SMALL GROUP LESSONS

Grade 1, Mission 1

Add and Subtract Small Numbers

Lessons

YOUR NOTES

Topic A: Embedded Numbers and Decompositions

In this first mission of Grade 1, students make significant progress towards fluency with addition and subtraction of numbers to 10.

Lesson 1

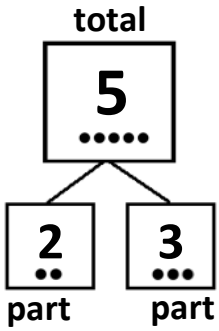
Analyze and describe embedded numbers (to 10) using 5-groups and number bonds.

Materials: (T) 1 egg carton cut to 10 slots (S) 1 egg carton cut to 10 slots, bag with 9 beads (or other fun classroom objects), number bond (Template), personal white board

Before the lesson, insert the number bond template into each student's personal white board.

T: Take out your egg carton. Count to find out how many slots there are. Wait for the signal to tell me. (Pause. When all are ready, give the signal.)
S: 10.
T: Someone already cut 2 off.
T: How many slots are in the top row?
S: 5.
T: How many slots are in the bottom row?
S: 5.
T: Take out the objects in your bag. First, count 5 into the top row from left to right. (Pause.) How many beads do you have in your top row?
S: 5.
T: Now, we are going to be number detectives. Let's see what numbers are hiding inside of 5.
T: I see 2 hiding inside. Look. (Show the two objects.) What other numbers do you see hiding inside 5? Talk to your partner.
T: (Circulate and listen. Encourage those who are touching and counting, rather than seeing the embedded numbers, to recognize quantities of at least 2 or 3.)
T: (Write the 5 in the total box of a number bond.) That's our total, or whole. Do you remember these number bonds from kindergarten?
S: Yes!
T: You said there was a 2 hiding inside of 5. That's a part.

Number Bond



YOUR NOTES

(Write the 2 in the number bond.)

T: Let's cover those 2 beads. What is the other part?

S: 3.

T: Let's write that in the other part of the number bond. (Write 3.)

T: What two parts did we find make 5, detectives?

S: 2 and 3.

T: Let's see if we can find different numbers inside of 5. (Write 5 in the total box inside a new number bond.)

T: (Continue to find the other numbers inside of 5 and generate the corresponding number bonds using the same process.)

T: Let's take out 2 more beads, and put them in the bottom row of the egg carton.

T: How many beads are there now?

S: 7.

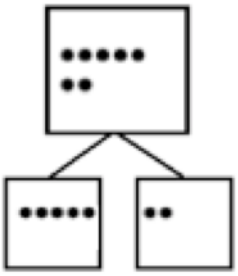
T: Turn and talk to your partner about what numbers you see inside 7.

S: (Circulate and share their observations.)

T: I heard a student say that she saw 5 beads. Are there 5 beads?

S: Yes!

T: Let's draw 5 dots as a part in our number bond instead of the number 5.



Number bond with parts drawn the 5-groups way

T: Where did you see the 5?

S: In the top row.

T: Let's cover the 5. What is the other part to make 7?

S: 2.

T: Let's draw in 2 dots as the other part in the number bond.

T: Let's count on from 5 to find our total. Count with me. Let's start with 5. (Point to the fifth dot.)

T/S: Fiiiiiive, 6, 7. (Point to each of the dots as you count them. Draw 7 dots in the total box the 5-group way.)

T: Let's now represent this number bond with numbers instead of dots. (Lead students to make the number bond numerically on their personal white boards.)

Continue to find five and its partner within 6, 7, 8, and 9. Other combinations will be explored in Lesson 2. Release students to work independently.

NOTES

Debrief Questions

- Can you show me 5 fingers? Show me 5 with two hands (i.e., 4 and 1, or 3 and 2). Now, show me 5 with one hand.
- Can you show me 6 the Math Way with your fingers? (Five fingers on the left hand and the thumb on the right hand.) Can you show me the 5 inside 6? Continue with 7, 8, 9, and 10.

Multiple Means of Action and Expression

Discourage the touch and count behavior which many students mistake for being good at school. Grade 1 students can subitize twos and threes without counting. They should be encouraged to recognize this since seeing embedded numbers (or subitizing) is the beginning of counting on.

Multiple Means of Representation

Have students write the two parts on their number bond template. For further support for counting on, have them draw the beads at first, and then later in the lesson, represent the 5-groups numerically.

YOUR NOTES

Lesson 2

Reason about embedded numbers in varied configurations using number bonds.

Materials: (T) Dot cards of 6–9 (Template) (S) Dot cards of 6–9 (Template), personal white board

T: (Draw 7 apples on the board, as shown to the right.) How many apples are there? (Pause. When all are ready, give the signal.)

Configuration of 7 to show or draw

S: 7.

T: Talk to your partner about the different groups of apples you see hiding inside of 7. (Circulate and listen to student discussion.) What two different groups or number partners do you see?

S: (Answers may vary.) I saw 4 and 3.

T: (Group 4 and 3 apples by drawing a circle around them.)

T: Count on to find the total. Start with 4. (Point to each apple in the 3 group.)

T/S: Fooooouuuur, 5, 6, 7. What is the total?

S: 7.

T: What are the parts?

S: 4 and 3.

T: Let's make a number bond to match this picture. (Draw the bond. Ask students to name the parts and the whole.

T: What other number partners do you see? (Elicit other ways that students see two embedded numbers within 7 and make corresponding number bonds.)

T: (Continue modeling, decomposing 6, 8, or 9 and filling in the two-part number bond by counting on to find the total.)

OPTIONAL FOR FLEX DAY: PARTS AND BONDS

T: Let's play Parts and Bonds.

T: Show a dot card inside your personal board to your partner. He circles two parts. You write a number bond to match his parts. Switch roles using the same dot card (change cards after two turns).

As students work, circulate and encourage active counting on.

NOTES

Debrief Questions

- Is there always more than one way to make the total?
- Turn to your partner and share what you learned in today's lesson. What did you get better at doing today?

Multiple Means of Engagement

Provide challenging extensions for some students. While holding a dot card, cover some of the dots. Tell them the whole, and see if they can figure out the two parts without seeing what is being hidden.

Lesson 3

See and describe numbers of objects using 1 more within 5-group configurations.

Materials: (T) Sentence frame 1 more (Template 1) (S) 5-group mat (Template 2), bag with 9 linking cubes of the same color, 1 linking cube of another color, personal white board, 1 more game cards (Template 3)

YOUR NOTES

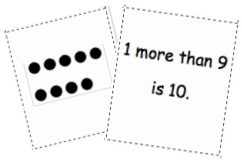
T: Show me 5 fingers on one hand the Math Way.
S: (Hold up their left hand, showing 5 fingers.)
T: Show me 4 fingers inside your 5.
T: Show me your 5.
T: Show me your 4.
T: How much does 4 need to make 5?
S: 1.
T: Show me 7 fingers the Math Way.
T: Show me 6.
T: Show me 7.
T: Show me 6.
T: How much does 6 need to make 7?
S: 1.
T: Put 5 cubes that are the same color onto your 5-group mat. How many cubes do you have?
S: 5.
T: Use a different color cube and put 1 more on your mat. Now, how many do you have?
S: 6.
T: How did you know that so quickly?
S: I counted on from 5. → It was just 1 more. → I saw 5 and 1. →I just knew it. → I counted on from 5. It was just 1 more.
T: What is 1 more than 5?
S: 6.
T: Let's say that in a full sentence. (Point to the sentence frame as students speak. 1 more than ____ is ____.)
T/S: 1 more than 5 is 6.
T: Let's try saying this in a different way. What was the first part we saw?
S: 5.
T: How many more did 5 need to make 6?
S: 1.
T: So, we can say 6 is 1 more than.... (Invite student responses.)

YOUR NOTES

S: 5.
T: Say it as a whole sentence. (Point to the sentence frame as students speak. ____ is 1 more than ____.)
S: 6 is 1 more than 5.
T: Help me write our parts and total in a number sentence, or equation. (Write the components of the number sentence as each question is asked.) What did we start with?
S: 5.
T: How many cubes did we add?
S: 1.
T: How many cubes do we have altogether?
S: 6.
T: Let's read our number sentence together.
T/S: 5 + 1 = 6.

Have students clear their mats, and continue this process with 7, 8, and 9. Have students say both "8 is 1 more than 7," and "1 more than 7 is 8." When writing the number sentence, be sure to have the equal sign on either side of the equation (i.e., 7 + 1 = 8 and 8 = 7 + 1).

T: Now, you'll get to work with a partner to play the 1 More game! The goal is to match a dot card with the card that has 1 more. Here are the directions:
    1. Put all of your cards face down, with dot cards on one side and sentence cards on the other.
    2. Flip over a dot card.
    3. Flip over a sentence card.
    4. Keep the pair if the sentence card is one more than the dot card.
    5. Turn both cards back over if they do not match.
    6. When you and your partner have made all the pairs, write a number sentence for each pair.



Model how to play this with students. Practice the language *1 more than* ____ *is* ____ and ____ *is 1 more than* ____.

NOTES

Debrief Questions

- If we had to find 2 more, how would today's lesson help us?
- Using what you learned today, what is 1 more than 13? How do you know?
- Turn and talk to your partner about what we did today. What were we learning about, understanding, and getting good at?

Multiple Means of Engagement

Cultivate excitement by connecting on-level math with higher-math. For example:

- You know 1 more than 6 is 7. What is 1 more than 16?
- If 1 more than 18 is 19, then what is 1 more than 28?

See how far you can extend presenting numbers to 100.

Multiple Means of Expression

For students who may need additional support with the language of *1 more than* ____ *is* ____ and ____ *is 1 more than* ____, insert a sentence frame into their personal white boards, and allow them to write the numbers into the blanks. Pointing to each word and reading the number can provide a bridge between the concrete and the abstract.

Topic B: Counting On from Embedded Numbers

As students move into Topic B, they gain momentum with putting together, composing and decomposing, and counting on to determine the total.

Lesson 4

Represent put together situations with number bonds. Count on from one embedded number or part to totals of 6 and 7 and generate all addition expressions for each total.

Materials: (T) Chart to record decompositions of 6 (S) Bag of 10 two-color beans (painted white on one side and red on the other), 6 apples picture card (Template)

Choose a group of students who have different attributes to represent decompositions of 6 (e.g., 4 boys, 2 girls; 5 with shoelaces, 1 without; 3 with short sleeves, 3 with long sleeves). Be sure to encourage the actors themselves to participate in the mathematics of the lesson.

T: How many students do you see?
S: 6.
T: How many boys are there?
S: 4.
T: How many girls are there?
S: 2.
T: Talk to your partner about what would be a good strategy to see how many students there are altogether. (Circulate and listen to student discussion.)
S: We can count on from 4.
T: Point with me to keep track as we count on from 4. (Gesture around the group of 4, and then touch the 2 students on the head as you count on with the class.)
S: Fouuuur, 5, 6.
T: What parts did we put together to make 6?
S: 4 and 2.
T: Let's write those parts in a number sentence. (Call on students to help you write the equation
6 = 4 + 2 on the board.)
T: (Ask the 2 girls to move to the left and the 4 boys to move to the right.) What would our number sentence look like if we started with the girls first? Talk to your partner about what the number sentence would be.

T: (Circulate and listen to student discussion. Call on students to help you write the equation 6 = 2 + 4 on the board.)
T: Now, look at the shoes on these students. I notice shoes that have....
S: (Answers may vary.) Shoelaces!

Repeat the earlier process with decomposing according to having shoelaces and not, and again with short sleeves and not, in order to complete decomposing 6.

Bring up the topic of zero and the total as a possible decomposition:

T: How many students do you see up here?
S: 6.
T: How many tigers do you see up here?
S: 0.
T: How many living things do you see up here?
S: 6.
T: How can we write that story in a number sentence?
S: 6 + 0 = 6.
T: Think of a different story that shows 6 + 0 = 6. (If necessary ask, "Think of what we can make the zero represent.") Call on students to share.
T: When we add zero, we add nothing to the other part. And, this is another way we can make 6! Six and zero makes 6.

NOTES

Debrief Questions

Record all of the decompositions of 6 (5 + 1, 4 + 2, 3 + 3). Ask the following questions to close the lesson:

- What do you notice about the two parts in the **expressions** that make 6 as we look at them in order from left to right?
- What is different about this (point to 4 + 2), the expression, and this (point to 4 + 2 = 6), the number sentence?
- Turn to your partner and talk about what we learned about in today's lesson. What did you get really good at today?

Multiple Means of Engagement

For students who still need to count all of the objects, scaffold their learning and allow them to count all. After they have mastered counting all, be sure to model counting on so that they have an example of how they should be thinking when counting.

Multiple Means of Action and Expression

Display charts with the number bonds for 6 so students can refer to it if needed. Creating a place in the classroom for students to access this information will help those students who are visual learners or students who have trouble committing things to memory.

Lesson 5

Represent put together situations with number bonds. Count on from one embedded number or part to totals of 6 and 7 and generate all addition expressions for each total.

Materials: (T) Number bond on the white board, markers, chart to record decompositions of 7 (S) 5-group cards (Template 1), 7 children picture card (Template 2), scissors, glue stick, a sheet of blank paper for Debrief Questions

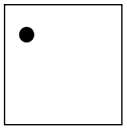
YOUR NOTES

Have students sit in a big semi-circle facing the number bond on the board. Distribute 5-group cards to each pair of students. Tell them they will be using the cards to show different ways to make 7. Instruct students to put their cards in order from smallest to largest.

Using students as actors, choose a group of students who have different attributes that represent decompositions of 7, and have them line up at the board (e.g., 6 with short hair, 1 with long hair).

Note: Be sure to encourage the actors themselves to participate in the mathematics of the lesson.

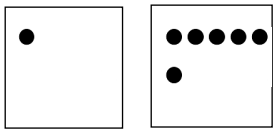
T: How many students are here?
S: 7.
T: (Write 7 in the total box of the number bond.)
T: What does this 7 represent? (Point to the 7.)
S: (Responses may vary.) The kids.
T The 7 in our whole represents the number of students. (Label the whole with the word students.)
T: There's 1 student up here who has something different from the rest! What is it?
S: 1 has long hair!
T: (Write 1 in the number bond.)
T: What does this 1 represent? (Point to the 1.)
S: Long hair.
T: The 1 represents the part of our students with long hair, so I am going to label this part long hair. (Write long hair next to the part with the number 1.)
T: Show 1 with your 5-group card using the dot side, and put it in front of you.



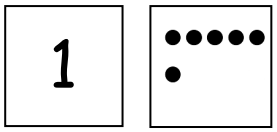
T: If [Student 1 with long hair] has long hair, what about the rest of these students?
S: They have short hair.
T: How many students have short hair?

YOUR NOTES

S: 6.
T: (Write 6 in the number bond.)
T: How should I label this part?
S: Short hair.
T: Yes. Six represents the number of students with short hair. (Write short hair next to the part with the number 6.)
T: Now, show 6 with your 5-group card using the dot side, right next to your first card.



T: What's the best strategy to find out how many students there are altogether?
S: (Responses may vary.) Count on from 1.
T: Point with me to keep track as we count on from 1. (Gesture around the group of 1, and then count on with the class by touching the 6 students on the head; have them sit down as they are counted.)
T: Now, it's your turn to count on. Flip your 1 dot card to show the number 1. Then, count on from 1. Be sure to touch and count!



S: (Count on from 1 to 7, pointing to each dot.)
T: What are the two parts that make 7?
S: 1 and 6.
T: Say the number sentence that makes 7. (Point to each box in the number bond as students respond.)
S: 1 + 6 = 7.
T: (Record this on the chart.)
T: Say the number sentence starting with the students with short hair.
S: 6 + 1 = 7.
T: Say the number sentence starting with the total.
S: 7 = 1 + 6.
T: Say the number sentence starting with the total, but flip the parts this time.
S: 7 = 6 + 1.

Continue this process with the other decompositions of 7. Keep the same actors, but rearrange them to show different decompositions of 7 (e.g., 2 sit, 5 stand; 3 smiling, 4 frowning). Review zero if necessary.

NOTES

Debrief Questions

- Look at all the ways we made 7 in this poster. What patterns do you see?
- Let's revisit our poster for 6. What do you see is the same and different about our poster showing ways to make 6 and our poster showing ways to make 7? Talk to you partner.
- What did you get really good at today?

Multiple Means for Action and Expression

Once students have shown how to make 7 with their 5-group cards, call on a volunteer to come fill in the number bond on the board. See if other volunteers can write the number sentence(s) that go along with the 5-group cards and number bond on the board. Maybe have another volunteer illustrate the number bond. Providing a variety of ways for students to respond allows them to make choices and engage when they know they will be successful at the task.

YOUR NOTES

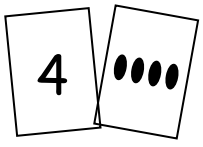
Lesson 6

Represent put together situations with number bonds. Count on from one embedded number or part to totals of 8 and 9 and generate all expressions for each total.

Materials: (T) 8 animals picture card (Template 1), ways to make 8 (Template 3) (S) 5-group cards 0–8 (Lesson 5 Template 1), 8 animals picture card (Template 1), blank number sentence and number bond (Template 2), personal white board, ways to make 8 (Template 3)

Insert blank number sentence and number bond template (Template 2) into personal white boards prior to the lesson. Assign students partners (A and B), and have them sit on the carpet with their 5-group cards.

T: (Project 8 animals picture card.) Look at the picture. Talk with your partner about the different parts you see. (Circulate as students discuss.)
S: (Discuss as the teacher circulates.)
T: What two different animals do you see?
S: Frogs and ducks!
T: Partner A, show how many frogs there are with your 5-group cards, using the number side.
S: (Show the numeral 4.)
T: Partner B, show how many ducks there are with your 5-group cards, using the dot side.
S: (Show 4 dots.)
T: Yesterday, what strategy did we use to find how many students were in the classroom?
S: We counted on.
T: Let's count on to see how many animals there are altogether, starting with...
S: 4.
T/S: Foouuur, 5, 6, 7, 8. (Count, while pointing to .)
T: Work with your partner to write a number sentence that matches our frogs and ducks on your personal white board.



S: (Write 4 + 4 = 8 or 8 = 4 + 4.)
T: How else are these animals different from one another?

Repeat this process as students record the decompositions of 8, using their 5-group cards to count on from one part (the numeral) to find the total and recording the decomposition in an equation on their personal white boards.

T: Now, we're going to play a game called Ways to Make 8. The goal is to find all of the different ways to make 8 with your partner and record it on your recording sheet.

1. Put your 5-group cards together in the center. Partner A's cards should all show the dot side. Partner B's cards should all show the number side.
2. Partner A picks a number card and a dot card that she thinks make 8. Both partners check together by counting on from the number card.
3. Partner A writes the number bond and expressions on her sheet, and Partner B checks it, saying, "That's correct!" or "Try again, friend."
4. Then, you take turns until each of you has all of the different ways to make 8.

(Discuss ways to work with 4 + 4, as this combination requires duplicates. Ask students how they might solve this dilemma!)

As students work, circulate and encourage active counting on. As students finish, have them save their recording sheet to add to their portfolio of number bonds for reference.

YOUR NOTES

NOTES

Debrief Questions

- Look at our poster for all of the different ways to make 8. What patterns to do you see?
- Think about our game, Ways to Make 8. Why did we only use our cards 0 through 8 today?
- Talk with your partner about what you learned today.

Multiple Means of Representation

Remember to highlight critical vocabulary for students who may need another representation to make the connection. Displaying pictures of the animals talked about in the lesson will help these students. Or, have students share what these animals are called in their native language to make it more personally meaningful.

Multiple Means for Engagement

Adjust lesson structure to suit specific learning needs, remembering that some students will need to keep counting all (by flipping the cards to expose all of the dots) before they are secure enough in their skills to count on.

Lesson 7

Represent put together situations with number bonds. Count on from one embedded number or part to totals of 8 and 9 and generate all expressions for each total.

Materials: (T) 9 books picture card (Template 1), 5-group cards (Lesson 5 Template 1), chart to record decompositions of 9 (S) Bag of 10 linking cubes: 5 of each of 2 colors, personal white board, number bond and expression (Template 2)

YOUR NOTES

T: (Distribute 5-group cards and a bag of linking cubes to each student. Show the picture card with 9 books.) How many books do you see here?
S: 9.
T: Turn to your partner and share the different ways you see 9 books. (Circulate as students share.)
S: (Share ideas.)
T: I heard so many students say they saw some books on the top shelf and some on the…
S: Bottom shelf!
T: Using linking cubes that are the same color, show how many books there are on the top shelf, and put them together like a stick. Then, place it into the part box of your number bond.
S: (Place a stick of 5 in the part box.)
T: How many books are on the top shelf?
S: 5.
T: Use the other color to show how many books are on the bottom shelf in the other part box of your number bond. But this time, just put them in a pile, not a stick.
S: (Place 4 individual cubes in the other part box.)
T: How many books are on the bottom shelf?
S: 4.
T: What is a counting strategy to figure out how many books there are in all?
S: Count on.
T: Start with the stick of 5, and let's count on. Watch me first. (Model.) Your turn!
S: Fiiiiiiive, 6, 7, 8, 9.
T: How many books are there in all?
S: 9.
T: What 2 parts made 9?
S: 5 and 4.
T: Put 9 other cubes into the space for the total to make our number bond true.
S: (Place 9 cubes in total.)

YOUR NOTES

T: Do the two parts together show the same number as the total?
S: Yes.
T: That means our number bond is true! Write in the parts in your expression boxes.
S: (Write 5 + 4.)
T: Now, change the order.
S: (Write 4 + 5.)

Repeat this process with one more way to make 9 using the picture.

Although the picture card can stay up, the next part of the lesson focuses on finding the remaining decompositions of 9 using numerals rather than pictures. As the class comes up with all the decompositions of 9 throughout the rest of the lesson, continue recording them on the chart using the number bonds and expressions.

T: Let's see if we can find the rest of the ways to make 9. When I show you a number, you make a stick of that number using the same color, and then place it on the number bond. Thumbs up if you know what to do.
S: (Show thumbs up.)
T: (Show the numeral 6 using the 5-group card.)
S: (Make sticks of 6 and place them into the part box.)
T: Let's find the other part that goes with 6 to make 9. Use another color to count on until you make 9.
S: Siiiiiiix, 7, 8, 9. (Place 3 individual cubes into the other part box.)
T: How many more does 6 need to get to 9?
S: 3.
T: Great! Fill in your expression boxes.

Repeat this process to make all other decompositions of 9. Continue to give students the first number each time. When appropriate, have students work independently or with a partner to count on and find the other part.

NOTES

Debrief Questions

- Let's compare the charts we made for 7, 8, and 9. (Point to the number bond for 5 and 2, 5 and 3, and 5 and 4.) How are these different? Explain why they are different.
- Look at the charts we made for 6, 7, 8, and 9. In what ways is the chart for 9 different? (This chart is not organized in any particular order.) Why might we want to rewrite this chart in an order, beginning with the biggest part first? (If students present compelling reasons and wish to have an organized chart, rewrite the chart to represent a predetermined order.)
- Turn to your partner and discuss what we did and what we learned during today's lesson. What did you get better at doing today?

Multiple Means of Engagement

Allow students to move forward in small steps and use the 5-group cards to show the partners of 9 if they need more support to transfer the decompositions from above into the number bonds. For those students who are ready for a challenge, give them ways to expand today's lesson to other decompositions they have practiced.

YOUR NOTES

Lesson 8

Represent all the number pairs of 10 as number bond diagrams from a given scenario and generate all expressions equal to 10.

Materials: (T) Chart to record decompositions of 10, 10 children on the playground picture card (Template), linking cubes in two colors (for Debrief) (S) Pipe cleaners, 10 beads (5 of one color, 5 of another color)

T: Talk with your partner. What comes in groups of 10?
S: (Discuss. Possible responses include 10 fingers, 10 toes, 10 dimes in a dollar, 10 digits in a phone number, and 10 hot dogs.)
T: We remember from Kindergarten that 10 is an important number. We're going to start by making bracelets with 10 beads to help us show all of the different ways to make 10. We will call these Rekenrek bracelets because they have beads organized in rows of 5 and 5, just like a Rekenrek.

Rekenrek bracelet with 5 white beads and 5 red beads

Walk students through the process of making a bracelet with 10 beads (5 of 1 color, 5 of another).

T: Let's use our Rekenrek bracelets to find out all of the different ways to make 10.
T: (Display template showing children on a playground.) Look at the picture. Talk with your partner about the different parts you see. (Circulate.)
S: (Discuss.)
T: I heard someone say they saw 4 kids on the swing set. Show that on your bracelet.
S: (Show 4 beads to the side.)
T: If 4 kids are on the swings, how many kids are not?
S: 6.
T: What are the parts?
S: 6 and 4.
T: What strategy should we use to find the total?
S: Count on!
T: Touch and count, starting from 4.
S: Fouuuur, 5, 6, 7, 8, 9, 10.
T: What's our total?
S: 10.

YOUR NOTES

Write the expressions 4 + 6 and 6 + 4 on chart paper. Repeat the above process several times, to familiarize students with showing the decompositions on their Rekenrek bracelets. Record each set of expressions on the chart paper. Have students keep these for use in Topic I.

NOTES

Debrief Questions

Have students come to the meeting area and look at the 10 linking cubes showing the decompositions of 10.

- Talk with your partner. What patterns do you see?
- Look from left to right. What is happening each time?
- Are there any sticks that have the same parts?
- How are these sticks different?

YOUR NOTES

Topic C: Addition Word Problems

In Topic C, students develop a more robust understanding of addition word problems, moving beyond the Kindergarten problem types by reviewing put together with result unknown and add to with result unknown problems, and then moving to the more complex change unknown version of the earlier problem types.

Lesson 9

Solve add to with result unknown and put together with result unknown math stories by drawing, writing equations, and making statements of the solution.

Materials: (S) Personal white board, number bond and two blank equations (Template)

Have students sit in a large semicircle facing the front. Use students to act out the math stories. Draw a number bond on the board. Begin the lesson with *add to* story problems.

T: Good morning, boys and girls. Welcome to Math Stories Theater! You will be watching some math stories and have a hand at solving them. First, close your eyes. When I tap you on the shoulder, quietly come up to the front.
S: (Close eyes.)
T: (Tap 5 students to come up. Have 1 of the students hide behind the bookcase.)
T: Open your eyes. How many students do you see?
S: 4 students.
T: There are 4 students dancing at a party. After a little while, along came their dancing friend, [name of the hiding student]. How many students are dancing at the dance party now?
S: 5 students.
T: This is the total number of students at the party. Let's show the total in the number bond. (Write 5 in the total portion of the number bond.)
T: How many students were dancing at first?
S: 4 students.
T: (Record on the number bond.) How many more students came over to dance?
S: 1 more student.
T: (Record on the number bond.) Think about the math story you just watched. Turn and tell your partner the number sentence that tells how many students were dancing in all.
S: (Turn and talk.)

