when it is time to open each of the bags. You are going to use the bears to make the scale balance. By the end of the lesson, you’re going to be able to understand that the equal sign means “is the same amount as” or “is equal to” and use objects and numbers to complete equations.**



Balance scale setup

- **I’m going to put 3 bears on the left side of the balance scale** (put 3 blue bears on the left side of the scale). **Open Bag A and count out 3 blue bears. Then put 3 blue bears on the left side of the balance scale.**
- **Now I’m going to put 1 bear on the right side of the balance scale** (put 1 green bear on the right side of the scale). **Open Bag B and count out 1 green bear. Then put 1 green bear on the right side of the balance scale.**

Let’s look at the scale together. Is the scale balanced? (*no*)

- **How do you know?** (*one side is lower than the other*)

We want the scale to balance. (Important: Stress the word “balance” and gesture like a balanced scale with both palms up at your sides and flat. Be sure to keep your palms level. Pause and hold that gesture for a moment.) **Talk to your group members, and have one person raise their hand if you know how many bears you should put on the right side of the scale** (point) **so that the number of bears on the right side** (point) **will be the same as the number of bears on the left side** (point). (At this point, make sure each group is setting up the balance scale correctly.)

- **Why should you put 2 bears on the right side of the scale?** (*we need 3 bears on both sides of the scale and there is already 1 bear on the right side so we need 2 more*)
- **Open Bag C and count out 2 yellow bears. Then put 2 yellow bears on the right side of the balance scale.**
- **The scale looks different now. What is different about the scale?** (*it's balanced*)
- **Why do you think it changed?** (*the number of bears on each side is the same*)

Clarifying Questions (Incorrect Response)

- **How many bears are there on the left side (point) of the scale?**
- **All together, how many bears are there on the right side (point) of the scale?**
- **Remember, we want the scale to balance (make balance gesture), so we need the same amount on both sides. Let's take out the yellow bears and try again. Talk to your group members, and have one person raise their hand if you know how many more bears you should put on the right side of the scale (point) so that all together (circle hand over the right side), the number of bears on the right side (point) will be the same as the number of bears on the left side (point).**

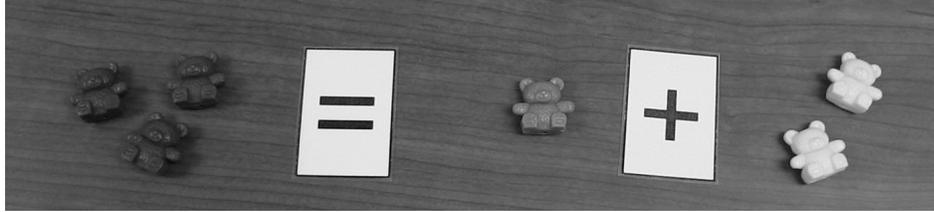
When the two sides of the scale are at the same level – neither side is higher or lower – the scale is balanced. That happens when we have the same amount on both sides of the scale. See, on the left side we have 3 blue bears (take blue bears out of the tub on the left and set on the left) and on the right side we have 1 green bear (take green bear out of the tub on the right and set on the right) and 2 yellow bears (take yellow bears out of the tub on the right and set on the right). So we have 3 bears on the left side (circle hand over blue bears) and all together, we have 3 bears on the right side too (circle hand over green and yellow bears). Both sides have the same number of bears. (Move scale out of the way.)

- **Now take the 3 blue bears out of the tub on the left side and set them on the left, take the 1 green bear out of the tub on the right side and set it on the right, and take the 2 yellow bears out of the tub on the right and set them on the right.** (At this point, make sure each group is setting up the equation correctly.)
- **What is another word we could use to say that the two amounts are the same?** (*equal*)
- **Good, the two groups have an equal number of bears.**
- **What math symbol do we use to show that two amounts are the same?** (*equal sign*)
- **Open Bag D now and take out the equal sign card.**
- **Talk to your group members, and have one person raise their hand if you know where to put the equal sign (hold up equal sign card) to tell others that the two amounts are the same.**
- **Now, put the equal sign between the two groups to show that they are the same.** (At this point, make sure each group is setting up the equation correctly.)

Look, there are two different colored bears on the right side of the equal sign (point to right side).

- **Talk to your group members, and have one person raise their hand if you know what math symbol we can use to show that we are adding this green bear (point to green bear) together with these yellow bears (point to yellow bears) to make one big group of bears (circle hand over the green and yellow bears). (*plus sign*)**
- **Open Bag E now and take out the plus sign card.**

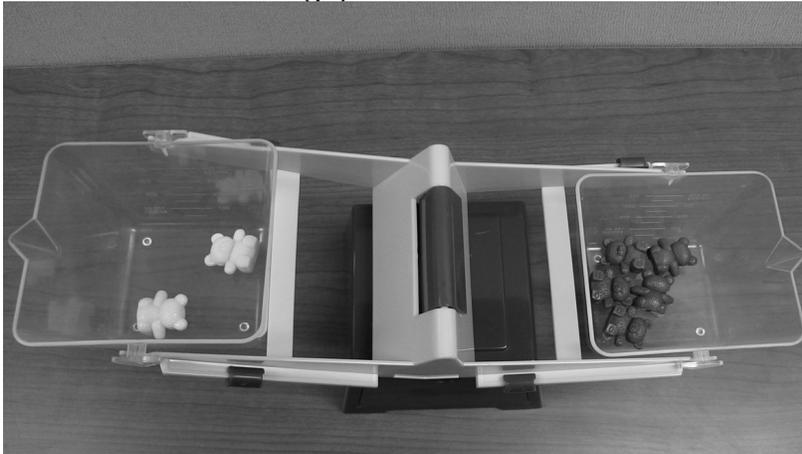
- Talk to your group members, and have one person raise their hand if you know where to put the plus sign (hold up plus sign card) to tell others that we are adding these bears together to make one big group of bears.
- Now, put the plus sign between the green and yellow bears to show that we are adding these bears together to make one big group of bears. (At this point, make sure each group is setting up the equation correctly.)



Great job! This tells us that 3 (point to blue bears on the left) **is equal to** (point to the equal sign) **1** (point to green bear on the right) **plus** (point to the plus sign) **2** (point to yellow bears on the right). **Now it's your turn to read this equation with me. All together now: 3 is equal to 1 plus 2** (students say aloud with teacher).

What else could we say for the equal sign instead of “is equal to”? (Wait for responses... encourage “is the same as” or similar relational wording.) **That's right. We could say 3 is the same as 1 plus 2.**

Put the blue bears back in Bag A, the green bear back in Bag B, the yellow bears back in Bag C, the equal sign back in Bag D, and the plus sign back in Bag E (wait while students return materials to bags).



Balance scale setup

- Now let's try another one.
- I'm going to put 2 bears on the left side of the balance scale (put 2 yellow bears on the left side of the scale). **Open Bag C first and count out 2 yellow bears. Then put 2 yellow bears on the left side of the balance scale.**

- Now I'm going to put 5 bears on the right side of the balance scale (put 5 blue bears on the right side of the scale). **Open Bag A now and count out 5 blue bears. Then put 5 blue bears on the right side of the balance scale.**

Let's look at the scale together. Is the scale balanced? (*no*)

- **How do you know?** (*one side is lower than the other*)

We want the scale to balance. (Important: Stress the word “balance” and gesture like a balanced scale with both palms up at your sides and flat. Be sure to keep your palms level. Pause and hold that gesture for a moment.) **Talk to your group members, and have one person raise their hand if you know how many bears you should put on the left side of the scale (point) so that the number of bears on the left side (point) will be the same as**

the number of bears on the right side (point). (At this point, make sure each group is setting up the balance scale correctly.)

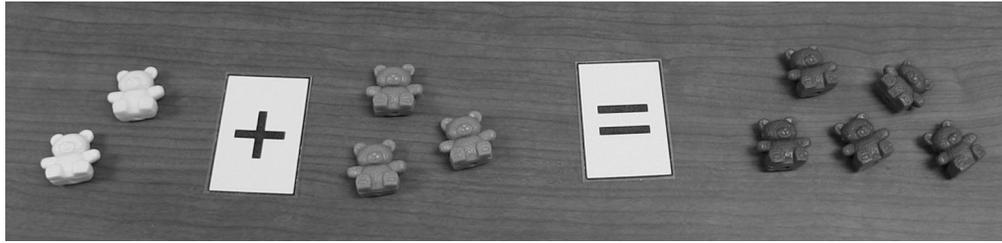
- **Why should you put 3 bears on the left side of the scale?** (*we need 5 bears on both sides of the scale and there are already 2 bears on the left side so we need 3 more*)
- **Open Bag B now and count out 3 green bears. Then put 3 green bears on the left side of the balance scale.**
- **The scale looks different now. What is different about the scale?** (*it's balanced*)
- **Why do you think it changed?** (*the number of bears on each side is the same*)

When the two sides of the scale are at the same level – neither side is higher or lower – the scale is balanced. That happens when we have the same amount on both sides of the scale. **See, on the left side we have 2 yellow bears** (take yellow bears out of the tub on the left and set on the left) **and 3 green bears** (take green bears out of the tub on the left and set on the left) **and on the right side we have 5 blue bears** (take blue bears out of the tub on the right and set on the right). **So all together, we have 5 bears on the left side** (circle hand over yellow and green bears) **and we have 5 bears on the right side too** (circle hand over blue bears). **Both sides have the same number of bears.** (Move scale out of the way).

- **Now take the 2 yellow bears out of the tub on the left side and set them on the left, take the 3 green bears out of the tub on the left side and set them on the left, and take the 5 blue bears out of the tub on the right and set them on the right.** (At this point, make sure each group is setting up the equation correctly.)
- **What is another word we could use to say that the two amounts are the same?** (*equal*)
- **Good, the two groups have an equal number of bears.**
- **What math symbol do we use to show that two amounts are the same?** (*equal sign*)
- **Open Bag D now and take out the equal sign card.**
- **Talk to your group members, and have one person raise their hand if you know where to put the equal sign** (hold up equal sign card) **to tell others that the two amounts are the same.**
- **Now, put the equal sign between the two groups to show that they are the same.** (At this point, make sure each group is setting up the equation correctly.)

Look, there are two different colored bears on the left side of the equal sign (point to left).

- **What math symbol can we use to show that we are adding these yellow bears** (point to yellow bears) **together with these green bears** (point to green bears) **to make one big group of bears** (circle hand over yellow and green bears)? (*plus sign*)
- **Open Bag E now and take out the plus sign card.**
- **Talk to your group members, and have one person raise their hand if you know where to put the plus sign** (hold up plus sign card) **to tell others that we are adding these bears together to make one big group of bears.**
- **Now, put the plus sign between the yellow and green bears to show that we are adding these bears together to make one big group of bears.** (At this point, make sure each group is setting up the equation correctly.)



- **Great job! This tells us that 2** (point to yellow bears on the left) **plus** (point to plus sign) **3** (point to green bears on the left) **is equal to** (point to the equal sign) **5** (point to blue bears on the right). **Now it's your turn to read this equation with me. All together now: 2 plus 3 is equal to 5** (students say aloud with teacher).

Now we're going to play the same game on paper. Open your workbook to page 47. Point to the first problem.

Balance Bears 2 Session 7

Draw the correct number of bears in each problem. Make sure the scale has an equal amount on both sides.

1.

Here are the bears on the left side. Finish drawing the bears on the right side.

2.

Finish drawing the bears on the left side. Here are the bears on the right side.

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- Point to the left side of the scale. How many bears are there on that side? (*four*)
- Now point to the right side of the scale. How many bears are there on that side? (*three*)
- Remember, we want the scale to balance (make level balance gesture), so we need to have the same amount on both sides. Can you figure out how many bears you need to draw in the blank box on the right side of the scale to make both sides have the same amount? Go ahead and draw them. Students draw bears.
- How many bears did you draw on the right side? (*one*)
- Can you put a math symbol between the boxes on the right side of the scale to show that all of those bears go together? Students draw plus sign.

- Can you put a math symbol between the two sides of the balance scale to show that both sides have the same number of bears? Students draw the equal sign.
- Now look at the equation in your book as I read it. This tells us that 4 is equal to 1 plus 3. Now it's your turn to read it with me. All together now: 4 is equal to 1 plus 3 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (*is the same as*). That's right. We could say 4 is the same as 1 plus 3.

Clarifying Questions (Incorrect Response)

- How many bears are on the left side of the scale?
- All together, how many bears are on the right side of the scale?
- Is the scale balanced?
- Remember, we want the scale to balance, so we need to have the same amount on both sides. Let's try again. There are 4 bears on the left side of the scale and there

are already 3 bears on the right side. So, raise your hand if you know how many more bears the right side needs (point to blank box) **so that all together** (circle hand over both boxes on the right), **the right side of the scale will have the same number of bears as the left side** (point to left side).

Point to the second problem on this page. I want you to do that problem by yourself.

Turn the page in your workbook. Now we're going to play the same game, but this time you'll write the number of bears instead of drawing them. Point to the first problem.

Balance Bears 2 Session 7

Now write the number of bears in each problem instead of drawing them. Make sure the scale has an equal amount on both sides.

1.

6

=

4

+

2

Here are the bears
on the left side.

▲

How many more does
the right side need?

2.

5

=

2

+

3

How many does
the left side need?

▲

Here are the bears
on the right side.

➔

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- Point to the left side of the balance scale. How many bears are there on that side of the scale? (*six*)
- Now point to the right side of the balance scale. How many bears are there on that side of the scale? (*four*)
- Can you figure out what number to write in the blank box on the right side of the scale, so there will be an equal amount on both sides of the scale? Students write number.
- What number did you write on the right side? (*two*)
- Can you put a math symbol between the boxes on the right side of the scale to show that all of these bears go together? Students draw plus sign.

- Can you put a math symbol between the two sides of the balance scale to show both sides have the same number of bears? Students draw the equal sign.
- Now look at the equation in your book as I read it. 6 is equal to 4 plus 2. Now it's your turn to read it with me. All together now: 6 is equal to 4 plus 2 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 6 is the same as 4 plus 2.

Clarifying Questions (Incorrect Response)

- How many bears are on the left side of the scale?
- All together (circle hand over right side of the scale), how many bears are on the right side of the scale?
- Is the scale balanced?
- Let's try again. There are 6 bears on the left side of the scale and there are already 4 bears on the right side. So, raise your hand if you know how many more bears the right side needs (point to blank box) so that all together (circle hand over both boxes on the right), the right side of the scale will have the same number of bears as the left side (point to the left side).

Point to the second problem on this page. I want you to do that problem by yourself.

Turn to page 49 in your workbook. Now I want you to think about balancing the scale to help you solve some math problems. Point to the first problem.

Balance Bears 2 Session 7

Now think about balancing the scale to help you solve the math problems. Write the correct number in the blank.

1. $5 = \underline{3} + 2$
 Here are the bears on the left side. How many more does the right side need?

2. 3 is the same amount as $1 + \underline{2}$
 Here are the bears on the left side. How many more does the right side need?

3. $4 + \underline{2} = 6$
 How many more does the left side need? Here are the bears on the right side.

➔

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- This is the left side of the balance scale (circle hand over the left side) and this is the right side of the balance scale (circle hand over the right side). So, I want you to figure out what number goes in the blank (point to the blank), so that both sides will have an equal amount and the scale will balance.
- Wait for students to fill in the blank. Can someone tell me what number you wrote in the blank? (*three*)
- Let's read this equation together. 5 is equal to 3 plus 2 (students say aloud with teacher). What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 5 is the same as 3 plus 2.

Clarifying Questions (Incorrect Response)

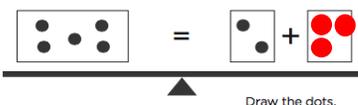
- What number did you write in the blank?
- So all together, how much do you have on the right side of the equal sign?
- How much do you have on the left side of the equal sign?
- So do you have the same amount on both sides of the equal sign?

I want you to do the next two problems on this page by yourself.

INDEPENDENT PRACTICE

Balance Bears 2 Session 7

The scale needs the same amount on both sides to balance. Fill in the missing values below.

1. 
 Draw the dots.

2. 5 is equal to $2 + \underline{3}$

3. $\underline{4} = 1 + 3$

4. $2 + \underline{5}$ is the same amount as 7

➔

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- Now I want you to solve some more problems by yourself. Turn to page 50 in your workbook.
- Think about balancing the scale to help you solve each problem.

Go over solutions to the independent practice before going through the review on the following page.

REVIEW

Balance Bears 2 Session 7

Let's review all the ways you made the scale balance.

First we drew dots

Then we wrote numbers

Last we wrote equations

$$1 + 3 = 4$$

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- Now it's time to review all the ways you made the scale balance. Turn to page 51 in your workbook.
- First we drew dots (point) for bears on the balance scale.
- Then we wrote the number (point) of bears on the sides of the scale instead of drawing them.
- Last, we wrote equations (point) to show the relation between the two sides.
- How are all of these equations the same? (they all show an equal number of bears on each side of the balance scale)
- What has to be true for the scale to balance? (there has to be the same amount on each side).

MAKING THE CONNECTION

Now we are going to think about how Frog and Monkey sharing stickers is like using the bears to make the scale balance. I want you to answer some questions to help you think about how these two activities are the same. Turn to page 52 in your workbook.

Balance Bears 2 Session 7

Write the equation that goes with each picture.

1. $5 = 2 + 3$

2. $2 + 3 = 5$

Fill in the blanks to answer the questions.

3. How are the two equations you just wrote the same, and how are they different?
 They both have 2 + 3 on one side of the equal sign and 5 on the other side.
 2 + 3 and 5 are on different sides of the equal sign in the two equations.

4. What do both equations tell us? Can you think of two ways to describe this?
 Five is equal to five.
 Five is the same amount as five.

5. In what way is using the bears to balance the scale like helping Frog and Monkey share stickers? Can you think of another way to describe this?
 In both cases, we need to make two amounts the same.
 In both cases, we need to make two amounts equal.

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- Look at the pictures of Frog and Monkey. Use your finger to draw a circle around Frog's stickers. How many stickers does Frog have? (five) Ok, write the number 5 underneath Frog.
- Now use your finger to draw a circle around Monkey's stickers. How many stickers does Monkey have on each sticker collector? (two; three) Ok, write the number 2 underneath Monkey's first sticker collector and the number 3 underneath Monkey's other one.
- Now, can you put a math symbol in between Monkey's sticker collectors to show that they are being added together to make one big group? Students draw plus sign.
- Now, can you put a math symbol between Frog and Monkey to show that they are equal? Students draw equal sign.

Now look at the equation under Frog and Monkey in your book as I read it. 5 is equal to 2 plus 3. Now it's your turn to read it with me. All together now: 5 is equal to 2 plus 3 (students say aloud with teacher).

Now look at the balance scale. Repeat the prompts above with the balance scale example. (Ask students to circle finger over the left side, write 2 and 3, write a plus sign in between, circle finger over the right side, write 5, and then put an equal sign.)

Now look at the equation under the balance scale in your book as I read it. 2 plus 3 is equal to 5. Now it's your turn to read it with me. All together now: 2 plus 3 is equal to 5 (students say aloud with teacher).

Read Question 3 aloud and allow time for class discussion. After the concept has been discussed, ask students to fill in each of the blanks before moving on to the next question. Read sentence aloud: **They both have 2 + 3 on one side of the equal sign and 5 on the other side.** (Discuss with students that you could also write "5" in the first blank and "2 + 3" in the second blank, or put "5" in both blanks in this sentence). **2 + 3 and 5 are on different sides of the equal sign in the two equations.**

Read Question 4 aloud. **What do both equations tell us? Can you think of two ways to describe this? Try your best to fill in both blanks on Question 4.**

Discuss the question as a class. Encourage students to fill in BOTH blanks before moving on. Some possible correct responses are: is equal to, is the same amount as, is equivalent to. Read both sentences aloud to remind students that both filled-in sentences mean the same thing: "**Five is equal to five. Five is the same amount as five.**"

Read Question 5 aloud: **In what way is using the bears to balance the scale like helping Frog and Monkey share stickers? Can you think of another way to describe this? Try your best to fill in both blanks on Question 5.**

Discuss the question as a class before ending the lesson. Encourage students to fill in BOTH blanks. Some possible correct responses are: equal, the same, equivalent. Read both sentences aloud: **In both cases, we need to make two amounts equal. In both cases, we need to make two amounts the same.**

Key concept: Frog and Monkey and the Balance Scale are two different examples of equality. Frog and Monkey want to have an equal number of stickers and the balance scale has to have an equal number of bears on each side to balance.

MINUTE MATH

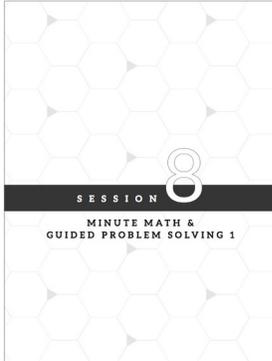
LEARNING OBJECTIVES

- Practice simple addition problems with sums of 7

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 8 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 14 problems on 2 pages. There is a stop sign at the end of each set. Most students should not be able to solve all fourteen problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

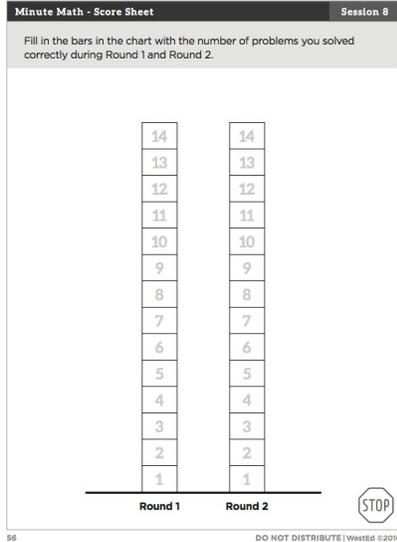
Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $4 + 3$ is equal to 7! If you put a 3 in the blank, you can put a check mark next to problem a.
2. Now look at problem b. You should have put 7 in the blank because $2 + 5$ is equal to 7!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 7	c. 7	d. 3	e. 7	f. 6	g. 7
PAGE 2	h. 2	i. 7	j. 7	k. 7	l. 7	m. 7	n. 7

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $4 + 3$ is equal to 7! If you put a 3 in the blank, you can put a check mark next to problem a.
2. Now look at problem b. You should have put 7 in the blank because $2 + 5$ is equal to 7!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 7	c. 7	d. 3	e. 7	f. 6	g. 7
PAGE 2	h. 2	i. 7	j. 7	k. 7	l. 7	m. 7	n. 7

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to the Guided Problem Solving.

