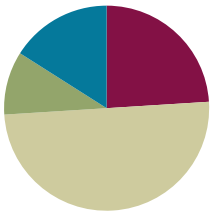
Lesson 28

Objective: Model decompositions of 10 using fingers, sets, linking cubes, and number bonds.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(5 minutes)
Concept Development	(25 minutes)
Student Debrief	(8 minutes)
Total Time	**(50 minutes)**



Fluency Practice (12 minutes)

- Race to 0 Subtraction Game **K.OA.5** (4 minutes)
- Number Bond Bracelet **K.OA.4** (3 minutes)
- Make 10 Memory Game **K.OA.4** (5 minutes)

Race to 0 Subtraction Game (4 minutes)

Materials: (S) Die with the 6-dot side covered

Note: This fluency activity develops automaticity with subtraction within 5, part of the fluency goal for this grade.

1. The partners roll their dice and subtract the number on their die from 5. Both partners state their equations respectively.
2. To win the game, subtract a number from 5 that equals 0 (only by rolling a 5). If neither partner rolls a 5, they both state their subtraction sentences out loud.
3. Both partners roll again and subtract the new number on the die from 5. Both partners state their respective new equations.
4. Continue the subtraction race, rolling the dice and subtracting with speed and accuracy until one of the partners rolls a 5 and says, "5 – 5 = 0."
5. They must reach 0 exactly, stating each subtraction equation before rolling again.

Below is an example of how the game might unfold. Begin a new round if time permits.

Partner A: Rolls a 2 and says "5 – 2 = 3."
Partner B: Rolls a 3 and says "5 – 3 = 2."
Partner A: Rolls a 4 and says "5 – 4 = 1."
Partner B: Rolls a 5 and says "5 – 5 = 0," winning the race to 0.

Number Bond Bracelet (3 minutes)

Materials: (S) Number bonds of 10 bracelet (Lesson 27), personal white board

Note: This fluency activity helps students develop automaticity with partners to 10, which is crucial to learning more efficient methods of addition in Grade 1.

T: Do you remember how many beads are on your number bond bracelets?
S: 10.
T: Is 10 the whole (emphasize by clasping two hands together) or part of the beads? (Pull two hands apart to reinforce the meaning.)
S: Whole.
T: Yes. Take 1 of the beads, and slide it away from the rest. Is 1 the whole or a part? (Emphasize with gestures as before.)
S: Part.
T: Good. Raise your hand when you know the other part. (Wait for all hands to go up, and then signal.) Ready?
S: 9.
T: Yes. Now, write the number bond.

Continue to provide guidance as necessary, and then direct students to work independently through the partners of 10 using their bracelets.

Make 10 Memory Game (5 minutes)

Materials: (S) Matching game cards 0–5 (Lesson 1 Fluency Template 2), matching game cards 6–10 (Lesson 7 Fluency Template 2) per pair, 1 extra 5-card (so 1 of the partners can be 5 and 5)

Note: Students find the hidden partners of 10 in support of today's work with composition and decomposition.

Conduct the activity as outlined in Lesson 26, but now, have students find partners of 10.

Scaffold: Provide each partner with a stick of 10 cubes to help the pair determine the missing part. For example, a student turns over 4 and then breaks off 4 cubes, revealing 6 as the missing part. Students then know to look for the card with the number 6.

Application Problem (5 minutes)

Materials: (S) Small ball of clay, personal white board

Use your clay to make 10 tiny grapes. With your marker, draw a pretty plate on your personal white board. Now, put some of the grapes on the plate.

How many grapes do you have in all? How many grapes are on the plate? How many are not on the plate?

Draw a number bond about your work, and talk about it with your partner. Did she do it in the same way?

Take the grapes off, and try again!

Note: Continuing Lesson 27 practice with decompositions of 10 leads into further work with this topic in the Concept Development.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Challenge students working above grade level by asking how they would complete their number bonds if all the grapes were placed on the plate or, as a follow-up, if all the grapes remained on the table.

Concept Development (25 minutes)

Materials: (S) 2 linking cube 5-sticks, a half sheet of red construction paper to represent a picnic blanket, personal white board

T: You just did a lot of work with your grapes! Who can tell me one way you grouped them?

S: I had 8 on my plate and 2 not on the plate.

T: Show 8 on your fingers using the Math Way. How many fingers are you still holding down?

S: I have 2 down!

T: How many fingers are up?

S: There are 8 fingers up. → 8 up and 2 down. → That is just like the parts in the number bond.

T: You are right! You have 10 fingers in all, but you showed the 8 and the 2 in different ways with your fingers. This time, the up-and-down fingers make the parts of 10. Who arranged their grapes in a different way? Could you show your idea to us with your fingers?