YOUR NOTES

T: Say the number sentence.
S: 4 + 1 = 5.
T: (Write on the board below the completed number bond.) What is the total?
S: 5.
T: What does 5 equal? What are the two parts that make 5?
S: 4 and 1.
T: Say the number sentence starting with 5 equals. (Write number sentence on the board.)
S: 5 = 4 + 1.

Analyze the referents for each number, ensuring that students understand what each number represents in the story. Possibly continue with 8 + 1 = 9 but without writing in the number bond on the board.

Choose a group of new actors to act out put together math stories (e.g., 5 students sitting, 2 students standing: 5 + 2 = 7; 3 students facing sideways, 5 students facing forward: 3 + 5 = 8).

T: We will now make math drawings. (Distribute personal white boards.)
T: I will tell you a story and you draw. There are 4 inchworms on a giant leaf.
S: (Draw 4 worms on a leaf.)
T: Three more inchworms crawled onto the leaf.
S: (Draw 3 more worms.)
T: Does your drawing show the two parts of our story clearly? (Have students share how to make their drawings match the story by drawing two distinct groups.)
T: Write a number sentence to show what happened in your picture and find the total.
S: (Write 4 + 3 = 7.)
T: Turn and talk to your partner about what each number tells about the story.
S: (Share with their partners.)
T: Write the rest of the number sentences that go with your story.

Possibly continue with the following suggested sequence: 7 + 3 = 10, 3 + 6 = 9, and 0 + 2 = 2.

T: This time, I will only write the number sentence on the board. Your job is to draw a picture with math drawings to match the number sentence. (Write 5 + 2 = 7.)
S: (Draw 5 circles with one color and 2 circles with another color and write 5 + 2 = 7.)

Repeat the process for 6 + 4 = 10, 2 + 7 = 9, and 4 + 0 = 4.

NOTES

Debrief Questions

- Use your picture from your personal white board or think of your own story for us to act out for Math Stories Theater!
- How was today's lesson related to our lesson on ways to make 9? (You may also cite the lessons on ways to make 6, 7, 8, or 10.)

Multiple Means for Action and Expression

When choosing numbers to use in a story, start at a simple level, and after students have solved it with easy numbers, change to harder numbers. Here is a suggested sequence starting from simple to more complex:

- Add within 5 (e.g., 4 + 1 = 5).
- Add adding 1 (e.g., 8 + 1 = 9).
- Add using 5 (e.g., 5 + 2 = 7).
- Add with the smaller addend first (e.g., 3 + 5 = 8).
- Add to 9 and 10 (e.g., 7 + 3 = 10).
- Add to 9 and 10 with smaller addend first (e.g., 3 + 7 = 10).
- Add including 0 (e.g., 0 + 8 = 8 or 8 + 0 = 8).

Multiple Means for Action and Expression

Ask those students who have moved into abstract thinking to solve the subsequent problems without drawing. Ensure that they are still making sense of the problems by having them write or talk about how they solved each one.

YOUR NOTES

Lesson 10

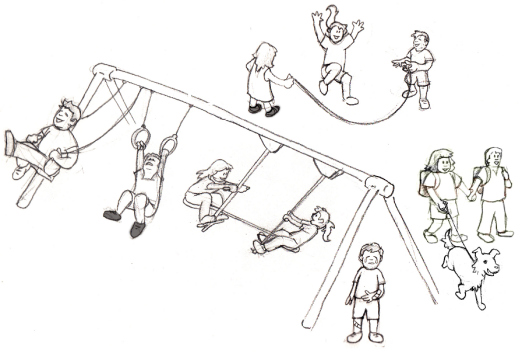
Solve put together with result unknown math stories by drawing and using 5-group cards.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 10

Materials: (T) 7 children picture card (Lesson 5 Template 2), 10 children on playground picture card (Lesson 8 Template) (S): 5-group cards (Lesson 5 Template 1), personal white boards, number bond and two blank equations (Lesson 9 Template), 10 children on playground picture card (Lesson 8 Template) per pair

T: When I tell the math story from the picture, you draw a picture to match it. In a first-grade classroom, some students are sitting down and learning. Use simple math drawings like circles to draw how many students are sitting down.
S: (Draw 5 circles.)
T: Some students are standing up and learning. Draw this part of the story.
S: (Draw 2 circles.)
T: How many students are there in all? (Give time for students to count on.)
S: 7 students!
T: Write the number sentence to match your drawing.
T: (Have students identify what each number represents.)

Using the same picture, generate one or two story problems for students to draw and solve (e.g., 3 + 4 = 7, 1 + 6 = 7).



T: (Distribute 5-group cards to each student.) Let's look at the picture of children playing on the playground. I'll make up a math story, and you use your 5-group cards to match the story. At recess, 3 students are having fun on the swings. Show me with your 5-group card, using the numeral side.
S: (Show the number 3.)
T: Three students are having fun playing with the jump rope. Show me with your 5-group card, using the dot side.
S: (Show 3 dots.)

YOUR NOTES

T: Count on to find out how many students are playing on the swings and how many students are playing with the jump rope. (Give time for students to solve.)
T: Write the number sentence using numbers to match your drawing.
S: (Write 3 + 3 = 6.)
T: (Have students identify what each number represents.)

Using the same picture, generate one or two story problems for students to solve using their 5-group cards. You might continue with the following suggested examples: 5 + 5 = 10 (children in the air, children on the ground), 3 + 7 = 10 (sitting kids, standing kids).

T: (Write 8 + 2 on the board.) Now, it's your turn to be the storyteller. Study the picture card carefully! Work with your partner to come up with a story that matches my expression.

Circulate and choose pairs to share their stories. There are multiple ways to represent 8 + 2 in the picture. Distribute a picture of the playground to each pair of students. Have them work together to make up story problems and solve them by using 5-group cards. Circulate and then choose a pair of students to share their story for the class to solve at the end of this lesson.

NOTES

Debrief Questions

- In our lesson, we used simple math drawings like circles to draw the students in our problem. Why would we use circles instead of drawing the students?
- Was counting on the same as adding today? How do you know? (The numbers were increasing; we were counting up, etc.)

Multiple Means of Representation

As the math story is told, make sure to have it written on the board or on a handout for students who need information presented visually. Presenting material in more than one way helps different styles of learners. In this part of the lesson, auditory and visual learners will benefit.

Multiple Means of Representation

Circulate as students are telling their story problems and solving using 5-group cards. Guide and encourage students to use math vocabulary in discussion. When students use these words, it is apparent that they are applying what they are learning.

YOUR NOTES

Lesson 11

Solve add to with change unknown math stories as a context for counting on by drawing, writing equations, and making statements of the solution.

Materials: (T) Mystery box (shoe box or other box with a question mark on it), counting bears (or another engaging classroom material that lends itself to storytelling), enlarged blank number sentence and number bond (Lesson 6 Template 2), number sentence cards (Template) and 2" × 2" sticky notes labeled with question mark (S) Personal white board; blank number sentence and number bond (Lesson 6 Template 2); yellow colored pencil or a crayon; set of bear counters, paper bag labeled with question marks on the front per pair

Before the lesson, privately place 2 counting bears in a mystery box. Set the box out of sight. Have students bring their personal white boards and sit in a semi-circle. Display 3 counting bears in front of the enlarged number sentence template.

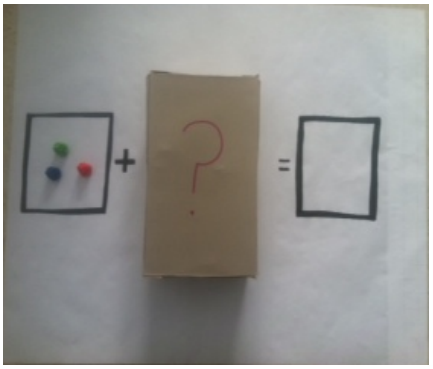
T: Once upon a time, 3 little bears went to play tag in the forest. (Place 3 bear counters on the template on the floor.) Then, some more bears came over. (Place the box with the question mark next to the bears.) In the end, there were 5 little bears playing tag in the woods altogether.

T: How many bears do you think came to play (point to the box)? Turn and talk to a partner. (Circulate and listen to student discussions.)

S: (Discuss.)

T: How many bears joined the group to play tag? (Have students share ideas.) What strategy did you use to decide? (Ask a few students to share varying ideas.) Let's use counting on to test our ideas.

S/T: (Gesture over the 3.) Threeeee, (tap the box while drawing dots below the box for each count) 4, 5.



T: How many more bears came to play?

S: 2 bears!

T: Let's find out if we were right. (Open up the box and reveal 2 bears.) You were right! There were 2 more bears that came to play tag. (Close the box and place the 2 bears on top of the box.)

T: Write the number sentence and number bond for the story. (Circulate.)

S: (Write the number sentence and number bond.)

T: Let's replace our bears with numbers to see our number sentence. (Replace the 3 bears with the number 3 and the 2 bears with the number 2. Add the number 5 after the equal sign as the total.)

YOUR NOTES

Analyze the referents for each number, ensuring that students understand what each number represents in the story. Possibly continue with 8 + 1 = 9 but without writing in the number bond on the board.

Repeat this process with a decomposition number sentence such as 9 = 6 + ?. Nine bears were playing tag. At first, there were 6 bears playing. How many more bears joined in?

OPTIONAL FOR FLEX DAY: STORY GAME

Provide sets of bears and a paper bag to each pair. Then, distribute one to two number sentence cards with a question mark sticky note covering the second addend. Have students use the bears and the paper bag to tell a story that matches their number sentence card and figure out the mystery number. Circulate and listen to students sharing strategies, solutions, and writing the corresponding number sentence on their templates. Encourage students to talk about what's happening in each story so that they can contextualize the numbers in the action of the story.

NOTES

Debrief Questions

- How are these number stories different from other number stories we've solved?

Multiple Means of Engagement

The mystery number game that was played in class today would be a good game to send to parents to play at home. This game provides a challenging extension for students to practice counting on to find the missing addend. Let those students who are able to work with larger numbers count on from a two-digit number.

Lesson 12

Solve add to with change unknown math stories using 5-group cards.

Materials: (T) Mystery box (Lesson 11), counting bears (or another engaging classroom material that allows for story telling), enlarged blank number sentence and number bond (Lesson 6 Template 2) (S) Personal white board, blank number sentence and number bond (Lesson 6 Template 2), 5-group cards including blank (Lesson 5 Template 1), number sentence cards (Lesson 11 Template) with sticky notes labeled with question marks per pair

YOUR NOTES

Before the lesson, privately place 3 counting bears in the mystery box. Have students sit in a semi-circle with their 5-group cards and number sentence template.

T: Use the number side of your 5-group cards to help me solve a story. Once upon a time, 5 little bears came out of hibernation. (Place 5 bear counters above the first addend space on the teacher number sentence template.)

S: (Place the numeral 5 card on number sentence.)

T: Then, some more bears came out of hibernation. (Bring out mystery box.)

T: What should we do in our number sentence here? Turn and talk to your partner and show it on your number sentence.

S: (Discuss. Acceptable responses are leaving the second square blank or inserting a question mark.)

T: Here's a blank card for everyone. (Distribute a blank card.) Place it in your number sentence to show that this part is a mystery.

T: At the end, there were 8 little bears out of hibernation. Where should we show that number of bears in our number sentence? (Give students time to discuss and place the 8 card in the final box. Then, place the numeral 8 in the teacher equation template.)

T: How can we use the 5-group cards to figure out how many more bears came out of hibernation? With your partner, use your cards to show how many bears are in the box. (Circulate.)

S: (Discuss and solve. For example, students may turn the 8 over to the dot side, gesture to the five and count on, "Fiiiive, 6, 7, 8.")

T: How many bears joined the group?

S: (Share ideas.)

T: How did you use your 5-group cards to figure this out? (Ask students with cards dot side up to demonstrate. Some students may use the cards to check their solution by creating the number sentence 5 + 3 = 8 with the numeral cards and then flipping the 3 to the dot side to count on.)

T: Let's count on as we point to each dot.

S/T: Fiiiiive, 6, 7, 8.

YOUR NOTES

T: How many more bears came out of hibernation?
S: 3 bears!
T: Let's open the box and see how many more bears came out of hibernation! Write the number sentence using the 5-group cards in front of you to help.

Explain to the students that this type of a story problem is a *mystery change* problem since the change that results in the total is a mystery (the unknown).

T: (Show 4 + ? = 7.) This time, I want you to think of a mystery change story with your partner. Try to solve the mystery using your 5-group cards.

Choose a number sentence card with a sticky note covering the second addend, such as 9 = 5 + ?. Have the students create a mystery change story to go with the number sentence. When the students are ready to work more independently, give partners two or three number sentence cards with sticky notes already covering the second addend to continue telling stories and solving.

Debrief Questions

- How did the 5-group cards help you with today's work?
- Compare the different strategies we used in Small Group Lesson 11 and Small Group Lesson 12. Which strategy was easier for you, and why?
- Share with your partner an "I can..." statement, based on something you can now do on your own. For example, "I can make up mystery change problems and write number sentences with sticky notes," or "I can use 5-group cards to help me solve mystery change problems."

YOUR NOTES

Topic D: Strategies for Counting On

Topic D affords students the opportunity to solve problems within the simplicity of equations, moving on from the context of story problems.

Lesson 13

Tell put together with result unknown, add to with result unknown, and add to with change unknown stories from equations.

Materials: (S) Number sentence cards (Lesson 11 Template) with sticky notes labeled with a question mark per pair, personal white board, blank number sentence and number bond (Lesson 6 Template 2)

T: (Project 5 + 1 = 6 number sentence card with the 6 covered with a sticky note.) What do we need to find in this number sentence?

S: The total!

T: With your partner, make up a math story using this number sentence. As you make up the story, draw a picture to help you solve for the number that hides under the question mark.

S: (Make up math stories and illustrate.)

T: (Choose two or three pairs to share their stories. After each pair tells the story, invite the class to say the answer and the number sentence. Emphasize the importance of naming the unit: 5 lions + 1 lion = 6 lions.)

T: (Project 6 + 2 = 8 number sentence card with the 2 covered with a sticky note.) What do we need to find in this number sentence?

S: The missing part! It's like finding what's in the mystery box.

Repeat the earlier sequence to allow students to share and solve their change unknown story problems.

Distribute a set of number sentence cards to each pair of students and assign each student to be A or B.

T: You and your partner will take turns being math storytellers. Partners will each pick their own number sentence card and make it special by placing a sticky note either on the total or on the second part of the number sentence. (Model the two different types as they are being presented.) Then, come up with a story that matches your number sentence creation. Tell your partner your story as you show your number sentence. The partner will have to draw a math picture to show what is happening in the story and to solve the problem.

S: (Participate in creating their own math story problems and take turns solving the

partner's problem by drawing a picture.)

YOUR NOTES

NOTES

Debrief Questions

- Which of your stories was the most difficult for you to make? Which story was the easiest for you? Why?

Multiple Means of Representation

When asking students to draw an object, check for understanding that they know what it is. If needed, provide a picture of the object for English language learners. At the same time, remind your students they are always to do math drawings and not spend time on their illustrations.

Multiple Means of Representation

Never underestimate the use of manipulatives when students are learning a new skill. Students should use their 5-group cards or other manipulatives, such as counting bears, when they need extra support. Allow students to use the extra support as long as they need it.

Lesson 14

Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Materials: (T) Pictures of crayons and hot dogs (Template) (S) 5-group cards (Lesson 5 Template 1), personal white board

YOUR NOTES

T: Today, let's try some of those same great strategies to help us solve missing numbers in math sentences. What are some of the ways we figured out the mystery number in our bear stories? Turn and talk with a partner.

T: (Give time for partner sharing. Then, call on students to share strategies such as counting on, using 5-group cards, and drawing.)

T: Let's use those strategies with this situation. (Project a picture of a box of crayons labeled 4 on the outside and 2 more crayons.) Look at this picture. How many crayons are outside of the box?

S: 2.

T: Let's use our fingers to keep track of these. As I point, put out your fingers to follow along.

S/T: (Touch crayons on the projection.) Oooneeee (put out one finger), 2 (put out another finger).

T: How many fingers do you have out?

S: 2.

T: Those 2 fingers match these 2 crayons.

T: Let's count on to find out how many crayons are in the picture. We'll start with the box first. Use your fingers and count with me.

S/T: Fourrrrr (gesture to box), 5, 6. (Put out fingers while counting.)

T: How many crayons are there altogether?

S: 6 crayons!

T: Take out your 5-group cards and build the number sentence using the numeral side.

S: (Share number sentences such as, 4 + 2 = 6, 2 + 4 = 6, 6 = 4 + 2, or 6 = 2 + 4.)

T: Turn over your 2 to show the dot side. We will use the 5-group cards to check our solution.

S/T: Fourrrr (touch 4), 5, 6. (Touch dots while counting.)

T: What is the total when we use the cards?

S: 6.

T: What is the total when we counted the crayons with our fingers?

S: 6 crayons!

T: Great job! Let's try another. (Repeat the process with a picture of a package of 6 hot T: Turn and talk with your partner about the two strategies we just used. How are they

similar?

S: When we count on using our fingers, it's just like when we touch the dots. Each finger is like a dot.

T: (Project the following number sentence on the board: 4 + 3 = ☐.) Let's try to solve one more with a partner. Talk quietly with your partner to decide what number belongs in the box. Remember that you can count on using your fingers or your 5-group cards to help you.

YOUR NOTES

NOTES

Debrief Questions

- Are there any problems that have the same total? Let's list those number sentences.
- How can the totals be the same if we counted on different amounts?

Multiple Means of Representation

As the class is counting, support those students who may need visual or auditory help. Using physical cues such as body movements (pointing, nodding the head, eye blinking, or foot tapping helps students who need visual help). Using auditory cues such as a snap, clap, or stomp helps those students who need auditory support.

Multiple Means of Action and Expression

When students are having difficulty counting on with fingers or 5-group cards, continue with more examples together. Some students need to move forward in small steps. Regular opportunities to practice what they are learning will eventually get them to abstract-level thinking.

Lesson 15

Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Materials: (S) 5-group cards (Lesson 5 Template 1), number sentence cards (Lesson 11 Template) per pair with sticky note covering the total, personal white board

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Before the lesson, privately place 3 counting bears in the mystery box. Have students sit in a semi-circle with their 5-group cards and number sentence template.

T: Today, let's use our strategies for counting on to play the partner game Count On! We will need to use counting on with our fingers and counting with 5-group cards to play.

T: (Write 6 + 3 = □ on the board.) Show how we use counting on with our fingers to solve this.

S: Siiiix, 7, 8, 9. (Extend fingers as they count on.)

T: Show how to use our 5-group cards to solve this.

S: Siiiix, 7, 8, 9. (Put out 5-group cards with 6 on numeral side and 3 on dot side. Touch as they count.)

T: Why did each strategy get to the same answer?

S: Both are ways to keep track of the part we are counting on.

T: This is a type of a shortcut. It is a fast or efficient strategy. Today, you will work with a partner to practice using these shortcuts, or strategies, to play Count On!

T: Here are the directions:

1. Put all of your cards face down, with dot cards on one side and sentence cards on the other. Partners A and B, lay all of the number sentence cards in front of you.
2. Partner A, you touch the card you want to take.
3. Count on or use the 5-group cards to solve for the total under the sticky note.
4. When you do, your partner lifts the sticky. If you are right, your partner says, "Go ahead and take it!"
5. Partner B takes a turn. Continue until all the cards are taken.

S: (Play Count On!)

T: (Circulate, listen, and observe, providing support as necessary.)

YOUR NOTES

NOTES

Debrief Questions

- How do shortcuts or strategies help us?
- Look at 7 + 1 and 6 + 2. Why is the total the same? How does counting on 1 relate to counting on 2?
- Which method do you prefer to use to keep track when you are counting on? Demonstrate what you do, using a number sentence.
- Is there another way to solve these problems besides counting on? (Visualizing, knowing related facts, just knowing the fact, etc.)

Multiple Means of Representation

Reading aloud word problems facilitates problem solving for those students who have difficulty reading the text. Hearing the word problem also helps students who are auditory learners.

Multiple Means of Action and Expression

When a skill is not automatic, provide support so students can practice and refine their skill. Repeated practice with 5-group cards and fingers helps students develop automaticity of their addition facts.

Multiple Means of Engagement

For students who are ready, alter the number sentence cards to include more challenging numbers. For example, 23 + 2 = ? may be more appropriate for some students, as they track the change.

YOUR NOTES

Lesson 16

Count on to find the unknown part in missing addend equations such as 6 + __ = 9. Answer, "How many more to make 6, 7, 8, 9, and 10?"

Materials: (T) 5-group cards (Lesson 5 Template 1), mystery box, enlarged blank number sentence and number bond (Lesson 6 Template 2), 1 set of 7 disks (e.g., counters, two-color beans or pennies) (S) 7 disks per set of partners, personal white board, shake those disks 7 board (Fluency Template), blank number sentence and number bond (Lesson 6 Template 2), 5-group cards (Lesson 5 Template 1), number sentence cards (Lesson 11 Template), sticky notes with question marks

Opening Problem: Shake Those Disks

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Assign students partners.

Give each set of partners 7 two-color beans. Instruct them to take turns as the Shaker and the Recorder. The Shaker shakes the disks and tosses them on the table. The Recorder then records the roll on the Shake Those Disks graph. (For example, if the Shaker rolls 3 red and 4 white, the Recorder puts an X on the graph above the 3 and 4 number bond.)

Take one set of 7 beans from Shake Those Disks and bring it to the carpet. Hide 2 of the beans under the carpet without students noticing. Gather students on the carpet with their personal white boards.

T: While we were cleaning up, some of the beans fell on the carpet. I picked most of them up, but I think I am still missing some. We had 7 beans in total, right?
S: Right!
T: Now, I have 5 beans. (Show beans to the class.)
T: How many am I missing? Talk with your partner to solve this.
S: (Discuss.)
T: Let's try to count on to check how many I'm missing.
S/T: Fivvvve (gesture to beans in hand), 6, 7. (Track on fingers.)
T: How many did we count on to get up to 7? (Keep fingers out to show the two that were

YOUR NOTES

used to track.)

S: Two!

T: So, how many beans am I missing?

S: Two beans!

T: (Lift edge of carpet to show the 2 beans.)

T: Use your 5-group cards to make the number sentence on your personal white board. Place the numeral side up. If you want to double-check your number sentence, turn the cards to the dot side. Remember, try to turn over the fewest cards you can and count on. (Circulate and check for accuracy.)

S: (Create 5 + 2 = 7 on white boards with 5-group cards. Some students flip to dot side to count on and check.)

Repeat the process using the mystery box, concealing 3 of the 7 beans in the box so that students only see 4 beans. Encourage them to use their 5-group cards or track on their fingers to decide how many beans are in the mystery box. Students use the cards to make a corresponding number sentence.

T: How many beans did I place in the box?

S: 3 beans!

T: What is the number sentence you recorded?

S: 4 + 3 = 7.

T: Circle the part that was the mystery, or unknown part.

T: (Write 5 + □ = 8.) Use your cards to make and solve this number sentence.

S: (Discuss and solve using cards or finger tracking to confirm.)

T: What is the mystery, or unknown part, of this number sentence?

S: 3.

Repeat the process with the following sequence:

a) 5 + __ = 6 4 + __ = 6 3 + __ = 6

b) 6 + __ = 7 5 + __ = 7 4 + __ = 7

c) 7 + __ = 8 6 + __ = 8 5 + __ = 8

d) 8 + __ = 9 7 + __ = 9 6 + __ = 9

e) 9 + __ = 10 8 + __ = 10 7 + __ = 10

Leave the sets of number sentences on the board so that students can notice the patterns within the sequence. Explore the resulting patterns.

- What do you notice is happening?
- Imagine there is a fourth column (point to where it would be). What number sentence do you think I will add next in each row?

- How do the parts change from one number sentence to the next?
- What strategies did you use?

YOUR NOTES

NOTES

Debrief Questions

- What strategies did you use to solve these problems? How are these problems the same? How are they different?

Multiple Means of Engagement

Encourage students who are ready to explore place value to imagine each disk has a value of 10. Adjust the recording sheet so that students can complete the number bonds as they initially identify the combinations of 70 created as they play.

Multiple Means of Engagement

When using words that may complicate language acquisition in English language learners, be sure to model as much as possible. Hearing teacher-talk along with math-they-can-see helps these students comprehend the skills they are learning. Teaching in multiple modalities also helps other learners in the class.

YOUR NOTES

Topic E: The Commutative Property of Addition and the Equal Sign

Topic E leads students to a very intentional understanding and application of the equal sign and the commutative property of addition.

Lesson 17

Understand the meaning of the equal sign by pairing equivalent expressions and constructing true number sentences.

Materials: (S) Bag of 20 linking cubes (10 red and 10 yellow), personal white board

Have students sit next to their math partners at their tables.

T: Let's play a game called Make it Equal. Partner B, close your eyes. Partner A, make your linking cubes look exactly like mine. (Show 4 red cubes and 1 yellow cube as a stick.) Hide your stick behind you and close your eyes.
T: Partner B, open your eyes. Make your linking cubes look exactly like mine. (Show 3 red and 2 yellow cubes as a stick.)
T: Partner A, open your eyes. Everyone, write the expression that shows how many cubes you have.
S: (Partner A writes 4 + 1; Partner B writes 3 + 2.)
T: Show each other your linking cube stick. How are they the same? How are they different? (Circulate.)
S: (Discuss.)
T: How are they different?
S: I had 4 red and 1 yellow cube, but my partner had 3 red and 2 yellow cubes.
T: How are they the same?
S: We both have 5 cubes.
T: Even though you have different parts, do you have the same total?
S: Yes.
T: Put your expressions next to each other. Now, put your sticks in between the expressions by putting them one above the other. What do the two sticks look like now?
S: An equal sign!
T: Hmmm... does this make sense? How many cubes do you have on the left side of the equal sign?
S: 5.
T: How many cubes do you have on the right side of the equal sign?
S: 5.

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T: Does 5 equal 5?
S: Yes!
T: Does 4 + 1 equal 3 + 2?
S: Yes!
T: Let's say the number sentence.
T/S: 4 + 1 = 3 + 2.
T: This is called a true number sentence.

Repeat this process. Possibly use the following suggested sequence: 5 + 2 and 6 + 1; 7 + 2 and 6 + 3.

Next, project 3 red and 3 yellow linking cubes and have partners use one board to write the expression. Then, project 1 red and 5 yellow linking cubes. Partners write the expression on the second board. Ask students to give thumbs up if these expressions are equal. If yes, have them draw an imaginary equal sign between the two boards and say the true number sentence. Repeat this process, but be sure to include some expressions that are not equivalent (such as 3 + 5 and 4 + 2).