GUIDED PROBLEM SOLVING

Students will be asked to:

- Make sure that every bird gets a worm (pages 59 through 64)
- Make sure that every student gets a pencil (pages 65 through 70)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Guided Problem Solving 1 Session 8

Draw the correct number of worms in each problem. Make sure every bird gets a worm.

Example

Draw the worms. ← Here are the birds.

1.

Draw the worms. ← Here are the birds.

Example

Here are the birds. → Draw the worms.

2.

Here are the birds. → Draw the worms.

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Now you get to solve some more problems on your own. Open your workbook to the first Guided Problem Solving page for Session 8. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes, and this time it's not a race. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. Remember, this part is not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Guided Problem Solving 1 Session 8

Draw the correct number of worms in each problem. Make sure every bird gets a worm.

Example

Draw the worms. ← Here are the birds.

1.

Draw the worms. ← Here are the birds.

Example

Here are the birds. → Draw the worms.

2.

Here are the birds. → Draw the worms.

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Read instructions from page 59. The instructions say: **Draw the correct number of worms in each problem. Make sure every bird gets a worm.**

To save time, just draw lines to show the worms (draw sample worm squiggle on the board). **As you work, the instructions will change. You'll make sure that every bird has a worm and then make sure that every student has a pencil. Use the example problems to help you understand what to do. If you have any questions, please raise your hand. Go ahead and begin.**

After 5 minutes: **OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 59 and look at the first problem...** Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Determine whether equations demonstrate equality
- Understand the concept of equality and the procedure for establishing equality

MATERIALS

- Classroom board
- Student workbook

INSTRUCTIONAL PLAN

Today you're going to see some math problems and answer some questions about the problems. What do we know about the equal sign? (*the equal sign means that two amounts are the same / the equal sign means "is the same amount as" / the equal sign means that the amount on one side of the equation is equal to the amount on the other side*) **By the end of the lesson, you're going to be able to use what you know about the equal sign to figure out what number should go in the blank to make an equation true.**

Here is the first problem. Write " $6 + 3 = \underline{\quad} + 5$ " on the board. **Tell your neighbor what number would go in the blank to make this true. Remember, a true equation has the same total amount on both sides of the equal sign.** Give students a little time to share. **Raise your hand if you know what number would go in the blank to make this true.** Select a student volunteer to respond. Write the student's response in the blank but do not indicate whether the response is correct or incorrect. **We're going to come back to this problem in a little bit.**

**For all questions that do not have a desired response in parentheses, select student volunteer to respond but do not indicate whether the response is correct or incorrect.*

Let's look at another problem. Write $7 = 3 + 4$ on the board below the previous equation.

- **Is this true or false? Tell your neighbor if you think it is true or false, and why.** Give students a little time to share. Then, select student volunteer to explain.

Write $7 = 7$ on the board below the previous equation. **Is 7 equal to 7?**

Write $6 = 6$ on the board below the previous equation. **Is 6 equal to 6?**

Clarifying Explanation (Incorrect Response)

Use the following prompts only if students had an incorrect response for the last 3 equations.

Let's look at this equation (point to $7 = 7$). **We have 7 on this side of the equal sign** (point) **and 7 on this side of the equal sign** (point). **We have 7 on both sides of the equal sign and this equation is true.** Now let's let look at the next equation. Repeat sentences above with $6 = 6$.

So what makes all of these equations true? (*they all have the same amount on both sides of the equal sign*)

*If needed, remind students that Frog and Monkey's stickers are on each side, then chunk sides with hand. As a last resort, draw a bracket under each side and show those as bins on a balance scale.

Write $10 = 10$ on the board below the previous equation. **Is 10 equal to 10?**

So all of these equations (point to $7 = 7$, $6 = 6$, and $10 = 10$) **were true. What makes an equation true?** (*the same amount is on both sides of the equal sign*)

So if 7 is equal to 7 (point to $7 = 7$), **is 7 equal to $3 + 4$** (point to $7 = 3 + 4$)? (yes)

Why is this equation true (point to $7 = 3 + 4$)? (*you have the same amount on both sides of the equal sign; you have 7 on both sides*)

Write $7 = 3 + 4$ again on the board. Write $3 + 4 = 7$ directly below $7 = 3 + 4$.

- **Does it matter if I write it like this** (point to $7 = 3 + 4$) **or like this** (point to $3 + 4 = 7$)? (*no*)
- **Why not?** (*as long as you have the same amount on both sides of the equal sign it's correct; it's a true equation*)

Research has shown that students learn more from lessons on math equivalence when teachers gesture in specific ways, using their left hand for the left side of the problem and right hand for the right side of the problem to help students differentiate the two sides of the problem. For the next section, you will demonstrate a correct strategy for solving a math equivalence problem with specific gestures, and then students will take a turn at solving a problem in their books. You will repeat this procedure until all problems are finished on the students' page. The specific gesture and speech is below (you can refer to the video clip to see an example of this gesture):

I want to make one side (sweep left hand back and forth under the left side) **equal to** (hands down) **the other side** (sweep right hand back and forth under the right side).

Point to the first equation again ($6 + 3 = \underline{\quad} + 5$). **Let's look at this first equation again.**

- **Does the number we put in the blank make this equation true? Remember, a true equation has the same total amount on both sides of the equal sign. One side** (sweep left hand back and forth under the left side) **should be equal to** (hands down) **the other side** (sweep right hand back and forth under the right side). **Tell your neighbor if you think the number we put in the blank makes this equation true.** Give students a little time to share.
- **Raise your hand if you can tell us if the number we put in the blank makes this equation true.** Select student volunteer to explain. **Why / Why not?**
- If the student put the wrong number in the blank:
 - **What number should go in the blank?** (*four*) If students are responding incorrectly, gesture again to differentiate the sides of the equation (see above), and if needed, draw a horizontal bracket under each side to connect the sides to the bins on each side of a balance scale.
 - **Why?** (*both sides are equal to 9; you have the same amount on both sides*)

Erase classroom board.

Now we are going to take turns solving problems. First, it's my turn.

Write $4 + 3 = 5 + \underline{\quad}$ on the board, keeping extra space around the equal sign.

Then, write the solution (2) in the blank.

Go through this sequence of gestures, speaking slowly and clearly:

I want to make one side (sweep left hand back and forth under the left side) **equal to** (hands down) **the other side** (sweep right hand back and forth under the right side). **4 plus 3 is 7 and 5 plus 2 is 7. So, one side** (sweep left hand back and forth under left side) **is equal to** (hands down) **the other side** (sweep right hand back and forth under right side).

Now it's your turn. Erase classroom board. **Take out your workbook and turn to page 72.**

Complete the Equation 1 Session 9

Fill in the missing values below.

1.
 $6 + 2 = 3 + \underline{5}$

2.
 $2 + \underline{3} = 1 + 4$

3.
 $1 + 2 + 4 = \underline{4} + 3$

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Look at the just the first problem for now. We will keep taking turns solving problems.

You need to figure out what number should go in the blank to make the equation true. Remember, you need to have the same amount on both sides of the equal sign to make the equation true.

After students solve the first problem, go through the following questions:

- **What number did you put in the blank?**
- **Is the equation true now?**
- **How do you know?**
- **Now look at the equation in your book as I read it. 6 plus 2 is equal to 3 plus 5. Now it's your turn to read it with me. All together now: 6 plus 2 is equal to 3 plus 5 (students say aloud with teacher).**

Now, it's my turn. Repeat gestures and explanation on previous page with two additional teacher-only problems and continue alternating with student problems. Remember to write each problem with extra space around the equal sign. These problems are not on the student's page in the workbook.

Teacher's 2nd Problem: $3 + \underline{\quad} = 7 + 1$ Write in solution (5).

Ask students to solve the 2nd problem on their page, then go over like it above.

Teacher's 3rd Problem: $2 + 1 + 3 = \underline{\quad} + 2$ Write in solution (4).

Ask students to solve the 3rd problem on their page, then go over like it above.

After reading the last equation aloud together: **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 1 plus 2 plus 4 is the same as 4 plus 3.**

We've reached the end of the lesson. What have we learned today? Students respond. **Now you've learned how to use what you know about the equal sign to figure out what number should go in the blank to make an equation true.**

INDEPENDENT PRACTICE

Complete the Equation 1

Session 9

Fill in the missing values below.

1.

$$2 + 5 \text{ is equal to } \underline{4} + 3$$

2.

$$3 + \underline{5} = 4 + 4$$

3.

$$3 + 2 \text{ is the same amount as } 2 + \frac{3}{2}$$



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73

Now I want you to solve some problems by yourself. Turn to page 73 in your workbook. Try your best to solve each problem and write the number that goes in the blank. Raise your hand if you have any questions.

MINUTE MATH**LEARNING OBJECTIVES**

- Practice simple addition problems with sums of 6 and 7

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN

The previous session included specific teacher gestures for a correct problem-solving strategy. Research has also shown that it is important for *students* to produce this gesture on their own before solving problems. Before you do Minute Math, you will demonstrate a specific gesture (you can refer to the video clip to see an example of this gesture) and then students will all line up at the board and produce the gesture and say the same phrase:

I want to make one side (sweep left hand back and forth under the left side) **equal to** (hands down) **the other side** (sweep right hand back and forth under the right side).

Let's look at a problem together.

Write $4 + 2 = 4 + \underline{\quad}$ in large print on the board, leaving a bit of space on either side of the equal sign. Do not fill in the blank.

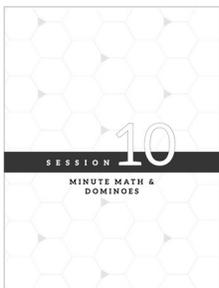
I'm going to say some words and move my hands in ways that will help me think about this problem. I want everyone to watch what I do very carefully because soon I'm going to ask everyone to come up to the board and do it.

Is everyone ready? Say the following slowly and clearly:

I want to make one side (sweep left hand back and forth under the left side) **equal to** (hands down) **the other side** (sweep right hand back and forth under the right side).

Watch me do it one more time. Repeat gesture and phrase.

Have students line up at the board (you could have two lines if that speeds up the process) and each repeat the exact phrase and gesture, one by one.



If students are not switching hands, say: **Watch, I switched hands.** Model the gesture again as necessary. Make sure every student does it while switching hands.

After everyone has done the gesture up at the board, move on to Minute Math. **Now we get to do Minute Math! Open your workbook to Session 10 for Minute Math.** Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math sessions includes two sets of 14 problems on 2 pages. There is a stop sign at the end of each set. Most students should not be able to solve all fourteen problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

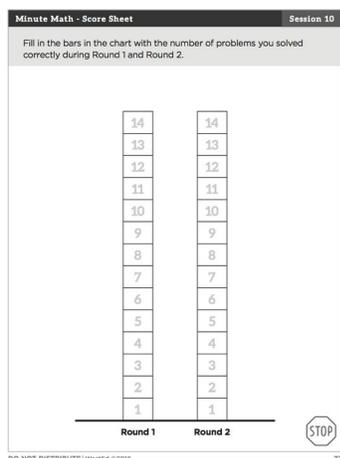
Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 2 in the blank because $4 + 2$ is equal to $4+2!$ (stress the second 2 when reading the problem) Both sides are equal to 6! If you put a 2 in the blank, you can put a check mark next to problem a.
2. Now look at problem b. You should have put 5 in the blank because $1 + 5 + 1$ is equal to 7! If you put a 5 in the blank, you can put a check mark next to problem b.

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 2	b. 5	c. 1	d. 5	e. 1	f. 1	g. 2
PAGE 2	h. 3	i. 4	j. 5	k. 4	l. 3	m. 3	n. 7

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your**



number correct here on the Minute Math Score Sheet. Find the "Round 1" column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4. Allow time for students to color in the boxes.

You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you'll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put **2** in the blank because $4 + 2$ is equal to $4 + 2$! (stress the second 2 when reading the problem) Both sides are equal to 6! If you put a 2 in the blank, you can put a check mark next to problem a.
2. Now look at problem b. You should have put **5** in the blank because $1 + 5 + 1$ is equal to 7! If you put a 5 in the blank, you can put a check mark next to problem b.

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 2	b. 5	c. 1	d. 5	e. 1	f. 1	g. 2
PAGE 2	h. 3	i. 4	j. 5	k. 4	l. 3	m. 3	n. 7

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the "Round 2" column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Dominoes (Guided Problem Solving).

DOMINOES (GUIDES PROBLEM SOLVING)

Students will be asked to:

- Draw dots so that the dominos have equal numbers of dots (pages 80 through 82)
- Draw dots and then write that number in the equation (pages 83 through 85)
- Draw dots and then write the missing numbers in the equation (pages 86 through 87)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Dominoes Session 10

Each domino should have the same number of dots. Draw the missing dots.

Example

1.

2.

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Now you get to solve some more problems on your own. Open your workbook to the first Dominoes page for Session 10. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes, and this time it's not a race. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. Remember, this part is not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Dominoes Session 10

Each domino should have the same number of dots. Draw the missing dots.

Example

1.

2.

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Read instructions from page 80. The instructions say: Each domino should have the same number of dots. Draw the missing dots.

To save time, you don't need to shade in your dots. Also, remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 80 and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Determine whether equations demonstrate equality
- Turn false equations into true equations by adding an addend.

MATERIALS

- Student workbook
- Classroom board

INSTRUCTIONAL PLAN

Today you're going to hear statements and see equations. You will figure out whether the statements and equations are true or false. What do we know about the equal sign? *(the equal sign means that two amounts are the same / the equal sign means "is the same amount as" / the equal sign means that the amount on one side of the equation is equal to the amount on the other side)* **By the end of the lesson, you're going to be able to use what you know about the equal sign to decide if equations are true or false and turn false equations into true equations by adding another number.**

- What does it mean if something is true? *(correct)*
- What does it mean if something is false? *(incorrect)*

Open your workbook to page 89. Let's look at the first problem together. Point to the birds. Now point to the worms. We have one worm for every bird (pause). Is that statement true or false? *(true)*

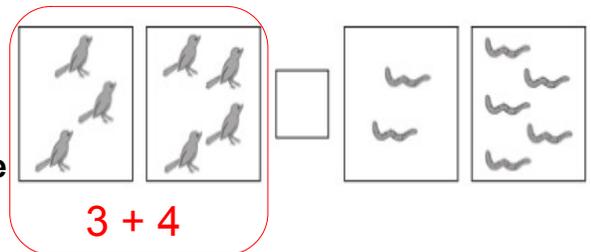
- Why did you say true? *(there are 7 birds and 7 worms)*
- If we have one worm for every bird, what do we know about the number of worms and birds? *(they are the same)*
- What is another word that means "the same amount as"? *(equal)*

Clarifying Questions (Incorrect Response)

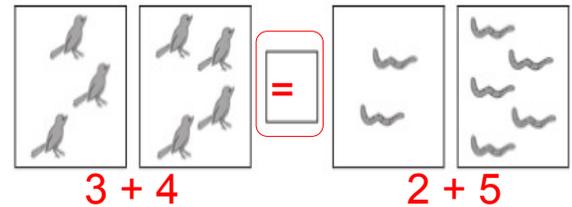
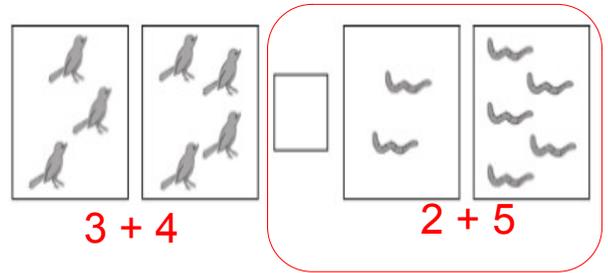
- Let's look at these pictures together. All together (circle hand over worm boxes), how many worms are there? *(seven)*
- There are 7 worms and 7 birds, so we have the same numbers of worms and birds. That means we have one worm for every bird, so the statement is true.

Now, I'm going to help you write an equation to show that the numbers of birds and worms are the same. Go through the steps below for writing the equation on the classroom board while students are writing in their lesson books.

- How many birds are there in the first box? *(three)*
- Write 3 below that box.
- How many birds are there in the second box? *(four)*
- Write 4 below that box.
- What math symbol can we use to show that we are putting all of these birds together to make one big group of birds? *(plus sign)*
- Write a plus sign between the 3 and 4.
- So all together, how many birds do we have? *(seven)*



- Now, how many worms are there in the first box of worms? (*two*)
- Write 2 below that box.
- How many worms are there in the second box? (*five*)
- Write 5 below that box.
- What math symbol can we use to show that we are putting all of these worms together to make one big group of worms? (*plus sign*)
- Write a plus sign between the 2 and 5.
- So all together, how many worms do we have? (*seven*)
- We have 7 birds (point to $3 + 4$) and we have 7 worms (point to $2 + 5$). The numbers of birds and worms are the same. So, what math symbol can we use to show that we have an equal number of birds and worms? (*equal sign*)



Look up here at the equation we wrote. One side (sweep left hand back and forth under the left side) is equal to (hands down) the other side (sweep right hand back and forth under the right side). Now look at the equation in your book as I read it. 3 plus 4 is equal to 2 plus 5. Now it's your turn to read it with me. All together now: 3 plus 4 is equal to 2 plus 5 (students say aloud with teacher).

What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) That's right. We could say 3 plus 4 is the same as 2 plus 5.

Let's try another one. Point to the second problem on the page. Point to the bones. Now point to the dogs. We have one bone for every dog (pause). Is that statement true or false? (*false*)

- Why did you say false? (*there are 6 dogs but only 5 bones; there are not enough bones*)

Clarifying Questions (Incorrect Response)

- Let's look at these pictures together. All together (circle hand over bone boxes), how many bones are there?
- And, (point to dog box) how many dogs are there?
- There are 5 bones and 6 dogs, so we don't have the same number of bones and dogs. That means we don't have one bone for every dog, so the statement is false.

Now, I'm going to help you make the statement true. To make the statement true, will we need more dogs or more bones? (*bones*)

Why will we need more bones? (*because we have more dogs than bones*)

Can you add a box in the blank space on the side with the bones (point to blank space to left of bones) and draw the bones we need so that there will be one bone for every dog? Allow time for students to draw box and one bone. Students can also draw the bone in one of the existing bone-boxes. How many bones did you draw? (*one*)

2.

$1 + 4 + 1 = 6$

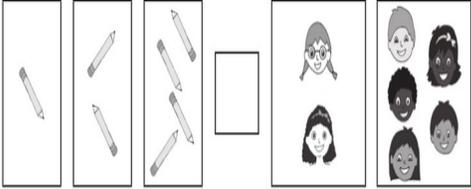
Now we have one bone for every dog. Just like before, I want you to write the equation to show that the numbers of bones and dogs are the same. Allow time for students to try to write the equation on their own. If needed, go through the steps below. Then, write the equation on the classroom board.

Step-by-step Directions (only if needed)

- How many bones are there in the first box? (*one*)
- Write 1 below that box.
- How many bones are there in the second box? (*four*)
- Write 4 below that box.
- How many bones are there in the third box? (*one*)
- Write 1 below that box.
- What math symbol can we use to show that we are putting all of these bones together to make one big group of bones? (*plus sign*)
- Where will you put the plus sign? (*between the 1 and 4 and between the 4 and 1*)
- So all together, how many bones do we have? (*six*)
- Now how many dogs are there in the box of dogs? (*six*)
- Write 6 below that box.
- So all together, how many dogs do we have? (*six*)
- We have 6 bones (point to $1 + 4 + 1$) and we have 6 dogs (point to 6). The number of bones and dogs are the same. So, what math symbol can we use to show that we have an equal number of bones and dogs? (*equal sign*)

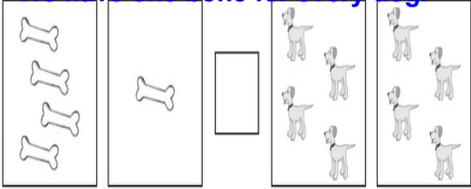
Look up here at the equation we wrote. One side (sweep left hand back and forth under the left side) is equal to (hands down) the other side (sweep right hand back and forth under the right side). Now look at the equation in your book as I read it. 1 plus 4 plus 1 is equal to 6. Now it's your turn to read it with me. All together now: 1 plus 4 plus 1 is equal to 6 (students say aloud with teacher).

We have one pencil for every student.

3. 

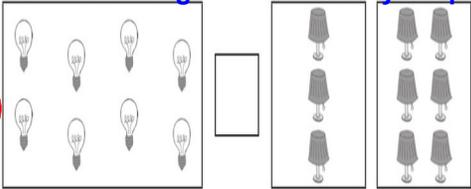
1 + 2 + 4 = 2 + 5

We have one bone for every dog.

4. 

3 + 4 + 1 = 4 + 4

We have one light bulb for every lamp.

5. 