S: I made 1 and 9. → I had 5 and 5.

T: Let's practice showing these number partners with our fingers, too. (Allow time for practice and discussion.) How are your fingers like number bonds for 10? (Allow students to describe the relationship.)

T: You have some cubes in front of you. Count your cubes.

S: There are two 5-sticks. → I just counted mine all up: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. → Fives are partners to 10. I had a 5-stick and 5 more.

T: Put all of your linking cubes together. Now, imagine with me for a minute. It is a beautiful summer day at the park, and you are having a picnic with your friends. Now, imagine that 10 ants come to share your picnic!

T: Let's pretend your paper is a little picnic blanket. It is not wise to play with real ants, so we will act out the story using our linking cubes instead. How many ants do we have?

S: 10.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

As students are invited to imagine the picnic story, scaffold for English language learners by pointing to or showing a visual of an ant, and then illustrate how the ants crawled away from the picnic blanket. Students can tackle the math if they understand the story situation being created.

T: Put all of the ants on your blanket. Now, pretend 1 ant got full and crawled away. Break off a linking cube, and make it crawl off the blanket. How could we talk about this with math words?

S: There are still 10 ants in the whole story, but now, we have parts of 1 and 9. → This is just like what we did with our bracelets! → 1 is off the blanket, and 9 are on the blanket.

T: Good thinking! Draw a number bond to tell about the ant that crawled away. Hold your personal white board up, so I can see your work. (Quickly scan for accuracy.)

MP.8

T: Imagine that another ant got full, too, and left the blanket. Break off another cube, and put it with its full friend. Who can tell me about what you see now?

S: We still have 10 cubes, but now, our parts are different. → Now, we have 2 and 8. → It is like a pattern, the same as with the bracelets. → This one is growing, and this one is getting shorter!

T: Draw a new number bond to show the new parts. (Circulate to ensure accuracy.)

T: With your partner, continue to act out the story as the ants get full one by one! Each time, make a new number bond about the hidden partners you find for 10. (Allow time for sharing, modeling, and discussion.) Now, put your 10-sticks together again, and act out a new picnic story. You can choose how many are on the blanket each time. Don't forget to make your number bonds! (Allow time for extra partner practice.)

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted time.

Student Debrief (8 minutes)

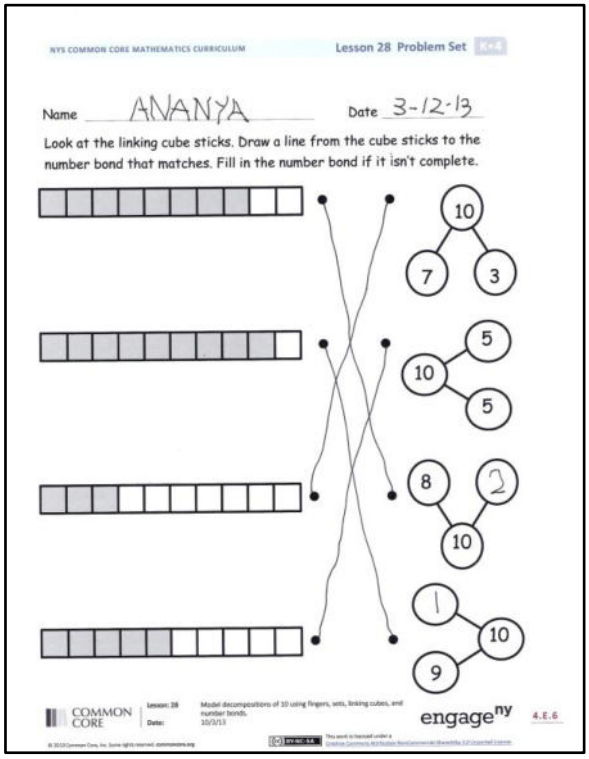
Lesson Objective: Model decompositions of 10 using fingers, sets, linking cubes, and number bonds.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- How did you know which number bond to match with which linking cube stick in your Problem Set?
- What did you think about when you had to draw your own linking cube sticks?