T: (Project a stick of 6 red and 2 yellow cubes.) Write an expression to match these cubes on one of your white boards.
S: (Write 6 + 2.)
T: With your partner, use your linking cubes to make another stick to show the same total in a different way. Write the expression to match your stick. Then, use your sticks to make the equal sign to help you say the true number sentence.

For enrichment, encourage students to make up as many equivalent expressions as they can. Repeat this process. Possibly use the following suggested sequence: 3 + 4, 4 + 5, and 3 + 7.

NOTES

Debrief Questions

- Think about the goal of today's lesson. What does the equal sign tell us?

Multiple Means of Engagement

When asking English language learners to answer a question, support their response with a sentence frame. Write the statement on the board:

_____ swings are empty.

This also helps other students organize their thoughts.

YOUR NOTES

Lesson 18

Understand the meaning of the equal sign by pairing equivalent expressions and constructing true number sentences.

Materials: (S) 5-group cards (Lesson 5 Template 1), personal white board, true and false number sentence cards (Template), red and green markers per pair

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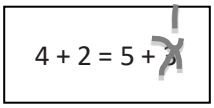
Have students sit next to their math partners in the meeting area or at their tables.

T: (Write 7 + 1 = ___ + ___. Read the number sentence aloud with students.) Talk with your partner, and use this incomplete number sentence to finish writing a true number sentence.
S: (Write any combination that makes 8, for example, 6 + 2, 5 + 3, etc.)
T: Hold up your true number sentences. Look around the class. Did everyone use the same numbers to make 8 on both sides?
S: No!
T: They don't all use the same numbers, but are all of them equal to 8?
S: Yes!
T: Yesterday, you made a lot of true number sentences. Use your 5-group cards to tell me why this number sentence is NOT true. (Project 4 + 2 = 5 + 3.)
S: (Build 4 + 2 = 5 + 3 with 5-group cards, and solve for each side.)
T: Is 4 + 2 = 5 + 3 true or false?
S: False!
T: Talk with your partner. How do you know that 4 + 2 = 5 + 3 is not equal, or false? (As students share, circulate and listen. Then, call on one student.)
S: 4 + 2 is 6, and 5 + 3 is 8, so they are not equal because 6 is not the same as 8.
T: Talk with your partner. How can you fix this number sentence to make it equal, or true? (As students share, circulate and listen. Then, call on a couple of students.)
S: Change 4 + 2 to 4 + 4 to make it equal 8. → Change 5 + 3 to 5 + 1 to make it equal 6.



T: Is there more than one way to fix this number sentence to make it true?
S: Yes!
T: Today, you will be playing True or False Number Sentences, like we just did, with a partner. Here are the directions:
1. Read the number sentence together.
2. Use your 5-group cards to solve each side of the number sentence together.

3. If the sentence is true, Partner A uses your green marker to put a check on it.
4. If the sentence is false, work together to use your 5-group cards to change one number to fix the number sentence to make it equal, using your red marker.
5. Then, Partner B checks it, and it becomes her turn to pick a card.

Circulate and support students as they play.

YOUR NOTES

NOTES

Debrief Questions

- Think about the goal of today's lesson and the work we have been doing with the equal sign. Imagine an alien came down from outer space and asked you what the equal sign means. Tell your partner what you would say to that alien to describe it! Be sure to use examples.

Multiple Means of Representation

Connect calculations to 5-group cards to encourage counting on. Students use one numeral side and one dot side and touch the dots with their fingers as they count on. Some students will be able to do the calculations in their head while others will use the 5-group cards for as long as needed.

Multiple Means for Engagement

Some students will really enjoy playing True or False Number Sentences. Provide challenging extensions (e.g., 14 + 2 = 15 + 1) and give these students more problems to figure out and solve.

Lesson 19

Represent the same story scenario with addends repositioned (the commutative property).

Materials: (S) Personal white board, bag of 7 counters (4 red, 3 white)

YOUR NOTES

Invite students to sit on the carpet with their personal white boards, facing the front of the room. Choose 5 girls and 3 boys (or 3 girls and 5 boys) to stand in a row in front of the class.

T: How many girls are standing here?
S: 5 girls!
T: How many boys are standing here?
S: 3 boys!
T: Write a number sentence on your board to show 5 girls plus 3 boys.
S: (Write 5 + 3 = 8 on their boards.)
T: Starting with the boys, write the number sentence on your boards.
S: (Write 3 + 5 = 8.)
T: How many children do we have when we add 3 boys and 5 girls?
S: 8 children!
T: Is that the same total or a different total of children as we had the last time we added the boys and girls?
S: The same!
T: Take 4 red and 3 white counters out of your bag. Put them in a line starting with the red counters.
T: Tell your friend two number sentences that match your materials.
S: 4 + 3 = 7 and 3 + 4 = 7.
T: Can you start with the whole amount?
S: Yes! 7 = 4 + 3 and 7 = 3 + 4.
T: Now, switch the red and white counters, putting the white first in your line. Tell your partner four number sentences that match your new arrangement.
S: (Do so.)
T: Is this the same set of number sentences?
S: Yes!
T: Why? Turn and talk with your partner. (Circulate and listen.)
S: (Talk with partner.) The number of reds and whites did not change. We can add them in any order, as long as we include them all.
T: On your board, write a number sentence showing that 4 plus 3 is the same as 3 plus 4.

S: (Write 3 + 4 = 4 + 3.)

T: On your board, draw 6 circles and 3 hearts in a line. Write four number sentences to match your picture. Share your work with a partner. What are you noticing?

YOUR NOTES

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Debrief Questions

- Why does the total stay the same, even though you are adding in a different order?
- Try adding two amounts in different orders. See if you get the same total each time. You can draw and use number sentences as you try it.
- How will this strategy help you add more quickly next time, especially during a Number Bond Dash or a Sprint?

Multiple Means of Action and Expression

Though some think of the commutative property as "switch arounds," it is the addends that switch not the referents. When the placement of the materials changes when adding, the exact same four number sentences also describe the materials in different positions.

YOUR NOTES

Lesson 20

Apply the commutative property to count on from a larger addend.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 20

Materials: (S) Expression cards (Template 1), equal signs (Template 2) per pair

Note: There are enough expression cards for 34 students. Multiple copies of the equal signs sheet will be needed to accommodate the number of students in the class.

While students are still at their seats, give them expression cards, and ask each student to hold his card so the class cannot see it.

T: Find someone who has an expression card with a total equal to yours. When you find your partner, take an equal sign from the pile in front of the room, sit with your partner, and write a number sentence with your expression cards.
S: (Look for a partner, take an equal sign, sit together, and make a number sentence such as 3 + 2 = 2 + 3.)
T: Great job finding your partner. Here is one of the number sentences a partnership made. (Write 1 + 7 = 7 + 1 on the board.)
T: Does everyone agree that 1 plus 7 is the same amount as 7 plus 1?
S: Yes!
T: (Write the two expressions underneath each other: 1 + 7 and 7 + 1)
T: If I wanted to count on to solve this, which would be faster, starting with 1 and counting on 7 or starting with 7 and counting on 1? Talk with a partner.
S: (Discuss.)
T: Let's try counting on with both to decide together.
S/T: Onnnnnne (gesture to first addend), 2, 3, 4, 5, 6, 7, 8. (Keep track on fingers.)
T: Now, let's try the second expression.
S/T: Seveeeennnnn (gesture to first addend), 8. (Keep track on fingers.)

Repeat the process with 3 + 5 and 5 + 3. Collect the expressions, redistribute them, and allow students to play again.

T: Which way was the faster way to count on?
S: 5 + 3.
T: Why?
S: When you start with the bigger number, you don't have to count on as much.
T: What about when we solved 7 + 1 and 1 + 7? Discuss which was faster and why with your

partner.

S: (Discuss with partner.)

YOUR NOTES

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Debrief Questions

- When does switching the order to count on from the larger number help you the most?
- If I gave you a really challenging expression like 1 + 51, how could you use what you learned today to make it an easier expression to solve?

Multiple Means of Action and Expression

Some students may still be developing their ability to decide which number is bigger within a number sentence. Offer students the choice to respond by first circling or coloring the bigger number. Then, have them write the number sentence using the circled or colored number first.

Multiple Means of Engagement

Adjust the lesson structure to suit specific learning needs, remembering that some students will need to keep counting all (by using objects or their 5-group cards to expose all of the dots).

YOUR NOTES

Topic F: Development of Addition Fluency within 10

Topic F continues with the theme of more efficient strategies coupled with deep understanding to solve addition problems within 10.

Lesson 21

Visualize and solve doubles and doubles plus 1 with 5-group cards.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 21

Materials: (T) 5-group cards (1–6) (Lesson 5 Template 1), addition chart (Template), colored pencils (yellow, orange) (S) Personal white board

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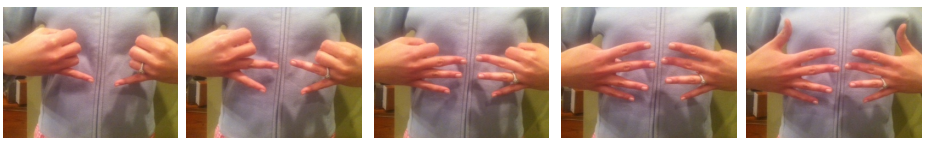
Have students sit next to their math partners in the meeting area or at their tables.

T: Let's count by twos using our fingers. Watch me first.
T/S: (Show fingers.) 2, 4, 6, 8, 10, 10, 8, 6, 4, 2.
T: Show me 1 and 1 with your pinkies like me. (See image below.) How many fingers are you holding up?
S: 2.
T: What is the number sentence?
S: 1 + 1 = 2.
T: Show me 2 and 2 fingers, your pinkies and ring fingers. Say the number sentence to tell how many fingers you're holding up.
S: 2 + 2 = 4.

Continue with 3 + 3, 4 + 4, 5 + 5, and back down to 1 + 1.

T: What did you notice about the numbers we added each time?
S: We added the same number two times.
T: We call those **doubles**.



Give 2 minutes for students to work with a partner and practice making doubles number sentences. Partner A flashes doubles fingers; Partner B says the number sentence. They switch roles after 1 minute.

T: (Show two 5-group cards showing 3 dots.) Without counting all, tell how many dots

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there are.

S: 6.

T: How did you know?

S: I saw doubles. Three and 3. That makes 6.

Continue with 2 + 2, 4 + 4, and 5 + 5, ensuring students use the term doubles to explain what they see and eventually naming it as a strategy. Congratulate them on getting better at mastering their doubles facts.

T: (Show 3 dots card and 4 dots card.) Without counting all, tell how many dots there are.

S: 7.

T: How did you know so quickly? Turn and talk to your partner. (Circulate and listen.)

T: Bobbie said she saw 3 and 3 plus another dot! Give thumbs up if you see 3 dots hiding inside these 4 dots.

S: (Show thumbs.)

T: She used her doubles fact to help. Three plus 3 (circle 3 dots and 3 dots), that's....

S: 6.

T: Plus another dot?

S: 7.

T: How is 3 + 4 related to 3 + 3?

S: It's making doubles and adding 1 more.

T: This is called **doubles plus 1.** Let's see if we can find more doubles facts hiding inside another expression.

Continue with 1 + 2, 3 + 2, and 4 + 5.

T: (Project the numerals 4 and 5.) How would you solve 4 + 5 using what you learned in today's lesson? Turn and talk to your partner, and solve on your board.

S: (Write 4 + 5 = 9.) Use our doubles facts. 4 + 4 = 8. Add 1 more, and you get 9.

T: (Project 3 + __ = 6.) What number is missing here? Talk with your partner to decide. Tell each other how you know.

S: (Discuss with partner.)

T: What is the missing number in 3 + __ = 6?

S: 3.

T: How do you know?

S: I know that 3 + 3 = 6. I thought of the doubles. If I have 3 (holds up 3 fingers on one hand), I need 3 more to make 6.

T: (Project 3 + __ = 7.) What number is missing here? Discuss with your partner. Remember to use words or your boards to explain your thinking.

S: (Discuss with partner.)

T: What is the missing number in 3 + __ = 7?

S: 4.

T: How could the last problem, 3 + 3 = 6, help you with this one?

S: If you know 3 + 3 is 6, and you need to have 7, you know you need 1 more than last time, so now it's 3 + 4.

Continue with 4 + 4 and 4 + 5.

YOUR NOTES

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Debrief Questions

- (Post the addition chart.) Can you find all the **doubles** facts? (Color them red.) What do you notice about these numbers?
- Can you find all the **doubles plus 1** facts? (Color them using blue.) What do you notice about the two parts in doubles plus 1 facts? (They are the numbers next to each other when we count.)
- Is 4 + 3 a doubles plus 1? Why? How is this related to another math lesson from before? Can you find any more doubles plus 1 facts like this one? (Color them blue if you find any more.)

Multiple Means of Engagement

To help students recognize the doubles they are creating, encourage them to wiggle their fingers as they hold up doubles. For instance, to solve 3 + 3, have students wiggle pinkies and say "two," wiggle pinkies and ring fingers and say "four," and finally wiggle pinky, ring, and middle fingers and say "six."

Multiple Means of Engagement

For students who have reached mastery with larger doubles, consider using other doubles facts within their repertoire. This helps motivate those students and keep them actively engaged in the objective.

YOUR NOTES

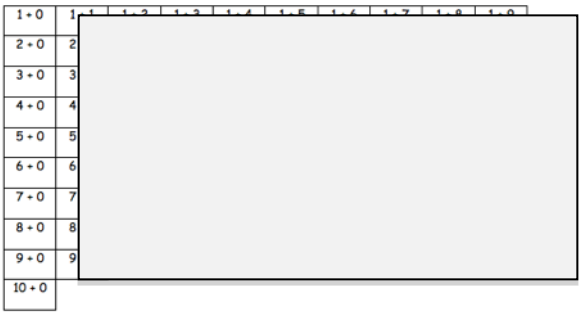
Lesson 22

Look for and make use of repeated reasoning on the addition chart by solving and analyzing problems with common addends.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 22

Materials: (T) Addition chart with sums to 10 (Lesson 21 Template), cover paper

Addition Chart with +0 Revealed



T: (Post or project addition chart, reveal only the +0 column.) Mathematicians, today you need to especially put on your noticing ears and eyes! Read the expressions aloud with me.

S/T: 1 + 0, 2 + 0, 3 + 0, 4 + 0, 5 + 0, 6 + 0, 7 + 0, 8 + 0, 9 + 0, 10 + 0.

T: What did you notice was the same as you read each of these expressions?

S: We said "plus zero" every time!

T: What did you notice was different as you read each of these expressions?

S: The first number went up by 1 each time!

T: Good. Now, let's solve each problem together.

As students solve the problems, transform the expressions into equations as the teacher or student volunteers write the solutions. Be sure to have students read the equations aloud. Next, reveal the +1 column, and go through the same process of having students read, notice the similarities and differences, and then solve.

T: (Point to 1 + 0 and 2 + 0.) You said that all of these problems add zero each time. How does adding zero change this first **addend**, or part? (Point.)

S: The first addend doesn't change, because we're just adding zero!

T: So, it's zero more than the first number? Is this true of all of the facts in this area? (Gesture to the + 0 column.)

S: Yes!

T: (Point to 8 + 1 and 9 + 1.) You said that all of these problems add 1 each time. How does adding 1 change this first addend?

S: The total goes up by 1, because we're adding on! → It's just the next counting number!

Continue this process with the +2 column, focusing on the common addends.

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Debrief Questions

- How are the second column (n + 1) and the first row (1 + n) related? Does this remind you of another math lesson?
- Which row is the third column related to? What **addend**, or part, do they have in common?
- Which colored boxes have the easiest facts for you to solve? Why?
- Which colored boxes have the facts you need the most practice with? Why?
- How can this chart help you learn your facts better?

Multiple Means of Representation

Some students will benefit from an addition chart colored based on the addend. For example, color all the +0 blue, +1 yellow, +3 green, etc. Using the addition chart in this way will especially help visually impaired students who may find the chart hard to read.

YOUR NOTES

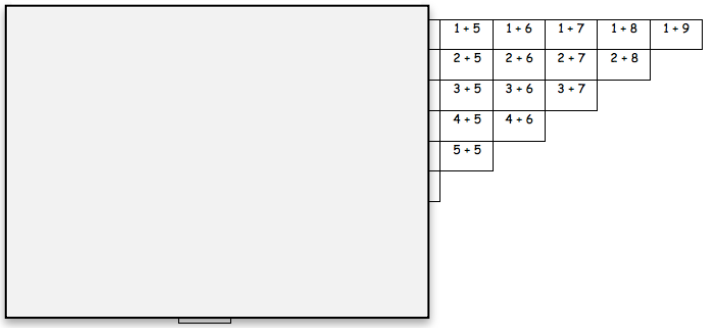
Lesson 23

Look for and make use of structure on the addition chart by looking for and coloring problems with the same total.

Materials: (T) Addition chart with sums to 10 to project or post (Lesson 21 Template), cover paper, markers (three different colors) (S) Addition chart with sums to 10 (Lesson 21 Template), pencils (three different colors)

Distribute an addition chart to each student. Have students fold their papers to match the chart below.

Addition Chart with 1 + 5 through 1 + 9 Revealed



T: (Point to 5 + 5.) What is 5 + 5?
S: 10.
T: (Point to 4 + 6.) What is 4 + 6?
S: 10.
T: (Repeat through 1 + 9.) Talk to your partner. What do you notice about the totals?
T: (Circulate and listen. Then, choose students to share with the class.)
S: They are all the same! → The totals are all 10. → They look like they're moving up like stairs!
T: You said all of the totals are 10. Help me color in the expressions that equal 10. (Prompt students to say which to color.)
S: (Lightly color in charts.)
T: What is 4 + 5?
S: 9.
T: Talk with your partner. Find the other expressions that equal 9.
S: (Share with partners to find totals of 9.)
T: Let's color them in. (Using a different color, prompt students to say which to color as they color in their own charts.)
T: Talk with your partner: What do you notice about these problems? (Circulate and listen, and then choose students to share with the class.)
S: They all equal 9. → The totals are all 1 less than the ones we colored in for 10. → They make another staircase!
T: With your partner, look for expressions that equal 8. When you both agree, color them in with your last colored pencil.
S: (Circulate and observe.)

T: Which expressions equal 8? (As students share, color them in on the class chart.)
T: What patterns are you noticing?
S: All the totals of 8 make a slanted line, like a staircase.

YOUR NOTES

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Debrief Questions

- What did you notice about the number of boxes of each color? How many boxes will be colored for the total of 4? 3?
- Why do you think we have more totals for 10 compared to totals for 5?
- Which totals are the easiest for you to solve? Why?
- Which totals do you think you need to practice the most? What can you do to get better at these expressions?

Multiple Means of Engagement

Offer opportunities for student leadership as "teacher." Have students demonstrate for the class how the staircase works for each total. Listen for the use of math vocabulary in their descriptions.

YOUR NOTES

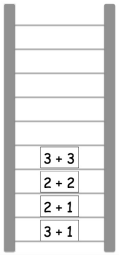
Lesson 24

Practice to build fluency with facts to 10.

Materials: (T) Friendly Fact Go Around (Fluency Template), Related Fact Ladder (Template 1), 10 expression cards (Template 2) (S) 5–12 expression cards per pair

Note: Friendly Fact Go Around and Related Fact Ladder are both to be posted or projected. The suggested set for the expression cards is 3 + 1, 2 + 1, 2 + 2, 3 + 3, 3 + 2, 2 + 3, 4 + 3, 4 + 4, 4 + 5, 5 + 5.

T: (Hold up the expression cards 3 + 1 and 2 + 1. Project ladder picture on the board.) We just found the total of each of the expressions when we played Friendly Fact Go Around. (Tape 3 + 1 on bottom center of board and 2 + 1 directly above it.) How are 3 + 1 and 2 + 1 alike? How are they related to each other?



S: They both are adding 1 to a number.

T: What happens when you add 1 to a number? Use 3 + 1 and 2 + 1 as your examples to explain.

S: You get the next counting number. When you add 1 to 3, you get 4, the next counting number. When you add 1 to 2, you get 3, which is the next counting number after 2. Twooo, 3.

T: We're going to make a Related Fact Ladder. Let's look for an expression that might be related to 2 + 1 in some way. How about 2 + 2? How is 2 + 2 related to 2 + 1?

S: 2 + 2 is one more than 2 + 1.

T: (Place 2 + 2 card on the next ladder rung, above 2 + 1.) Find a card that is related to 2 + 2. Explain how it is related.

S: 3 + 3. It's the next doubles fact.

T: (Add card on the next rung of the ladder.)

Repeat the process, having students explain how the expressions are related as cards are added to the ladder rungs in successive order.

Note: There will always be more than one expression that could be an appropriate choice. (For example, appropriate choices to follow 3 + 2 could be 2 + 2 or 3 + 3 as the double that helps solve the expression, or 4 + 1 as an expression with the same total, where 1 is added to the first addend, and 1 is taken away from the second addend.) As long as students are able to discuss the mathematical relationship between the two expressions (i.e., it is the next double, a double plus 1 fact is 1 more than the double fact, or the expression is 1 more than the previous expression), the expression can be used.

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Debrief Questions

- Share one of your Related Fact Ladders with a partner. Explain how each number sentence is related. What types of relationships did you both use? What was the easiest relationship for you to think of? Why?
- For which facts did you have the hardest time thinking of a related fact? Explain what made it difficult, and what you decided to do.
- Let's look at the addition chart together. How does the chart help us see how facts are related? Use examples to explain your thinking.

Multiple Means of Representation

The Related Fact Ladder provides students an opportunity to demonstrate their level of comprehension. This activity facilitates student discovery of patterns and structures in their math work. Encourage students to discover these connections whenever possible.

Multiple Means of Action and Expression

Allow students to use their 5-group cards if they need them. The focus should be on students articulating the relationship between one expression and another as they solve for the totals.

YOUR NOTES

Topic G: Subtraction as an Unknown Addend Problem

Following the Mid-Mission Assessment, Topic G focuses on students understanding the meaning of subtraction as it relates to addition.

Lesson 25

Solve add to with change unknown math stories with addition and relate to subtraction. Model with materials and write corresponding number sentences.

Materials: (T) 10 bear counters, number bond and number sentences (Template) (S) Personal white board, number bond and number sentences (Template), 10 bear counters

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Have students bring their personal white boards to the meeting area and sit in a semi-circle. Project the number bond and number sentences template on the board.

T: Once upon a time, 4 little bears went to play tag in the forest. Some more bears came over. In the end, there were 6 little bears playing tag in the woods. (Place 6 bear counters on the floor.)
T: How many more bears came to play? Turn and talk to a partner to share a strategy you used.

Review the strategy of counting on to solve. Ask students to write the number sentence (4 + 2 = 6) and the number bond. Circle the solution in both.

T: (Write the number sentence and the number bond on the board.)
T: What does 6 stand for?
S: The number of bears playing at the end.
T: (Gesture over the 6 bears on the floor.)
T: What does 4 stand for?
S: The number of bears playing in the beginning.
T: (Separate 4 bears slightly from the group.)
T: How many bears came over to play? Point to where you see them.
S: 2 bears. (Point to 2 bears.)
T: We can make an imaginary line with our finger to show the two parts. (Draw an imaginary line between the two groups.) Four bears were there first, and then 2 more bears came. (Point to each part accordingly.)
T: Many of you used addition to figure out how many bears came over to play. When we

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checked our work just now, we separated the 4 bears from the total group of 6 bears. (Write 4 + __ = 6 on the board.) Since we know the whole and one part, we can use subtraction to find the other part. Turn and talk to your partner about how we could write this as a subtraction sentence. (Circulate and listen.)

S: (Discuss.)

T: (Choose a student to demonstrate her subtraction sentence using the bears.)

T: We can write 6 – 4 = 2 to show that we had 6 bears and separated 4 of them from the group, leaving us with 2 bears for the unknown part. You write the subtraction sentence on your board as I write it.

S/T: (Write 6 – 4 = 2.)

T: Circle the answer to our question in the number sentence.

T: What number bond matches the parts and the total for this story? Add that to your board.

S/T: (Draw a number bond of 4 and 2 with the total of 6.)

Tell the following story: Once upon a time, 8 bears were fishing for dinner. Five bears had been fishing all day. The rest of the bears came after lunch. How many bears came after lunch?

Have students solve and write an addition and subtraction number sentence along with a matching number bond.

Place 8 bears on the floor. Invite students to share the number sentences and analyze the referents for each number. Emphasize that there are two parts within the total by drawing an imaginary line between them.

T: Do both of your number sentences match the number bond?

S: Yes!

T: How are these number sentences the same? How are they different? Turn and talk to your partner.

S: Both number sentences gave us the answer. Three more bears came to fish. The first time, we used counting on and an addition sentence to solve. The second time, we used subtraction.

Distribute bear counters to each student. Repeat the process by telling other change unknown stories for students to solve using their counters. Be sure to have students separate one addend from the other. Consider using the following sequence: 5 +___ = 7, 7 – 5 = ___; 2 + ___ = 8, 8 – 2 = ___; and 4 + ___ = 9, 9 – 4 = ___.

NOTES

Debrief Questions

- With your yellow colored pencil, circle all the numbers that were the unknown in the number bond and in the number sentences. Where do they appear in the number bonds and the number sentences?
- How did the number bond help you come up with the addition and the related subtraction sentence?

Multiple Means of Representation

Post a written copy of the problem for students to consult as the two stories in this lesson are being read aloud. This helps visual learners, in particular, and all students follow along as the story is being told.

Lesson 26

Count on using the number path to find an unknown part.

Materials: (T) Giant number path (S) Personal white board, number path (Template)

YOUR NOTES

Place a giant number path on the floor. Have students bring their personal white boards and sit in a semi-circle facing the number path.