1 + 8 = 3 + 6

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For problems 3-5, read the statement in blue aloud to the students. After each statement provide the following prompts:

- **Is that statement true or false?**
- **Why did you say true / false?** Select student volunteer to explain.
- If false:
 - **What would you need more of to make this statement true?** Select student volunteer to explain.
 - **Add another box here and draw the number of x (pencils, bones, light bulbs) you need so that there will be one x (pencil, bone, light bulb) for every y (student, dog, lamp).**
- **Now write an equation to show that the two groups are the same.**
- **Let's read this equation together** (students read aloud with teacher).

Now you're going to see equations and determine whether they are true or false.

- **What makes an equation true?** (*it has the same amount on both sides of the equal sign*)
- **What makes an equation false?** (*it does not have the same amount on both sides of the equal sign*)

For this part of the lesson I will write an equation on the classroom board and you will decide whether the equation is true or false. If you think the equation is true, make a thumbs up like this (make a thumbs up). If you think the equation is false, then make a thumbs down like this (make a thumbs down). Don't do a thumbs up or down until I ask to see. Do you have any questions?

Let's try a practice problem together. Write $4 + 5 = 3$ on the board.

- **Is this equation (point) true or false?** Give students a moment to examine the equation.
- **Now hold your hand up with a thumbs up or down.** Scan the room to make sure the majority of the students are correct.
- **This equation is false. Raise your hand if you can explain why it is false.** Select student volunteer to explain.

Great job everyone. Are there any questions before we continue with the next equation?

Clarifying Questions (Incorrect Response)

- **Let's look at this equation together. All together, how much do we have on the left side of the equal sign?** (*nine*)
- **All together, how much do we have on the right side of the equal sign?** (*three*)
- **Do we have the same amount on both sides of the equal sign?** (*no*)
- **Remember, a true equation has the same amount on both sides of the equal sign and a false equation does not. So is this equation true or false?** (*false*)

Write each equation on the board and continue with the questioning above for the following equations:

- $4 = 4$ **True**
- $2 = 5$ **False**
- $10 = 5 + 5$ **True**

We are going to continue looking at equations, but this time if the equation is false you will do something a little different. Instead of doing a thumbs down, you will turn the equation into a true equation and then tell your neighbor the true equation you came up with. If the equation is already true, you will still do a thumbs up when I ask.

Let's practice a false equation together. Write $5 = 2 + 4$ on the board. Remember, this equation (point) is false, so you need to change the equation into a true equation by adding another number to one side of the equation.

- **Tell your neighbor which number you would have to add and where it would go.** ($1 + 5 = 2 + 4$ *or* $5 + 1 = 2 + 4$)
- **Raise your hand if you can tell me what the true equation would be.** Select student volunteer. Write true equation on the board.
- **Can you explain what you did to make this equation true?** Select student volunteer to explain.
- **How did you decide which side of the equation you should add to?** Select student volunteer to explain.
- **Let's read this equation together** (students say aloud with teacher).
- **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 5 plus 1 (or 1 plus 5) is the same as 2 plus 4.**

Clarifying Questions (Incorrect Response)

- **Remember, a true equation has to have the same amount on both sides of the equal sign, so you need to add another number to one side of the equation so that all together, the left side will have the same amount as the right side. Which side should you add to?** (*the left side*)
- **So how much more would you need on that side to make it the same as this side?** (*one*)

Great job everyone. Are there any questions before we continue with the next equation?

Write each equation on the board and continue the questioning above with the following equations:

- $3 + 1 = 8$ $(4 + 3 + 1 = 8 \text{ or } 3 + 1 + 4 = 8)$
- $7 = 4$ $(7 = 4 + 3)$
- $5 = 3 + 2$ True

We've reached the end of the lesson. What have we learned today? Students respond. **Now you've learned how to decide if equations are true or false, and you turned false equations into true equations by adding another number.**

(Independent Practice on following page).

INDEPENDENT PRACTICE

Now I want you to solve some problems by yourself. Turn to page 90 in your workbook. You need to determine if each equation is true or false. If the equation is true, write a "T" on the line (point). If it is false, write an "F" on the line (point). Remember, a true equation has the same amount on both sides of the equal sign. Do you have any questions?

Allow time for students to complete the page. Provide the following directions for the last page: **Turn to page 91. All the equations on this last page are false. You will make each of these equations true by adding to the smaller side. Do you have any questions? Do the first problem with the students if necessary.**

Equal or Not Equal 2	Session 11
Determine whether the equation is true or false.	
1. $2 + 2 = 3 + 1$	True or false? <u> T </u>
2. 5 is the same amount as $2 + 3$	<u> T </u>
3. $8 = 5 + 4$	<u> F </u>
4. $4 + 3 = 2 + 3 + 2$	<u> T </u>
5. 9 is equal to $1 + 5$	<u> F </u>
6. $2 + 2 = 4 + 4$	<u> F </u>

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Equal or Not Equal 2	Session 11
Make each equation true by adding to the smaller side.	
1.	$4 + 1 = 2 + 3$
2.	$4 + 1 + 3 = 8$
3.	$2 + 4 = 1 + 2 + 3$

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MINUTE MATH**LEARNING OBJECTIVES**

- Practice intermixed format addition problems with sums of 8

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN

The previous sessions included specific teacher gestures for a correct problem-solving strategy. Research has also shown that it is important for *students* to produce this gesture on their own before solving problems. Before you do Minute Math, you will demonstrate a specific gesture (you can refer to the video clip to see an example of this gesture) and then students will all line up at the board and produce the gesture and say the same phrase:

I want to make one side (sweep left hand back and forth under the left side) **equal to** (hands down) **the other side** (sweep right hand back and forth under the right side).

Let's look at a problem together.

Write $3 + 5 = \underline{\quad} + 2$ in large print on the board, leaving a bit of space on either side of the equal sign. Do not fill in the blank.

I'm going to say some words and move my hands in ways that will help me think about this problem. I want everyone to watch what I do very carefully because soon I'm going to ask everyone to come up to the board and do it.

Is everyone ready? Say the following slowly and clearly:

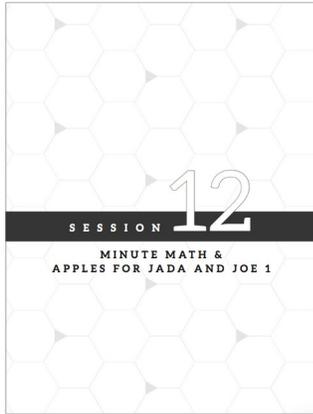
I want to make one side (sweep left hand back and forth under the left side) **equal to** (hands down) **the other side** (sweep right hand back and forth under the right side).

Watch me do it one more time. Repeat gesture and phrase.

Have students line up at the board (you could have two lines if that speeds up the process) and each repeat the exact phrase and gesture, one by one.

If students are not switching hands, say: **Watch, I switched hands.** Model the gesture again as necessary. Make sure every student does it while switching hands.

After everyone has done the gesture up at the board, move on to Minute Math.
Now we get to do Minute Math! Open your workbook to Session 12 for Minute Math.



Hold up your copy with the appropriate page open.
The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all 20 problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

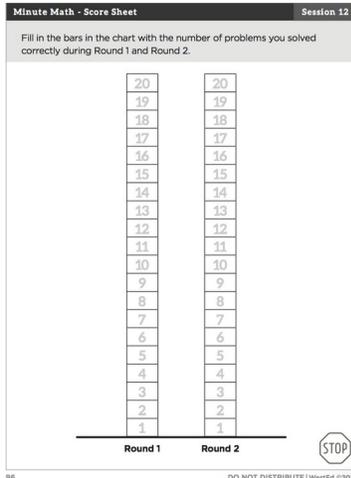
Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 6 in the blank because $3 + 5$ is equal to $6 + 2$! Both sides are equal to 8!
2. Now look at problem b. You should have put 1 in the blank because $1 + 3 + 4$ is equal to $1 + 7$! (stress the first 1 when reading the problem) Both sides are equal to 8!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 1	c. 6	d. 5	e. 2	f. 3	g. 1
PAGE 2	h. 7	i. 4	j. 8	k. 3	l. 1	m. 4	n. 1
PAGE 3	o. 5	p. 6	q. 1	r. 5	s. 8	t. 4	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here are three example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 6 in the blank because $3 + 5$ is equal to $6 + 2$! Both sides are equal to 8!
2. Now look at problem b. You should have put 1 in the blank because $1 + 3 + 4$ is equal to $1 + 7$! (stress the first 1 when reading the problem) Both sides are equal to 8!
3. Now look at problem c. You should have put 6 in the blank because $2 + 6$ is equal to 8!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 1	c. 6	d. 5	e. 2	f. 3	g. 1
PAGE 2	h. 7	i. 4	j. 8	k. 3	l. 1	m. 4	n. 1
PAGE 3	o. 5	p. 6	q. 1	r. 5	s. 8	t. 4	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Apples for Jada and Joe 1 (Guided Problem Solving).

APPLES FOR JADA AND JOE 1 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Write the number of apples on Jada's empty bag (pages 100 through 103)
- Write the number of apples on Jada's empty bag and answer the questions (pages 104 through 107)
- Write the number of apples on Jada's empty bag and write the equation (pages 108 through 111)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Apples for Jada and Joe 1 Session 12

Jada wants to have the same number of apples as Joe. Write the number of apples she should put in her empty bag.

Example

1.

2.

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Now you get to solve some more problems on your own. Open your workbook to the first Apples for Jada and Joe 1 page for Session 12. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Apples for Jada and Joe 1 Session 12

Jada wants to have the same number of apples as Joe. Write the number of apples she should put in her empty bag.

Example

1.

2.

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Read instructions from page 100. The instructions say: Jada wants to have the same number of apples as Joe. Write the number of apples she should put in her empty bag.

HINT: After you write a number on Jada's bag, check to make sure Jada and Joe have the same number of apples. Please share this hint – or a similar phrasing of it – with your students. We have found that some students need this extra tip to be successful on this activity.

Remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 100**

and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Compare and contrast two equations
- Use a complete equation to fill in the blank in a related equation

MATERIALS

- Classroom board
- Student workbook
- Red colored pencil

INSTRUCTIONAL PLAN

Today you're going to compare and contrast equations. What do we know about the equal sign? (*the equal sign means that two amounts are the same / the equal sign means "is the same amount as" / the equal sign means that the amount on one side of the equation is equal to the amount on the other side*) **By the end of the lesson, you're going to be able to use what you know about the equal sign to compare and contrast equations and use one equation to fill in the blank in a related equation.**

- **What does it mean to compare and contrast?** (*to look for ways the equations are the same and ways the equations are different*)

Here is the first equation. Write " $4 + 3 = 7$ " on the board. **I need a volunteer to read this equation aloud to the class.** Select student volunteer. **Now let's look at another equation.** Write " $7 = 4 + 3$ " on the board below the previous equation. **I need another volunteer to read this equation.** Select student volunteer. **I want you to compare and contrast these two equations. So, you'll think about how they're the same and how they're different.** Pause for students to examine the equations.

- **How are these two equations the same?** (*both equations have the same numbers in them and the numbers are grouped in the same way - "7" on one side of the equal sign and "4 + 3" on the other side of the equal sign*)
- **How are these two equations different?** (*the "7" and the "4 + 3" are on different sides of the equal sign*)

Clarifying Questions (Incorrect Response)

- **Do you see anything in this equation** (point) **that is also in the equation** (point)?
- **If both equations have "4 + 3" and "7," how are the equations different?**
- **Are both of the equations correct?**
- **So, does an equation remain correct when you flip the two sides of the equation?**

Erase the second equation and write " $3 + 4 = 7$ " below the first equation. **Now I want you to compare this equation** (point to " $3 + 4 = 7$ ") **to this equation** (point to " $4 + 3 = 7$ ").

- **How are these two equations the same?** (*both equations have the same numbers in them and the numbers are always on the same side of the equal sign - "3" and "4" on the left and "7" on the right*)
- **How are these two equations different?** (*the order of the "3" and the "4" is different*)

Clarifying Questions (Incorrect Response)

- **Both equations have "3" and "4" on the left side of the equation, but what is different about "3" and "4" in this equation?** (point to " $3 + 4 = 7$ ") and **"3" and "4" in this equation** (point to " $4 + 3 = 7$ ")?

- When you add numbers together, does the order of the numbers matter?

Erase the second equation and write “ $4 + 3 = 3 + 4$ ” below the first equation. **Now I want you to compare this equation** (point to “ $4 + 3 = 3 + 4$ ”) **to this equation** (point to “ $4 + 3 = 7$ ”).

- **How are these two equations the same?** (*the left side of the equal sign is the same in both equations and the sum of the right side of the equal sign is equal to 7 in both equations*)
- **How are these two equations different?** (*the two equations use different numbers to sum to 7 on the right side of the equal sign – the first equation just has the number “7” on the right side of the equal sign and the second equation makes 7 by adding “ $3 + 4$ ”*)

Clarifying Questions (Incorrect Response)

- **Do you have a side that looks the same in both equations?**
- **What does the other side look like?**
- **How is 7** (point to right side of the first equation) **like 3 plus 4** (point to right side of the second equation)?

Write “ $7 = 4 + 3$ ” and “ $3 + 4 = 7$ ” below the two equations currently on the board. **What do all the equations we looked at have in common?** (*they are all true equations with a sum of 7 on each side of the equal sign*)

Equation Sequence

$$\begin{aligned} 4 + 3 &= 7 \\ 4 + 3 &= 3 + 4 \\ 7 &= 4 + 3 \\ 3 + 4 &= 7 \end{aligned}$$

Now we’re going to look at some more equations. Each of these equations will have a blank, and you will need to figure out what number goes in the blank.

Complete the Equation 2 Session 13

Fill in the missing values below.

Example

$3 + \underline{2} = 5$

1.

$\underline{5}$ is equal to $3 + 2$

2.

$5 = 2 + \underline{3}$

3.

$1 + 4 = \underline{3} + 2$

➔

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Turn to page 113 in your workbook. On this page you will see one complete equation and three equations you will need to complete. I want you to use the completed equation at the top of your workbook page (point to “ $3 + 2 = 5$ ”) to help you figure out what number goes in the blank in each equation. Write reference equation on the classroom board.

Ask the following questions for each problem.

- **Can you figure out what number goes in the blank?**
- **Raise your hand if you can tell me how you figured out what number should go in the blank.** Select student volunteer to explain.
- If the student did any addition, ask: **Can you figure out what number goes in the blank without adding any numbers together?**

After completing this page, ask: **What do all of the equations on this page have in common?** (*they are all true equations with a sum of 5 on each side of the equal sign*)

Clarifying Questions (Incorrect Response)

- **What do all the equations on this page have in common?**
- **Can you use the other equations to help you figure out what number goes in the blank without adding any numbers together?**

Complete the Equation 2 Session 13

Use the reference equation to help you fill in the missing values below.

Reference Equation

$$26 + 54 = 80$$

1.

$$54 + 26 = \underline{80}$$

2.

80 is the same amount as $26 + 54$

3.

$$26 + 54 = 54 + \underline{26}$$

➔

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Turn to page 114 in your workbook. On this page you will see one complete equation and three equations that you will need to complete. These equations use really big numbers, so I want you to use the completed equation at the top of your workbook page (point to “ $26 + 54 = 80$ ”) to help you figure out what number goes in the blank in each equation. Write the reference equation on the classroom board. **Let’s read this equation together. 26 plus 54 is equal to 80.**

What else could we say for the equal sign instead of “is equal to”? (Wait for responses... encourage “is the same as” or similar relational wording.) **That’s right. We could say 26 plus 54 is the same as 80.**

Point to the first equation with a blank on your workbook page.

- **Can you figure out what number goes in the blank without adding $54 + 26$? Write your answer in the blank and tell your neighbor how you figured it out.** Give students a little time to share.
- **Raise your hand if you can tell me how you figured out what number should go in the blank without having to add $54 + 26$.** Select student volunteer to explain.

Clarifying Questions (Incorrect Response)

- **How is this equation (point to “ $26 + 54 = 80$ ”) like this equation (point “ $54 + 26 = \underline{\quad}$ ”)?**
- **Because both equations have the same numbers on the left side of the equal sign, can you use this completed equation (point to “ $26 + 54 = 80$ ”) to help you figure out what will go in the blank (point)?**

Let’s try another one. Point to the second equation with a blank on your workbook page.

- Can you figure out what number goes in the blank without adding any numbers? Write your answer in the blank and tell your neighbor how you figured it out. Give students a little time to share.
- Raise your hand if you can tell me how you figured out what number should go in the blank without having to add. Select student volunteer to explain.

Let's try one more. Point to the third equation with a blank on your workbook page.

- Can you figure out what number goes in the blank without adding any numbers? Write your answer in the blank and tell your neighbor how you figured it out. Give students a little time to share.
- Raise your hand if you can tell me how you figured out what number should go in the blank without having to add. Select student volunteer to explain.

Clarifying Questions (Incorrect Response)

- How is this equation (point to “ $26 + 54 = 80$ ”) like this one (point “ $26 + 54 = 54 + \underline{\quad}$ ”)?
- If you have to have the same amount on both sides of the equal sign, how can you use this completed equation (point) to help you figure out what will go in the blank (point)?

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned how to compare and contrast equations and how to use one equation to fill in the blank in a related equation.

INDEPENDENT PRACTICE

Complete the Equation 2 Session 13

Another student filled in the blanks. Make a check if the answer is correct or an X if the answer is wrong.

Reference Equation

$$36 + 24 = 60$$

1. X $24 + 36 = \underline{65}$ 60

2. 😊 $\underline{60} = 24 + 36$

3. X $24 + 36 = 24 + \underline{17}$ 36

4. 😊 $60 = 53 + \underline{7}$



Now it's your turn to be the teacher! Turn to page 115 in your workbook and take out a red colored pencil. These are the same types of problems you just did where there is a blank in each equation. However, the answers have already been filled in by another student. So, it's your job to be the teacher and grade the worksheet. Look at each problem, and decide if the student put the correct number in each blank. Draw a check mark next to the problem (point) if the student got it right and an X if the student got it wrong. If the student got it wrong, you should also write the correct number above the student's response. Do you have any questions?

MINUTE MATH

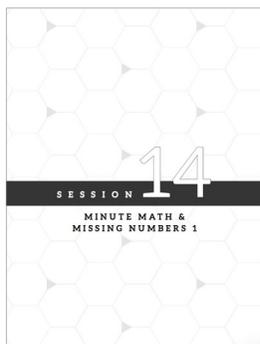
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 9

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 14 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages.

There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 5 in the blank because $1 + 8$ is equal to $5 + 4$! Both sides are equal to 9!
2. Now look at problem b. You should have put 1 in the blank because $1 + 1 + 7$ is equal to $6 + 3$! (stress the first 1 when reading the problem) Both sides are equal to 9!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 5	b. 1	c. 3	d. 5	e. 2	f. 4	g. 6
PAGE 2	h. 2	i. 3	j. 1	k. 9	l. 6	m. 5	n. 4
PAGE 3	o. 3	p. 2	q. 5	r. 2	s. 9	t. 2	

Minute Math - Score Sheet Session 14

Fill in the bars in the chart with the number of problems you solved correctly during Round 1 and Round 2.

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

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Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.

You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 problems again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 5 in the blank because $1 + 8$ is equal to $5 + 4$! Both sides are equal to 9!
2. Now look at problem b. You should have put 1 in the blank because $1 + 1 + 7$ is equal to $6 + 3$! (stress the first 1 when reading the problem) Both sides are equal to 9!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 5	b. 1	c. 3	d. 5	e. 2	f. 4	g. 6
PAGE 2	h. 2	i. 3	j. 1	k. 9	l. 6	m. 5	n. 4
PAGE 3	o. 3	p. 2	q. 5	r. 2	s. 9	t. 2	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to the Missing Numbers 1 (Guided Problem Solving).

MISSING NUMBERS 1 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Write the missing number to make expressions equal to a target sum (pages 124 through 127)
- Write the missing number to make expressions equal to a target expression or sum (pages 128 through 133)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Missing Numbers 1 Session 14

Make the expression in the white portion equal to the number in the gray portion.

Example

7
___ + 6

1. 7
___ + 5

2. 7
3 + ___

3. 7
4 + ___

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Now you get to solve some more problems on your own. Open your workbook to the first Missing Numbers 1 page for Session 14. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Missing Numbers 1 Session 14

Make the expression in the white portion equal to the number in the gray portion.

Example

7
___ + 6

1. 7
___ + 5

2. 7
3 + ___

3. 7
4 + ___

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Read instructions from page 124. The instructions say: Make the expression in the white portion equal to the number in the gray portion.

Remember to read the instructions at the top of every page. Some pages will have more boxes than others. Pay close attention to the number or expression that is written in each gray box. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up!** It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 124 and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Use given information to write equations that demonstrate equality
- Solve for the missing number in an equation

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

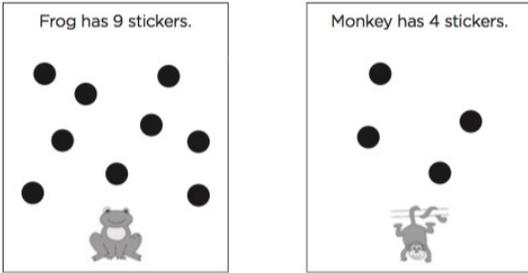
Remember when we helped Frog and Monkey share stickers? And when we made the scale balance? What had to happen for Frog and Monkey to be equal or for the scale to balance? (each side had the same number of stickers/bears) That's right, each side had to have the same number of stickers or bears. Today you're going to compare information about several pairs of objects. What do we know about the equal sign? (the equal sign means that two amounts are the same / the equal sign means "is the same amount as" / the equal sign means that the amount on one side of the equation is equal to the amount on the other side) By the end of the lesson, you're going to be able to use what you know about the equal sign to write and solve for the missing number in an equation.