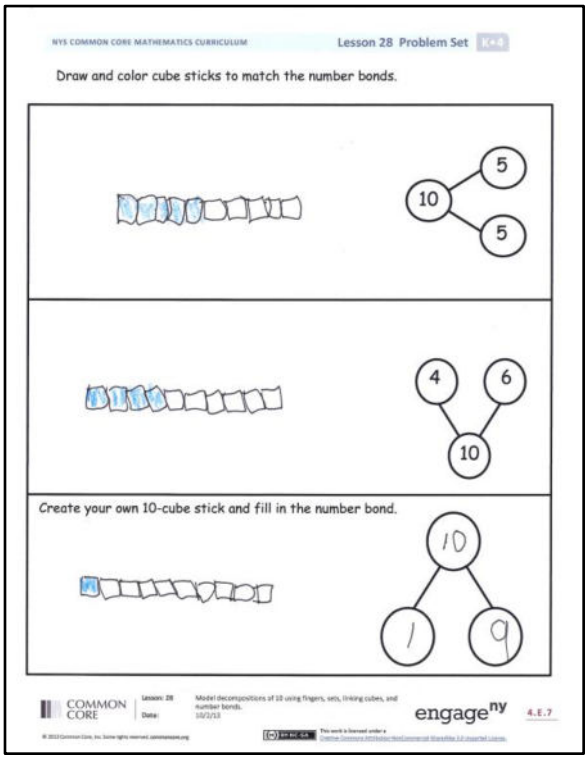

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 28 Problem Set K•4

Name ANANYA Date 3-12-13

Look at the linking cube sticks. Draw a line from the cube sticks to the number bond that matches. Fill in the number bond if it isn't complete.

COMMON CORE Lesson: 28 Date: Model decompositions of 10 using fingers, sets, linking cubes, and number bonds. 10/3/13 engage^ny 4.E.6

- How is what we did today like what we did yesterday with our bracelets?
- How are your fingers like number bonds of 10?
- How can you show 6 and 4 as partners of 10 on your fingers? Is 6 a part or a whole? (Part.) What is the other part? What is the whole?


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 28 Problem Set K•4

Draw and color cube sticks to match the number bonds.

10 → 5, 5

10 → 4, 6

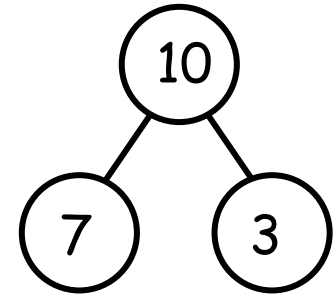
Create your own 10-cube stick and fill in the number bond.

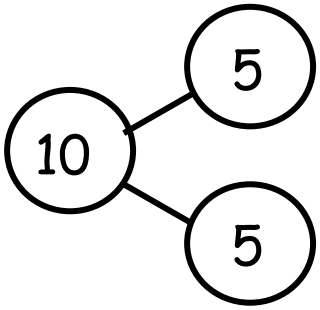
10 → 1, 9

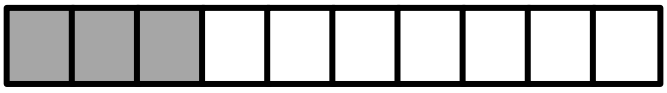
COMMON CORE | Lesson: 28 Date: | Model decompositions of 10 using fingers, sets, linking cubes, and number bonds. | engage^ny 4.E.7

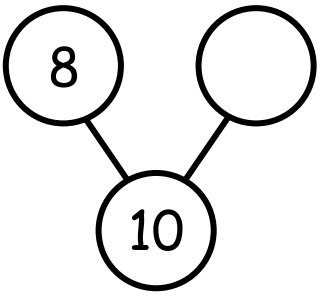
Name _____ Date _____

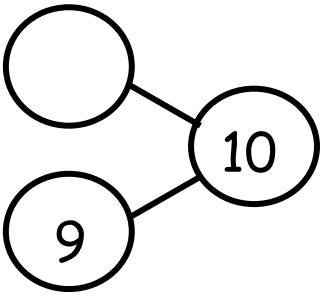
These squares represent cube sticks. Look at the linking cube sticks.
Draw a line from the cube stick to the number bond that matches.
Fill in the number bond if it is not complete.



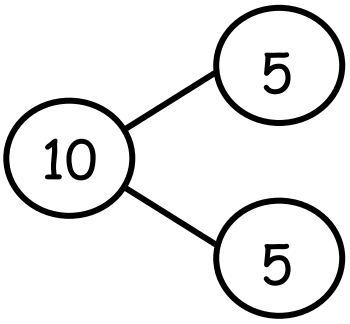


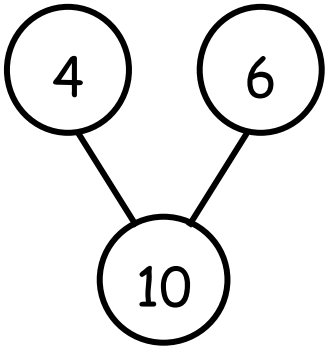




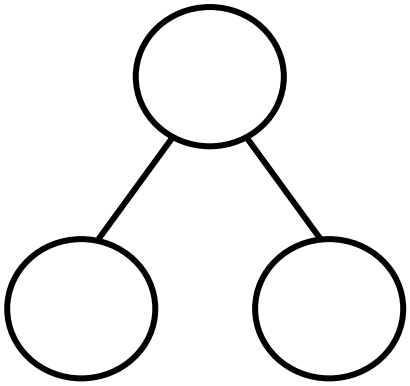


Draw and color cube sticks to match the number bonds.