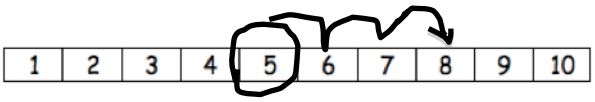
T: (Write 6 – 4 = ___ on the board.) Fill in your number bond using this number sentence. One of the boxes should be left empty.
S: (Write 6 in the total box and 4 in the part box.)
T: Let's solve 6 – 4 by using this giant number path. What is the whole?
S: 6.
T: (Select and direct a student to stand above 6.) If we are using the number path to show how to take 4 away from 6, should we count on or count back on the number path? By how many?
S: We count down by 4.
T: As Paul hops down, let's keep track of our counts until we reach 4.
S: (Paul hops 1 square at a time as the rest of the class counts.) 1, 2, 3, 4. (He ends up on 2.)
T: What is 6 – 4?
S: 2.
S/T: (Write 2 in the number sentence. Complete the number bond.)
T: Is there another way to solve 6 – 4? Turn and talk to your partner.
S: We can also count on from 4 to 6. → We can use an addition sentence. → We can think, "4 + ___ = 6."
T: (Write 4 + ___ = 6.) We can count on using the number path! How many hops are needed to get to 6? Let's count on and keep track of the hops on our fingers.
T/S: Foouuur, 5, 6. (Put up a finger for each hop.)
T: How many does 4 need to get to 6?
S: 2.
T: What is the number sentence to show what we just did?
S: 4 + 2 = 6.
T: (Fill in the blank with 2.) Again, 2 was the number we were looking for. It's the same answer as the answer from the subtraction sentence.
T: Which was easier, counting back or counting on?
S: Counting on was easier.
T: (Write 8 – 5 = ___ on the board.) When you see a subtraction problem, you can always add instead. How can I turn this into an addition sentence?
S: 5 + ___ = 8. (Read as "five plus an unknown part equals eight.")

YOUR NOTES

T: Write the number sentence on your board.

T: On your number path, circle the 5. That's the part we already know. Let's find the unknown part by hopping to each number until we get to 8. Watch me as you help me count on.

T/S: (Circle 5 and draw to show hopping to each consecutive number.) Fiiiive, 6, 7, 8.



T: How many did 5 need to get to 8?

S: 3.

T: Fill in the unknown number, and put a circle around it to show that it was what we were solving for.

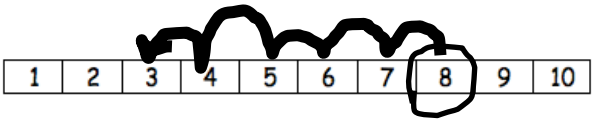
T: If 5 + 3 = 8, then 8 – 5 must be...?

S: 3.

T: Let's check our work by using the number path to solve 8 – 5. Erase the marks on your number path. Start at 8. Which way should we hop to show taking away 5? How many times?

S: Hop backward 5 times.

T: Let's count as we draw our hopping marks.



T/S: 1, 2, 3, 4, 5.

T: What number did you land on?

S: 3.

T: Write the number sentence, and put a circle around what we were solving for.

S: (Write 8 – 5 = 3, and circle 3.)

Repeat this process. Consider using the suggested sequence 9 – 2, 7 – 5, and 7 – 3. Some students may begin to see when counting on is more efficient and when counting back is more efficient. It is okay if they do not see this yet, as they will do more work with selecting an efficient strategy in Small Group Lesson 27.

NOTES

Debrief Questions

- Post the problem 9 - 6 or 6 + ___ = 9. Which is easier for you? Counting on or counting back?

Multiple Means of Representation

Present math concretely with familiar objects. Students may prefer using their fingers while others might prefer using something to count, such as bears or disks. Allow students to use the manipulative that helps them solve problems in the most effective way.

YOUR NOTES

Lesson 27

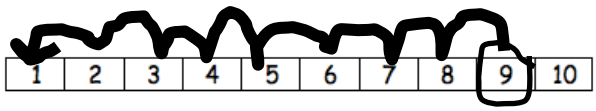
Count on using the number path to find an unknown part.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 27

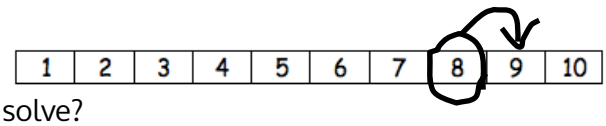
Materials: (T) 2 number paths (projected or charted) (S) Personal white board, number path (Lesson 26 Template)

Have students bring their personal white boards and sit in a semicircle facing a projected number path.

T: (Write 9 – 8 = ☐ on the board, and read the equation aloud with students.) Fill in your number bond using this number sentence. One of the boxes should be left empty.
S: (Write 9 in the total box and 8 in the part box.)
T: What are some ways we can solve this? Talk with your partner.
S: (Share with a partner.)
T: (Circulate and listen. Then, ask a student or two to share with the class.)
S: We can add! → We can count on using the number path! → We can count back!
T: I heard someone say that we can count back. Let's use the number path to count back and solve 9 – 8 = ☐. Which way should we hop to show taking away 8? How many times?
S: Hop backward 8 times.
T: Let's start with our whole, and count as we draw our hopping marks.
T/S: 1, 2, 3, 4, 5, 6, 7, 8.



T: What is 9 – 8?
S: 1.
T: Yes. Write that in your number bond, solve your number sentence, and circle the unknown or answer number we were solving for.
S: (Write 1 in the other part box, solve, and circle 1.)
T: We counted back 8 from 9 until we reached 1. Wow, that took us a long time! Hmmm, is there a faster way to solve this? I heard someone say that we can add instead. So, if we think addition, what addition sentence could we write to help us solve 9 – 8 = ☐?
S: 8 + ☐= 9.
T: Good. Please write that number sentence. (Pause.) Let's use our number paths to solve 9 – 8 =☐ by thinking of 8 + ☐= 9.
T/S: (Circle 8, and draw an arced arrow to 9 as everyone counts.) Eeiiiight, 9.



T: How many did we count on in order to solve?
S: 1.

YOUR NOTES

T: Yes. Please solve your number sentence, and circle the unknown or answer number we were solving for.

S: (Solve and circle 1.)

T: Look at these two strategies to solve the same problem, 9 – 8 = □. Talk with your partner. Did we get the same answer each time? Which way was more efficient, or faster?

T: (As students talk, circulate and listen. Then, ask a student or two to share and explain why.)

S: Counting on was more efficient, because we only had to count on 1 more. → Counting back took so much longer, and we still got 1 as our unknown, or answer number.

T: So, when you are solving subtraction number sentences, you can think and decide: "Would it be easier for me to count back or count on?"

Continue this process, having students show the strategies on their own personal boards, just as in Small Group Lesson 26. Consider using the following suggested sequence: 7 – 6, 9 – 2, 8 – 3, and 10 – 7. Focus students on explaining why they would select a particular method, ensuring that they cite efficiency in some way.

NOTES

Debrief Questions

- What did you notice about the times you chose to count on? When you counted back?
- What other strategies could you have used to solve these subtraction sentences?
- What about if we had 117 – 115? Should we count on or back? What would our answer be?

Multiple Means of Engagement

Some students may feel more comfortable moving forward in small steps with frequent opportunities to practice what they are learning. Not all students will be able to determine if they should count on or count back right away. Support the way they are solving the problems, and encourage them to eventually be able to choose the method that is most efficient.

Multiple Means of Representation

During this lesson it is important for students to articulate the way they chose to solve a problem so that other students can hear how they are thinking. This should help guide these students toward the most efficient method for solving subtraction problems.

YOUR NOTES

Topic H: Subtraction Word Problems

With a smooth transition from Topic G, Topic H provides students with rich experiences connecting subtraction to their solid foundation of addition, using various word problem types.

Lesson 28

Solve *take from with result unknown* math stories with math drawings, true number sentences, and statements, using horizontal marks to cross off what is taken away.

Materials: (S) Personal white board

Invite students to sit in the circle area in a semicircle with their personal white boards.

T: Welcome to another edition of Math Stories Theater! You will be watching math stories and having a hand at solving them.
T: There were 6 children at the sleepover. (Call on 6 students to come to the front of the room and act out being at a sleepover.) Two children got picked up. (Draw an imaginary horizontal line in front of 2 students.)
S: (Two students leave the group of 6 and sit down.)
T: How many children stayed?
S: 4.
T: Put that into a sentence.
S: Four children stayed.
T: Now, use simple math drawings to show how you know 4 children stayed. (Ask all actors to return to the circle.)
S: (Draw simple math drawings such as circles, and use their own strategies to show that 2 children left the sleepover.)
T: (Ask students to share their strategies.)

If a student shares the crossing off using horizontal marks strategy, have her share with the group, being sure to include key points from the script below. If no one uses horizontal marks, lead students into a dialogue similar to the one below.

T: What did we start with?
S: Six children at the sleepover.
T: (Model drawing 6 circles in a linear configuration.) What is the whole in this story?

YOUR NOTES

S: 6.

T: Yes. So, our drawing shows how we started with the whole. Then, what happened?

S: Two children had to leave.

T: When they were leaving I drew an imaginary line in front of them to show that they were leaving. Let's show that with our drawing. I'm going to cross 2 off with a line. (Model crossing off 2 of the circles and ask students to trace it in the air.) What does that line crossing out those 2 remind you of?

S: Taking away! → The subtraction symbol!

T: Good! Write a number bond and number sentence that tells the sleepover story. Don't forget to label your number bond.

T: (Circulate and listen. Then, ask a student or two to share with the class.)

S: For my number sentence, I wrote 6 – 2 = 4. For my number bond, I wrote 6 as the total children at the sleepover, and then one of the parts was 2 because those were the children who got picked up. The other part was 4 because those children stayed.

Have students erase their personal white boards. Continue to tell stories without actors, using the following suggested sequence and scenarios: 7 – 3 (frogs on a log), 8 – 6 (apples getting eaten), and 9 – 5 (flowers getting picked). Focus students on the referents, starting with the whole and crossing off to show the action of taking away.

NOTES

Debrief Questions

- What do our drawings in a row remind us of? (A number path. → 5-group cards.) Why would you draw our stories this way?
- Can we always show a math story using a picture number bond? Does it only work for this story?

Multiple Means of Action and Expression

Using personal white boards for student responses is a great way to involve all learners. Some students might not feel comfortable participating orally, while others may not be able to respond orally. This way, both groups can show what they know on their personal white boards so that the teacher can check for understanding.

Multiple Means of Action and Expression

Having students act out number stories is a great way to provide math they can see. This will help students with hearing impairments. It also provides visual and kinesthetic learners an opportunity to engage in the lesson using their preferred style of learning.

Lesson 29

Solve take apart with addend unknown math stories with math drawings, equations, and statements, circling the known part to find the unknown.

Materials: (S) Personal white board

YOUR NOTES

Invite students to sit in the circle area in a semicircle with their personal white boards.

T: Welcome to another edition of Math Stories Theater! Six children are at a sleepover. (Call 6 children to the front, lining them up in a straight row.)
T: Four children are wearing black shoes. The rest are wearing white shoes.
T: How many children are wearing white shoes at the sleepover?
T: Write a subtraction sentence to answer the question.
S: (Write 6 – 4 = 2.)
T: By lining up our actors in a straight row, we can easily see the sets of students. Let's try another one.
T: It's bedtime. Three children are in their sleeping bags. The rest are underneath their blankets. How many children are using blankets? Turn and decide with a partner.
S: (Discuss with partner.)
S: Three children are using blankets.
T: Let's use the actors to see. These 3 have sleeping bags. (Gesture to students.) That means these children have blankets. Three children are using blankets.
T: Let's draw a simple math drawing to match this situation. (On a personal board, draw 6 circles in a row.)
T: These circles represent our 6 children in the story. We know that 3 of them are using sleeping bags. I'm going to circle the first 3 of these (circle the first 3 shapes), and then we should be able to see how many children are left using blankets. How many circles are left?
S: 3 circles.
T: Draw a simple math drawing like mine to match the story. Write the subtraction sentence that goes with it.
S: (Create a similar math drawing and write 6 – 3 = 3.)

Repeat the process with more take apart math stories. Listed below is a suggested sequence of story lines:

- 8 cupcakes in all: 6 with chocolate icing, and the rest with vanilla
- 7 sneakers in all: 3 with Velcro, and the rest with shoe laces
- 10 coats: 7 with buttons, and the rest with zippers

- 9 balls: 3 basketballs, and the rest are soccer balls

Each time, ask the students to draw a simple math story to check their solution to the story problem before having the actors portray the two parts. Focus on circling the part that is known to help solve the unknown part.

YOUR NOTES

NOTES

Debrief Questions

- Help students make a distinction between the take apart and take from stories, the two problem types using subtraction they have encountered thus far in the mission:

  T: When we used subtraction today, we didn't cross off any parts of our drawings. What does it mean when we cross things off in our drawings? (Give an example.)

  S: Something is going away.

  T: Why didn't we cross things off today? (Give an example.)

  S: Because nothing went away. It was just that one part was different from the other. We were looking for the other part.

Multiple Means of Representation

Frequent checks for understanding benefit English language learners and other students who may shy away from asking questions. Ask questions for comprehension and encourage students to retell the story to ensure the vocabulary and concept is being understood.

Multiple Means of Engagement

Adjust the lesson structure to suit the specific needs of the class. Some students may need to continue with concrete representations throughout the lesson. Other students may be ready for more challenging numbers or the opportunity to develop their own math stories.

YOUR NOTES

Lesson 30

Solve *add to with change unknown* math stories with drawings, relating addition and subtraction.

Materials: (T) Books of different sizes (S) Personal white board, number path (Lesson 26 Template), yellow colored pencil or highlighter

Display 5 books (either on the ledge of the board or on a shelf). Invite students to sit in the meeting area in a semicircle with their personal white boards.

T: How many books do I have on this shelf? (Gesture to the books.)
S: 5 books.
T: A student came and put some more books on the shelf. Close your eyes. (Add 2 more books.) Open your eyes. How many books are there now?
S: 7 books.
T: Let's make a number bond to figure out how many more books the student brought. (Ask students to identify what they already know from the story and decide if it is a part or the total as they fill in the boxes. Have students identify the referents for each number and label the boxes accordingly.)
T: Turn and talk to your partner about what you can do to solve how many more books the student put on the shelf. Write the number sentence, but leave the mystery number blank.
S: (Discuss and write 5 + □ = 7 or 7 – 5 = □.)
T: (Circulate and listen. Ask a student who used addition to share.)
S: (Show the number sentence.) I counted on. Fiiive, 6, 7. I added 2 more. → I said 5 plus what equals 7 and just knew it was 2.
T: Great strategies! (Choose a student who used subtraction to share.)
S: I knew there were 7 books total, so I took away 5 books that we already had and got 2 books.
T: Nice work! Did we all get the same answer, even though some used an addition sentence and others used a subtraction sentence?
S: Yes!

Have students fill in the missing part of the number bond and label it.

T: Let's draw a picture number bond to show the story.
T: Draw circles in a row to represent the total of 7 books. Put a box around it, just like the number has a box around it in the number bond. (Model and emphasize the importance of making circles the same size. Each circle represents 1 book, not the size of each book.)
S: (Draw.)

YOUR NOTES

T: Draw circles in a row to represent the number of books we began with. Put a box around it. (Model and draw a diagonal line to connect the part and total box.)
S: (Draw.)
T: Draw a box to show the part that will contain the number of books the student brought. (Model and draw another diagonal line.) Fill in the box with circles that represent how many more books were put on the shelf.
S: (Draw 2 more circles.)
T: Write the labels to show what each box and its circles stand for. (Guide the students if necessary.)
S: (Write labels.)

Repeat the process by telling more *add to with change unknown* stories. Use the following suggested sequence: 4 + □ = 7, 6 + □ = 8, and 6 + □ = 9. At times, rotate the picture number bond so that the parts are above the total. This will help students focus on recognizing which is the total and which sections are the parts based on the lines, or arms, of the bond.

T: How did you use your math drawing to show how you can use addition to solve the problem?
S: I started with the 6 books and used my fingers to count on 3 (or add 3) to get to the total.
T: How did you use your math drawing to show how you can use subtraction to solve the problem?
S: I started with the total, which is 9, separated the 6, and saw that 3 were left.

NOTES

Debrief Questions

- What new math strategy did we use today to communicate precisely? Explain how it is helpful.
- How is drawing a picture number bond similar to and different from your past math drawings?
- Let's compare our problems using subtraction again:

  T: When we used subtraction yesterday, we didn't cross off any parts of our drawings. What does it mean when we cross things off in our drawings? (Give an example.)

  S: Something is going away.

  T: Why didn't we cross things off today? (Give an example.)

  S: Something was being added, but we didn't know what. → We added on the mystery number. → We just subtracted because it was a missing part, but it didn't sound like subtraction. →I didn't even write a subtraction sentence at first! →I didn't need to, because I saw the number bond in my mind. A part was missing.

Multiple Means of Action and Expression

Provide sentence frames to support verbal responses for English language learners and other students who may require language support.

Lesson 31

Solve *take from with change unknown* math stories with drawings.

Materials: (T) Books of different sizes (S) Personal white board, yellow colored pencil

YOUR NOTES

T: Welcome to another edition of Math Stories Theater! You will be watching math stories and having a hand at solving them.
T: I borrowed 7 books from the library. On my way home, I lent some of the books to a friend. Will my backpack have more or fewer books than 7? How do you know?
S: Fewer books because you took away some books to give to your friend.
T: You're right! There are 5 books still in the backpack. How many books did I lend?
T: Let's make a number bond to find out. On your board, make and fill in the number bond. What does 7 stand for?
S: The books you borrowed from the library.
T: Is that a part or the total number of books in the story?
S: The total.
T/S: (Fill in 7 on the number bond and label B for borrowed books.)
T: What else do you know?
S: You have 5 books left.
T: Are these 5 books part of the total number of books?
S: Yes.
T/S: (Fill in 5 and label L for leftover books.)
T: What about this part box? What does it stand for?
S: That's the mystery number. It stands for how many books you gave to your friend.
T: Let's write a number sentence. How did the story begin?
S: You borrowed 7 books.
T: (Write 7.) What happened next? How can we continue our number sentence?
S: You gave away some books, so use minus. → Write 7 minus box, because we don't know how many books you gave away.
T: (Write 7 – ___.) What happened last? How can we continue our number sentence?
S: You ended up with 5 books. Seven minus something is 5.
T: (Writes 7 – ___ = 5.)
T: Let's make a math drawing to show what we know so far.
S: (Draw 7 circles.)
T: Group the circles that show how many books I still have.
S: (Group 5 circles together.)
T: What are these books that we didn't group? (Gesture to the 2 remaining books.)
S: The books you gave to your friend.

T: How can we show that I gave away these books?
S: Say, goodbye 2. Make the line look like one big subtraction sign.
T: Write a number sentence to show what you just did.
S: (Write 7 – 2 = 5.)
T: How many books did I give away?
S: You gave away 2 books.
T: Circle the part of the number sentence that shows this answer.
S: (Circle 2.)

Continue to tell take from with change unknown stories using the following suggested sequence and scenarios:

- Hansel and Gretel have a bag with 8 pieces of bread. They drop some on their path and have 3 pieces remaining.
- Nine children are playing hide and seek. Some went away to hide. Four children can still be seen.
- We caught 9 fireflies. Some flew away. Six fireflies are left in the jar.

YOUR NOTES

NOTES

Debrief Questions

- What pattern did you notice about all of our story problems today?
- What new math strategy did we use to solve our story problems today?
- One at a time, share some student drawings that have particular strengths (e.g., use of simple circles or squares, picture number bonds, straight rows or similarly sized shapes, clear labels). What do you notice about this math drawing? What qualities make it useful for solving math problems?

YOUR NOTES

Lesson 32

Solve take apart with addend unknown math stories with math drawings, equations, and statements, circling the known part to find the unknown.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 32

Materials: (T) 10 white linking cubes (S) Personal white board

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Invite students to come to the meeting area with their personal white boards and sit in a semicircle.

T: There are 8 apples. (In a line, lay out 8 individual white linking cubes.) Put on your magic glasses that will show different colors. (Pretend to put on glasses.)
S: (Pretend to put on glasses.)
T: Ooooh, I see two parts. There are five red apples, here on this side. (Gesture.) That's one part. Thumbs up if you can see the red apples.
S: (Show thumbs up.)
T: The other part of the apples is green. Can you see the two parts?
S: Yes!
T: Make a number bond to find out how many apples are green. Be sure to label each box, even the mystery box.
S: (Make a number bond with labels.)
T: Make a math drawing to show how you can solve the mystery number. Remember to line up your pictures in a straight row.
S: (Drawings may vary.)
T: Write the number sentence to solve. Be sure to circle the solution.
S: (Number sentences may vary.)
T: (Circulate and observe. Choose two students to share different strategies and number sentences. Possibilities include counting up, counting back, and writing addition or subtraction sentences.)
T: James wrote 5 + ___ = 8, and Lily wrote 8 – 5 = ___. Even though they used different number sentences and drawings, did they get the same answer?
S: Yes!
T: Hmmm, which was a faster or more efficient way to solve? Counting up or counting back? Turn and talk to your partner and explain why.
S: Counting up! You only need to count on 3 times to get to 8. Taking away 5 takes longer.
T: (While guiding students to notice that counting on 3 is more efficient, accept all explanations. Some students may know their –5 facts and find 8 – 5 a better strategy.)

Repeat the process with math stories using the following suggested sequence: 7 +

YOUR NOTES

___ = 9, 3 + ___ = 7, 4 + ___ = 8, and 6 + ___ = 9. After each story, ask students to identify which number sentence, addition or subtraction, they used to solve. Guide students to make a generalization about when it would be a better shortcut to use counting on or counting back, along with just knowing the decompositions.

T: Look at this number bond. (Write 8 as the total and 6 as a part.)
T: Think of a math story with a missing part where nothing goes away that could go with this number bond. Tell it to your partner.
T: Make a math drawing, write an addition and subtraction number sentence, and solve. Circle each of your solutions.
S: (Solve.)

Repeat the process by asking students to create their own number bond with 9 as the total.

NOTES

Debrief Questions

- When you use different strategies, do you always find the unknown number in the same place in your number sentence? Give an example to explain your thinking.
- Was it easier for you to use an addition sentence or a subtraction sentence to solve today's math stories? Why do you think that is?
- When is it wiser for you to use an addition sentence to solve the problem? Give an example. What about using a subtraction sentence?

Multiple Means of Representation

Facilitate student discussions to provide opportunities for English language learners to use math language. This also provides an opportunity to check for understanding of vocabulary and concepts.

Multiple Means of Engagement

Never underestimate the use of manipulatives when students are learning a new skill. Students should use 5-group cards, number path, or other manipulatives such as counting bears when they need extra support. Allow students to use the extra support as long as they need it.

YOUR NOTES

Topic I: Decomposition Strategies for Subtraction

Similar to Topic E's addition methods, Topic I allows students to learn methods for subtraction that involve subtracting 0 and 1, subtracting the whole number, subtracting one less than the whole number, and using familiar decompositions (5-groups and partners of 10) to conceptualize subtraction as finding a missing part.

Lesson 33

Model 0 less and 1 less pictorially and as subtraction number sentences.

Materials: (T) Number bracelet of 10, white board or easel (S) Number bracelet of 10 beads made with 5 red and 5 white beads (see Lesson 8), personal white board

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Have students bring materials to meeting area and sit in a semi-circle.

T: How many beads are on your number bracelet? (Hold up the bracelet.)
S: 10 beads! (Hold up the bracelet.)
T: Take 1 bead away.
T/S: (Push 1 white bead away from the set, as shown.)

T: How many beads do we have now?
S: (Count the beads as needed.) 9 beads!
T: Write a number sentence to show what we did.
T/S: (Write 10 – 1 = 9.)
T: Push that bead all the way up until it is hiding in your hand.
T/S: (Push the bead into the palm, as shown.)

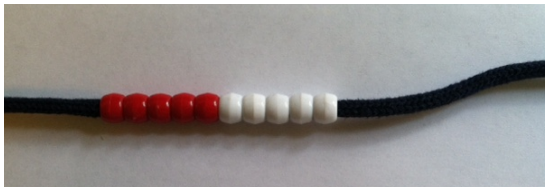
T: We have 9 beads.

Repeat the process of taking 1 bead away and writing the new number sentence for the following suggested sequence: 9 – 1, 8 – 1, and 7 – 1.

T: Push your beads back, and open your pipe cleaner so that your beads are in a straight line.

YOUR NOTES

T/S: (Adjust the beads and pipe cleaner as shown.)



T: Push a set of 3 white beads away to the end of the pipe cleaner. (Be sure students push 3 beads as a set, rather than one at a time, to encourage decomposition rather than 1 to 1 counting.)

T: Tell me a number sentence to describe what we did.

S: 10 – 3 = 7.

T: Use your beads to show me 7 – 1. Write the number sentence on your board.

S: (Show 6 beads together and 1 separated bead. Write 7 – 1 = 6 on personal boards.)

Repeat the process for 5 – 1.

T: We have 4 beads. This time, take 0 away.

S: (Look at their beads.)

T: How many beads do we have now?

S: 4 beads!

T: Hmmm. Let's try that with a larger number. Push all your beads back to the middle so we can start with 10.

T/S: (Push beads back to middle, showing all 10 beads.)

T: We have 10 beads. Take away 0 beads. How many beads do we have now?

S: 10 beads!

T: Write the number sentence to show what we did.

S/T: (Write 10 – 0 = 10.)

Repeat the process of taking 0 beads away and writing the new number sentence for the following suggested sequence: 9 – 0 and 6 – 0.

NOTES

Debrief Questions

- Explain how solving 10 – 0 can help you solve 122 – 0. What happens every time you subtract 0?
- Explain how solving 9 – 1 can help you solve 73 – 1. What happens every time you subtract 1? How does subtracting 1 relate to counting?

Multiple Means of Representation

Integrating children's literature, poetry, and songs reinforces and supports mathematical knowledge for English language learners. Some suggested titles are "10 Little Monkeys Jumping on the Bed" by Child's Play and "Ten Sly Piranhas" by William Wise.

Multiple Means of Engagement

Cultivate excitement for students who are ready to work with larger numbers by presenting numbers to 100. These students would also benefit from developing their own story, song, or poem for larger numbers.

YOUR NOTES

Lesson 34

Model $n - n$ and $n - (n - 1)$ pictorially and as subtraction sentences.

Materials: (T) Number bracelet of 10, white board or easel (S) Number bracelet of 10 beads (5 red, 5 white) (see Lesson 8), personal white board

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Have students bring materials to meeting area and sit in a semicircle.

T: Stretch out your bracelet into a long line of beads like we did in our last lesson.
T/S: (Adjust the pipe cleaner into a straight line.)
T: How many beads do we have in this set?
S: 10 beads!
T: Take 10 beads away.
T/S: (Push 10 beads to the other side of the pipe cleaner.)
T: How many beads do we have now?
S: Zero!
T: Write the number sentence to show what you did. Write the number bond also.
T/S: (Write 10 – 10 = 0 and number bond.)
T: Start with 8 beads now.
T/S: (Push 8 beads back to the main section of the pipe cleaner.)

Repeat the process using the following suggested sequence: 8 – 8, 7 – 7, and 6 – 6.