Open your workbook to page 135. The given information will make the two sides different, but I want you to figure out what would need to happen to make them the same. Let's look at the first set of pictures together. Point to the first picture. This is Frog. Frog has 9 stickers. Now point to the second picture. This is Monkey. Monkey has 4 stickers.

Word Problems 2 Session 15

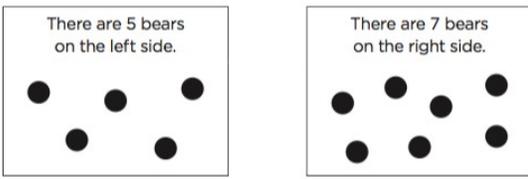
Figure out how to make the two sides the same. Write an equation to show what you did to make them equal.

1. Frog has 9 stickers. Monkey has 4 stickers.



$$9 = 4 + \underline{5}$$

2. There are 5 bears on the left side. There are 7 bears on the right side.



$$5 + \underline{2} = 7$$

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- Are Frog and Monkey the same or different? (*different*)
- How are Frog and Monkey different? (*Frog has 9 stickers, but Monkey only has 4*)
- Monkey wants to be the same as Frog! I want you to figure out what would need to happen to make Monkey (point to Monkey) equal to Frog (point to Frog).
- Let's do it together! We are going to make Frog and Monkey equal so go ahead and write the equal sign between Frog and Monkey. Students write the equal sign between the boxes.
- We know that Frog has 9 stickers, so write 9 under the picture of Frog. And we know that Monkey has 4 stickers, so write 4 under the picture of Monkey.

9 (point) is not equal to 4 (point), so we need to add something to make them equal.

- What would need to happen to make Monkey equal to Frog? (*Monkey would need 5 more stickers*)
- So, can you add something to this equation to show that if Monkey has 5 more stickers, all together Monkey will have the same number of stickers as Frog? Students add "+ 5" to the right side of the equation.
- Now the two sides of the equation are equal. Both sides have 9! Let's read this equation together. 9 is equal to 4 plus 5 (students say aloud with teacher).
- What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 9 is the same as 4 plus 5.**

Clarifying Questions (Incorrect Response)

- If we want them to be equal, who will need more stickers – Frog or Monkey? (*Monkey*)
- How many more stickers would Monkey need to have as many stickers as Frog? (*five*)
- What math symbol should you use to show you are putting the 4 and 5 together to make one big group? (*plus sign*)

Now let's look at the second set of pictures. Point to the first picture. There are 5 bears on the left side of the balance scale. Now point to the second picture. There are 7 bears on the right side of the balance scale

- We want the scale to balance! I want you to figure out what would need to happen to make the scale balance. How many bears are on the left side of the scale? (*five*) Good, write 5 under the left side of the scale.
- How many bears are on the right side of the scale? (*seven*) Good, write 7 under the right side of the scale.
- What needs to happen to make the scale balance? (*we need 2 more bears on the left side*) Right! We need 2 more bears on the left side! Write "+ 2" after the 5.
- Now that the two sides are equal, write the equal sign in the middle. Let's read this equation together. 5 plus 2 is equal to 7 (students say aloud with teacher).

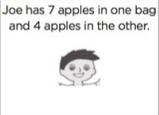
Now turn to page 136 in your workbook. Just like you did on the last page, you need to figure out what would need to happen to make both sides equal and then write an equation.

Word Problems 2 Session 15

Figure out how to make the two sides the same. Write an equation to show what you did to make them equal.

1. Joe has 3 apples in one bag and 5 apples in the other.  Jada has 4 apples. 

$$3 + 5 = 4 + 4$$

2. Jada has 6 apples.  Joe has 7 apples in one bag and 4 apples in the other. 

$$6 + 5 = 7 + 4$$

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- Let's look at the first set of pictures together. Point to the first picture. This is Joe. Joe has 3 apples in one bag and 5 apples in the other. Write 3 under Joe, and then write "+ 5" next to the 3.
- Now point to the second picture. This is Jada. Jada has 4 apples. Write 4 under Jada.
- Jada wants to be the same as Joe! Tell your neighbor what would need to happen to make Jada (point to Jada) equal to Joe (point to Joe). 74 (*Jada needs to get 4 more apples*)

- **Raise your hand if you can tell me how you figured that out.** Select a student volunteer to explain.
- **If you didn't already, I want you to write an equation to show that Joe and Jada now have an equal number of apples. Let's read this equation together. 3 plus 5 is equal to 4 plus 4** (students say aloud with teacher).
- **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 3 plus 5 is the same as 4 plus 4.**

Clarifying Questions (Incorrect Response)

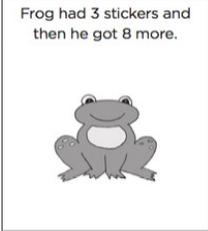
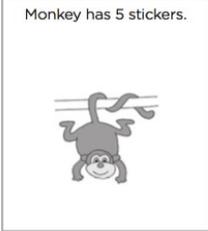
- **Let's look at the first picture. This is Joe. Do we know how many apples Joe has?** (3 + 5)
- **So write 3 + 5 under the picture of Joe because we know he has 3 + 5 apples.**
- **Now let's look at the second picture. This is Jada. Do we know how many apples Jada has?** (4)
- **So write 4 under the picture of Jada because we know she has 4 apples.**
- **If we want them to be equal, who will need more apples – Joe or Jada?** (*Jada*)
- **How many more apples would Jada need to have as many apples as Joe?** (4)
- **What math symbol should you use to show you are putting the 4 and 4 together to make one big group?** (*plus sign*)
- **So go ahead and write "+ 4" after the 4 under the picture of Jada.**
- **Now you have an equation that shows that Joe and Jada have an equal number of apples!**

Point to the second problem. Repeat above prompts for the second problem.

Word Problems 2 **Session 15**

Figure out how to make the two sides the same. Write an equation to show what you did to make them equal.

1. Frog had 3 stickers and then he got 8 more. Monkey has 5 stickers.

$$3 + 8 = 5 + 6$$

2. There are 8 bears on the left side of the balance scale. Olivia put 7 bears on the right side of the balance scale and then she put on 2 more.

$$8 + 1 = 7 + 2$$

→

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Now we're going to do some more problems like those. Turn to page 137 in your workbook.

- **Let's look at the first set of pictures together. Point to the first picture. This is Frog. Frog had 3 stickers and then he got 8 more. Write 3 under Frog, and then write "+ 8" next to the 3.**
- **Now point to the second picture. This is Monkey. Monkey has 5 stickers. Write 5 under Monkey.**
- **Monkey wants to be the same as Frog! Tell your neighbor what would need to happen to make Monkey (point to Monkey) equal to Frog (point to Frog). (*Monkey needs 75 to get 6 more stickers*)**

- **Raise your hand if you can tell me how you figured that out.** Select a student volunteer to explain.
- **If you didn't already, I want you to write an equation to show that Frog and Monkey now have an equal number of stickers. Let's read this equation together. 3 plus 8 is equal to 5 plus 6** (students say aloud with teacher).
- **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 3 plus 8 is the same as 5 plus 6.**

Clarifying Questions (Incorrect Response)

- **Let's look at the first picture. This is Frog. Do we know how many stickers Frog has?** (3 + 8)
- **So write 3 + 8 under the picture of Frog because we know he has 3 + 8 stickers.**
- **Now let's look at the second picture. This is Monkey. Do we know how many stickers Monkey has?** (5)
- **So write 5 under the picture of Monkey because we know he has 5 stickers.**
- **If we want them to be equal, who will need more stickers – Frog or Monkey?** (Monkey)
- **How many more stickers would Monkey need to have as many stickers as Frog?** (6)
- **What math symbol should you use to show you are putting the 5 and 6 together to make one big group?** (plus sign)
- **So go ahead and write "+ 6" after the 5 under the picture of Monkey.**
- **Now you have an equation that shows that Frog and Monkey have an equal number of stickers!**

Now let's look at the second set of problems. Point to the first box. There are 8 bears on the left side of the balance scale. Now point to the second box. Olivia put 7 bears on the right side of the balance scale and then she put on 2 more.

- **We want the scale to balance! I want you to figure out what would need to happen to make the scale balance. How many bears are on the left side of the scale?** (eight) **Good, write 8 under the left side of the scale.**
- **How many bears are on the right side of the scale?** (seven plus two). **Good, write 7 under the right side of the scale, and then write "+ 2" next to the 7.**
- **What needs to happen to make the scale balance?** (we need 1 more bear on the left side of the scale) **Right! We need 1 more bear on the left side of the scale! Write "+ 1" after the 8.**
- **Now that the two sides are equal, write the equal sign in the middle.**
- **Now let's read this equation together. 8 plus 1 is equal to 7 plus 2** (students say aloud with teacher).

Now you're going to solve some word problems. Turn to page 138 in your workbook.

Word Problems 2 **Session 15**

Write an equation and solve for the missing information in each word problem.

1. Frog has 7 stickers. Monkey has 10 stickers. How many more stickers does Frog need in order to have as many stickers as Monkey?

Frog
Monkey

$$\underline{7 + 3 = 10}$$

2. Jada has 2 apples in one bag and 9 apples in another bag. Joe has 3 apples. How many more apples does Joe need so that he has as many apples as Jada?

Jada
Joe

$$\underline{2 + 9 = 3 + 8}$$

➔

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- Point to the first problem. I'll read the problem to you. Follow along with me while I read: *Frog has 7 stickers. Monkey has 10 stickers. How many more stickers does Frog need to have as many stickers as Monkey?*
- Can you figure out how many more stickers Frog needs? (*Frog needs 3 more stickers*)
- How did you figure that out? Select a student volunteer to explain.
- If you didn't already, I want you to write an equation to show that Frog and Monkey now have an equal number of stickers. Let's read this equation together. **7 plus 3 is equal to 10** (students say aloud with teacher).

Now point to the second problem. I'll read the problem to you. Follow along with me while I read: *Jada has 2 apples in one bag and 9 apples in another bag. Joe has 3 apples. How many more apples does Joe need so that he has as many apples as Jada?*

On the lines below the problem make sure to write "Jada" on one side and "Joe" on the other. Now, can you figure out how many more apples Joe needs so that he will have as many apples as Jada? (*Joe needs 8 more apples*)

How did you figure that out? Select a student volunteer to explain.

Clarifying Questions (Incorrect Response)

- What is the problem asking you to find? (*how many more apples Joe needs to have as many apples as Jada*)
- So what are the two groups you need to make equal? (*Jada's apples and Joe's apples*)
- Let's label the two sides of the equal sign. On the left side of the equal sign you will have Jada and on the right side of the equal sign you will have Joe.
- Do we know how many apples Jada has? (*yes*)
- And how many apples is that? (*2 + 9 = 11, so 11 apples*)
- So go ahead and write 2 + 9 under "Jada."
- Do we know how many apples Joe has? (*yes*)
- And how many apples is that? (*3*)
- So go ahead and write 3 under "Joe."
- How many more apples does Joe need in order to have the same number of apples as Jada? (*8*)
- Now you have an equation that shows Jada and Joe have an equal number of apples!

If you didn't already, I want you to write an equation to show that Jada and Joe have an equal number of apples. Let's read this equation together. 2 plus 9 is equal to 3 plus 8 (students say aloud with teacher).

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned how to use information to write equations and how to solve for the missing number in an equation.

INDEPENDENT PRACTICE

Now I want you to solve some problems by yourself. Turn to page 139 in your workbook. These problems will be just like the ones we have been doing together. I'll read each problem out loud and then I'll give you time to solve it and write an equation. Make sure to remember to label the sides like we did in the previous problems. Read each problem and then give students time to solve it before reading the next problem.

Word Problems 2 **Session 15**

Write an equation and solve for the missing information in each word problem.

1. There are 3 bears on the left side of the balance scale. Tom put 4 more bears on the left side of the scale. He then put 5 bears on the right side of the scale. How many more bears does Tom need to put on the right side of the scale so that the scale is balanced?

Left Right

3 + 4 = 5 + 2

2. There are 10 students in the class. The teacher has 7 pencils. How many more pencils does the teacher need to have a pencil for every student?

Students Pencils

10 = 7 + 3



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Page 139, Problem 1

There are 3 bears on the left side of the balance scale. Tom put 4 more bears on the left side of the scale. He then put 5 bears on the right side of the scale. How many more bears does Tom need to put on the right side of the scale so that the scale is balanced?

Page 139, Problem 2

There are 10 students in the class. The teacher has 7 pencils. How many more pencils does the teacher need to have a pencil for every student?

MINUTE MATH

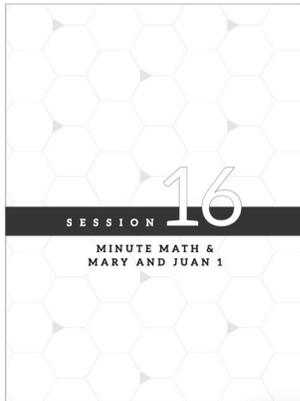
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 8 and 9

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 16 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

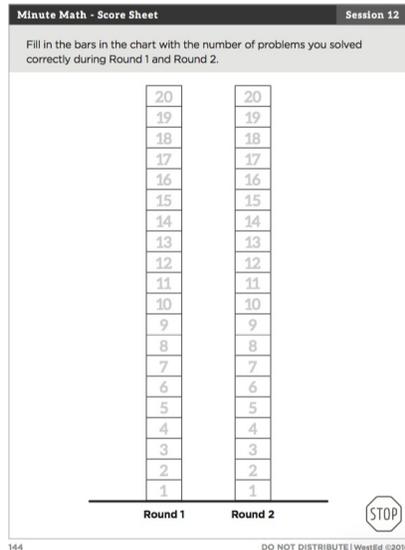
Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $4 + 5$ is equal to $3 + 6$! Both sides are equal to 9!
2. Now look at problem b. You should have put 1 in the blank because $6 + 1 + 1$ is equal to 8! (stress the first 1 when reading the problem)

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 1	c. 5	d. 8	e. 2	f. 9	g. 4
PAGE 2	h. 5	i. 6	j. 2	k. 4	l. 3	m. 8	n. 5
PAGE 3	o. 1	p. 7	q. 3	r. 2	s. 5	t. 4	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the ones you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem 1. You should have put 3 in the blank because $4 + 5$ is equal to $3 + 6$! Both sides are equal to 9!
2. Now look at problem 2. You should have put 1 in the blank because $6 + 1 + 1$ is equal to 8! (stress the first 1 when reading the problem)

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 1	c. 5	d. 8	e. 2	f. 9	g. 4
PAGE 2	h. 5	i. 6	j. 2	k. 4	l. 3	m. 8	n. 5
PAGE 3	o. 1	p. 7	q. 3	r. 2	s. 5	t. 4	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Mary and Juan 1 (Guided Problem Solving).

MARY AND JUAN 1 (GUIDED PROBLEM SOLVING)

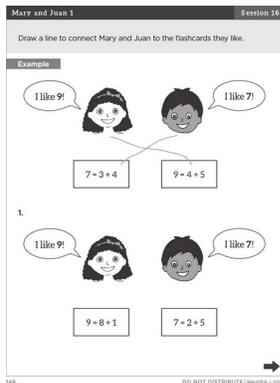
Students will be asked to:

- Draw lines to connect Mary and Juan to flashcards they like (pages 148 through 151)
- Write the equations on Mary's board and Juan's board (page 152)
- Solve each equation and draw a line to connect Mary and Juan to the flashcards they like (pages 153 and 154)
- Solve each equation and write the equations on Mary's board and Juan's board (page 155)

MATERIALS

- Student workbook

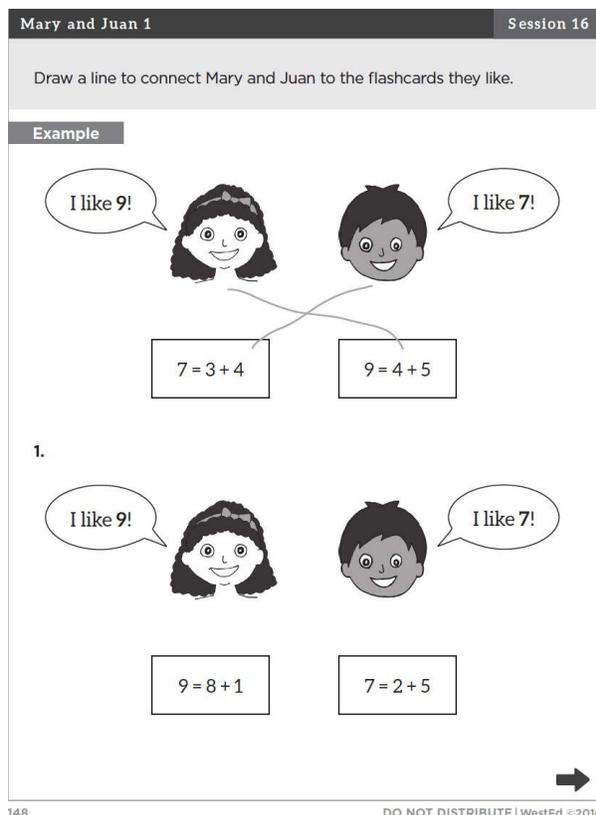
INSTRUCTIONAL PLAN



Now you get to solve some more problems on your own. Open your workbook to the first Mary and Juan 1 page for Session 16. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Turn the page, and follow along as I read the instructions at the top of the page.



Read instructions from page 148. The instructions say: Draw a line to connect Mary and Juan to the flashcards they like.

Remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 148 and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Determine whether equations demonstrate equality
- Turn false equations into true equations by adding an addend.

MATERIALS

- Student workbook
- Classroom board

INSTRUCTIONAL PLAN

Today you're going to hear statements and see equations. You will determine whether the statements and equations are true or false. By the end of the lesson, you're going to be able to decide if equations are true or false and turn false equations into true equations by adding another number.

- What does it mean if something is true? (*correct*)
- What does it mean if something is false? (*incorrect*)

Let's start with some statements. Open your workbook to page 157.

Let's look at the first problem together. Point to the dogs. Now point to the bones. We have one bone for every dog (pause). Is that statement true or false? (*false*)

- Why did you say false? (*there are 6 dogs, but only 4 bones; there are not enough bones*)

Clarifying Questions (Incorrect Response)

- Let's look at these pictures together. All together (circle hand over bone box), how many bones are there?
- All together (circle hand over dog boxes), how many dogs are there?
- There are 4 bones and 6 dogs, so we have a different number of bones and dogs. That means we don't have one bone for every dog, so the statement is false.

Now, I'm going to help you make the statement true. To make the statement true, will we need more dogs or more bones? (*bones, because we have more dogs than bones*)

How many more bones will you need to have an equal number of bones and dogs? (*two*)

Can you add a box to the side with the bones and draw the bones you need so that there will be one bone for every dog? Students draw box and bones.

Now we have one bone for every dog. I want you to write the equation to show that the numbers of bones and dogs are the same.

Allow time for students to try to write the equation on their own. (If needed, go through the steps below.) Then, write the equation on the classroom board.

Step-by-Step Directions (Only if needed)

- **How many dogs are there in the first box? (*two*)**
- **Write 2 below that box.**
- **How many dogs are there in the second box? (*three*)**
- **Write 3 below that box.**
- **How many dogs are there in the third box? (*one*)**
- **Write 1 below that box.**
- **What math symbol can we use to show that we are putting all of these dogs together to make one big group of dogs? (*plus sign*)**
- **Where will you put the plus sign? (*between the 2 and 3 and between the 3 and 1*)**
- **So all together, how many dogs do you have? (*six*)**

- **Now, how many bones are there in the first box of bones? (*four*)**
- **Write 4 below that box.**
- **How many bones are there in the second box of bones? (*two*)**
- **Write 2 below that box.**
- **So all together, how many bones do you have? (*six*)**

- **So you have 6 dogs (point to $2 + 3 + 1$) and you have 6 bones (point to $4 + 2$). The numbers of dogs and bones are the same. So, what math symbol can we use to show that we have an equal number of dogs and bones? (*equal sign*)**

Look up here at the equation we wrote. One side (sweep left hand back and forth under the left side) **is equal to the other side** (sweep right hand back and forth under the right side).

Now look at the equation in your book as I read it. 2 plus 3 plus 1 is equal to 4 plus 2.

Now it's your turn to read it with me. All together now: 2 plus 3 plus 1 is equal to 4 plus 2 (students say aloud with teacher).

What else could we say for the equal sign instead of “is equal to”? (Wait for responses... encourage “is the same as” or similar relational wording.) **That's right. We could say 2 plus 3 plus 1 is the same as 4 plus 2.**

I want you to do the next two problems on this page by yourself. For each problem, read the statement in red aloud to the students. After each statement provide the following prompts:

- **Is that statement true or false?**
- **Why did you say true / false?** Select student volunteer to explain.
- If false:
 - **What would you need more of to make this statement true?** Select student volunteer to explain. (*worms*)
 - **Add another box here and draw the number of worms you need so that there will be one worm for every bird.**
- **Now write an equation to show that the two groups are equal.**
- **Let's read this equation together** (students say aloud with teacher).

Now you're going to see equations and determine whether they are true or false.

- What makes an equation true? (*it has the same amount on both sides of the equal sign*)
- What makes an equation false? (*it does not have the same amount on both sides of the equal sign*)

For this part of the lesson I will write an equation on the classroom board and you will decide whether the equation is true or false. If you think the equation is true, make a thumbs up like this (make a thumbs up). If you think the equation is false, then make a thumbs down like this (make a thumbs down). Don't do a thumbs up or down until I ask to see. Do you have any questions?

Let's try a practice problem together. Write $3 = 5$ on the board.

- Is this equation (point) true or false? Give students a moment to examine the equation.
- Now hold your hand up with a thumbs up or down. Scan the room to make sure the majority of the students are correct.
- This equation is false. Raise your hand if you can explain why it is false. Select student volunteer to explain.