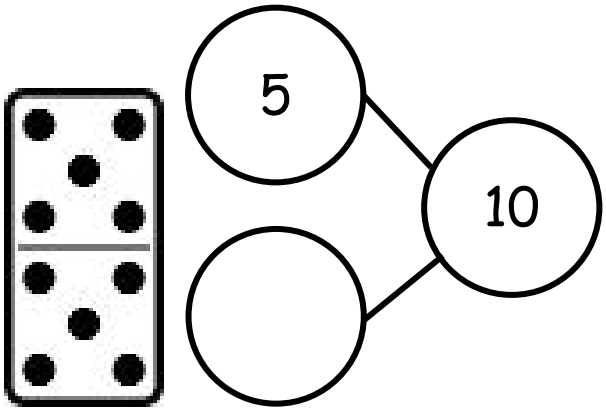


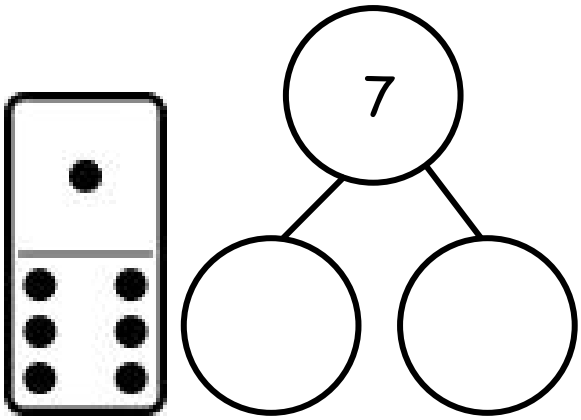
Create your own 10-cube stick, and fill in the number bond.

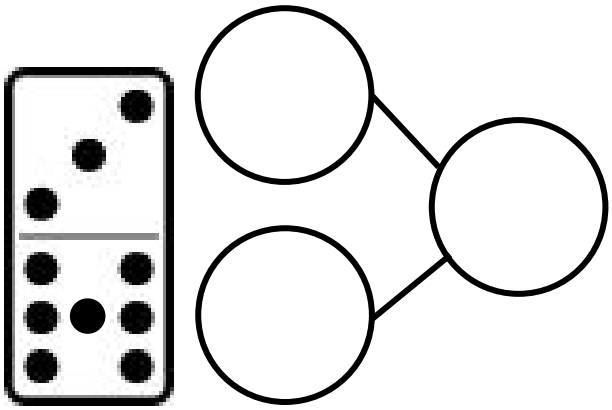


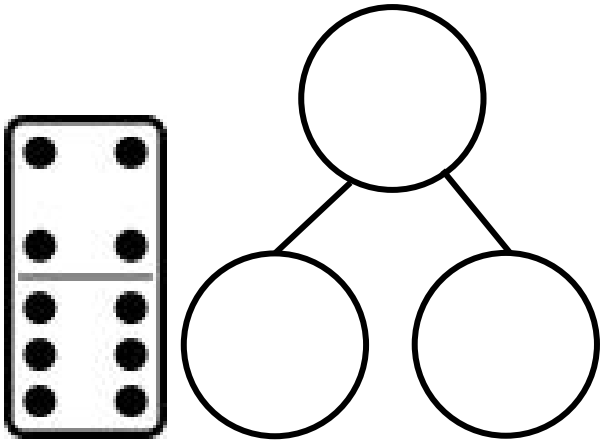
Name _____ Date _____

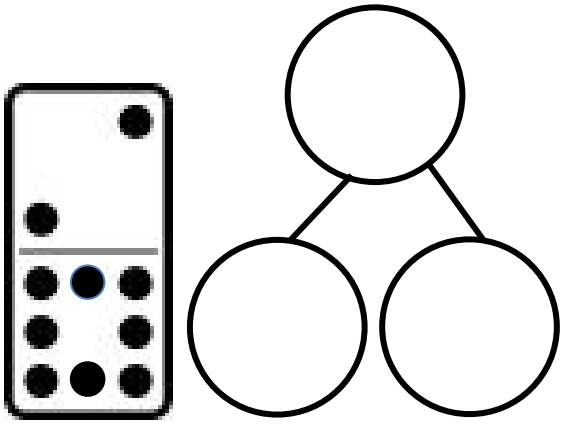
Write a number bond to match each domino.











On the back of your paper, draw 1 of the dominoes and a blank number bond. Pretend you are the teacher, and ask an adult at home to fill it in.