T: How are these problems similar to each other?
S: We are taking away the total amount.
T: When we have a number and then subtract that exact number, what part are we left with?
S: Zero!
T: Let's try something different. Start with 10 beads again.
T/S: (Reset pipe cleaner to show all 10 beads as a set.)
T: Take away 9 beads.
T/S: (Push 9 beads slightly farther down the pipe cleaner.)
T: How many beads do we have left?
S: 1 bead!
T: Write the number sentence to show what you did. Write the number bond also.
T/S: (Write 10 – 9 = 1.)
T: Start with 9 beads now.

YOUR NOTES

Repeat the process using the following suggested sequence: 9 – 8, 8 – 7, and 7 – 6. Be sure to keep these number sentences on the board for discussion.

T: How are these problems similar to each other? Turn and talk to your partner. (Circulate and listen.)
S: (Discuss.)
T: How are these problems similar?
S: The answer is 1 every time!
T: Let's try a few more. This time, try to complete the number sentence and number bond without using the beads. Then, check your answer using your beads.

Repeat the process again using expressions that vary between subtracting all and subtracting all but one through the following suggested sequence: 6 – 6, 6 – 5, 8 – 8, 8 – 7, 9 – 9, and 9 – 8.

T: When you are working today, see if you can figure out how to tell quickly that the answer to a subtraction problem will be 1 or that the answer will be 0.

NOTES

Debrief Questions

- How can solving 10 – 10 help you solve 1,272 – 1,272; 10,629 – 10,629; or 1,000,000 – 1,000,000?
- How can solving 9 – 8 help you solve 759 – 758... 2,478 – 2,477 and 1,000,001 – 1,000,000?

Multiple Means of Representation

Providing opportunities for all students to work at the concrete level facilitates student discovery of patterns and structures in their math work. Allow time for students to explore with the number bracelets throughout the week to help solidify 5-groups and to discourage counting all.

Multiple Means of Action and Expression

Provide students with a variety of ways to respond. Some students need concrete models to show their understanding, while others benefit from a partner share.

YOUR NOTES

Lesson 35

Relate subtraction facts involving fives and doubles to corresponding decompositions.

Materials: (S) Number bracelet of 10 beads, 5 red and 5 white (see Lesson 8), personal white board

T: Show me 7 the Math Way. How many fingers did you use on your left hand?
S: (Hold up 5 fingers on their left hands and the thumb and index finger on their right hands.) 5.
T: Show me 7 – 5 by hiding your 5.
S: (Hide their left hands.)
T: What's the answer?
S: 2.
T: Give me the complete number sentence.
S: 7 minus 5 is 2.
T: Show me your 7 again. Subtract 2 by hiding your 2. The answer is…?
S: 5.
T: Give me the complete number sentence.
S: 7 minus 2 is 5.

Quickly repeat the same process, subtracting 5 and its partner from 6 through 10.

T: Please take out your bracelets and start with 8 beads. (Project 8 – 5.) Use your beads in one movement to show me the answer. Write the number sentence and number bond.
S: (Push 5 beads in one movement away from the set and write 8 – 5 = 3.
T: (Circulate. If students move the beads one, two, three, or four at a time, have students repeat the exercise.)
T: How did you solve this so quickly?
S: I moved just my red beads in a 5-group. →I moved a group of 5 without counting out 1, 2, 3, 4, 5.
T: How did you know how many to push at once?
S: The beads are in groups of 5.
T: Push them back together to have 8, and try this one. (Project 8 – 3.)
S: (Push the 3 white beads away from the set and write 8 – 3 = 5.)
T: What did you push away as a group?
S: The 3 white beads.
T: What did you have left?
S: The 5 red beads.

YOUR NOTES

Repeat the process using the following suggested sequence: 9 – 5, 9 – 4, 7 – 5, and 7 – 2.

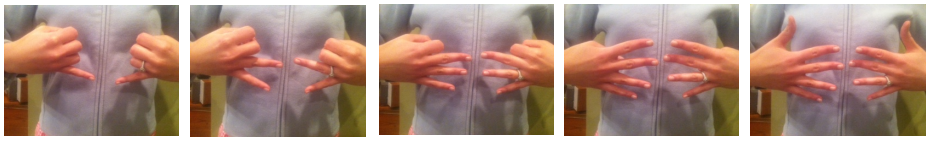
T: Great job visualizing larger groups to help you subtract quickly. Now, we will use a different way to visualize, or see, groups to help us subtract. Put your bracelets back together so you have 10 beads total. What two equal parts do you see?

S: 5 and 5.

T: That's right. Remember, facts like 5 + 5 are part of a special group of addition facts. What are they called?

S: Doubles.

T: Starting at 1 + 1, let's recite our doubles facts. Point your fingers together as we say them.



T/S: 1 + 1 = 2, 2 + 2 = 4, 3 + 3 = 6, 4 + 4 = 8, 5 + 5 = 10.

T: Doubles can be easy to see, just like 5-groups. Let's see if we can spot which of these subtraction facts are made from doubles. Visualize your doubles facts as we look for them.

T: (Project three subtraction expressions: 7 – 3, 8 – 4, and 9 – 2.)

T: Which subtraction expression is splitting up a double? Turn and talk with your partner to decide. Talk about how you know. Write the number sentence and number bond on your paper. (Circulate and listen.)

S: (Discuss with a partner.)

T: I like how you proved your idea to your partner by showing the doubles on your fingers. Try more.

Repeat the process using the following suggested sequence of three sets of expressions: (a) 5 – 2, 8 – 3, 4– 2; (b) 7 – 4, 6 – 3, 10 – 4; (c) 8 – 4, 6 – 3, 10 – 5. The last set purposely has three doubles facts as students begin to visualize their doubles and recognize the facts within the subtraction context more quickly.

NOTES

Debrief Questions

- How can your hands help you solve problems like these? (Fingers are like 5-groups.)
- How are your hands similar to the number bracelet? How are they different?

Multiple Means of Engagement

Some students may need to make real life connections to concepts such as doubles and 5-groups. Allow students the opportunity to explore doubles and 5-groups they see in real life (e.g., pairs of shoes, 4-wheelers, legs of a spider, doubles on dominoes, and their fingers).

Multiple Means of Representation

Provide students who are developing fluency with math facts a visual tool, such as the addition chart with the doubles facts, for reference until this skill becomes automatic.

Lesson 36

Relate subtraction from 10 to corresponding decompositions.

Materials: (T) Number bracelet of 10 beads (5 red, 5 white) (from Lesson 8), white board or easel (S) Number bracelet, personal white boards

YOUR NOTES

Before students come to the meeting area, slip 4 white beads off of the demonstration pipe cleaner and place them in a pocket, out of view of the students. Have students bring materials to the meeting area and sit in a semicircle.

T: Oh, no! My bracelet broke and is missing some of its beads. (Show the pipe cleaner to the class, holding it far enough away so that students cannot touch each bead to count.)
T: How many beads are on my bracelet?
S: 6 beads.
T: Wait, how many beads do you have on your bracelet?
S: 10.
T: Use one movement of beads to find out how many fell off my bracelet.
S: (Push 6 away in one movement from the set to find 4.) Four of your beads fell off.
T: Write a number sentence and number bond to show what just happened to my bracelet.
S: (Write 10 – 4 = 6, and then write the corresponding number bond.)
T: (Assign partners. Project 10 – 1.) Partner A, use your beads to show Partner B the answer to this problem. Write the number sentence and number bond on your board.
S: (Partner A pushes 1 bead away from the set, writes 10 – 1 = 9, and writes the number bond.)
T: How many beads are left?
S: 9 beads.
T: (Project 10 – 9.) Partner B, use your beads to show Partner A the answer to this problem. Write the number sentence and number bond on your board.
S: (Partner B pushes 9 beads away from the set, writes 10 – 9 = 1, and writes the number bond.)
T: Look at your stretched out bracelets. Talk with your partner: What's the same or different about them? (Circulate and listen.)
S: (Discuss with a partner.) They're the same; mine is just facing the other way. → When I flip my bracelet over, it's exactly the same as my partner's.
T: Look at your number bonds and equations. Talk with your partner: What's the same or different about them? (Circulate and listen.)
S: (Discuss with a partner.) Our number bonds are the same. → Our number sentences use the same numbers and always start with 10 as the whole.
T: (Project 10 – 7.) Partner A, use your beads to show Partner B the answer to this problem. Write the number sentence and number bond on your board.

YOUR NOTES

S: (Partner A pushes 7 beads away from the set, writes 10 – 7 = 3, and writes the number bond.)

T: Partner B, use your bracelet to show Partner A the other subtraction sentence, which matches your number bond. Write the number sentence.

S: (Partner B pushes 3 beads away from the set and writes 10 – 3 = 7.)

Repeat this process using 10 – 6, starting with Partner B so that Partner A has a hand at coming up with the other subtraction equation. If it seems necessary, continue the process two more times, using 10 – 8 and 10 – 3.

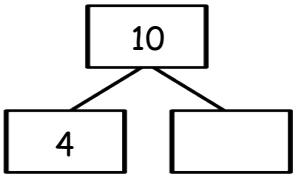
T: You've been writing some wonderful number bonds, taking apart 10. Now, I'm going to show you a number bond that's not quite finished. (Show number bond with 10 in the total box, 4 in a part box, and the other part blank.) What part goes with 4 to make 10?

S: 6.

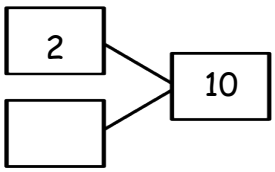
T: Good. Now, write both subtraction sentences all by yourself.

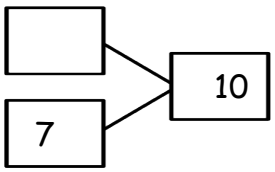
S: (Write 10 – 4 = 6 and 10 – 6 = 4.)

Unfinished number bond



Repeat this process with the following number bonds:





NOTES

Debrief Questions

- How are 5-groups and our bracelets the same in appearance? What can they help us do? How are they different?
- Can we visualize rather than holding our bracelets or 5-groups?

Multiple Means of Engagement

Provide challenging extensions for students who are ready by connecting partners to 10 with numbers up to 100. For example, some pairs could have double-digit numbers. Their goal would be to find the partner to make the next ten and complete a number bond (46, 4, 50).

Multiple Means of Action and Expression

Partner share time provides a good opportunity to facilitate student analysis of work, allowing students to evaluate the process and analyze errors. Careful choice of partners is important when students are developing these skills.

YOUR NOTES

Lesson 37

Relate subtraction from 9 to corresponding decompositions.

OPTIONAL FOR FLEX DAY: ALL OF LESSON 37

Materials: (T) Number bracelet of 10 beads (5 red, 5 white) (see Lesson 8) (S) Number bracelet of 10 beads (5 red, 5 white), personal white board

Have students bring materials to meeting area and sit in a semi-circle.

T: (Assign partners. MPject 10 – 5.) Partner A, use your beads to solve, and also show Partner B the number sentence and number bond on your board. Explain as you go.

S: (Complete the task with partner.)

T: (Project 9 – 5.) Partner B, take off 1 bead and put it behind you to have 9. (Pause.) Use your beads to solve, and also show Partner A a number sentence and number bond on your board. Explain what you did.

S: (Complete the task with partner.)

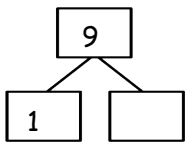
T: Compare your bracelets, your number sentences, and number bonds. How can Partner A's work help you solve Partner B's work? (Circulate and listen.)

S: (Discuss with partner.) Partner B starts with 1 less as the whole. But, we both took 5 away, and Partner B's answer is 1 less. → Nine is 1 less than 10. So, when we take 5 away, our answer will be 1 less. → It's just like on the addition chart! → We take away a five group, so it's 4 left not 5.

T: Good! Now, Partner A, please remove 1 bead and place it behind you to make sure you have 9. (Pause.) Our 10 is now…

S: 9.

T: (Project 9 – 1.) Use your beads to solve and also show the number sentence and number bond on your personal board.



9 - 1 =

S: (Push 1 bead away from the set, finish the number bond, and write 9 – 1 = 8.)

T: What is the other number sentence you can write to describe this number bond?

S: 9 – 8 = 1.

T: Yes. Now, please write it below your first number sentence.

S: (Write 9 – 8 = 1.)

T: Now, you're going to write all of the other number bonds with 9 as the total or the whole and the subtraction sentences that describe each number bond. You can move around the room to do this. Hmmm, what tools can you use to help you do this?

S: Our bracelets! → Our hands. → Our 5-group cards. → Our math drawings. → Our addition chart. → Visualizing. → Our brains. → The charts in the room!

T: Talk with your partner!

YOUR NOTES

As students work, circulate and support them as appropriate. When most students have finished, have them return to the meeting area.

T: What strategies did you use to be sure that you got every way to make 9?

S: I used my bracelet and showed 1 less each time! → I checked mine over a couple of times and showed it with my bracelet.

T: What strategies did you use to be sure that you showed the subtraction sentences that described the number bonds?

S: I actually took the beads away on my bracelet! →I flipped my bracelet after I made the first subtraction sentence.

NOTES

Debrief Questions

- How can you visualize 9? What do you see in your brain? Does that help you to subtract from 9?

Multiple Means of Action and Expression

Some students would benefit from having a set of ten-frame cards to use as a reference and to have available for practice. This practice should include flipping the cards over to encourage visualization of the numbers and their partners.

Multiple Means of Representation

During this lesson, it is important for students to articulate how using strategies helps to solve problems so that other students can hear how they are thinking. This should help guide them toward a better understanding of the patterns and structures.

YOUR NOTES

Topic J: Development of Subtraction Fluency Within 10

Grade 1's Mission 1 closes with Topic J, where students spend Lesson 38 exploring the addition chart (similar to Topic F) and looking for patterns within the context of subtraction.

Lesson 38

Look for and make use of repeated reasoning and structure using the addition chart to solve subtraction problems.

Materials: (T) Addition chart (Lesson 21 Template), subtraction expression cards (Template) (S) Addition chart (Lesson 21 Template), subtraction expression cards (Template) per group, yellow crayon, personal white board

T: (Project addition chart.) How did this addition chart help us with our addition facts?

S: (Responses will vary.) All the +1 addends are in the same column. → The rows start with the same part. → The totals made a staircase. → The ones near each other are related, like 4 + 3 is 7, and underneath we see 5 + 3; that's one more—it's 8.

T: (Hold up subtraction expression card 7 – 4.) Write a number bond and leave the missing part empty for now.

S: (Write number bond.)

T: What is the whole?

S: 7.

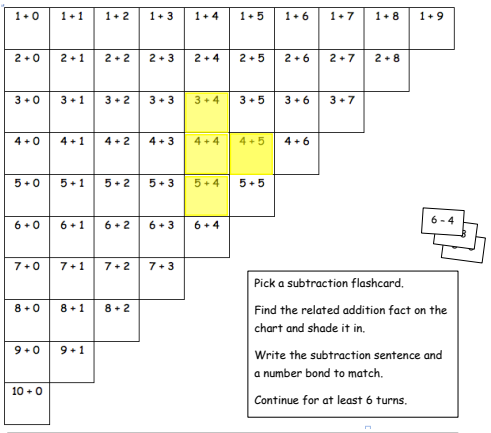
T: The known part?

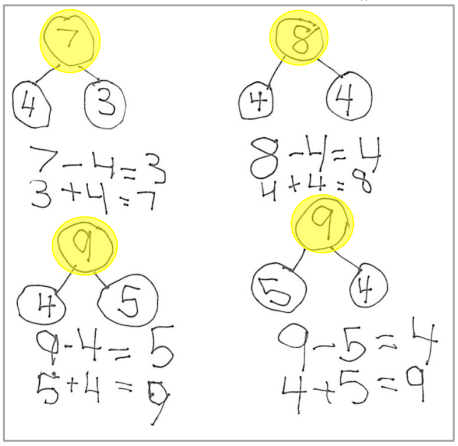
S: 4.

T: Which of the addition problems on your chart have a part that is 4? Talk to your partner.

S: The ones here, going across. → It's the row that starts with 4 + 0. → There is one here, too, going down. → It starts with 1 + 4.

T: The chart tells the parts but not the totals. Which of those problems have the same total as 7 – 4? Don't call out the answer.





S: (Wait for the signal.) 4 + 3. → 3 + 4.
T: Let's color in 4 + 3 and 3 + 4 on our chart with yellow and fill in our number bond with the missing part.
T: Let's also color our totals yellow.
S: (Color in the chart and complete the number bond.)
T: Write the subtraction number sentence from the card we started with. Write the addition number sentence that helped us solve it.
S: (Write 7 – 4 = 3 and 4 + 3 = 7.)

Repeat the process with the following suggested sequence: 8 – 4, 9 – 4, and 9 – 5. Record the number sentences on the board to be used during the Debrief Questions.

YOUR NOTES

NOTES

Debrief Questions

- Look at the subtraction problems we solved during the lesson. (Point to sequence of 7 – 4, 8 – 4, 9 – 4, and 9 – 5.) What do you notice about these problems? Where are the helpful addition facts for these subtraction sentences located on your chart? How can solving the first one help you solve the next?
- Look at your work from the class. What pattern do you notice on your chart? How are these subtraction facts related?
- What is another set of subtraction facts that would make a cross on your chart?
- What tool did we use in a new way to solve subtraction problems today? Explain how the tool helped you.

Multiple Means of Engagement

Some students need concrete representations to solve word problems. Provide concrete models as needed. Allow students to take on leadership roles as appropriate by developing their own stories for the class to solve.

Multiple Means of Action and Expression

Using personal white boards with an addition chart template allows all learners to participate. Some students might not feel comfortable participating orally, while others may not be able to respond orally. They can show what they know on their boards.

Lesson 39

Analyze the addition chart to create sets of related addition and subtraction facts.

Materials: (T) Addition chart (Lesson 21 Template) (S) Addition chart (Lesson 21 Template), subtraction expression cards (Lesson 38 Template) per group, personal white board

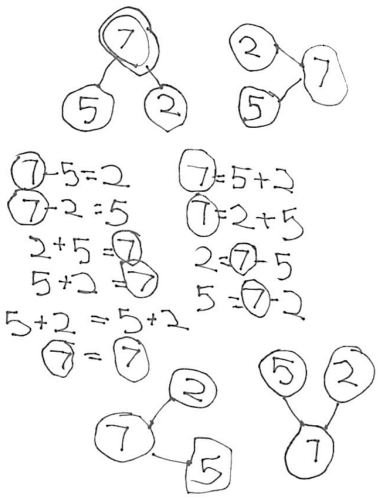
YOUR NOTES

T: Look at 5 + 2 on the addition chart. (Point to 5 + 2 on the chart.) Who can share a subtraction sentence and an addition sentence that have the same parts and total?

S: 7 – 5 = 2 and 5 + 2 = 7.

T: Let's all write that set on our board. Write the number bond, too.

T/S: (Write 7 – 5 = 2, 5 + 2 = 7, and matching number bond.)



T: There are more addition facts that we can make from this same number bond. What is one of them?

S: 2 + 5 = 7.

T: Let's write that number sentence as well.

S: (Write 2 + 5 = 7.)

T: We can also write a number sentence matching two addition expressions without totals. Turn and talk with your partner to discuss what this number sentence might be. Write it on your board. (Circulate and listen.)

S: (Discuss and write 5 + 2 = 2 + 5.)

T: I saw many of you write 5 + 2 = 2 + 5. 5 + 2 is equal to, or the same as, 2 + 5.

T: There are other number sentences that have the same parts and total. Talk with your partner to decide what they could be, and write them on your board. (Circulate and listen.)

S: (Discuss and write 7 – 2 = 5.)

T: See if you can write your number bond in different ways, too. Circle your totals!

T: Look how many facts you can share using your knowledge of *one* fact.

Assign pairs of students different number bonds from which to make as many varied number sentences as they can. Have them make a poster and prepare to share their ideas with peers.

NOTES

Debrief Questions

- Hold up a subtraction expression. What number sentences we can make? What number sentence can we make that uses *both* of the addition expressions?
- How does knowledge of one addition or subtraction fact help you know other facts? Use an example to explain your thinking.
- Have different groups present their work from the lesson. Let the others ask them questions about their work.

Multiple Means of Action and Expression

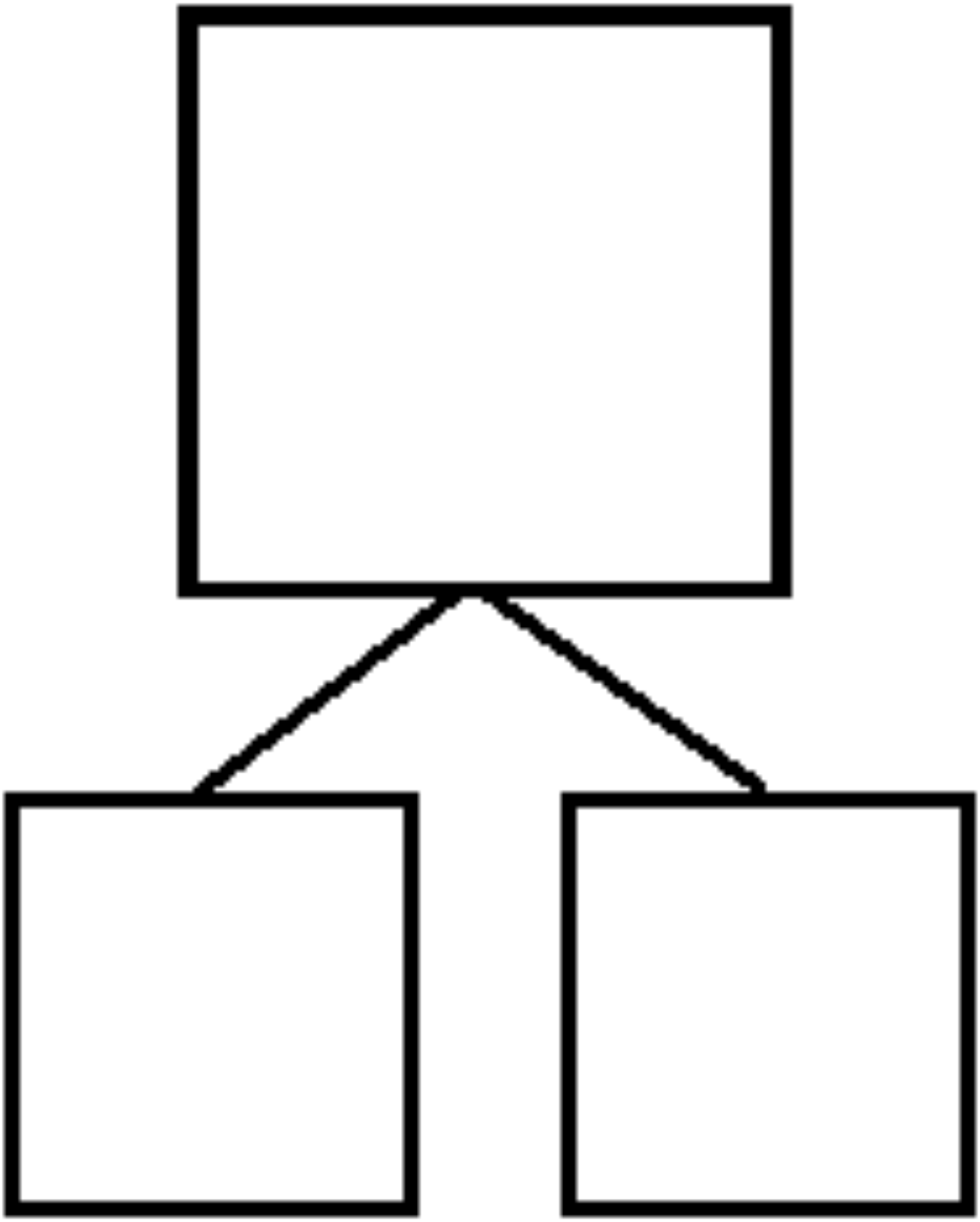
When students are not able to participate in the traditional partner share, they can use their white boards to adjust. Partners can still participate by jotting questions and answers to one another on their boards.