Clarifying Questions (Incorrect Response)

- Let's look at this equation together. How much do we have on the left side of the equal sign? (*three*)
- How much do we have on the right side of the equal sign? (*five*)
- Do we have the same amount on both sides of the equal sign? (*no*)
- Remember, a true equation has the same amount on both sides of the equal sign and a false equation does not. So is this equation true or false? (*false*)

Great job everyone. Are there any questions before we continue with the next equation?

Continue with the questioning above for the following equations:

- $3 + 4 = 7$ True
- $1 + 5 = 2 + 3$ False

We are going to continue looking at equations, but this time if the equation is false you will do something a little different. Instead of doing a thumbs down, you will turn the equation into a true equation and then tell your neighbor the true equation you came up with. If the equation is already true, you will still do a thumbs up when I ask.

Let's practice a false equation together. Write $6 = 2 + 1$ on the board. Remember, this equation (point) is false, so you need to change the equation into a true equation by adding another number to one side of the equation.

- Tell your neighbor which number you would have to add and where it would go. ($6 = 2 + 1 + 3$)
- Raise your hand if you can tell me what the true equation would be. Select student volunteer. Write true equation on the board.
- Can you explain what you did to make this equation true? Select student volunteer to explain.

- **How did you decide which side of the equation you should add to?** Select student volunteer to explain.
- **Let's read this equation together** (students say aloud with teacher).
- **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 6 is the same as 2 plus 1 plus 3.**

Clarifying Questions (Incorrect Response)

- **Remember, a true equation has to have the same amount on both sides of the equal sign, so you need to add another number to one side of the equation so that all together, the left side will have the same amount as the right side. Which side should you add to?** (*the right side*)
- **So how much more would you need on that side to make it the same as this side?** (3)
- **Now I want you to read this true equation.**

Great job everyone. Are there any questions before we continue with the next equation?

Write each equation on the board and continue with the questioning above for the following equations:

- $8 = 5 + 5$ ($2 + 8 = 5 + 5$ or $8 + 2 = 5 + 5$)
- $2 + 4 = 3 + 3$ True
- $2 + 2 + 4 = 1 + 3$ ($2 + 2 + 4 = 1 + 3 + 4$)

We've reached the end of the lesson. What have we learned today? Students respond. **Now you've learned how to decide if equations are true or false, and you turned false equations into true equations by adding another number.**

INDEPENDENT PRACTICE

Now I want you to solve some problems by yourself. Turn to page 158 in your workbook. You need to determine if each equation is true or false. If the equation is true, write a "T" on the line (point). If it is false, write an "F" on the line (point). There is one page to complete with problems like these. Remember, a true equation has the same amount on both sides of the equal sign. Do you have any questions?

Allow time for students to complete the first page. (Pictures of both pages of independent practice are on the following page of the manual).

Provide the following directions for the second page: **Turn to page 159. All the equations on this last page are false. You will make each of these equations true by adding to the smaller side. Do you have any questions?** Do the first problem with students if necessary.

Determine whether the equation is true or false.

- | | | True or false? |
|----|---------------------------------------|----------------|
| 1. | $8 + 2$ is the same amount as $5 + 5$ | <u>T</u> |
| 2. | $3 + 1 = 2 + 6$ | <u>F</u> |
| 3. | $2 + 5 = 4 + 2 + 1$ | <u>T</u> |
| 4. | $5 + 2$ is the same amount as $3 + 6$ | <u>F</u> |
| 5. | $3 = 4 + 1$ | <u>F</u> |
| 6. | 6 is equal to $3 + 1 + 2$ | <u>T</u> |



Make each equation true by adding to the smaller side.

1. $3 + 2 + 2 = 3 + 4$

2. $3 + 4 + 1 = 2 + 4 + 2$

3. $3 + 7 = 6 + 4$



MINUTE MATH

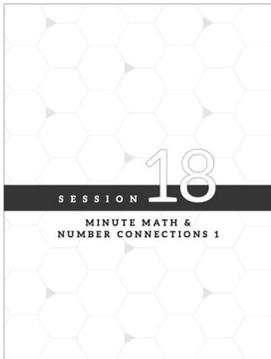
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 6–9

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 18 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

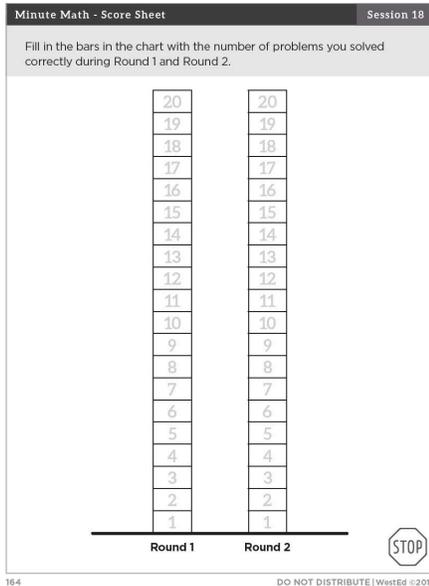
Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $4 + 2$ is equal to $3 + 3!$ (stress the first 3 when reading the problem) Both sides are equal to 6!
2. Now look at problem b. You should have put 3 in the blank because $2 + 3 + 2$ is equal to $1 + 6!$ Both sides are equal to 7!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 3	c. 9	d. 1	e. 2	f. 8	g. 4
PAGE 2	h. 2	i. 7	j. 4	k. 3	l. 6	m. 4	n. 2
PAGE 3	o. 5	p. 1	q. 4	r. 3	s. 8	t. 8	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you'll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $4 + 2$ is equal to $3 + 3$! (stress the first 3 when reading the problem) Both sides are equal to 6!
2. Now look at problem b. You should have put 3 in the blank because $2 + 3 + 2$ is equal to $1 + 6$! Both sides are equal to 7!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 3	c. 9	d. 1	e. 2	f. 8	g. 4
PAGE 2	h. 2	i. 7	j. 4	k. 3	l. 6	m. 4	n. 2
PAGE 3	o. 5	p. 1	q. 4	r. 3	s. 8	t. 8	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Number Connections 1 (Guided Problem Solving).

NUMBER CONNECTIONS 1 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Draw a line from the student with the correct number to the equation and write that number in the equation (pages 168 through 177)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Now you get to solve some more problems on your own. Open your workbook to the first Number Connections 1 page for Session 18. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Read instructions from page 168. The instructions say: Draw a line to connect the equation with the student who got the correct number. Then, write that number in the blank.

HINT: That means one of the students DID get the correct number. So if neither student got the number YOU think should go in the blank, try solving the problem again. Please share this hint – or a similar phrasing of it – with your students. This session serves as an opportunity for students to check their work.

Remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up!** It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 168 and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Compare and contrast two equations
- Use a complete equation to fill in the blank in a related equation

MATERIALS

- Classroom board
- Individual whiteboards*
- Dry erase markers*
- Erasers*
- Student workbook
- Red colored pencil

* *If your students do not have individual whiteboards, please have them use pencils and scratch paper.*

INSTRUCTIONAL PLAN

Today you're going to compare and contrast equations. By the end of the lesson, you're going to be able to compare and contrast two equations and use one equation to fill in the blank in a related equation.

- **What does it mean to compare and contrast?** *(to look for ways the equations are the same and ways the equations are different)*

Here is the first equation. Write " $2 + 3 = 5$ " on the board. I need a volunteer to read this equation aloud to the class. Select student volunteer. Now let's look at another equation. Write " $3 + 2 = 5$ " on the board below the previous equation. I need another volunteer to read this equation. Select student volunteer. I want you to compare and contrast these two equations. So, you'll think about how they're the same and how they're different. Pause for students to examine the equations.

- **How are these two equations the same?** *(both equations have the same numbers in them and the numbers are always on the same side of the equal sign - "2" and "3" on the left and "5" on the right)*
- **How are these two equations different?** *(the order of the "2" and the "3" is different)*

Clarifying Questions (Incorrect Response)

- **Do you see any numbers that are in both equations?**
- **Very good, both equations include the numbers 2, 3, and 5. What is different about the 2 and 3 in this equation** (point to $2 + 3 = 5$) **and the 2 and 3 in this equation** (point to $3 + 2 = 5$)?

- **When you add numbers together, does the order of the numbers matter?** *(no)*

Erase the board and repeat the process above with the following equation pairs:

$$9 = 5 + 4$$

$$1 + 6 = 5 + 2$$

$$9 = 4 + 5$$

$$6 + 1 = 2 + 5$$

If a student says a problem is "backwards," respond by saying:

- **Math problems aren't forwards or backwards. They can have any number amounts on either side of the equal sign, as long as the amount to the left of the equal sign is the same as the amount to the right of the equal sign.**

WHITEBOARDS

For this part of the lesson take out your whiteboard, dry erase marker, and eraser. Now you'll see more equation pairs, but this time there will be a blank in the second equation. You will use the completed equation to help you figure out what goes in the blank. You'll write the number that goes in the blank on your whiteboard, but don't show it to me until I ask to see it.

Here is the first equation. Write " $6 = 4 + 2$ " on the board. I need a volunteer to read this equation aloud to the class. Select student volunteer. Now let's look at another equation. Write " $6 = _ + 4$ " on the board below the previous equation. Pause for students to examine the equations.

- **What number goes in the blank** (point)? **Write your answer on your whiteboard.** Give students a moment to examine the equation and write their response.
- **Hold up your whiteboards.** Scan the room to make sure the majority of the students put the correct response on their whiteboard. (2)
- **How did you figure it out?** (*by comparing the two equations - both equations have the same numbers in them and the numbers are grouped the same way. The 2 was missing in the second equation so that goes in the blank.*)

Clarifying Questions (Incorrect Response)

- **How is this equation** (point to $6 = 4 + 2$) **like this equation** (point to $6 = _ + 4$)?
- **Because both equations have a 6 on the left side of the equal sign** (point), **can you use this completed equation** (point) **to help you figure out what will go in the blank** (point)?

Erase the board and repeat the process above with the following equation pair:

$$\begin{aligned}5 + 3 &= 6 + 2 \\3 + 5 &= 2 + _ \end{aligned}$$

Now you're going to compare and contrast completed equations again. So, you'll think about how they're the same and how they're different. Set your whiteboard aside for now because you won't need it for this part.

Here is the first equation. Write " $3 + 3 = 6$ " on the board. I need a volunteer to read this equation aloud to the class. Select student volunteer. Now let's look at another equation. Write " $6 = 3 + 3$ " on the board below the previous equation. I need another volunteer to read this equation. Select student volunteer. I want you to compare and contrast these two equations. So, you'll think about how they're the same and how they're different. Pause for students to examine the equations.

- **How are these two equations the same?** (*both equations have the same numbers in them and the numbers are grouped in the same way - "6" on one side of the equal sign and "3 + 3" on the other side of the equal sign*)
- **How are these two equations different?** (*the "6" and the "3 + 3" are on different sides of the equal sign*)

Clarifying Questions (Incorrect Response)

- **Do you see any numbers or expressions in this equation** (point to $3 + 3 = 6$) **that are also in this equation** (point to $6 = 3 + 3$)?
- **Good, you have $3 + 3$ and 6 in both equations. If both equations have the same numbers and expressions, how are the equations different?**

Erase the board and repeat the process above with the following equation pairs:

$$9 = 7 + 2$$

$$7 + 2 = 9$$

$$3 + 5 = 4 + 4$$

$$4 + 4 = 3 + 5$$

WHITEBOARDS

Now you'll use your whiteboards again. You'll see more equation pairs with a blank in the second equation. Use the completed equation to help you figure out what goes in the blank. You'll write the number that goes in the blank on your whiteboard, but don't show it to me until I ask to see it.

Here is the first equation. Write " $1 + 4 = 5$ " on the board. I need a volunteer to read this equation aloud to the class. Select student volunteer. Now let's look at another equation. Write " $5 = 1 + \underline{\quad}$ " on the board below the previous equation. Pause for students to examine the equations.

- **What number goes in the blank** (point)? **Write your answer on your whiteboard.** Give students a moment to examine the equation and write their response.
- **Hold up your whiteboards.** Scan the room to make sure the majority of the students put the correct response on their whiteboard. (4)
- **How did you figure it out?** (by comparing the two equations - both equations have the same numbers in them and they are grouped the same way. The 4 was missing in the second equation so that goes in the blank.)

Clarifying Questions (Incorrect Response)

- **How is this equation** (point to $1 + 4 = 5$) **like this equation** (point to $5 = 1 + \underline{\quad}$)?
- **If both equations have 5 on one side of the equal sign, can you use this completed equation** (point) **to help you figure out what will go in the blank** (point)?

Erase the board and repeat the process above with the following equation pair:

$$3 + 4 = 7$$

$$\underline{\quad} = 3 + 4$$

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned how to compare and contrast two equations and use one equation to fill in the blank in a related equation. Next time, you will continue comparing and contrasting equations like you did today.

(Independent Practice on following page)

INDEPENDENT PRACTICE

Complete the Equation 3

Session 19

Another student filled in the blanks. Make a check if the answer is correct or an X if the answer is wrong.

1.

$$\text{X } 4 + 3 = \overset{1}{\underline{7}} + 6$$

2.

$$\text{😊 } 3 + \underline{3} = 1 + 5$$

3.

$$\text{😊 } 9 = 2 + \underline{4} + 3$$

4.

$$\text{X } \overset{2}{\underline{8}} + 1 + 2 = 5$$

5.

$$\text{X } 2 + 6 = 3 + \overset{5}{\underline{11}}$$



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179

Now it's your turn to be the teacher!

Turn to page 179 in your workbook and Take out a red colored pencil. These are the same types of problems you have been doing where there is a blank in each equation but the answers have already been filled in by another student. So, it's your job to be the teacher and grade the worksheet. Look at each problem, and decide if the student put the correct number in each blank. You can draw a check mark next to the problem (point) if the student got it right and an X if the student got it wrong. If the student got it wrong, you should also write the correct number above the student's response. Do you have any questions?

If time permits:

After the students grade the worksheet, one at a time, go through each item and ask:

- **Why is this number correct? or Why is this number incorrect?**
- **How did the student solve this problem?**
- (If incorrect) **What should the student have done differently?**

MINUTE MATH

LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 10

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 20 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put **6** in the blank because $4 + 6$ is equal to $2 + 8$! Both sides are equal to 10!
2. Now look at problem b. You should have put **3** in the blank because $3 + 4 + 3$ is equal to 10! (stress the second 3 when reading the problem)

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 3	c. 1	d. 7	e. 4	f. 10	g. 8
PAGE 2	h. 2	i. 10	j. 3	k. 4	l. 5	m. 6	n. 8
PAGE 3	o. 2	p. 4	q. 3	r. 7	s. 8	t. 2	

Minute Math - Score Sheet Session 20

Fill in the bars in the chart with the number of problems you solved correctly during Round 1 and Round 2.

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

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Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in the boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.

You all did a great job! But I bet you can do even better. Now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 6 in the blank because $4 + 6$ is equal to $2 + 8$! Both sides are equal to 10!
2. Now look at problem b. You should have put 3 in the blank because $3 + 4 + 3$ is equal to 10! (stress the second 3 when reading the problem)

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 3	c. 1	d. 7	e. 4	f. 10	g. 8
PAGE 2	h. 2	i. 10	j. 3	k. 4	l. 5	m. 6	n. 8
PAGE 3	o. 2	p. 4	q. 3	r. 7	s. 8	t. 2	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Apples for Jada and Joe 2 (Guided Problem Solving).

APPLES FOR JADA AND JOE 2 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Write the number of apples on Jada's empty bag (pages 188 through 189)
- Write the number of apples on Jada's empty bag and answer the questions (pages 190 through 193)
- Write the number of apples on Jada's empty bag and write the equation (pages 194 through 197)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Now you get to solve some more problems on your own. Open your workbook to the first Apples for Jada and Joe 2 page for Session 20. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Read instructions from page 188. The instructions say: **Jada wants to have the same number of apples as Joe. Write the number of apples she should put in her empty bag.**

HINT: After you write a number on Jada's bag, check to make sure Jada and Joe have the same number of apples. Please share this hint – or a similar phrasing of it – with your students. We have found that some students need this extra tip to be successful on this activity.

Remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up!** It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 188 and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Compare and contrast two equations
- Use a complete equation to fill in the blank in a related equation

MATERIALS

- Classroom board
- Individual whiteboards
- Dry erase markers
- Erasers
- Student workbook
- Red colored pencil

** If your students do not have individual whiteboards, please have them use pencils and scratch paper.*

INSTRUCTIONAL PLAN

Remember last time, you compared and contrasted equations. Today you're going to compare and contrast more equations. By the end of the lesson you're going to be able to compare and contrast two equations and use one equation to fill in the blank in a related equation.

- **What does it mean to compare and contrast?** (*to look for ways the equations are the same and ways the equations are different*)

Here is the first equation. Write " $4 = 3 + 1$ " on the board. I need a volunteer to read this equation aloud to the class. Select student volunteer. Now let's look at another equation. Write " $4 = 2 + 2$ " on the board below the previous equation. I need another volunteer to read this equation. Select student volunteer. I want you to compare and contrast these two equations. Pause for students to examine the equations.

- **How are these two equations the same?** (*the left side of the equal sign is the same in both equations and the sum of the right side of the equal sign is equal to 4 in both equations*)
- **How are these two equations different?** (*the two equations use different numbers to sum to 4 on the right side of the equal sign*)

Clarifying Questions (Incorrect Response)

- **Can you find anything about this equation** (point to $4 = 3 + 1$) **that is the same as this equation** (point to $4 = 2 + 2$)?
- **What is $3 + 1$ equal to?**
- **And what is $2 + 2$ equal to?**
- **So how are $3 + 1$ and $2 + 2$ the same?**

Erase the board and repeat the process above with the following equation pairs:

$$4 + 4 = 6 + 2$$

$$8 + 2 = 5 + 5$$

$$4 + 4 = 3 + 5$$

$$4 + 6 = 5 + 5$$

If a student says a problem is “backwards,” respond by saying:

- **Math problems aren’t forwards or backwards. They can have any number amounts on either side of the equal sign, as long as the amount to the left of the equal sign is the same as the amount to the right of the equal sign.**

WHITEBOARDS

Now you’ll use your whiteboards one more time. You’ll see equation pairs with a blank in both equations. You’ll figure out what number goes in each blank, and then you’ll compare and contrast the equations. We’ll do the equations one at a time and you’ll write the number that goes in the blank on your whiteboard.

Write “ $2 + 6 = \underline{\quad} + 7$ ” on the board.

- **What number goes in the blank (point)? Write your answer on your whiteboard.** Give students a moment to examine the equation and write their response.
- **Hold up your whiteboards.** Scan the room to make sure the majority of the students put the correct response on their whiteboard. (1)
- **How did you figure it out?** (*2 + 6 is equal to 8, so I knew the numbers on the right would need to add up to 8 too. 1 + 7 is equal to 8, so 1 goes in the blank.*)

Now let’s look at another equation. Write “ $2 + 6 = 3 + \underline{\quad}$ ” on the board below the previous equation. Pause for students to examine the equations.

- **What number goes in the blank (point)? Write your answer on your whiteboard.** Give students a moment to examine the equation and write their response.
- **Hold up your whiteboards.** Scan the room to make sure the majority of the students put the correct response on their whiteboard. (5)
- **How did you figure it out?** (*2 + 6 is equal to 8, so I knew the numbers on the right would need to add up to 8 too. 3 + 5 is equal to 8, so 5 goes in the blank.*)

How are these equations the same? (*the sides of both equations sum to 8*)

How are these equations different? (*they use different number pairs to create the sums of 8*)

Clarifying Questions (Incorrect Response)

- **Can you find anything about this equation** (point to $2 + 6 = \underline{\quad} + 7$) **that is the same as this equation** (point to $2 + 6 = 3 + \underline{\quad}$)?
- **What is $1 + 7$ equal to?**
- **And what is $3 + 5$ equal to?**
- **So how are $1 + 7$ and $3 + 5$ the same?**

Erase the board and repeat the process above with the following equation pair:

$$\underline{\quad} + 8 = 5 + 4$$
$$6 + \underline{\quad} = 5 + 4$$

We’ve reached the end of the lesson. What have we learned today? Students respond. **Now you’ve learned how to compare and contrast two equations and how to use one equation to fill in the blank in a related equation.**

(Independent Practice on following page)

INDEPENDENT PRACTICE

Complete the Equation 4

Session 21

Another student filled in the blanks. Make a check if the answer is correct or an X if the answer is wrong.

1.

 $7 + 2 = \underline{4} + 5$

2.

$\overset{3}{\text{X}}$ $2 + \underline{5} + 3 = 8$

3.

$\overset{1}{\text{X}}$ $\underline{13} + 6 = 1 + 5 + 1$

4.

 $6 = 3 + 1 + \underline{2}$

5.

$\overset{4}{\text{X}}$ $4 + \underline{8} = 1 + 7$



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199

Now it's your turn to be the teacher! Turn to page 199 in your workbook and take out a red colored pencil. These are the same types of problems you have been doing where there is a blank in each equation, but the answers have already been filled in by another student. So it's your job to be the teacher and grade the worksheet. Look at each problem, and decide if the student put the correct number in each blank. You can draw a check mark next to the problem (point) if the student got it right and an X if the student got it wrong. If the student got it wrong, you should also write the correct number above the student's response. Do you have any questions?

If time permits:

After the students grade the worksheet, one at a time, go through each item and ask:

- **Why is this number correct? or Why is this number incorrect?**
- **How did the student solve this problem?**
- (If incorrect): **What should the student have done differently?**

MINUTE MATH

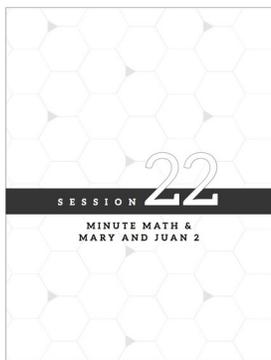
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 11

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 22 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

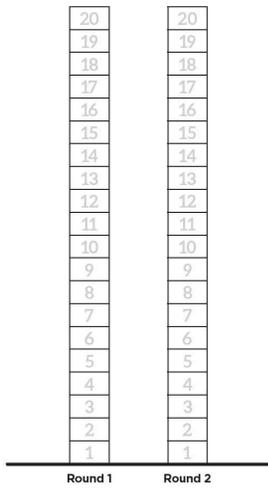
Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 5 in the blank because $6 + 5$ is equal to $2 + 9$! Both sides are equal to 11!
2. Now look at problem b. You should have put 7 in the blank because $3 + 2 + 6$ is equal to $4 + 7$! Both sides are equal to 11!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 5	b. 7	c. 4	d. 5	e. 6	f. 1	g. 9
PAGE 2	h. 3	i. 2	j. 4	k. 8	l. 7	m. 11	n. 1
PAGE 3	o. 5	p. 3	q. 2	r. 2	s. 9	t. 1	

Fill in the bars in the chart with the number of problems you solved correctly during Round 1 and Round 2.



Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.

You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 5 in the blank because $6 + 5$ is equal to $2 + 9$! Both sides are equal to 11!
2. Now look at problem b. You should have put 7 in the blank because $3 + 2 + 6$ is equal to $4 + 7$! Both sides are equal to 11!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 5	b. 7	c. 4	d. 5	e. 6	f. 1	g. 9
PAGE 2	h. 3	i. 2	j. 4	k. 8	l. 7	m. 11	n. 1
PAGE 3	o. 5	p. 3	q. 2	r. 2	s. 9	t. 1	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Mary and Juan 2 (Guided Problem Solving).

Mary and Juan 2 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Solve each equation and draw lines to connect Mary and Juan to the flashcards they like (pages 208 through 210)
- Solve each equation and then write the equations on Mary's board and Juan's board (pages 211 through 213)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Mary and Juan 2 Session 22

Solve each equation. Then, draw a line to connect Mary and Juan to the flashcards they like.

Example

I like 7! I like 12!

$12 = 6 + 6$ $7 = 6 + 1$

1.

I like 7! I like 12!

$\underline{\quad} = 4 + 3$ $\underline{\quad} = 9 + 3$

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Now you get to solve some more problems on your own. Open your workbook to the first Mary and Juan 2 page for Session 22. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Mary and Juan 2 Session 22

Solve each equation. Then, draw a line to connect Mary and Juan to the flashcards they like.

Example

I like 7! I like 12!

$12 = 6 + 6$ $7 = 6 + 1$

1.

I like 7! I like 12!

$\underline{\quad} = 4 + 3$ $\underline{\quad} = 9 + 3$

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Read instructions from page 208. The instructions say: **Solve each equation. Then, draw a line to connect Mary and Juan to the flashcards they like.**

Remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 208 and look at the first problem... Continue going over these problems as you normally would. Please go over all 6 pages with your class.

LEARNING OBJECTIVES

- Use given information to write equations that demonstrate equality
- Solve for the missing number in an equation

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Remember when we helped Frog and Monkey share stickers? And when we made the scale balance? What had to happen for Frog and Monkey to be equal or for the scale to balance? (each side had the same number of stickers/bears) That’s right, each side had to have the same number of stickers or bears.

Today you’re going to compare information about several pairs of students. By the end of the lesson, you’re going to be able to use information to write equations and solve for the missing number in an equation.

Open your workbook to page 215. The given information will make the two students different, but I want you to figure out what would need to happen to make them the same. Let’s look at the first set of pictures together. Point to the first picture. This is Fred. Fred read 5 books. Now point to the second picture. This is Patty. Patty read 1 book.

Word Problems 3 Session 23

Figure out how to make the two sides the same. Write an equation to show what you did to make them equal.

1.

Fred read 5 books.



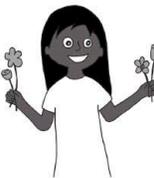
Patty read 1 book.



5 = 1 + 4

2.

Lindsay has 4 flowers.



Rachel has 7 flowers.



4 + 3 = 7

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- Are Fred and Patty the same or different? (*different*)
- How are Fred and Patty different? (*Fred read 5 books, but Patty only read 1*)
- Patty wants to be the same as Fred! I want you to figure out what would need to happen to make **Patty** (point to Patty) equal to Fred (point to Fred).
- Let’s do it together! We are going to make the two students equal so go ahead and write the equal, sign between Fred and Patty. Students write the equal sign between the boxes.
- We know that Fred read 5 books, so write 5 under the picture of Fred. And we know that Patty read 1 book, so write 1 under the picture of Patty.

5 (point) is not equal to 1 (point), so we need to add something to make them equal.

- What would need to happen to make Patty equal to Fred? (*Patty would need to read 4 more books*)
- So, can you add something to this equation to show that if Patty reads 4 more books, all together she will have read as many books as Fred? (Students write “+ 4” to the right side of the equation.)
- Now the two sides of the equation are equal. Both sides have 5! Let’s read this equation together: 5 is equal to 1 plus 4 (students say aloud with teacher).
- What else could we say for the equal sign instead of “is equal to”? (Wait for responses... encourage “is the same as” or similar relational wording.) **That’s right. We could say 5 is the same as 1 plus 4.**

Clarifying Questions (Incorrect Response)

- If we want them to be equal, who will need to read more books, Fred or Patty? (*Patty*)
- How many more books would Patty need to read to have read as many books as Fred? (*four*)
- What math symbol should you use to show you are putting the 1 and 4 together to make one big group? (*plus sign*)

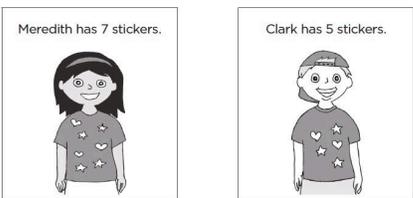
Now let’s look at the second set of pictures. Point to the first picture below. This is Lindsay. Lindsay has 4 flowers. Now point to the second picture. This is Rachel. Rachel has 7 flowers.

- Lindsay wants to be the same as Rachel! I want you to figure out what would need to happen to make Lindsay equal to Rachel. How many flowers does Lindsay have? (*four*) Good, write 4 under Lindsay.
- How many flowers does Rachel have? (*seven*) Good, write 7 under Rachel.
- What needs to happen to make Lindsay equal to Rachel? (*Lindsay needs three more flowers*) Right! Lindsay needs 3 more flowers! Write “+ 3” after the 4.
- Now that the two sides are equal, write the equal sign in the middle. Let’s read this equation together: 4 plus 3 is equal to 7 (students say aloud with teacher).

Word Problems 3 Session 23

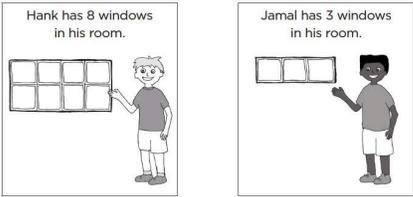
Figure out how to make the two sides the same. Write an equation to show what you did to make them equal.

1. Meredith has 7 stickers. Clark has 5 stickers.



$7 = 5 + 2$

2. Hank has 8 windows in his room. Jamal has 3 windows in his room.



$8 = 3 + 5$

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Now turn to page 216 in your workbook. Just like you did on the last page, you need to figure out what would need to happen to make both students equal and then write an equation.

- Let’s look at the first set of pictures together. Point to the first picture. This is Meredith. Meredith has 7 stickers. Write 7 under Meredith.
- Now point to the second picture. This is Clark. Clark has 5 stickers. Write 5 under Clark.
- Clark wants to be the same as Meredith! Tell your neighbor what would need to happen to make Clark (point to Clark) equal to Meredith (point to Meredith)? (*Clark needs to get 2 more stickers*)

- **Raise your hand if you can tell me how you figured that out.** Select a student volunteer to explain.
- **If you didn't already, I want you to write an equation to show that Meredith and Clark now have an equal number of stickers. Let's read this equation together: 7 is equal to 5 plus 2** (students say aloud with teacher).
- **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 7 is the same as 5 plus 2.**

Clarifying Questions (Incorrect Response)

- **Let's look at the first picture. This is Meredith. Do we know how many stickers Meredith has?** (7)
- **So write 7 under the picture of Meredith because we know she has 7 stickers.**
- **Now let's look at the second picture. This is Clark. Do we know how many stickers Clark has?** (5)
- **So write 5 under the picture of Clark because we know he has 5 stickers.**
- **If we want them to be equal, who will need more stickers – Meredith or Clark?** (Clark)
- **How many more stickers would Clark need to have as many stickers as Meredith?** (2)
- **What math symbol should you use to show you are putting the 5 and 2 together to make one big group?** (plus sign)
- **So go ahead and write "+ 2" after the 5 under the picture of Clark.**
- **Now you have an equation that shows that Clark and Meredith have an equal number of stickers!**

Point to the second problem. Repeat above prompts for the second problem.

Now you're going to solve some word problems. Turn to page 217 in your workbook.

Word Problems 3 Session 23

Write an equation and solve for the missing information in each word problem.

1. Mary has 7 marbles and 4 blocks. How many more blocks does Mary need to have as many blocks as marbles?

Marbles

Blocks

$$\underline{7} = \underline{4 + 3}$$

2. Bryan listened to 6 songs. Then he listened to 4 more. Tony listened to 8 songs. How many more songs does Tony need to listen to so that he will have listened to the same number of songs as Bryan?

Bryan

Tony

$$\underline{6 + 4} = \underline{8 + 2}$$

➔

- **Point to the first problem. I'll read the problem to you. Follow along with me while I read: Mary has 7 marbles and 4 blocks. How many more blocks does Mary need to have as many blocks as marbles?**
- **Can you figure out how many more blocks Mary needs?** (Mary needs 3 more blocks)
- **How did you figure that out?** Select a student volunteer to explain.
- **If you didn't already, I want you to write an equation to show that Mary now has an equal number of marbles and blocks. Raise your hand if you can read your equation aloud to the class. Select a student volunteer to read. Let's read this equation together. 7 is equal to 4 plus 3** (students say aloud with teacher).

Now point to the second problem. I'll read the problem to you. Follow along with me while I read: *Bryan listened to 6 songs. Then he listened to 4 more. Tony listened to 8 songs. How many more songs does Tony need to listen to so that he will have listened to the same number of songs as Bryan?*

On the lines below the problem make sure to write "Bryan" on one side and "Tony" on the other. Now, can you figure out how many more songs Tony needs to listen to so that he will have listened to the same amount as Bryan? (*Tony will need to listen to 2 more songs*)

How did you figure that out? Select a student volunteer to explain.

If you didn't already, I want you to write an equation to show that Tony and Bryan listened to an equal number of songs. Raise your hand if you can read your equation aloud to the class. Select a student volunteer to read. **Let's read this equation together: 6 plus 4 is equal to 8 plus 2** (students say aloud with teacher).

Clarifying Questions (Incorrect Response)

- **What is the problem asking you to find?** (*how many more songs Tony needs to listen to*)
- **So what are the two groups you need to make equal?** (*Bryan's songs and Tony's songs*)
- **Let's label the two sides of the equal sign. On the left side of the equal sign you will have Bryan and on the right side of the equal sign you will have Tony.**
- **Do we know how many songs Bryan has listened to?** (*yes*)
- **And how many songs is that?** (*6 + 4 = 10, so 10 songs*)
- **So go ahead and write 6 + 4 under "Bryan."**
- **Do we know how many songs Tony has listened to?** (*yes*)
- **And how many songs is that?** (*8*)
- **So go ahead and write 8 under "Tony."**
- **How many more songs does Tony need to listen to in order to have listened to the same number of songs as Bryan?** (*2*)

What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 6 plus 4 is the same as 8 plus 2.**

We've reached the end of the lesson. What have we learned today? Students respond. **Now you've learned how to use information to write equations and how to solve for the missing number in an equation.**

(Independent Practice on following page)

INDEPENDENT PRACTICE

Now I want you to solve some problems by yourself. Turn to page 218 in your workbook. These problems will be just like the ones we have been doing together. I'll read each problem out loud, and then I will give you time to solve it and write an equation. Make sure to remember to label the sides like we did in the previous problems. Read each problem and then give students time to solve it before reading the next problem.

Word Problems 3 Session 23

Write an equation and solve for the missing information in each word problem.

1. Jamie has 5 dogs. Jamie adopted 2 cats today. How many more cats does Jamie need in order to have the same number of cats and dogs?

Dogs Cats

5 = 2 + 3

2. Ping has 3 kites and 5 footballs. Then he gets 4 more kites. How many more footballs does Ping need to have as many footballs as kites?

Kites Footballs

3 + 4 = 5 + 2



218

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Page 218, Problem 1

Jamie has 5 dogs. Jamie adopted 2 cats today. How many more cats does Jamie need in order to have the same number of cats and dogs?

Page 218, Problem 2

Ping has 3 kites and 5 footballs. Then he gets 4 more kites. How many more footballs does Ping need to have as many footballs as kites?

MINUTE MATH

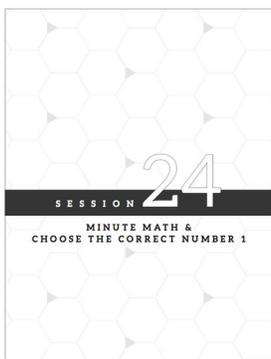
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 10 and 11

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 24 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

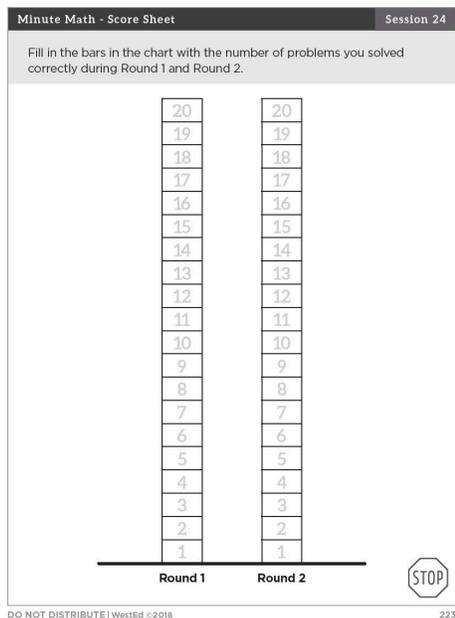
Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $8 + 3$ is equal to $3 + 2 + 6!$ (stress the first 3 when reading the problem) Both sides are equal to 11!
2. Now look at problem b. You should have put 7 in the blank because $4 + 2 + 4$ is equal to $7 + 3!$ Both sides are equal to 10!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 7	c. 6	d. 4	e. 1	f. 2	g. 8
PAGE 2	h. 9	i. 4	j. 7	k. 2	l. 1	m. 7	n. 10
PAGE 3	o. 3	p. 6	q. 5	r. 9	s. 6	t. 10	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you'll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 3 in the blank because $8 + 3$ is equal to $3 + 2 + 6!$ (stress the first 3 when reading the problem) Both sides are equal to 11!
2. Now look at problem b. You should have put 7 in the blank because $4 + 2 + 4$ is equal to $7 + 3!$ Both sides are equal to 10!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 3	b. 7	c. 6	d. 4	e. 1	f. 2	g. 8
PAGE 2	h. 9	i. 4	j. 7	k. 2	l. 1	m. 7	n. 10
PAGE 3	o. 3	p. 6	q. 5	r. 9	s. 6	t. 10	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes. **Did any of you beat your score from Round 1? Great job!**

Now you will move on to Choose the Correct Number 1 (Guided Problem Solving).

CHOOSE THE CORRECT NUMBER 1 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Color in the circle of the student who got the correct number (pages 227 through 230)
- Color in the circle under the correct number (pages 231 through 234)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Choose the Correct Number 1 Session 24

Color in the circle under the student who got the correct number. If none of the students got the correct number, color in the circle under "None."

Example 1

$12 = \underline{\quad} + 6$

12 6 8 None

Example 2

$8 + 4 = \underline{\quad} + 3$

9 12 6 None

Example 3

$9 + 3 = \underline{\quad}$

6 10 8 None

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Now you get to solve some more problems on your own. Open your workbook to the first Choose the Correct Number 1 page for Session 24. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Choose the Correct Number 1 Session 24

Color in the circle under the student who got the correct number. If none of the students got the correct number, color in the circle under "None."

Example 1

$12 = \underline{\quad} + 6$

12 6 8 None

Example 2

$8 + 4 = \underline{\quad} + 3$

9 12 6 None

Example 3

$9 + 3 = \underline{\quad}$

6 10 8 None

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Read instructions from page 227. The instructions say: **Color in the circle under the student who got the correct number. If none of the students got the correct number, color in the circle under "None."**

Did you hear the instructions? If none of the students got the number that YOU think should go in the blank, you should color the circle under "None." HINT: "None" means that NONE of the students got the correct number. Please share this hint – or a similar phrasing of it – with your students. Some students find the "None" confusing the first time they do an activity like this.

Remember to read the instructions at the top of every page. Use the examples on the first page to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 228 and look at the first problem...** Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Compare and contrast different strategies for solving mathematical equivalence problems

MATERIALS

- Student workbook
- Red colored pencil

INSTRUCTIONAL PLAN

Today you’re going to solve an equation and see how other students solved it. So, what do we know about the equal sign? (*the equal sign means that two amounts are the same / the equal sign means “is the same amount as” / the equal sign means that the amount on one side of the equation is equal to the amount on the other side*) **By the end of the lesson, you're going to be able to use what you know about the equal sign to compare and contrast correct and incorrect strategies for solving equations.**

Compare Strategies 1	Session 25
Solve the problem using a correct strategy. Make sure both sides are equal.	
$2 + 4 = 1 + \underline{5}$	
Look at how another student solved the problem. Then answer the questions below.	
$2 + 4 = \underline{1} + \underline{7}$	
<p>1. Did the student write the correct number in the blank? <u>No</u></p> <p>2. What did the student do wrong?</p> <p>The student wasn't paying attention to the equal sign and didn't make both sides equal. 2 + 4 is equal to 6, but 1 + 7 is equal to 8. 6 isn't the same amount as 8.</p> <p>3. What should the student have done differently?</p> <p>The student should have added 2 + 4 together to get 6 and then made the right side equal to 6 also.</p>	
➔	

Open your workbook to page 236. At the top of the page, you'll see a math problem. Solve the problem using a correct strategy. Remember, you have to make the left side equal to the right side.

- **Write the number that goes in the blank. Then, tell your neighbor how you solved the problem.**
- **Raise your hand if you can tell me how you figured that out. Call on student volunteer to explain solution.**
- **The equal sign means that one side has to be equal to the other side, and 2 plus 4 is equal to 1 plus 5. Both sides are 6! Let's read this equation together. 2 plus 4 is equal to 1 plus 5 (students say aloud with teacher).**

Now look at how another student solved the problem. This student added 2 plus 4 plus 1 together and got 7, so the student put 7 in the blank. Read questions 1-3 aloud one at a time to students and have them respond in writing. Then discuss their answers. Desired responses are indicated on the page above.

1. Did the student write the correct number in the blank?
2. What did the student do wrong? Write down your response, and then tell your neighbor what you wrote. Allow a little time for students to share. Raise your hand if you can tell me what the student did wrong. (Extra prompt: This student added 2 plus 4 plus 1...why is that incorrect?)
3. What should the student have done differently? Write down your response, and then tell your neighbor what you wrote. Allow a little time for students to share. Raise your hand if you can tell me what the student should have done differently. (Extra prompt: What did you do differently from this student?)

Clarifying Teaching Strategy

If students are having trouble understanding the correct vs. incorrect strategies, draw a see-saw for the correct equation and for the incorrect equation. $2 + 4$ will go on the left side of the see-saw, and $1 + 5$ or $1 + 7$ will go on the right side of the see-saw. Then compare the two equations with visuals to help students understand that the incorrect equation produces a see-saw that is not balanced.

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned how to compare and contrast correct and incorrect strategies for solving equations.

INDEPENDENT PRACTICE

Compare Strategies 1 Session 25

Solve the problems using a correct strategy.

1.

$$6 + 2 = \underline{1} + 7$$

2.

$$\underline{2} + 9 = 3 + 5 + 3$$

3.

$$5 + 5 = 4 + \underline{4} + 2$$

➔

Now you are going to solve some problems by yourself. Turn to page 237 in your workbook.

Try your best to solve each problem and write the number that goes in the blank. Think about what we did today. We saw an incorrect strategy being used. Solve the problems using a correct strategy.

(Page 238 instructions on following page).

Another student filled in the blanks. Make a check if the answer is correct or an X if the answer is wrong.

1. $\text{X } 1 + 4 = 5 + \underline{10}$ ⁰

2. 😊 $4 + 5 = \underline{6} + 3$

3. 😊 $8 + 5 = 9 + \underline{4}$

4. 😊 $1 + \underline{8} = 2 + 7$

5. $\text{X } 2 + 5 = \underline{7} + 4$ ³



Now it's your turn to be the teacher! Turn to page 238 in your workbook and take out a red colored pencil. These are the same types of problems you just did on the previous page, but the answers have already been filled in by another student. So, it's your job to be the teacher and grade the worksheet. The student was supposed to fill in the blank with the number that would complete each equation. Look at each problem, and decide if the student got it right or wrong. You can draw a check mark next to the problem if the student got it right and an X if the student got it wrong. If the student got it wrong, you should also write the correct number above the student's response. Do you have any questions?