Appendix

Topic A: Embedded Numbers and Decompositions

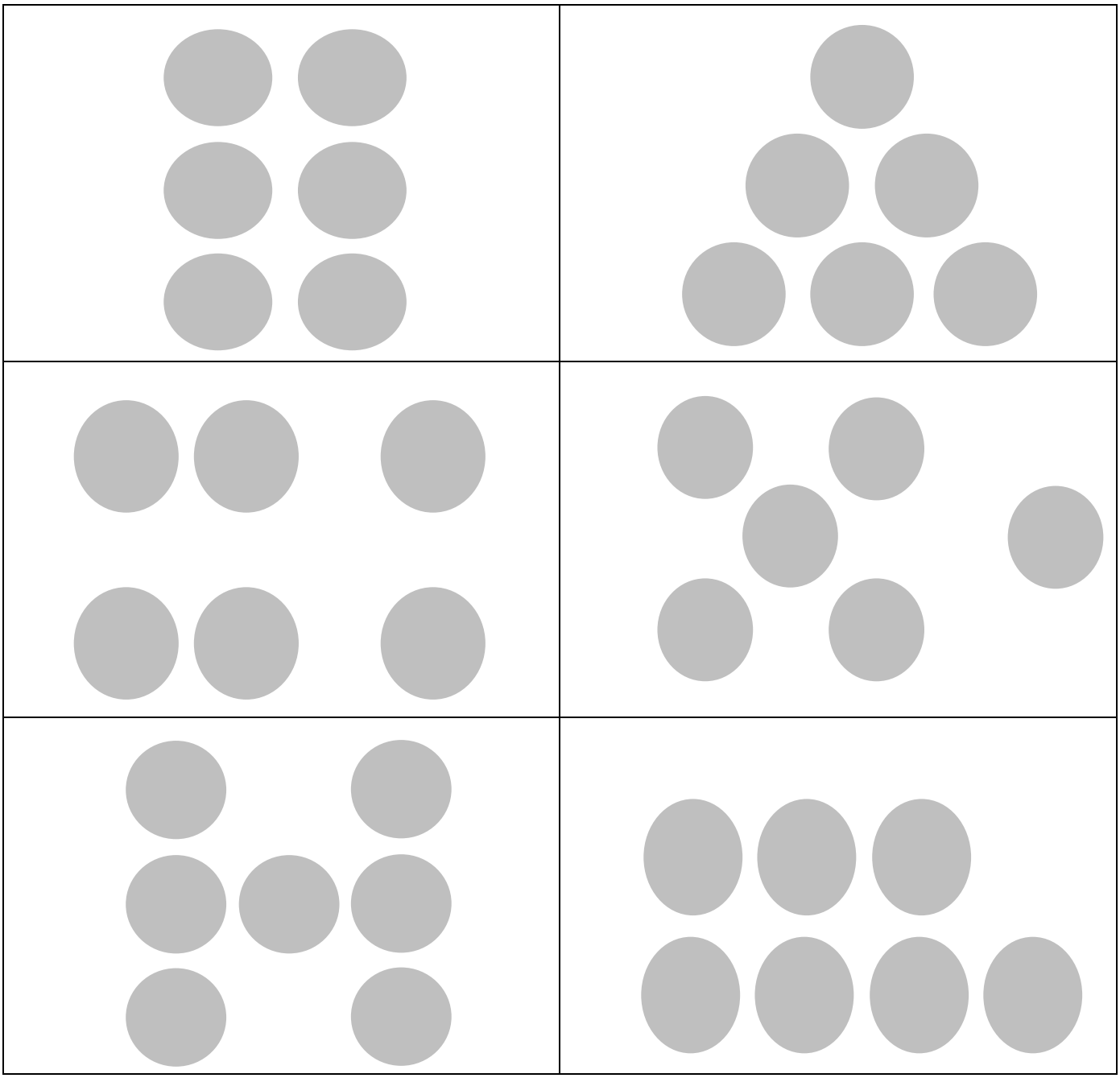
Lesson 1

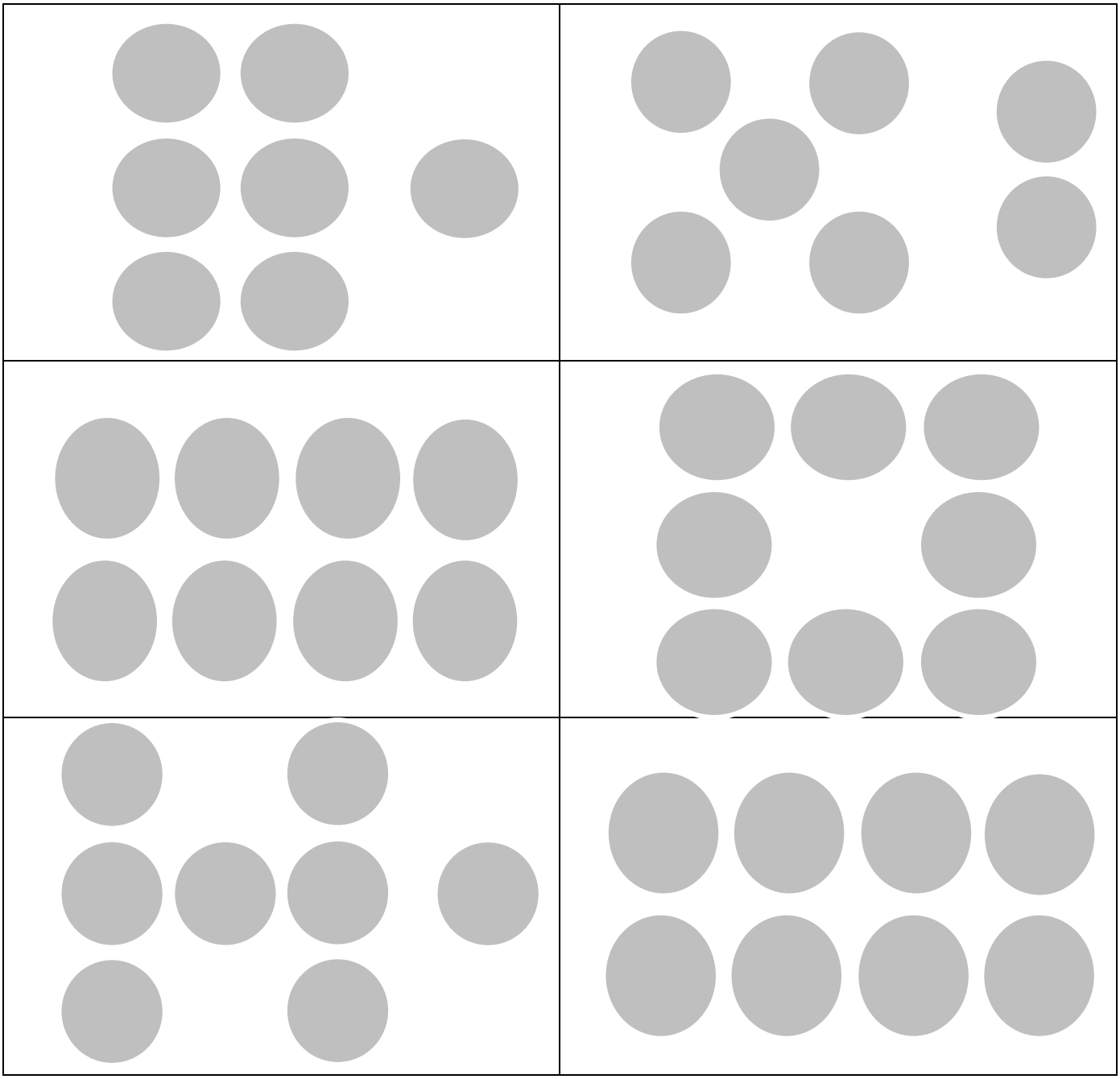
Number bond (Template)

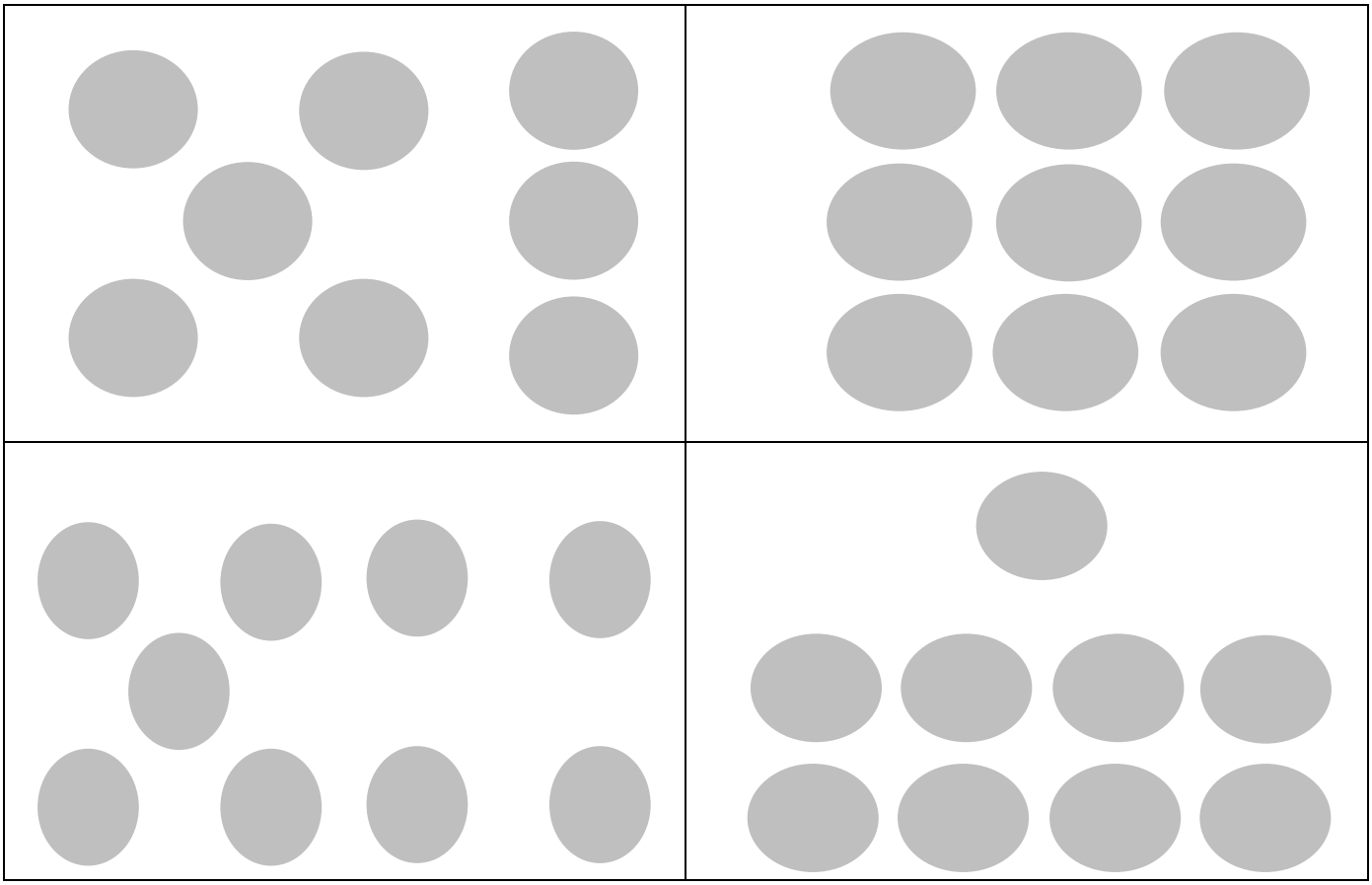


Lesson 2

Dot cards of 6-9 (Template)

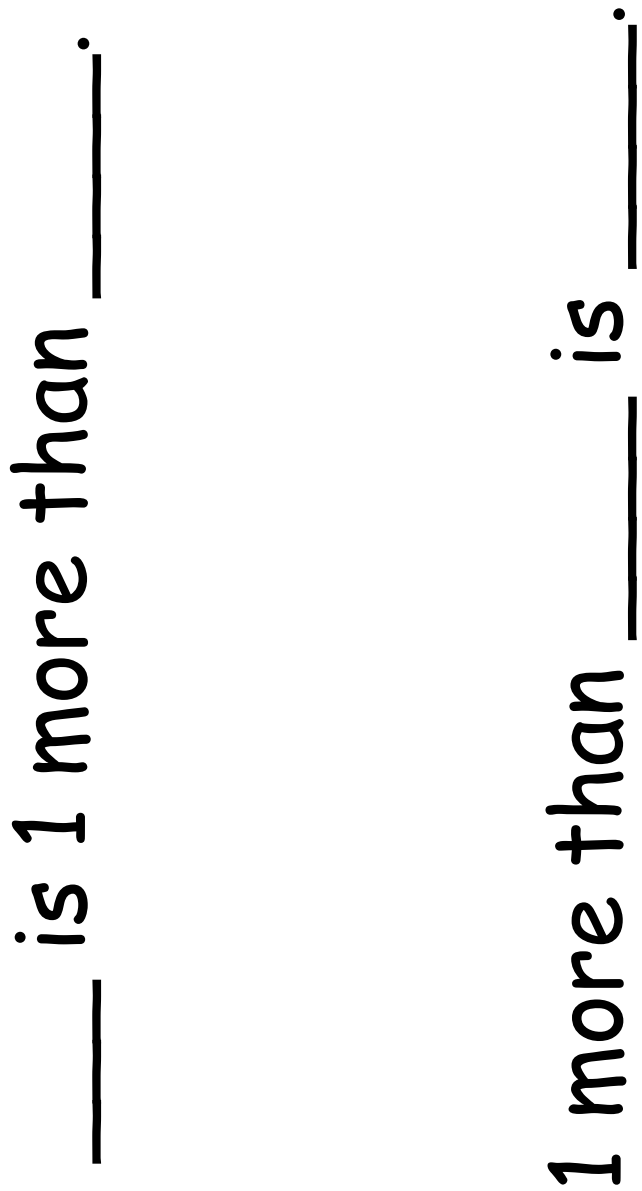




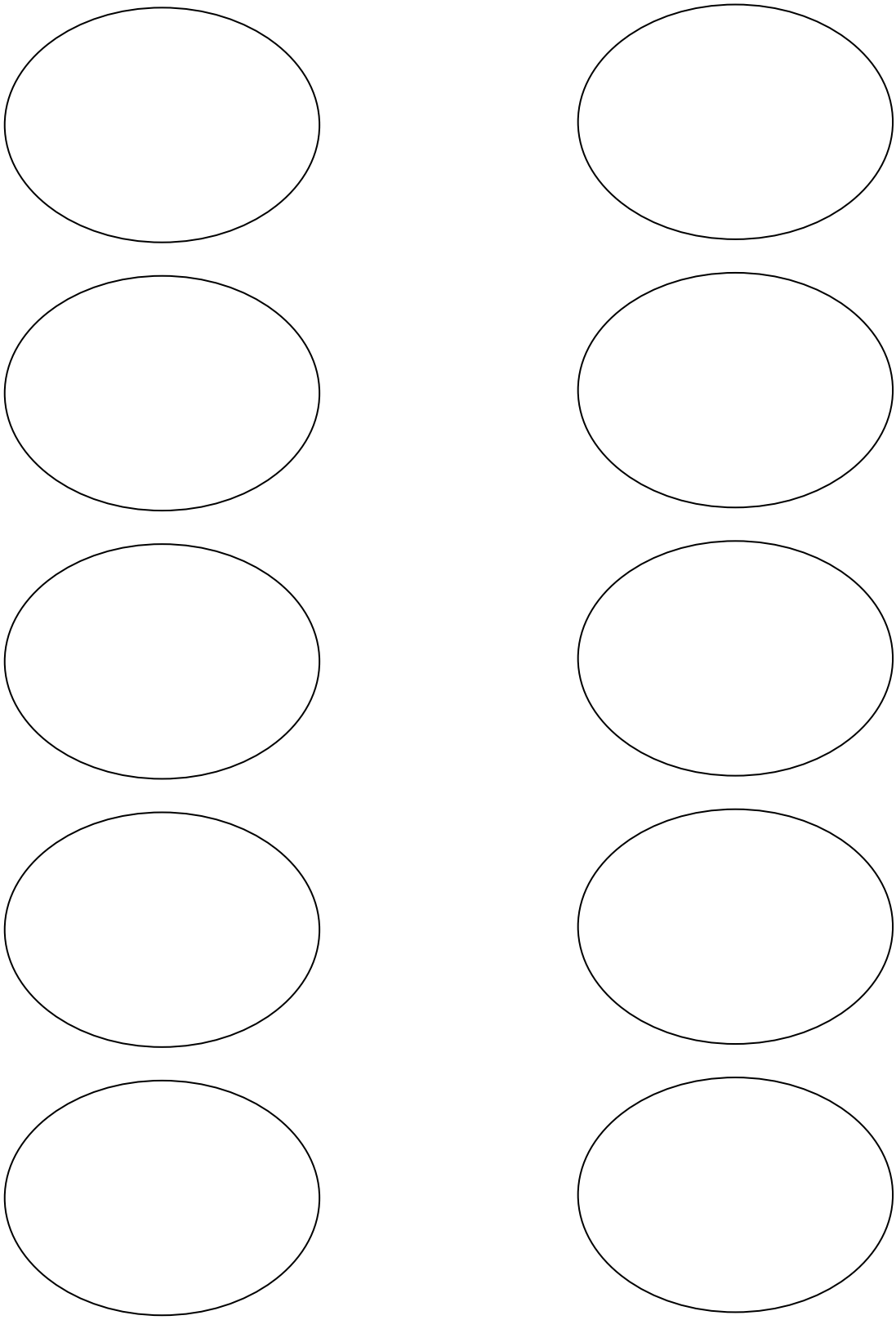


Lesson 3

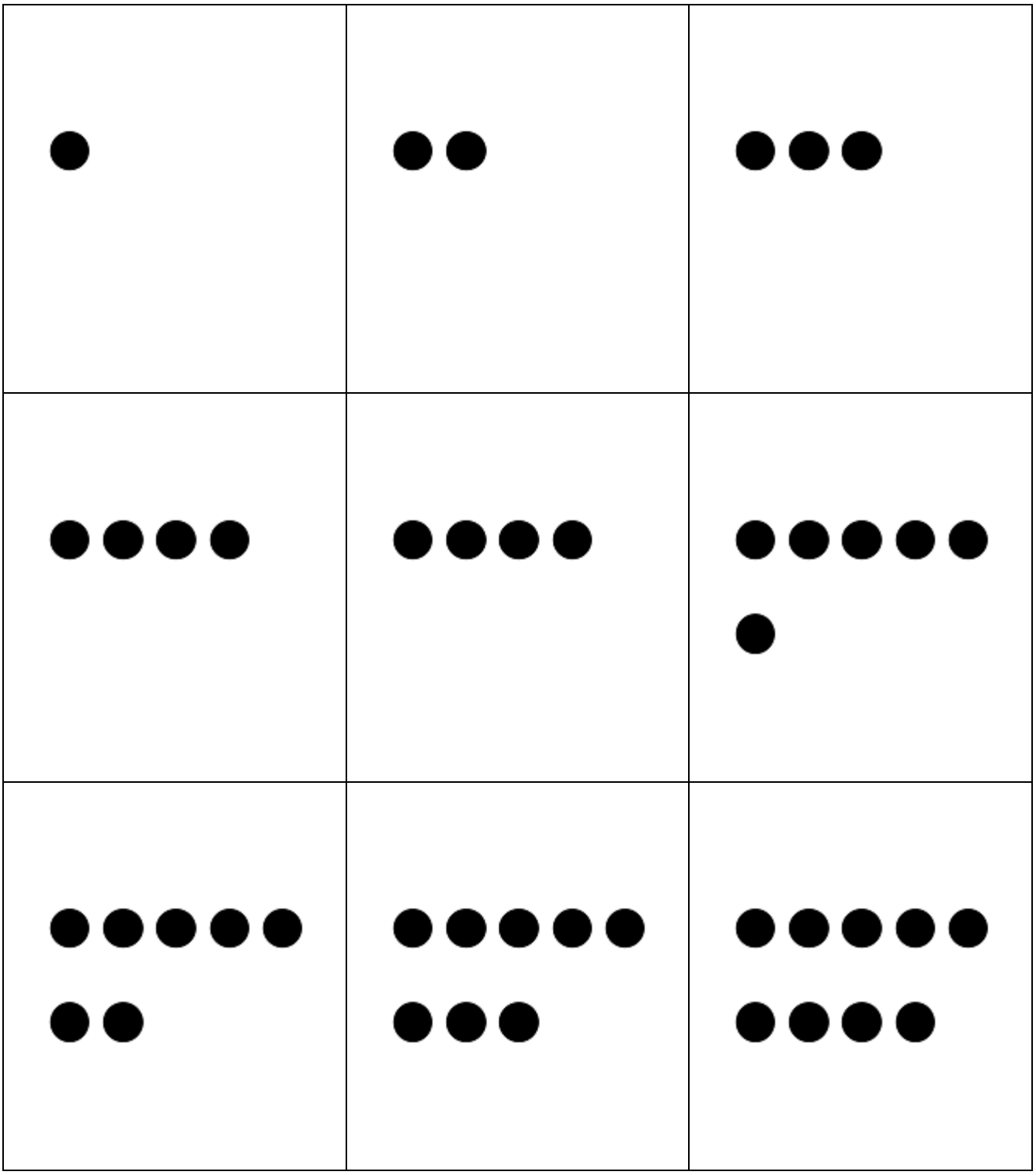
Sentence frame 1 more (Template 1)



5-group mat (Template 2)



1 more game cards (Template 3)

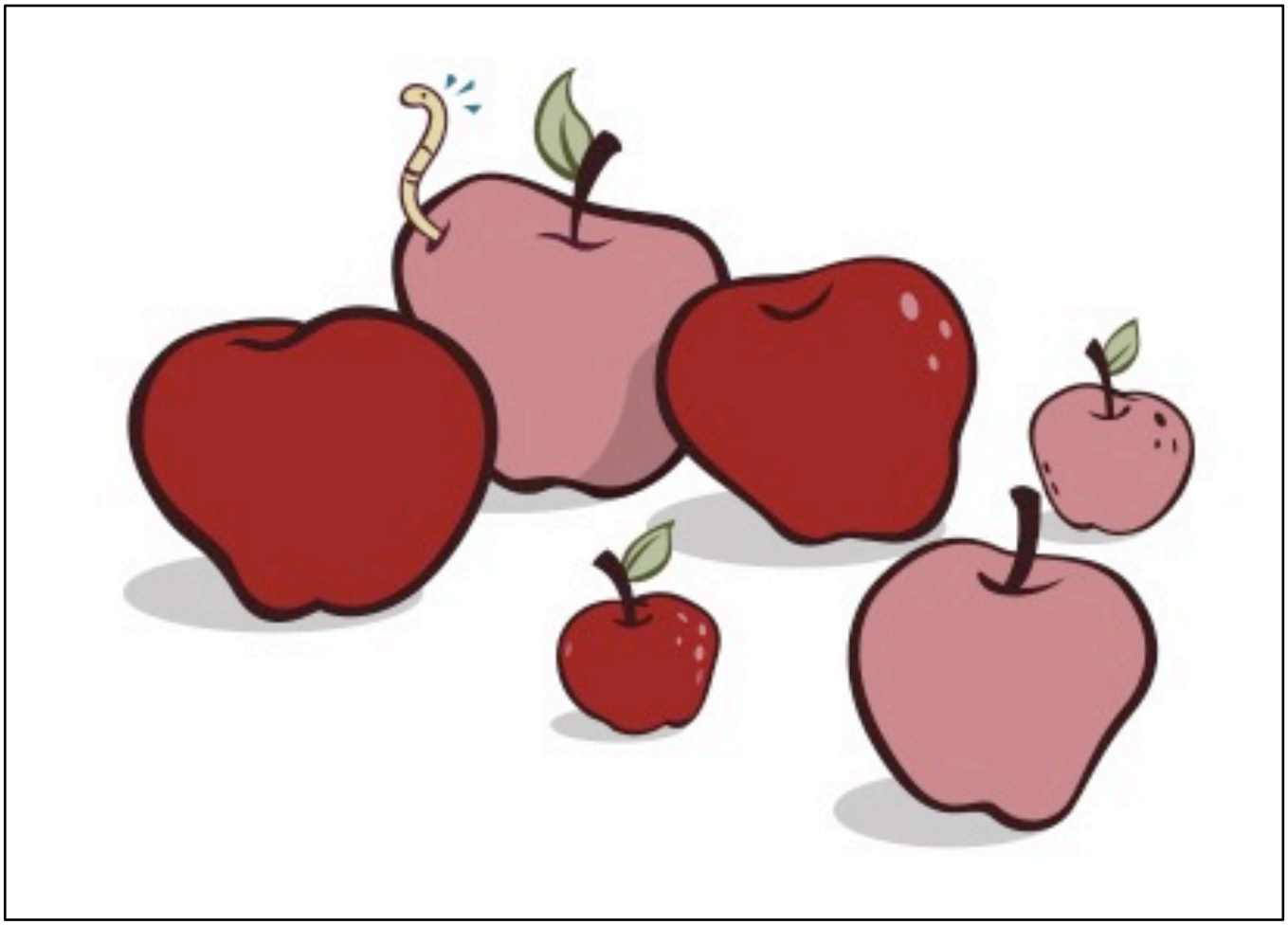


2 is 1 more than 1.	3 is 1 more than 2.	4 is 1 more than 3.
1 more than 4 is 5.	1 more than 5 is 6.	1 more than 6 is 7.
8 is 1 more than 7.	1 more than 8 is 9.	1 more than 9 is 10.