If time permits:

After the students grade the worksheet, one at a time, go through each item and ask:

- **Why is this number correct? or Why is this number incorrect?**
- **How did the student solve this problem?**
- (If incorrect) **What should the student have done differently?**

MINUTE MATH

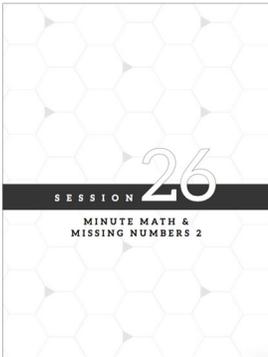
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 12

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 26 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

Here are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 9 in the blank because $8 + 4$ is equal to $9 + 3$! Both sides are equal to 12!
2. Now look at problem b. You should have put 10 in the blank because $10 + 2$ is equal to $3 + 5 + 4$! Both sides are equal to 12!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 9	b. 10	c. 6	d. 1	e. 7	f. 8	g. 2
PAGE 2	h. 12	i. 4	j. 10	k. 7	l. 9	m. 6	n. 4
PAGE 3	o. 6	p. 2	q. 10	r. 7	s. 5	t. 2	

Minute Math - Score Sheet Session 26

Fill in the bars in the chart with the number of problems you solved correctly during Round 1 and Round 2.

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

Round 1 Round 2

STOP

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Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.

You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 9 in the blank because $8 + 4$ is equal to $9 + 3$! Both sides are equal to 12!
2. Now look at problem b. You should have put 10 in the blank because $10 + 2$ is equal to $3 + 5 + 4$! Both sides are equal to 12!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 9	b. 10	c. 6	d. 1	e. 7	f. 8	g. 2
PAGE 2	h. 12	i. 4	j. 10	k. 7	l. 9	m. 6	n. 4
PAGE 3	o. 6	p. 2	q. 10	r. 7	s. 5	t. 2	

Now you need to count the total number of check marks that you made. Allow time for students to count. OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Missing Numbers 2 (Guided Problem Solving).

MISSING NUMBERS 2 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Write the missing number to make expressions equal to a target expression (pages 247 through 248)
- Write the missing number to make expressions equal to a target expression or sum (pages 249 through 254)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Missing Numbers 2 Session 26

Make the expression in the white portion equal to the number in the gray portion.

Example

$8 + 2$
 $\underline{\quad} + 9$

1. $6 + 4$
 $\underline{\quad} + 5$

2. $7 + 3$
 $4 + \underline{\quad}$

3. $3 + 7$
 $8 + \underline{\quad}$

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Now you get to solve some more problems on your own. Open your workbook to the first Missing Numbers 2 page for Session 26. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Missing Numbers 2 Session 26

Make the expression in the white portion equal to the number in the gray portion.

Example

$8 + 2$
 $\underline{\quad} + 9$

1. $6 + 4$
 $\underline{\quad} + 5$

2. $7 + 3$
 $4 + \underline{\quad}$

3. $3 + 7$
 $8 + \underline{\quad}$

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Read instructions from page 247. The instructions say: Make the expression in the white portion equal to the expression in the gray portion.

Remember to read the instructions at the top of every page. Pay close attention to the expression or sum that is written in each gray box. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 247 and look at the first problem... Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Compare and contrast different strategies for solving mathematical equivalence problems

MATERIALS

- Student workbook
- Red colored pencil

INSTRUCTIONAL PLAN

Remember last time, you compared and contrasted a correct strategy with an incorrect strategy. Today you’re going to solve some equations and see how other students solved them. So, what do we know about the equal sign? (*the equal sign means that two amounts are the same / the equal sign means “is the same amount as” / the equal sign means that the amount on one side of the equation is equal to the amount on the other side*) By the end of the lesson, you're going to be able to use what you know about the equal sign to compare and contrast correct and incorrect strategies for solving equations.

Compare Strategies 2	Session 27
Solve the problem using a correct strategy. Make sure both sides are equal.	
$3 + 6 = \underline{2} + 7$	
Look at how another student solved the problem. Then answer the questions below.	
$3 + 6 = \underline{9} + 7$	
<p>1. Did the student write the correct number in the blank? <u>No</u></p> <p>2. What did the student do wrong? The blank and 7 go together to make one side of the equation, but this student didn't use the 7, so the student didn't make both sides equal. 3 plus 6 is equal to 9, but 9 + 7 is equal to 16.</p> <p>3. What should the student have done differently? The student should have added 3 + 6 together to get 9 and then made the right side equal to 9 also.</p>	
➔	

Open your workbook to page 256. At the top of the page, you’ll see a math problem. Solve the problem using a correct strategy. Remember, you have to make the left side equal to the right side.

- Write the number that goes in the blank. Then, tell your neighbor how you solved the problem.
- Raise your hand if you can tell me how you figured that out. Call on student volunteer to explain solution.
- The equal sign means that one side has to be equal to the other side, and 3 plus 6 is equal to 2 plus 7. Both sides are 9! Let’s read this equation together. 3 plus 6 is equal to 2 plus 7 (students say aloud with teacher).

Now look at how another student solved the problem. This student added 3 plus 6 together and got 9, so the student put 9 in the blank. Read questions 1-3 aloud to students and have them respond in writing. Then discuss their answers. Desired responses are indicated on the previous page of the manual.

1. Did the student write the correct number in the blank?
2. What did the student do wrong? Write down your response, and then tell your neighbor what you wrote. Allow a little time for students to share. Raise your hand if you can tell me what the student did wrong. (Extra prompt: This student added 3 plus 6...why is that incorrect?)
3. What should the student have done differently? Write down your response, and then tell your neighbor what you wrote. Allow a little time for students to share. Raise your hand if you can tell me what the student should have done differently. (Extra prompt: What did you do differently from this student?)

Clarifying Teaching Strategy

If students are having trouble understanding the correct vs. incorrect strategies, draw a see-saw for the correct equation and for the incorrect equation. $3 + 6$ will go on the left side of the see-saw, and $2 + 7$ or $9 + 7$ will go on the right side of the see-saw. Then compare the two equations with visuals to help students understand that the incorrect equation produces a see-saw that is not balanced.

Compare Strategies 2 Session 27

Solve the problem using a correct strategy. Make sure both sides are equal.

$$3 + 4 + 5 = 3 + \underline{9}$$

Look at how another student solved the problem. Then answer the questions below.

$$3 + 4 + 5 = 3 + \underline{4}$$

1. Did the student write the correct number in the blank? No
2. What did the student do wrong?

The student didn't pay attention to the equal sign and just followed the pattern. There was a $3 + 4$ on the left side, so the student wrote 4 in the blank to have a $3 + 4$ on the right side too. $3 + 4 + 5$ is equal to 12, but $3 + 4$ is equal to 7.

3. What should the student have done differently?

The student should have added $3 + 4 + 5$ together to get 12 and then made the right side equal to 12 also.

➔

Turn the page in your workbook. At the top of the page, you'll see a math problem. Solve the problem using a correct strategy. Remember to make both sides equal.

- Write the number that goes in the blank. Then, tell your neighbor how you solved the problem.
- Raise your hand if you can tell me how you figured that out. Call on student volunteer to explain solution.
- The equal sign means that one side has to be equal to the other side, and 3 plus 4 plus 5 is equal to 3 plus 9. Both sides are 12! Let's read this equation together. 3 plus 4 plus 5 is equal to 3 plus 9 (students say aloud with teacher).

Now look at how another student solved the problem. This student saw a 4 after the 3 on the left side so the student put 4 in the blank. Read questions 1-3 aloud to students and have them respond in writing. Then discuss their answers. Desired responses are indicated on the previous page of the manual.

1. Did the student write the correct number in the blank?
2. What did the student do wrong? Write down your response, and then tell your neighbor what you wrote. Allow a little time for students to share. Raise your hand if you can tell me what the student did wrong. (Extra prompt: This student saw a 4 after the 3 and followed the pattern...why is that incorrect?)
3. What should the student have done differently? Write down your response, and then tell your neighbor what you wrote. Allow a little time for students to share. Raise your hand if you can tell me what the student should have done differently. (Extra prompt: What did you do differently from this student?)

If students are having trouble understanding the correct vs. incorrect strategies, use the Clarifying Teaching Strategy described on the previous page.

We've reached the end of the lesson. What have we learned today? Students respond. Now you've learned how to compare and contrast correct and incorrect strategies for solving equations.

INDEPENDENT PRACTICE

Compare Strategies 2	Session 27
Solve the problems using a correct strategy.	
1.	$5 + 3 = 1 + \underline{7}$
2.	$2 + 4 + 1 = 2 + \underline{5}$
3.	$2 + 8 = \underline{4} + 6$

Now you are going to solve some problems by yourself. Turn to page 258 in your workbook.

Try your best to solve each problem and write the number that goes in the blank. Think about what we did today. We saw some incorrect strategies being used. Solve the problems using a correct strategy.

(Page 259 instructions on following page)

Another student filled in the blanks. Make a check if the answer is correct or an X if the answer is wrong.

1.

$$\text{😊} \quad 3 + 2 = 1 + \underline{4}$$

2.

$$\text{X} \quad 4 + 4 = \overset{6}{\underline{8}} + 2$$

3.

$$\text{X} \quad 3 + 5 + 6 = 3 + \overset{11}{\underline{5}}$$

4.

$$\text{😊} \quad 4 + 8 = \underline{7} + 5$$



Now it's your turn to be the teacher! Turn to page 259 in your workbook and take out a red colored pencil. These are the same types of problems you just did on the previous page, but the answers have already been filled in by another student. So, it's your job to be the teacher and grade the worksheet. The student was supposed to fill in the blank with the number that would complete each equation. Look at each problem, and decide if the student got it right or wrong. You can draw a check mark next to the problem if the student got it right and an X if the student got it wrong. If the student got it wrong, you should also write the correct number above the student's response. Do you have any questions?

If time permits:

After the students grade the worksheet, one at a time, go through each item and ask:

- **Why is this number correct? or Why is this number incorrect?**
- **How did the student solve this problem?**
- (If incorrect): **What should the student have done differently?**

MINUTE MATH

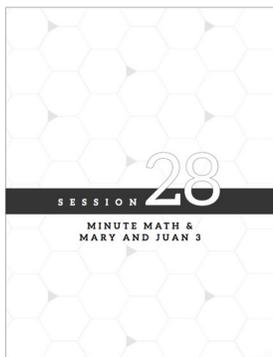
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 13

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 28 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 6 in the blank because $7 + 6$ is equal to $8 + 3 + 2$! Both sides are equal to 13!
2. Now look at problem b. You should have put 8 in the blank because $3 + 10$ is equal to $5 + 8$! Both sides are equal to 13!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 8	c. 6	d. 5	e. 7	f. 1	g. 8
PAGE 2	h. 6	i. 13	j. 3	k. 12	l. 6	m. 9	n. 7
PAGE 3	o. 4	p. 2	q. 12	r. 1	s. 8	t. 10	

Minute Math - Score Sheet Session 28

Fill in the bars in the chart with the number of problems you solved correctly during Round 1 and Round 2.

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

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Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.

You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you’ll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time’s up! Stop working now. Let’s see how many you got correct. I’m going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students’ answers to a problem:

1. OK, look at problem a. You should have put 6 in the blank because $7 + 6$ is equal to $8 + 3 + 2$! Both sides are equal to 13!
2. Now look at problem b. You should have put 8 in the blank because $3 + 10$ is equal to $5 + 8$! Both sides are equal to 13!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 8	c. 6	d. 5	e. 7	f. 1	g. 8
PAGE 2	h. 6	i. 13	j. 3	k. 12	l. 6	m. 9	n. 7
PAGE 3	o. 4	p. 2	q. 12	r. 1	s. 8	t. 10	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Mary and Juan 3 (Guided Problem Solving).

MARY AND JUAN 3 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Write the equations on Mary's board and Juan's board – equations are provided (page 268)
- Write the equations on Mary's board and Juan's board – equations are not provided (pages 269 through 273)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Mary and Juan 3 Session 28

Finish writing Mary's equations on her board and Juan's equations on his board.

$11 = 2 + 9$	$13 = 6 + 7$	$5 + 8 = 13$	$9 + 2 = 11$
$13 = 4 + 9$	$11 = 6 + 5$	$7 + 6 = 13$	$4 + 7 = 11$
$13 = 8 + 5$	$11 = 3 + 8$	$7 + 4 = 11$	$9 + 4 = 13$

I like 11!

I like 13!

1. $11 = 2 + 9$

2. _____

3. _____

4. _____

5. _____

6. _____

1. $13 = 6 + 7$

2. $5 + 8 = 13$

3. _____

4. _____

5. _____

6. _____

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Now you get to solve some more problems on your own. Open your workbook to the first Mary and Juan 3 page for Session 28. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Mary and Juan 3 Session 28

Finish writing Mary's equations on her board and Juan's equations on his board.

$11 = 2 + 9$	$13 = 6 + 7$	$5 + 8 = 13$	$9 + 2 = 11$
$13 = 4 + 9$	$11 = 6 + 5$	$7 + 6 = 13$	$4 + 7 = 11$
$13 = 8 + 5$	$11 = 3 + 8$	$7 + 4 = 11$	$9 + 4 = 13$

I like 11!

I like 13!

1. $11 = 2 + 9$

2. _____

3. _____

4. _____

5. _____

6. _____

1. $13 = 6 + 7$

2. $5 + 8 = 13$

3. _____

4. _____

5. _____

6. _____

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Read instructions from page 268. The instructions say: Finish writing Mary's equations on her board and Juan's equations on his board.

Remember to read the instructions at the top of every page. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 268 and look at the first problem... Continue going over these problems as you normally would. Please go over all 6 pages with your class.

LEARNING OBJECTIVES

- Use given information to write equations that demonstrate equality
- Solve for the missing number in an equation

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Remember when we helped Frog and Monkey share stickers? And when we made the scale balance? What had to happen for Frog and Monkey to be equal or for the scale to balance? (each side had the same number of stickers/bears) That’s right, each side had to have the same number of stickers or bears. Today you’re going to compare information about several pairs of students. By the end of the lesson, you’re going to be able to use information to write equations and solve for the missing number in an equation.

Word Problems 4 Session 29

Figure out how to make the two sides the same. Write an equation to show what you did to make them equal.

1.

<p>Kayla watered 6 plants.</p> 	<p>Nina watered 3 plants before school and 8 more after school.</p> 
$\underline{6 + 5} = \underline{3 + 8}$	

2.

<p>James bought 5 apples last week and 7 apples this week.</p> 	<p>Darnell bought 8 apples.</p> 
$\underline{5 + 7} = \underline{8 + 4}$	

➔

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- Open your workbook to page 275. The given information will make the two students different, but I want you to figure out what would need to happen to make them the same. Let’s look at the first set of pictures together. Point to the first picture. This is Kayla. Kayla watered 6 plants. Write 6 under Kayla.
- Now point to the second picture. This is Nina. Nina watered 3 plants before school and 8 more after school. Write 3 under Nina, and then write “+ 8” next to the 3.
- Are Kayla and Nina the same or different? (*different*)
- How are Kayla and Nina different? (*Kayla only watered 6 plants, but Nina watered 11 plants*)
- Kayla wants to be the same as Nina! I want you to figure out what would need to happen to make Kayla (point to Kayla) equal to Nina (point to Nina).
- Let’s do it together! We are going to make the two students equal so go ahead and write the equal sign between Kayla and Nina. Students write the equal sign between the boxes.

6 (point) is not equal to $3 + 8$ (point), so we need to add something to make them equal.

- What would need to happen to make Kayla equal to Nina? (*Kayla would need to water 5 more plants*)
- So, can you add something to this equation to show that if Kayla waters 5 more plants, all together she will have watered as many plants as Nina? Students write “+ 5” to the left side of the equation.
- Now the two sides of the equation are equal. Both sides have 11! Let’s read this equation together: 6 plus 5 is equal to 3 plus 8 (students say aloud with teacher).
- What else could we say for the equal sign instead of “is equal to”? (Wait for responses... encourage “is the same as” or similar relational wording.) **That’s right. We could say 6 plus 5 is the same as 3 plus 8.**

Clarifying Questions (Incorrect Response)

- If we want them to be equal, who will need to water more plants - Kayla or Nina? (*Kayla*)
- How many more plants would Kayla need to water to have watered as many plants as Nina? (*five*)
- What math symbol should you use to show you are putting the 6 and 5 together to make one big group? (*plus sign*)

Now let’s look at the second set of pictures.

- Point to the first picture below. This is James. James bought 5 apples last week and 7 apples this week. Write 5 under James, and then write “+ 7” next to the 5.
- Now point to the second picture. This is Darnell. Darnell bought 8 apples. Write 8 under Darnell.
- Darnell wants to be the same as James! Tell your neighbor what would need to happen to make Darnell (point to Darnell) equal to James (point to James). (*Darnell needs to buy 4 more apples*)
- Raise your hand if you can tell me how you figured that out. Select a student volunteer to explain.
- If you didn’t already, I want you to write an equation to show that James and Darnell now have an equal number of stickers. Let’s read this equation together. **5 plus 7 is equal to 8 plus 4** (students say aloud with teacher).

Clarifying Questions (Incorrect Response)

- Let’s look at the first picture. This is James. Do we know how many apples James has? (*yes*)
- So write “5 + 7” under the picture of James because we know he has 5 + 7 apples.
- Now let’s look at the second picture. This is Darnell. Do we know how many apples Darnell has? (*yes*)
- So write 8 under the picture of Darnell because we know he has 8 apples.
- If we want them to be equal, who will need more apples – James or Darnell? (*Darnell*)
- How many more apples would Darnell need to have as many apples as James? (*four*)
- What math symbol should you use to show you are putting the 8 and 4 together to make one big group? (*plus sign*)
- So go ahead and write “+ 4” after the 8 under the picture of Darnell.

Now turn to page 276. Just like you did on the last page, you need to figure out what information is missing that would make the two students equal. Use the information in the boxes to write an equation and solve for the missing information. Let's look at the first problem together.

Word Problems 4 Session 29

Write an equation to show the children are equal. Solve for the missing information.

1.

Kyle shot free throws in yesterday's game and in today's game. He shot 6 free throws in today's game.	Carlos shot 2 free throws in yesterday's game and 9 free throws in today's game.
---	--

$6 + 5 = 2 + 9$

2.

Caroline decorated 9 cookies before lunch and 7 cookies after lunch.	Monique decorated cookies before and after lunch. She decorated 5 cookies after lunch.
--	--

$9 + 7 = 11 + 5$

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- Point to the first box. It says, "Kyle shot free throws in yesterday's game and today's game. He shot 6 free throws in today's game."
- Now point to the second box. It says, "Carlos shot 2 free throws in yesterday's game and 9 free throws in today's game."
- What information is missing about Kyle? (*the number of free throws Kyle shot in yesterday's game*)
- Tell your neighbor how many free throws Kyle shot in yesterday's game. (*5 free throws*)
- Raise your hand if you can tell me how you figured that out. Select a student volunteer to explain.

- If you didn't already, I want you to write an equation to show that Kyle and Carlos shot an equal number of free throws. Let's read this equation together. 6 plus 5 is equal to 2 plus 9 (students say aloud with teacher).

Clarifying Questions (Incorrect Response)

- Let's start by putting an equal sign between the two boxes because we know they are equal.
- Let's look at the first box. How many days did Kyle shoot free throws? (*two*)
- So you will be adding 2 numbers together. Are you missing any information about the number of free throws Kyle shot? (*yes*)
- So, you will have a blank in place of one of the numbers on the left side of the equal sign. Can you write an addition expression to show you are adding those 2 numbers together to make one big group? Students write "6 + _" under the left box.
- Now, let's look at the second box. How many days did Carlos shoot free throws? (*two*)
- So you will be adding 2 numbers together. Are you missing any information about the number of free throws Carlos shot? (*no*)
- Can you write an addition expression to show you are adding those 2 numbers together to make one big group? Students write "2 + 9" under the right box.
- Now you have an equation using the information from the boxes. Can you use this equation to figure out how many free throws Kyle shot yesterday? (*five*)

Point to the second problem. Refer to the previous page for the second problem.

Now you're going to solve some word problems. Turn to page 277 in your workbook.

Word Problems 4 Session 29

Write an equation and solve for the missing information in each word problem.

1. Frank has 7 action figures and 11 bouncy balls. He gets 6 more action figures for his birthday. How many more bouncy balls does Frank need to have an equal number of action figures and bouncy balls?

Action figures Bouncy balls

$$\underline{7 + 6 = 11 + 2}$$

2. Philip and Alex are putting away toys. Philip put away 3 toys and then he put away 4 more toys. Then he found 1 more toy under the couch and put it away too. Alex put away 2 toys. How many more toys does Alex need to put away to have put away the same number of toys as Philip?

Philip Alex

$$\underline{3 + 4 + 1 = 2 + 6}$$

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- **Point to the first problem. I'll read the problem to you. Follow along with me while I read: Frank has 7 action figures and 11 bouncy balls. He gets 6 more action figures for his birthday. How many more bouncy balls does Frank need to have an equal number of action figures and bouncy balls?**
- **Can you figure out how many more bouncy balls Frank needs? (Frank needs 2 more bouncy balls)**
- **How did you figure that out? Select a student volunteer to explain.**
- **If you didn't already, I want you to write an equation to show that Frank has an equal number of action figures and bouncy balls. Raise your hand if you can read your equation aloud to the class. Select a student volunteer to read. Let's read this equation together. 7 plus 6 is equal to 11 plus 2 (students say aloud with teacher).**

- **What else could we say for the equal sign instead of "is equal to"?** (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 7 plus 6 is the same as 11 plus 2.**

Point to the second problem. Repeat above prompts for the second problem. Remember to

Clarifying Questions (Incorrect Response)

- **What is the problem asking you to find?** (*how many more bouncy balls Frank needs*)
- **So what are the two groups you need to make equal?** (*action figures and bouncy balls*)
- **Do we know how many action figures Frank has?** (*yes*)
- **And how many does he have?** (*seven and six*)
- **So go ahead and write "7 + 6" under "Action figures."**
- **Do we know how many bouncy balls Frank has?** (*yes*)
- **And how many does he have?** (*eleven*)
- **So go ahead and write 11 under "Bouncy balls."** Students write 11 under "Bouncy balls."
- **Does Frank have an equal number of action figures and bouncy balls?** (*no*)
- **Frank needs more bouncy balls if he wants to have an equal number of each toy. So go ahead and write "+ ____" after the 11 under "Bouncy balls."**
- **Now you just need to figure out what goes in the blank because that's how many more bouncy balls Frank needs. Can you use this equation to figure out how many bouncy balls Frank needs?** (*two*)

prompt students to add labels for “Philip” and “Alex” on the lines provided.