Topic B: Counting On from Embedded Numbers

Lesson 4

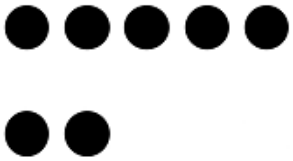
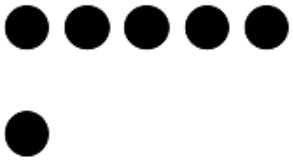
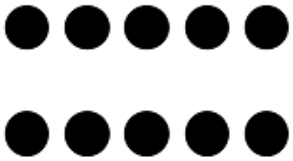
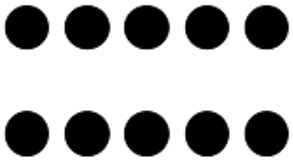
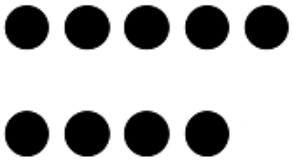
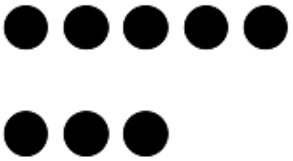
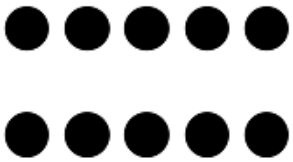
6 apples picture card (Template)



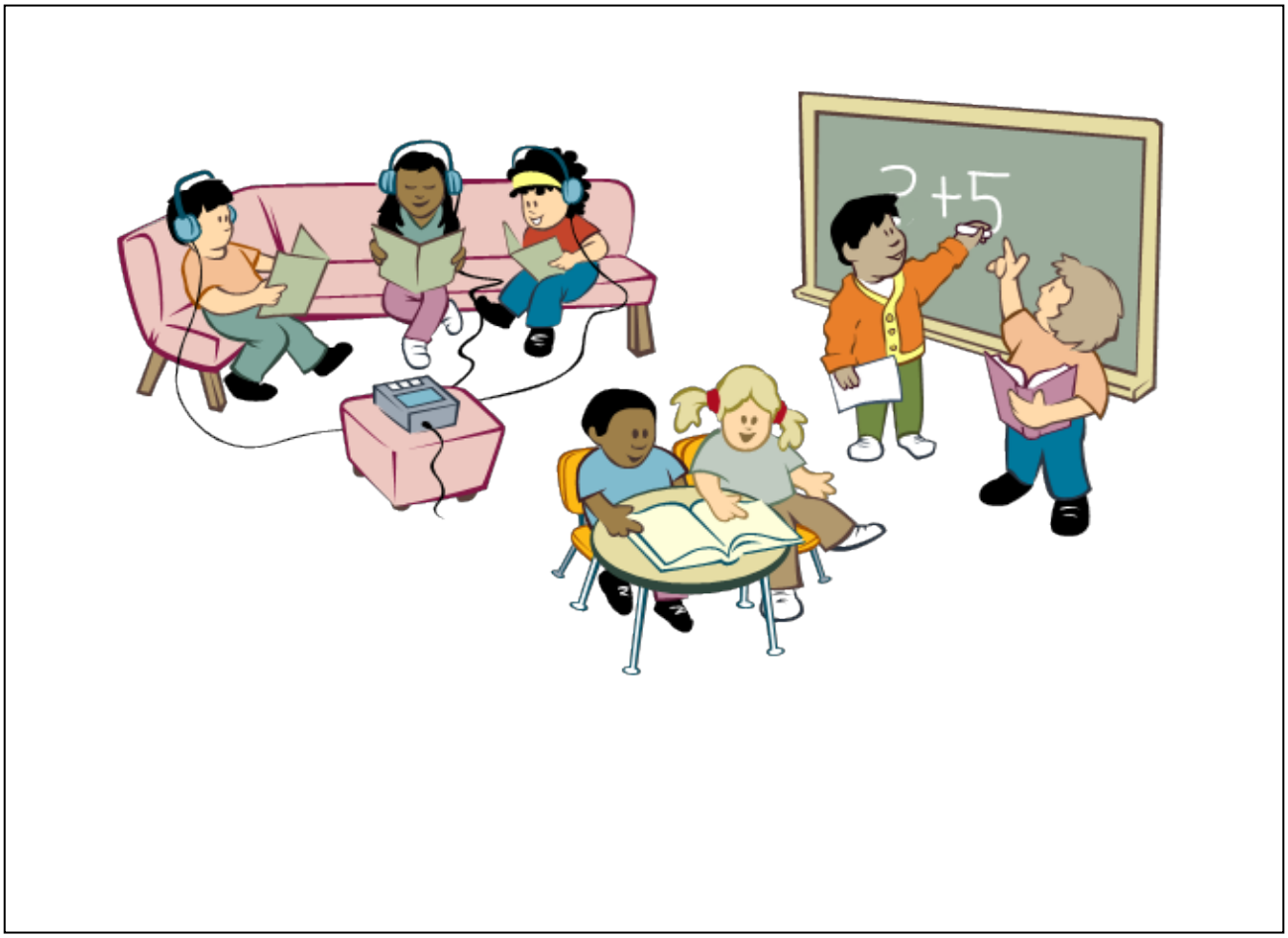
Lesson 5

5-group cards (Template 1)

0	1	2	3
4	5	6	7
8	9	10	10
	10	5	5

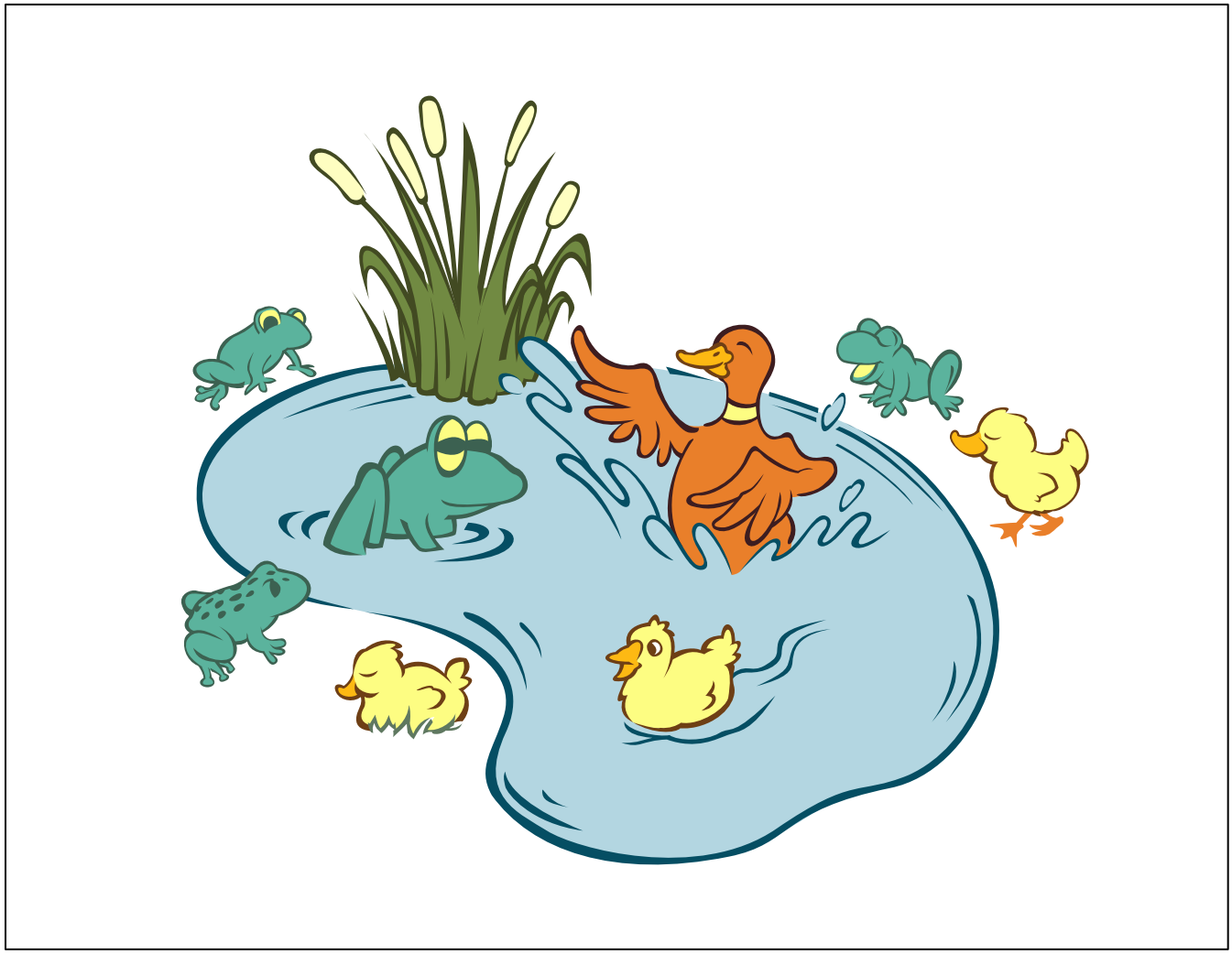
			
			
			
			

7 children picture card (Template 2)

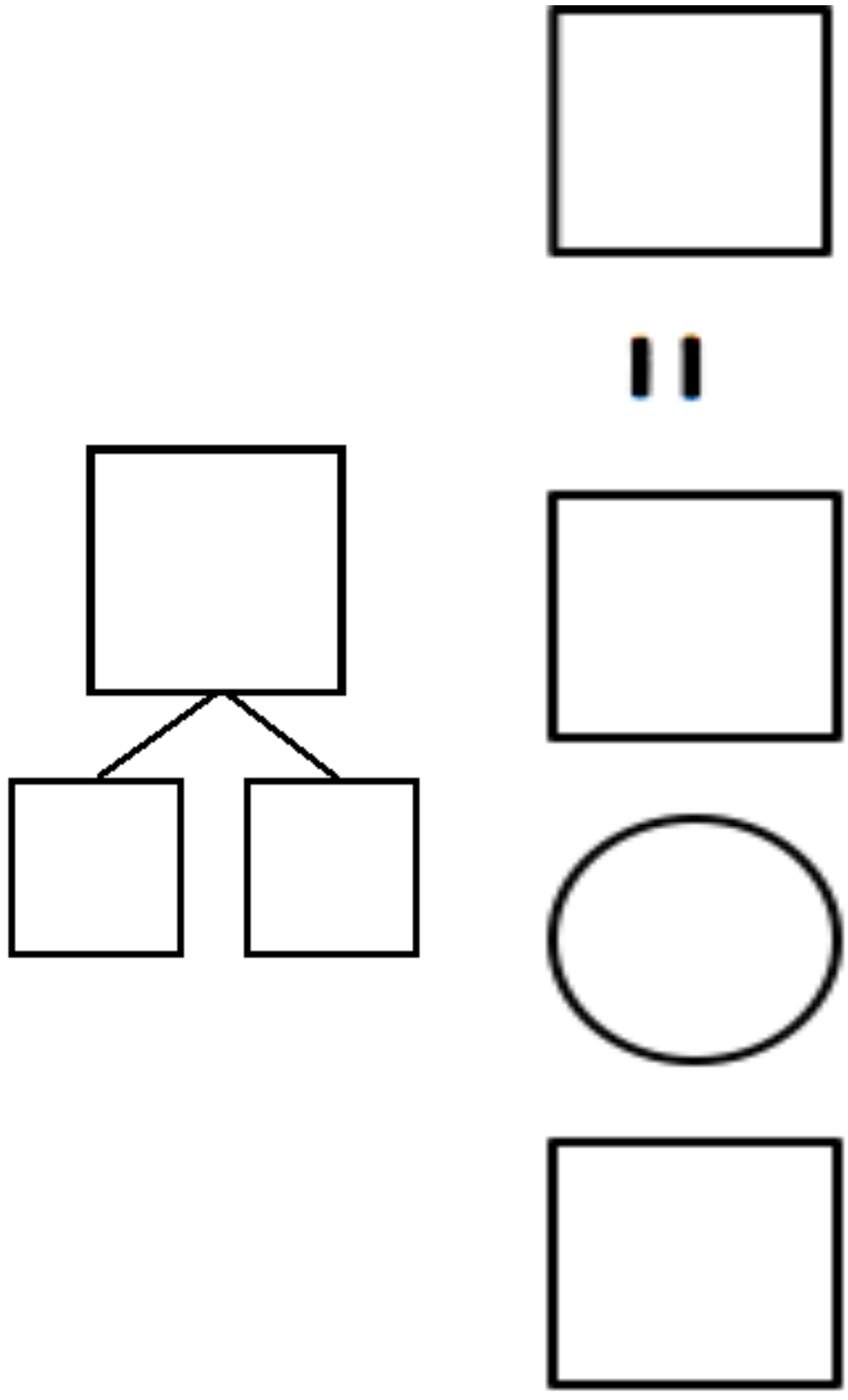


Lesson 6

8 animals picture card (Template 1)



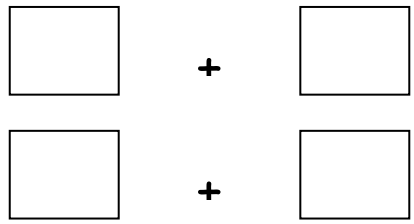
Blank number sentence and number bond (Template 2)

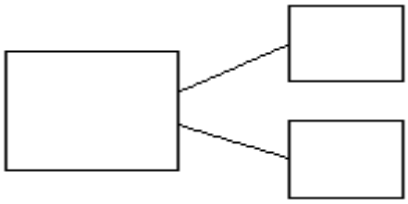


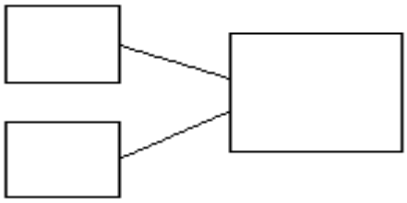
Ways to make 8 (Template 3)

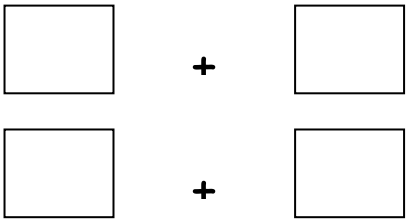
Name _____ Date _____

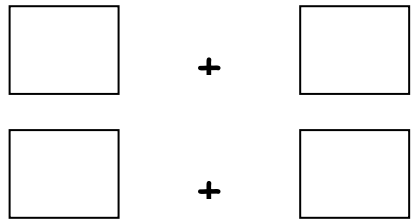
Use your 5-group cards to help you write the expressions and number bonds to show all of the different ways to make 8.

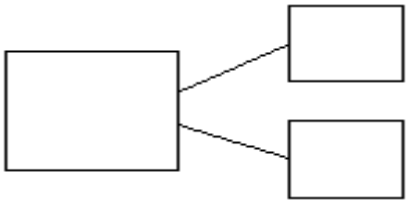


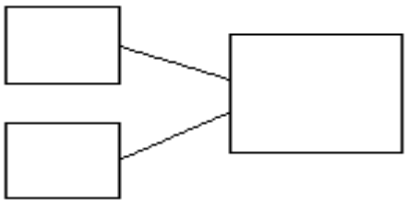


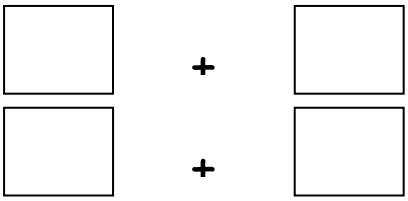


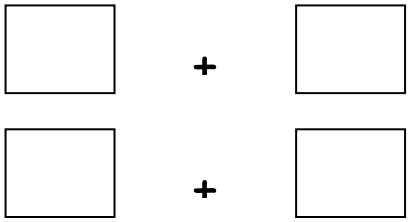


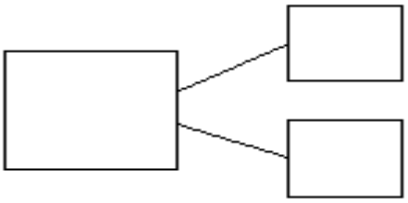






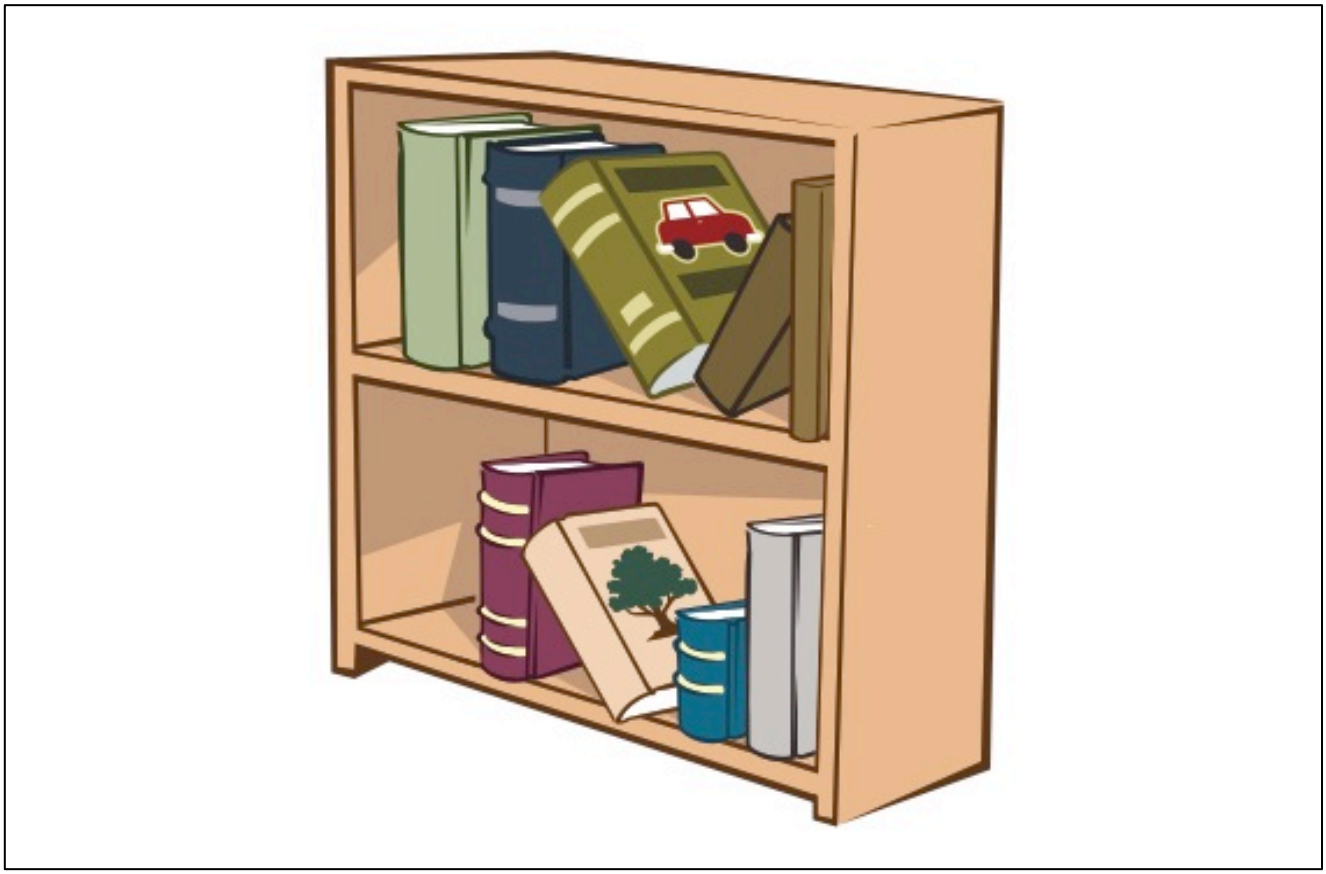




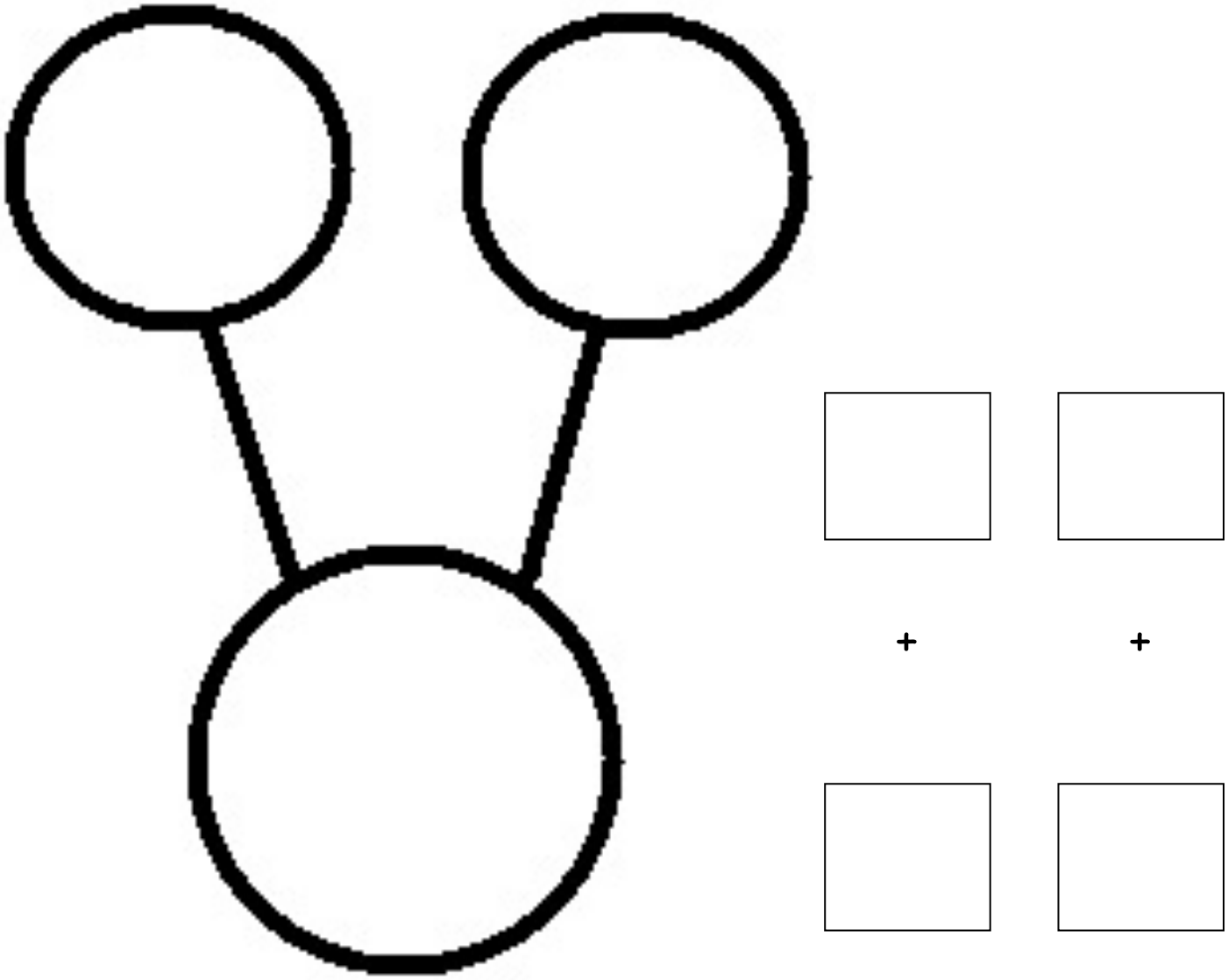


Lesson 7

9 books picture card (Template 1)

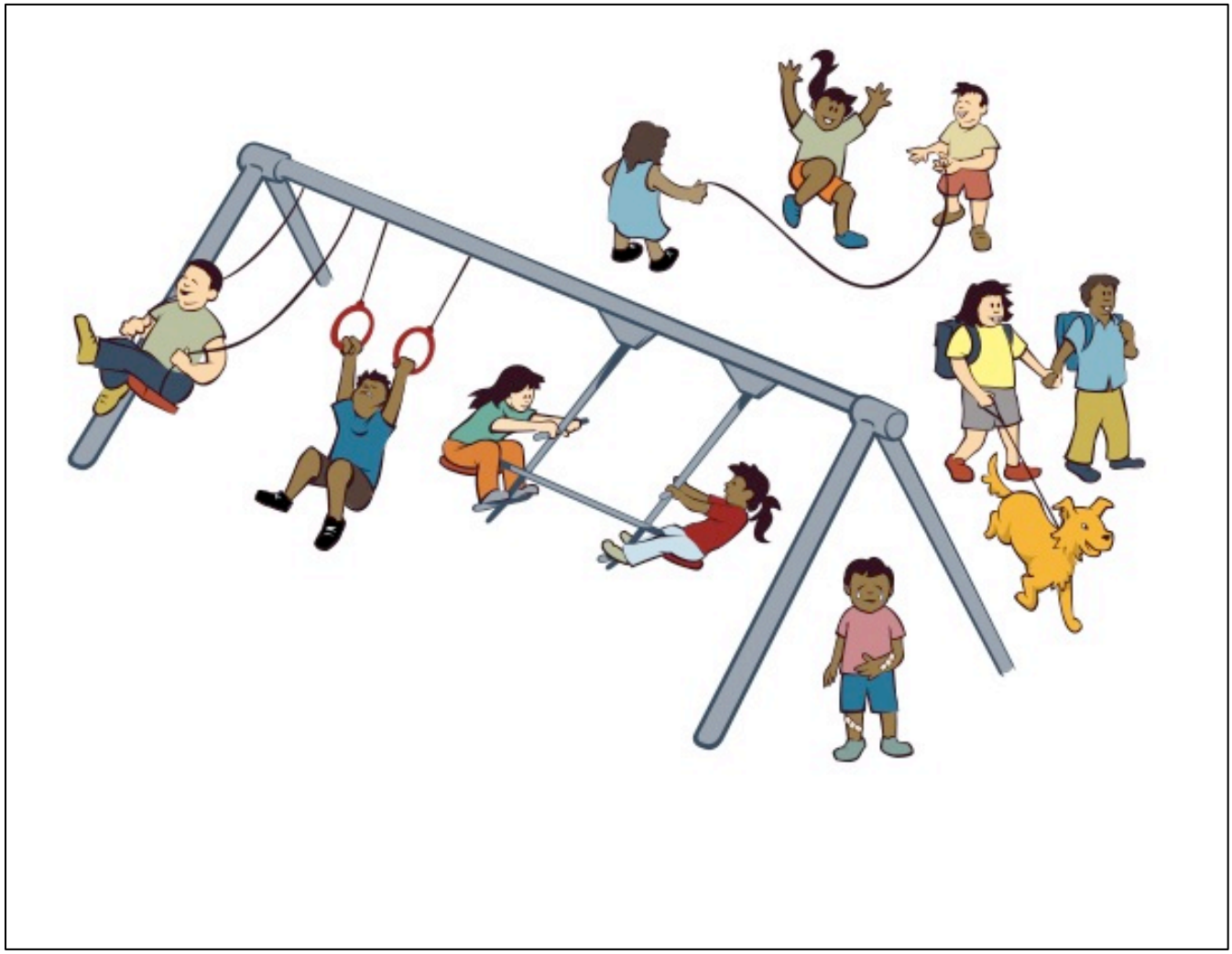


Number bond and expression (Template 2)



Lesson 8

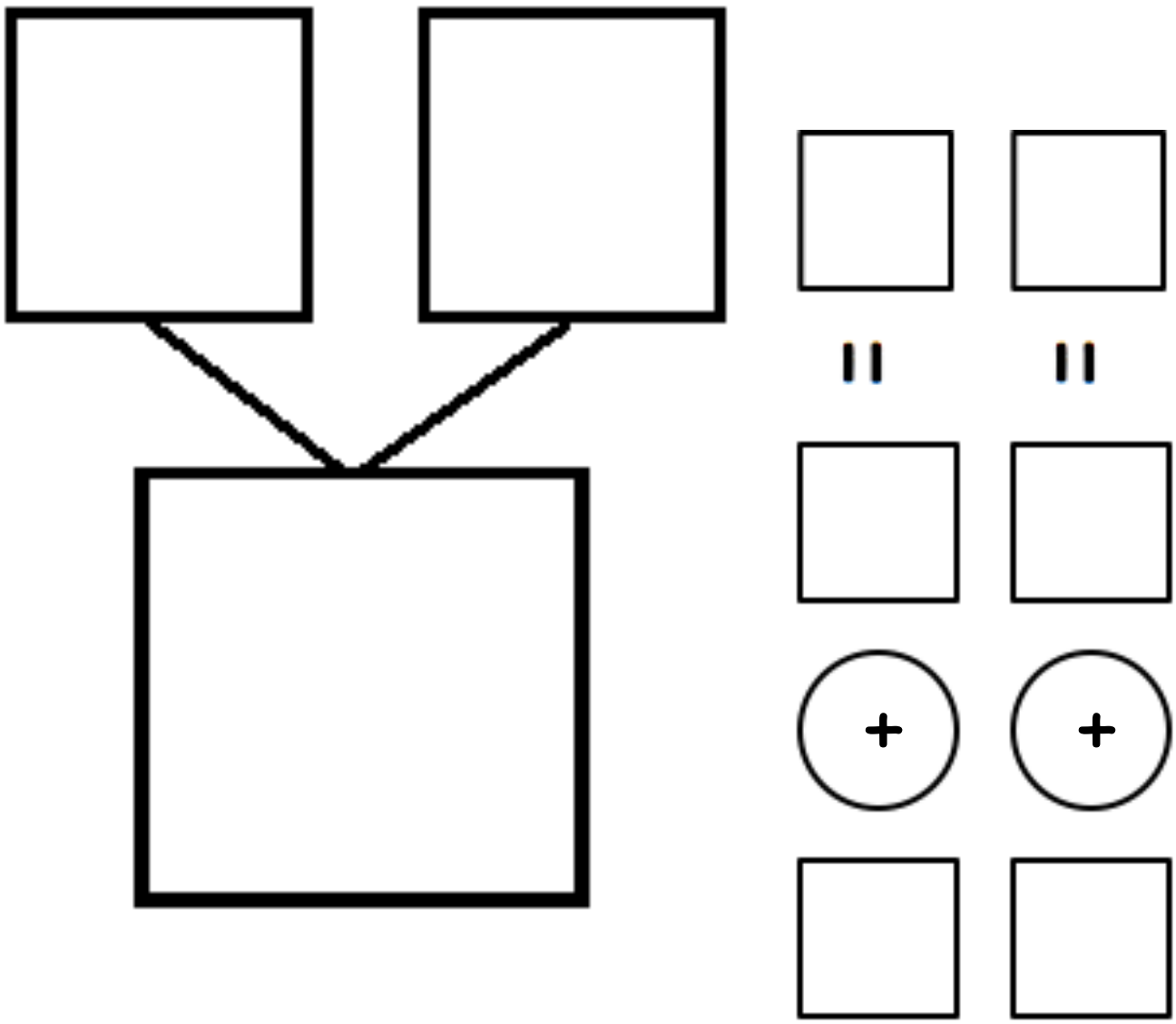
10 children on the playground picture card (Template)



Topic C: Addition Word Problems

Lesson 9

Number bond and two blank equations (Template)



Lesson 11

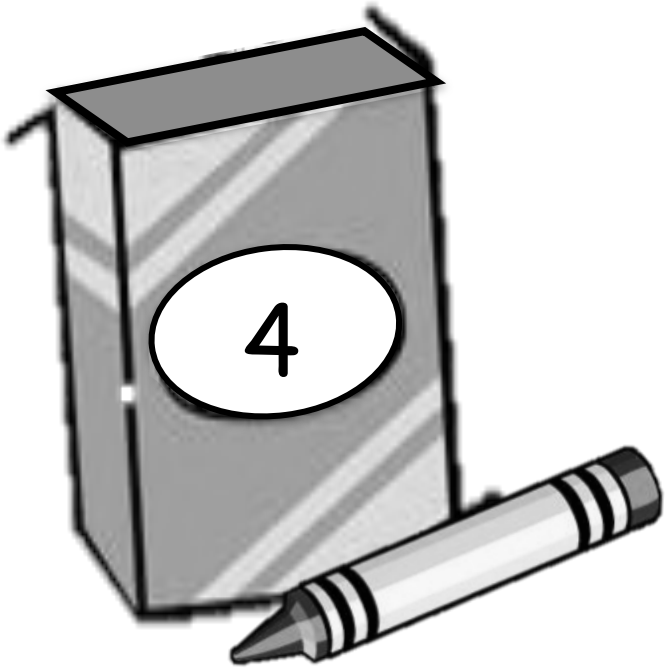
Number sentence cards (Template)

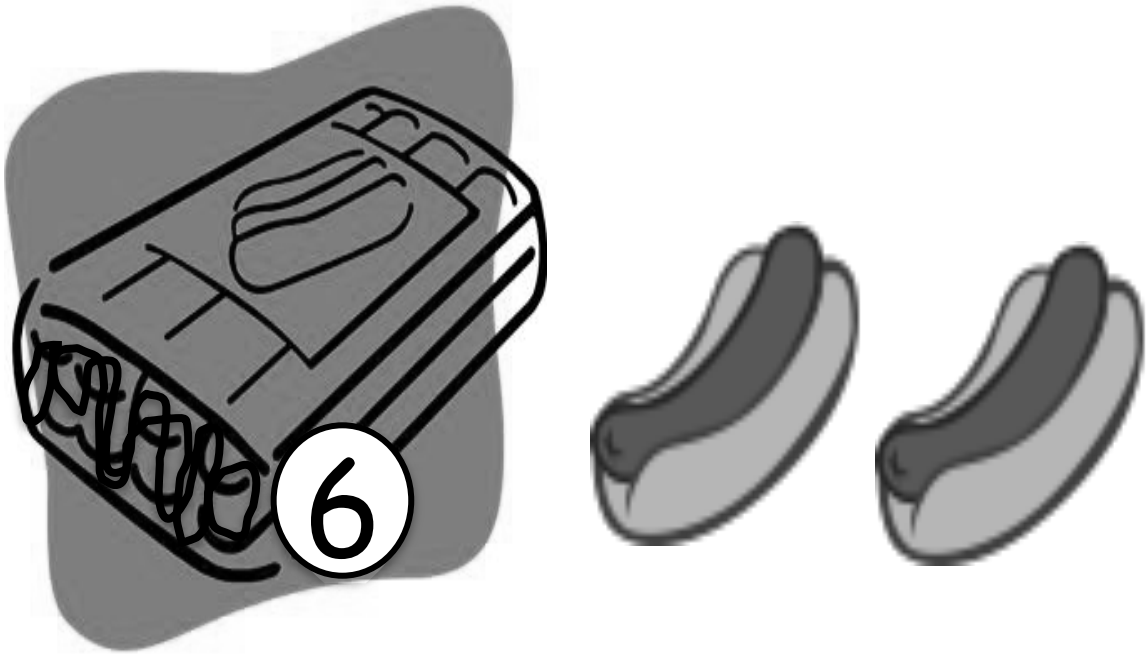
3	+	2	=	5
7	+	1	=	8
6	+	1	=	7
4	+	2	=	6
6	=	5	+	1
10	=	7	+	3
8	=	6	+	2
7	=	5	+	2

Topic D: Strategies for Counting On

Lesson 14

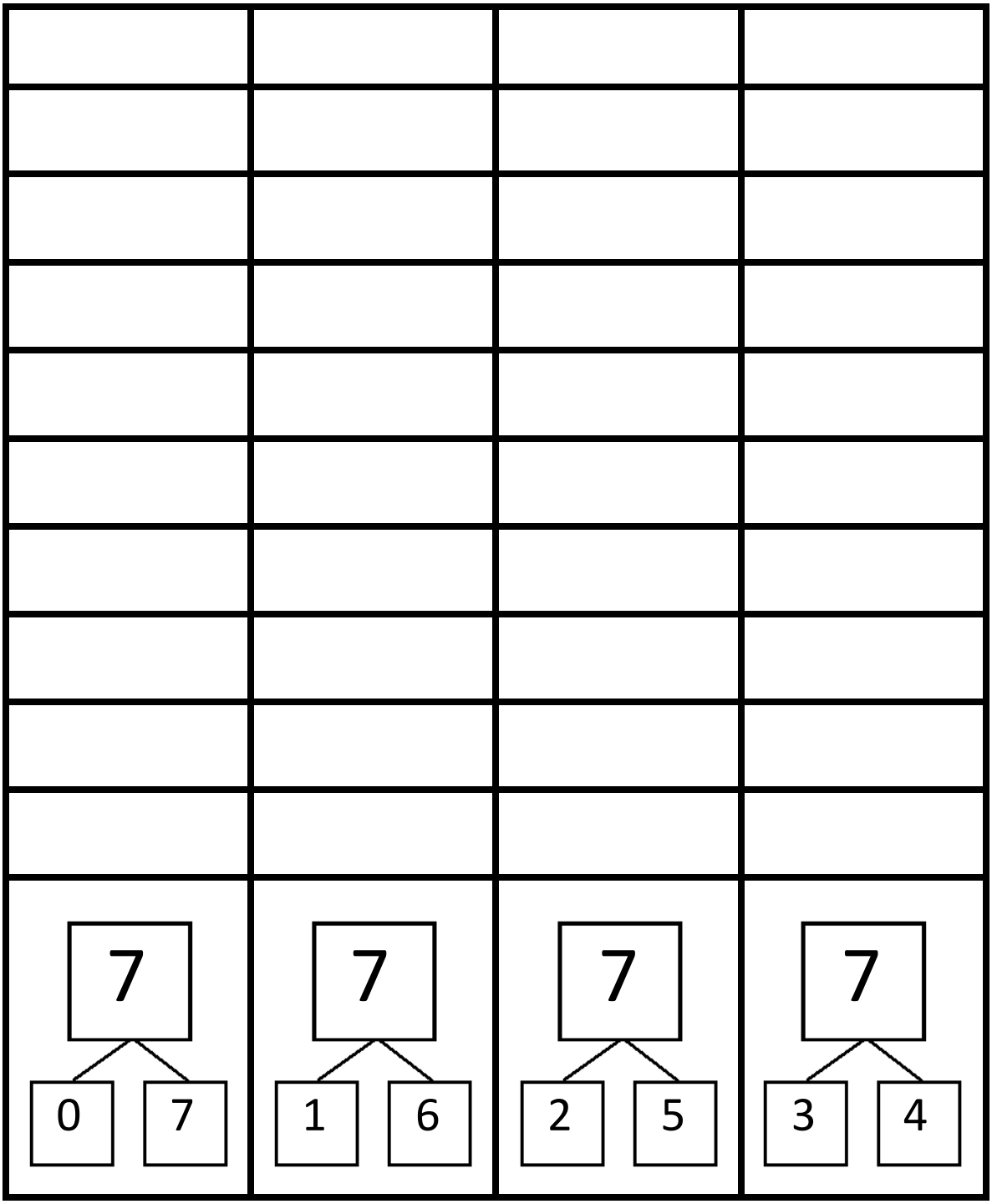
Pictures of crayons and hot dogs (Template)





Lesson 16

Shake those disks 7 board (Fluency Template)



Topic E: The Commutative Property of Addition and the Equal Sign

Lesson 18

True and false number sentence cards (Template)

4 + 1 = 2 + 2	2 + 5 = 8 + 2
3 + 2 = 4 + 1	9 + 1 = 4 + 6
6 + 2 = 3 + 3	3 + 4 = 6 + 3
1 + 7 = 4 + 4	5 + 4 = 3 + 7
2 + 5 = 4 + 3	5 + 5 = 6 +3
5 + 1 = 4 + 2	8 + 2 = 3 + 7

Lesson 20

Expression cards (Template 1)

4 + 1	1 + 4
2 + 3	3 + 2
4 + 0	0 + 4
3 + 1	1 + 3
2 + 1	1 + 2

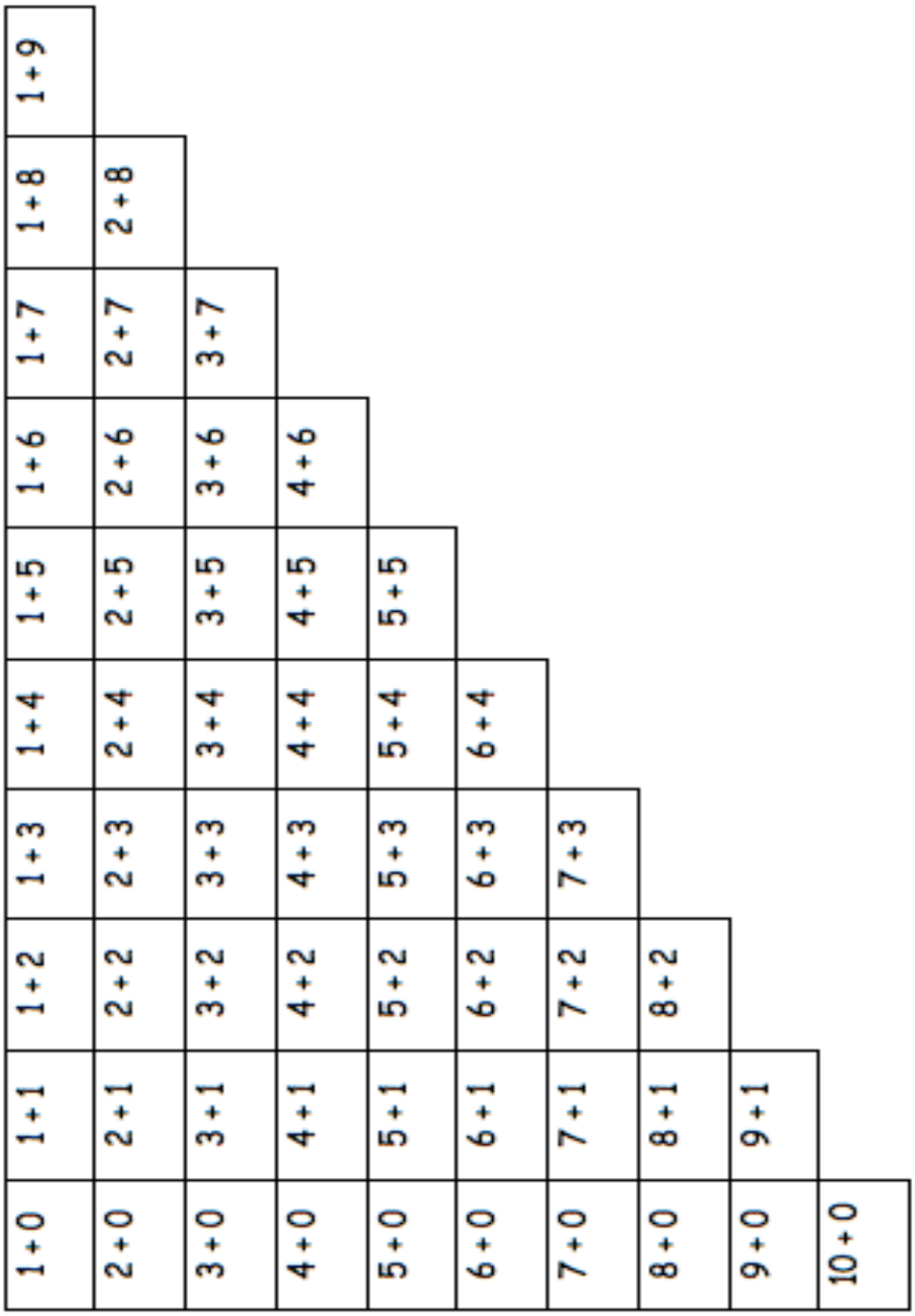
Equal signs (Template 2)

Topic F: Development of Addition Fluency within 10

Lesson 21

Addition chart (Template)



Lesson 24

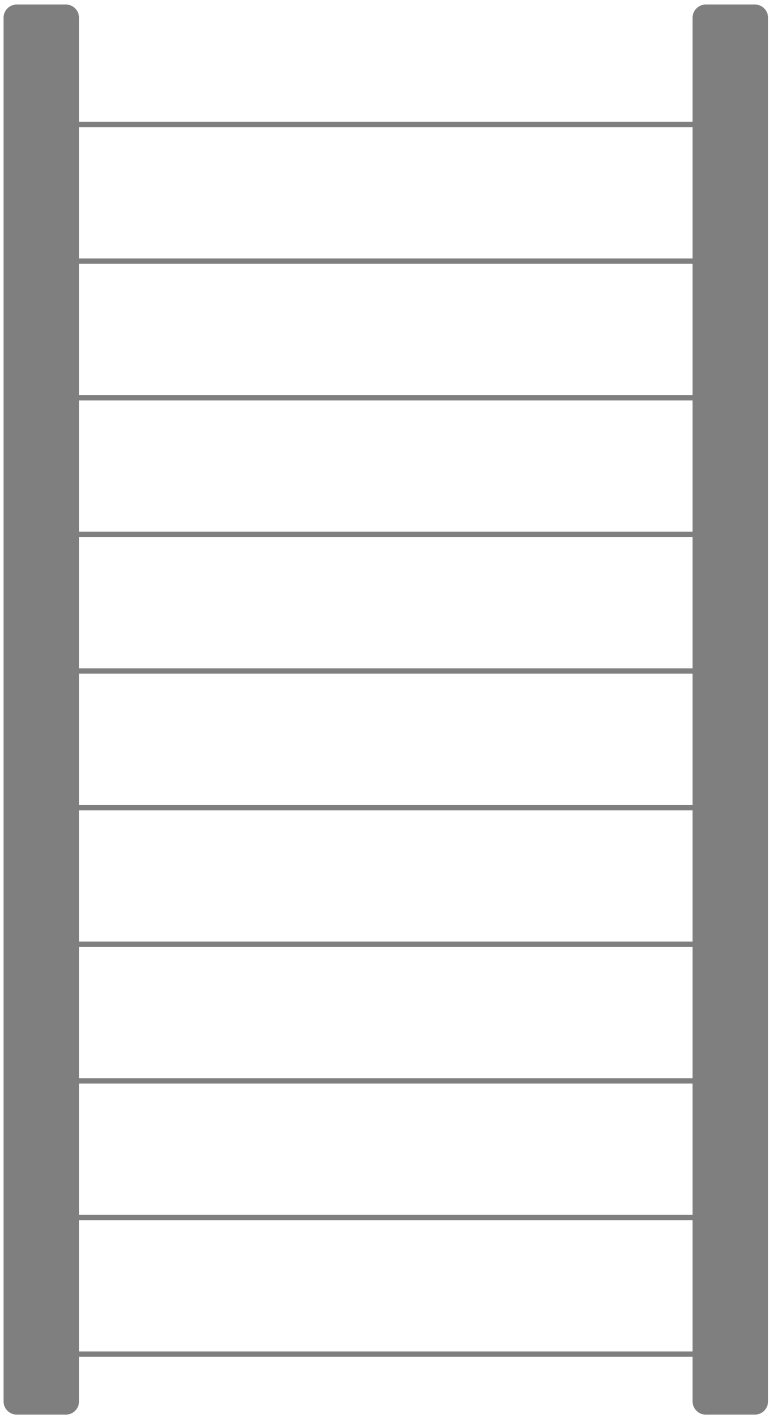
Friendly fact go around (Fluency Template)

2 + 1 = ☐	3 + 1 = ☐	5 + 1 = ☐
4 + 1 = ☐	6 + 1 = ☐	9 + 1 = ☐

2 + 2 = ☐	2 + 3 = ☐	5 + 5 = ☐
3 + 3 = ☐	4 + 4 = ☐	4 + 5 = ☐

0 + 1 = ☐	1 + 3 = ☐	1 + 1 = ☐
2 + 2 = ☐	7 + 1 = ☐	3 + 3 = ☐
1 + 5 = ☐	5 + 5 = ☐	3 + 4 = ☐
8 + 1 = ☐	4 + 4 = ☐	5 + 4 = ☐

Related fact ladder (Template 1)



Expression cards (Template 2)

7 + 3	0 + 7
0 + 2	8 + 2
9 + 0	0 + 3
9 + 1	1 + 8

6 + 3	4 + 6
7 + 2	1 + 7
6 + 2	4 + 5
6 + 1	0 + 6
4 + 3	4 + 4

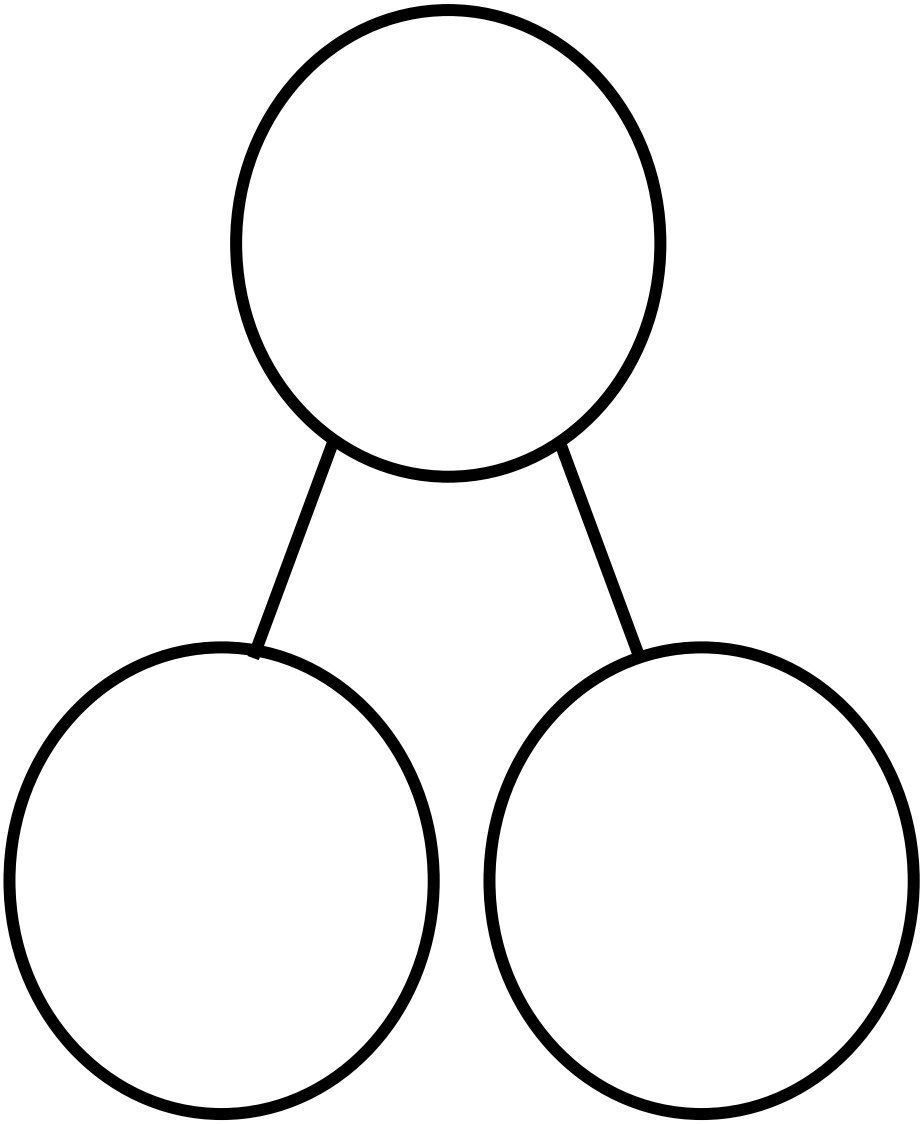
5 + 2	5 + 5
5 + 1	3 + 5
4 + 2	4 + 4
0 + 8	4 + 1

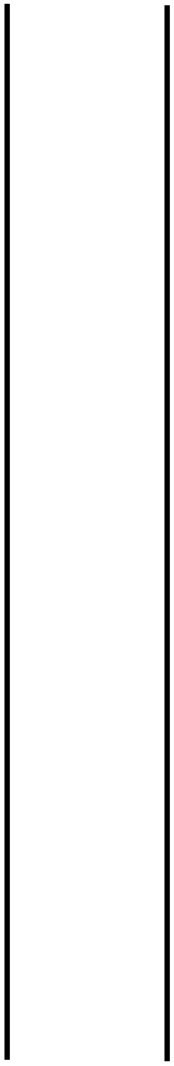
2 + 3	3 + 3
4 + 0	5 + 0
3 + 1	3 + 4
5 + 4	2 + 2

Topic G: Subtraction as an Unknown Addend Problem

Lesson 25

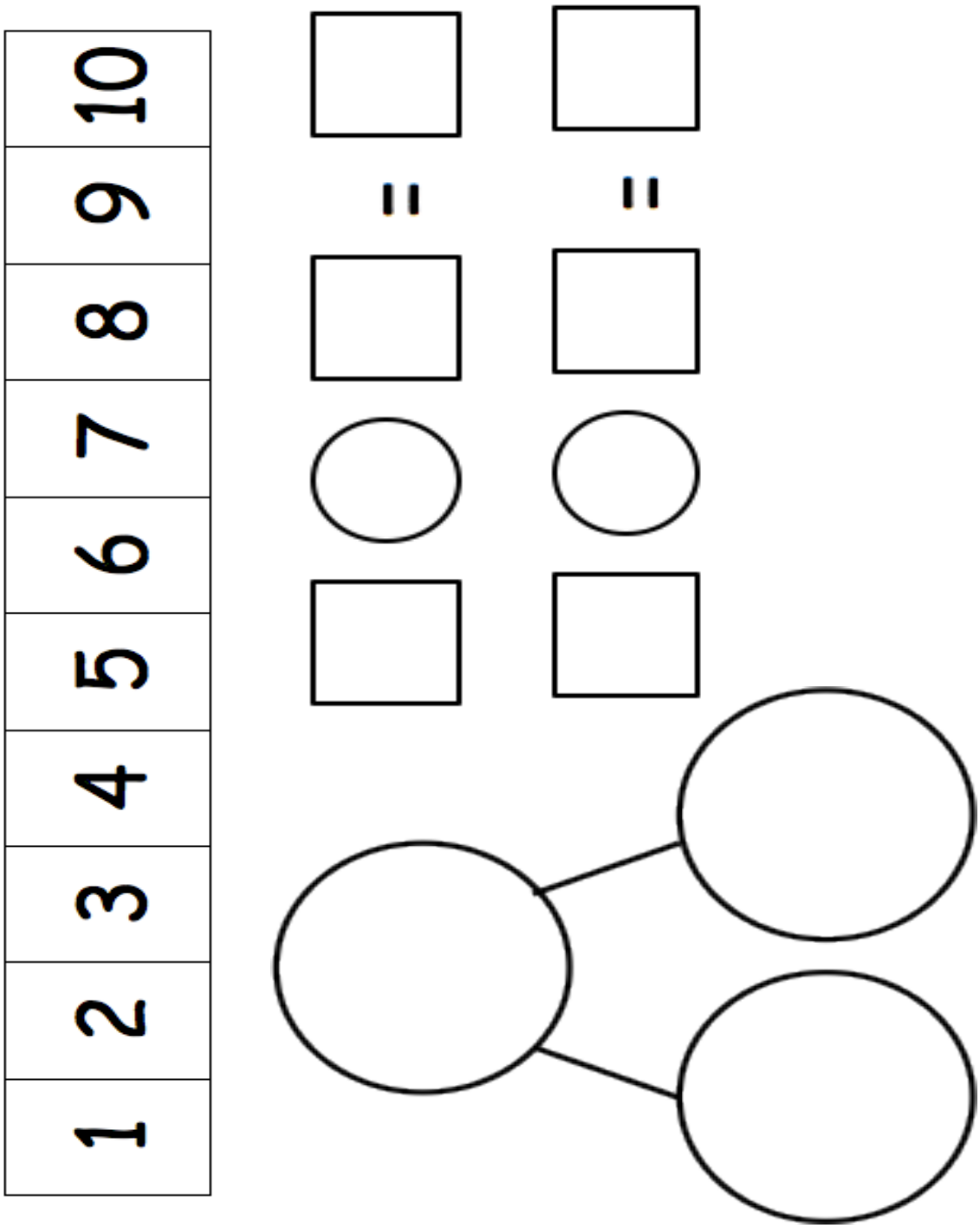
Number bond and number sentences (Template)





Lesson 26

Number path (Template)



Topic J: Development of Subtraction Fluency Within 10

Lesson 38

Subtraction expression cards (Template)

6 - 4	9 - 1
5 - 2	10 - 4
9 - 7	4 - 3
8 - 3	7 - 1
3 - 2	9 - 8

4 - 1	8 - 7
10 - 2	7 - 3
9 - 5	5 - 0
10 - 7	7 - 2
9 - 3	5 - 4

6 - 5	8 - 0
3 - 1	6 - 2
10 - 10	9 - 2
8 - 6	4 - 4
1 - 1	4 - 2

7 - 0	7 - 6
7 - 4	9 - 9
4 - 0	5 - 1
2 - 1	5 - 3
0 - 0	10 - 0

8 - 1	3 - 3
6 - 3	10 - 1
8 - 2	10 - 8
6 - 1	7 - 7
1 - 0	5 - 5

6 - 0	10 - 9
8 - 4	10 - 3
6 - 6	10 - 6
9 - 6	10 - 5
3 - 0	2 - 2

2 - 0	7 - 5
8 - 5	8 - 8
9 - 0	9 - 4
2 - 0	7 - 5