- **Philip and Alex are putting away toys. Philip put away 3 toys and then he put away 4 more toys. Then he found 1 more toy under the couch and put it away too. Alex put away 2 toys. How many more toys does Alex need to put away to have put away the same number of toys as Philip?**

We’ve reached the end of the lesson. What have we learned today? Students respond. Now you’ve learned how to use information to write equations and how to solve for the missing number in an equation.

INDEPENDENT PRACTICE

Now I want you to solve some problems by yourself. Turn to page 278 in your workbook. These problems will be just like the ones we have been doing together. I’ll read each problem out loud, and then I will give you time to solve it and write an equation. Make sure to remember to label the sides like we did in the previous problems. Read each problem and then give students time to solve it before reading the next problem.

Word Problems 4 Session 29

Write an equation and solve for the missing information in each word problem.

1. In yesterday’s soccer game Carly scored 4 goals and Elliott scored 6 goals. In today’s game Carly scored 7 goals. If Elliott wants to have scored an equal number of goals as Carly, how many goals will he need to score in today’s game?

Carly Elliott

4 + 7 = 6 + 5

2. Raven painted 2 pictures this morning and 4 more pictures this afternoon. Marshall painted 5 pictures this morning. How many more pictures does Marshall need to paint to have painted as many pictures as Raven?

Raven Marshall

2 + 4 = 5 + 1



Page 278, Problem 1

In yesterday’s soccer game Carly scored 4 goals and Elliott scored 6 goals. In today’s game Carly scored 7 goals. If Elliott wants to have scored an equal number of goals as Carly, how many goals will he need to score in today’s game?

Page 278, Problem 2

Raven painted 2 pictures this morning and 4 more pictures this afternoon. Marshall painted 5 pictures this morning. How many more pictures does Marshall need to paint to have painted as many pictures as Raven?

MINUTE MATH

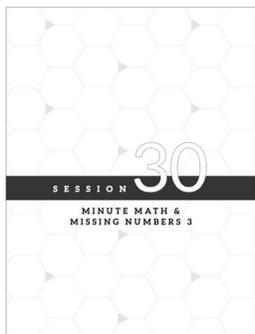
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 12 and 13

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 30 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

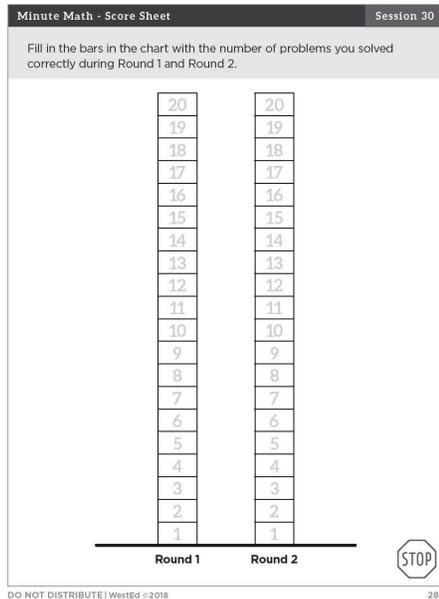
Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 11 in the blank because $6 + 6$ is equal to $11 + 1$! Both sides are equal to 12!
2. Now look at problem b. You should have put 5 in the blank because $8 + 5$ is equal to $4 + 6 + 3$! Both sides are equal to 13!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 11	b. 5	c. 3	d. 5	e. 2	f. 7	g. 12
PAGE 2	h. 10	i. 6	j. 4	k. 4	l. 1	m. 5	n. 8
PAGE 3	o. 2	p. 4	q. 5	r. 6	s. 9	t. 7	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you'll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 11 in the blank because $6 + 6$ is equal to $11 + 1$! Both sides are equal to 12!
2. Now look at problem b. You should have put 5 in the blank because $8 + 5$ is equal to $4 + 6 + 3$! Both sides are equal to 13!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 11	b. 5	c. 3	d. 5	e. 2	f. 7	g. 12
PAGE 2	h. 10	i. 6	j. 4	k. 4	l. 1	m. 5	n. 8
PAGE 3	o. 2	p. 4	q. 5	r. 6	s. 9	t. 7	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Missing Numbers 3 (Guided Problem Solving).

MISSING NUMBERS 3 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Write the missing number to make expressions equal to a target expression or sum (pages 287 through 294)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Missing Numbers 3 Session 30

Make the expressions in the white portion equal to the expression in the gray portion.

Example

$6 + 6$

$8 + 4$

$3 + 9$

1.

$7 + 5$

$__ + 8$

$__ + 3$

2.

12

$7 + __$

$8 + __$

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Now you get to solve some more problems on your own. Open your workbook to the first Missing Numbers 3 page for Session 30. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Missing Numbers 3 Session 30

Make the expressions in the white portion equal to the expression in the gray portion.

Example

$6 + 6$

$8 + 4$

$3 + 9$

1.

$7 + 5$

$__ + 8$

$__ + 3$

2.

12

$7 + __$

$8 + __$

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Read instructions from page 287. The instructions say: **Make the expressions in the white portion equal to the expression in the gray portion.**

Remember to read the instructions at the top of every page. Pay close attention to the expression or sum that is written in each gray box. Use the examples to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 287 and look at the first problem...** Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.

LEARNING OBJECTIVES

- Determine whether equations demonstrate equality
- Turn false equations into true equations by adding an addend

MATERIALS

- Student workbook
- Classroom board

INSTRUCTIONAL PLAN

Today you're going to hear statements and see equations. You will determine whether the statements and equations are true or false. By the end of the lesson, you're going to be able to decide if equations are true or false and turn false equations into true equations by adding another number.

- What does it mean if something is true? (*correct*)
- What does it mean if something is false? (*incorrect*)

Let's start with some statements. Open your workbook to page 296.

Equal or Not Equal 4 Session 31

Use the pictures to help you determine whether the amounts are equal or not equal. Fill in the box with the equal sign or the not-equal sign (\neq).

1.

$2 + 6 + 1 = 6 + 3$

2.

$4 + 2 + 1 = 7$

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Let's look at the first problem together. Point to the light bulbs. Now point to the lamps. We have one light bulb for every lamp (pause). Is that statement true or false? (*false*)

- Why did you say false? (*there are 9 lamps, but only 7 light bulbs; there are not enough light bulbs*)

Clarifying Questions (Incorrect Response)

- **Let's look at these pictures together. All together** (circle hand over light bulb boxes), **how many light bulbs are there?**
- **All together** (circle hand over lamp boxes), **how many lamps are there?**
- **There are 7 light bulbs and 9 lamps, so we have a different number of light bulbs and lamps. That means we don't have one light bulb for every lamp, so the statement is false.**

Now, I'm going to help you make the statement true. To make the statement true, will we need more light bulbs or more lamps? (*light bulbs, because we have more lamps than light bulbs*)

How many more light bulbs will you need to have an equal number of light bulbs and lamps? (*two*)

Can you add a box to the side with the light bulbs and draw the light bulbs you need so that there will be one light bulb for every lamp? Students draw box and light bulbs.

Now we have one light bulb for every lamp. I want you to write the equation to show that the numbers of light bulbs and lamps are the same. Allow time for students to try to write the equation on their own. (If needed, go through the steps below.) Then, write the equation on the classroom board.

Step-by-Step Directions (Only if needed)

- **How many light bulbs are there in the box you drew?** (*two*)
- **Write 2 below that box.**
- **How many light bulbs are there in the second box?** (*six*)
- **Write 6 below that box.**
- **How many light bulbs are there in the third box?** (*one*)
- **Write 1 below that box.**
- **What math symbol can we use to show that we are putting all of these light bulbs together to make one big group of light bulbs?** (*plus sign*)
- **Where will you put the plus sign?** (*between the 2 and 6 and between the 6 and 1*)
- **So all together, how many light bulbs do you have?** (*nine*)

- **Now, how many lamps are there in the first box of lamps?** (*six*)
- **Write 6 below that box.**
- **How many lamps are there in the second box?** (*three*)
- **Write 3 below that box.**
- **So all together, how many lamps do you have?** (*nine*)

- **So you have 9 light bulbs** (point to $2 + 6 + 1$) **and you have 9 lamps** (point to $6 + 3$). **The number of light bulbs and lamps are the same. So, what math symbol can we use to show that we have an equal number of light bulbs and lamps?** (*equal sign*)

Look up here at the equation we wrote. One side (sweep left hand back and forth under the left side) **is equal to** (hands down) **the other side** (sweep right hand back and forth under the right side). **Now look at the equation in your book as I read it. 2 plus 6 plus 1 is equal to 6 plus 3. Now it's your turn to read it with me. All together now: 2 plus 6 plus 1 is equal to 6 plus 3** (students say aloud with teacher).

What else could we say for the equal sign instead of “is equal to”? (Wait for responses... encourage “is the same as” or similar relational wording.) **That's right. We could say 2 plus 6 plus 1 is the same as 6 plus 3.**

Now look at the next problem. We have one pencil for every student (pause). **Is that statement true or false?** (*false*)

- **Why did you say true/false?** Select student volunteer to explain.
- **To make the statement true, will we need more pencils or more students?** Select student volunteer to explain. (*pencils, because we have more students than pencils*)

- How many more pencils will you need to have an equal number of pencils and students? (*four*)
- Add another box on the correct side and draw the number of pencils you'll need so that there will be one pencil for every student.
- Now write an equation to show the numbers of pencils and students are equal. Write equation on classroom board while students are writing it in their lesson books.

Look up here at the equation we wrote. One side (sweep left hand back and forth under the left side) is equal to (hands down) the other side (sweep right hand back and forth under the right side). Let's read this equation together. 4 plus 2 plus 1 is equal to 7 (students say aloud with teacher).

Now you're going to see equations and determine whether they are true or false.

- What makes an equation true? (*it has the same amount on both sides of the equal sign*)
- What makes an equation false? (*it does not have the same amount on both sides of the equal sign*)

For this part of the lesson, I will write an equation on the classroom board and you will decide whether the equation is true or false. If you think the equation is true, then make a thumbs up like this (make a thumbs up). If you think the equation is false, then make a thumbs down like this (make a thumbs down). Don't do a thumbs up or down until I ask to see. Do you have any questions?

Let's try a practice problem together. Write $3 + 4 + 2 = 6$ on the board.

- Is this equation (point) true or false? Give students a moment to examine the equation.
- Now hold your hand up with a thumbs up or down. Scan the room to make sure the majority of the students are correct.
- This equation is false. Raise your hand if you can explain why it is false. Select student volunteer to explain.

Clarifying Questions (Incorrect Response)

- Let's look at this equation together. All together, how much do we have on the left side of the equal sign? (*nine*)
- All together, how much do we have on the right side of the equal sign? (*six*)
- Do we have the same amount on both sides of the equal sign? (*no*)
- Remember, a true equation has the same amount on both sides of the equal sign and a false equation does not. So is this equation true or false? (*false*)

Great job everyone. Are there any questions before we continue with the next equation?

Write each equation on the board and continue with the questioning above with the following equations:

- $5 = 2 + 3$ True
- $1 + 2 = 5 + 4$ False

We are going to continue looking at equations, but this time if the equation is false you will do something a little different. Instead of doing a thumbs down, you will turn the equation into a true equation and then tell your neighbor the true equation you came up with. If the equation is already true, you will still do a thumbs up when I ask.

Let's practice a false equation together. Write $3 + 4 = 8$ on the board. Remember, this equation (point) is false, so you need to change the equation into a true equation by adding another number to one side of the equation.

- Tell your neighbor which number you would have to add and where it would go. ($3 + 4 + 1 = 8$ *or* $1 + 3 + 4 = 8$)
- Raise your hand if you can tell me what the true equation would be. Select student volunteer to explain. Write true equation on the board.
- Can you explain what you did to make this equation true? Select student volunteer to explain.
- How did you decide which side of the equation you should add to? Select student

Clarifying Questions

- Remember, a true equation has to have the same amount on both sides of the equal sign, so you need to add another number to one side of the equation so that all together, the left side will have the same amount as the right side. Which side should you add to? (*the left side*)
- So how much more would you need on that side to make it the same as this side? (*one*)
volunteer to explain.

- Let's read this equation together (students say aloud with teacher).
- What else could we say for the equal sign instead of "is equal to"? (Wait for responses... encourage "is the same as" or similar relational wording.) **That's right. We could say 3 plus 4 plus 1 (or 1 plus 3 plus 4) is the same as 8.**

Great job everyone. Are there any questions before we continue with the next equation?

Write each equation on the board and continue with the questioning above with the following equations:

- $11 = 6 + 3$ ($11 = 6 + 3 + 2$)
- $2 + 6 = 7 + 1$ True
- $6 + 4 = 3 + 5$ ($6 + 4 = 3 + 5 + 2$)

We've reached the end of the lesson. What have we learned today? Students respond. **Now you've learned how to decide if equations are true or false, and you turned false equations into true equations by adding another number.**

(Independent Practice on following page)

INDEPENDENT PRACTICE

Now I want you to solve some problems by yourself. Turn to page 297 in your workbook. You need to determine if each equation is true or false. If the equation is true, write a “T” on the line (point). If it is false, write an “F” on the line (point). There is one page to complete with problems like these. Remember, a true equation has the same amount on both sides of the equal sign. Do you have any questions? Allow time for students to complete the first page.

Provide the following directions for the next page: Turn to page 298. All the equations on this last page are false. You will make each of these equations true by adding to the smaller side. Do you have any questions? Do the first problem with students if necessary.

Equal or Not Equal 4	Session 31
Determine whether the equation is true or false.	
1. $10 = 7 + 2 + 1$	True or false? <u> T </u>
2. $4 + 3 = 2 + 1$	<u> F </u>
3. $5 + 3 = 4 + 4$	<u> T </u>
4. $5 + 1 = 2 + 1 + 3$	<u> T </u>
5. $4 + 2 = 1 + 3 + 4$	<u> F </u>
6. $1 + 8 = 3$	<u> F </u>

➔

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Equal or Not Equal 4	Session 31
Make each equation true by adding to the smaller side.	
1.	$3 + 2 + 5 = 4 + 1 + 5$
2.	$4 + 4 = 6 + 2$
3.	$5 + 2 = 3 + 3 + 1$



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MINUTE MATH

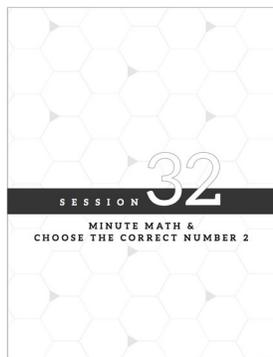
LEARNING OBJECTIVES

- Practice intermixed format addition problems with sums of 6–13

MATERIALS

- Student workbook
- Red colored pencil
- Timer

INSTRUCTIONAL PLAN



Now we get to do Minute Math! Open your workbook to Session 32 for Minute Math. Hold up your copy with the appropriate page open.

The goal of this activity will be to solve as many math problems as you can in one minute. Don't turn the page yet! I want you to work as quickly as you can, but try not to make mistakes. At the end of one minute, I will tell you to stop. Are there any questions?

This Minute Math session includes two sets of 20 problems on 3 pages. There is a stop sign at the end of each set. Most students should not be able to solve all twenty problems in one minute, but if they do, they should NOT work past the stop sign. After each set, you should have students grade their responses with a red colored pencil and then color in the corresponding column on their score sheet.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the correct solutions in the key below.

KEY: PROBLEM SET 1

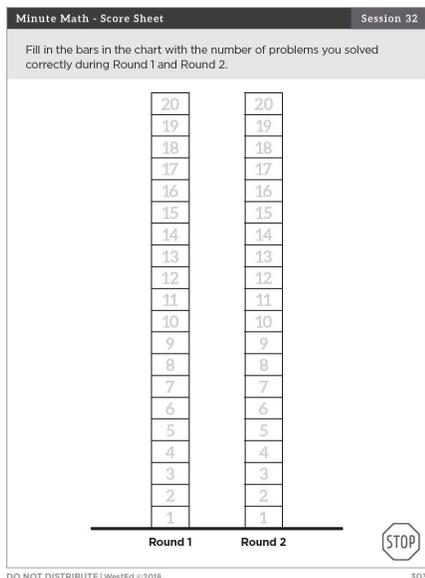
Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put **6** in the blank because $6 + 2$ is equal to $4 + 3 + 1$! Both sides are equal to 8!
2. Now look at problem b. You should have put **5** in the blank because $1 + 9$ is equal to $5 + 5$! (stress the first 5 when reading the problem) Both sides are equal to 10!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 5	c. 3	d. 4	e. 6	f. 5	g. 9
PAGE 2	h. 1	i. 13	j. 8	k. 3	l. 6	m. 4	n. 2
PAGE 3	o. 6	p. 5	q. 7	r. 8	s. 5	t. 7	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now turn to the next page in your workbook. You will record your number correct here on the Minute Math Score Sheet. Find the “Round 1” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct. Remember, these are the problems you put a check mark next to before. So, for example, if you got 4 problems correct, then you should color in boxes 1, 2, 3, and 4.** Allow time for students to color in the boxes.



You all did a great job! But I bet you can do even better. So, now you get to do it again to see if you can beat your score. Remember, you'll get one minute to complete as many problems as you can. Work as quickly as you can, but try not to make mistakes.

OK, get ready. When I say go, you may turn the page and begin. Ready, set, go! Start the timer. At the end of 1 minute: **Time's up! Stop working now. Let's see how many you got correct. I'm going to read the number that you should have written in the blank for each problem. Put a check mark next to each problem that you got correct.** Read off the first 3 sentences again in their entirety so students can hear the full equations. Then, beginning with Problem 4, use the Quick Reference Key to read off the correct solutions.

KEY: PROBLEM SET 2

Here is are two example ways of evaluating students' answers to a problem:

1. OK, look at problem a. You should have put 6 in the blank because $6 + 2$ is equal to $4 + 3 + 1$! Both sides are equal to 8!
2. Now look at problem b. You should have put 5 in the blank because $1 + 9$ is equal to $5 + 5$! (stress the first 5 when reading the problem) Both sides are equal to 10!

QUICK REFERENCE ANSWER KEY

PAGE 1	a. 6	b. 5	c. 3	d. 4	e. 6	f. 5	g. 9
PAGE 2	h. 1	i. 13	j. 8	k. 3	l. 6	m. 4	n. 2
PAGE 3	o. 6	p. 5	q. 7	r. 8	s. 5	t. 7	

Now you need to count the total number of check marks that you made. Allow time for students to count. **OK, now go ahead and turn back to the score sheet page. Find the “Round 2” column of the graph, and fill it in based on the number you got correct. Color in one box for each problem you got correct.** Allow time for students to color in the boxes.

Did any of you beat your score from Round 1? Great job!

Now you will move on to Choose the Correct Number 2 (Guided Problem Solving).

CHOOSE THE CORRECT NUMBER 2 (GUIDED PROBLEM SOLVING)

Students will be asked to:

- Color in the circle of the student who got the correct number (pages 307 through 310)
- Color in the circle under the correct number (pages 311 through 316)

MATERIALS

- Student workbook

INSTRUCTIONAL PLAN

Choose the Correct Number 2 Session 32

Color in the circle under the student who got the correct number. If none of the students got the correct number, color in the circle under "None."

Example 1

$10 = 6 + \underline{\quad}$

5 4 16 None

Example 2

$10 = 8 + \underline{\quad}$

2 18 4 None

Example 3

$7 + 3 = \underline{\quad}$

11 4 14 None

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Now you get to solve some more problems on your own. Open your workbook to the first Choose the Correct Number 2 page for Session 32. Hold up your copy with the appropriate page open.

We'll work on this for 5 minutes. Once we begin, you should keep working until you get to the stop sign. If you get to the stop sign before time is up, go back and check your work. Many of you will not be able to get to the stop sign before time is up, and that's OK. This time it's not a race! Just work carefully and try your best.

Follow along as I read the instructions at the top of the page.

Choose the Correct Number 2 Session 32

Color in the circle under the student who got the correct number. If none of the students got the correct number, color in the circle under "None."

Example 1

$10 = 6 + \underline{\quad}$

5 4 16 None

Example 2

$10 = 8 + \underline{\quad}$

2 18 4 None

Example 3

$7 + 3 = \underline{\quad}$

11 4 14 None

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Read instructions from page 307. The instructions say: **Color in the circle under the student who got the correct number. If none of the students got the correct number, color in the circle under "None."**

Did you hear the instructions? If none of the students got the number that YOU think should go in the blank, you should color the circle under "None." HINT: "None" means that **NONE** of the students got the correct number. Please share this hint – or a similar phrasing of it – with your students. Some students find the "None" confusing the first time they do an activity like this.

Remember to read the instructions at the top of every page. Use the examples on the first page to help you figure out what to do. If you have any questions as you work, please raise your hand. Go ahead and begin.

After 5 minutes: **OK, time's up! It's time to stop working now and look at some of the answers to the problems you just did. Flip back to page 308 and look at the first problem...** Continue going over these problems as you normally would. Please go over only the first 6 pages with your class.