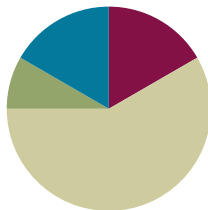


Lesson 17

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

Suggested Lesson Structure

■ Fluency Practice	(10 minutes)
■ Application Problem	(5 minutes)
■ Concept Development	(35 minutes)
■ Student Debrief	(10 minutes)
Total Time	(60 minutes)



Fluency Practice (10 minutes)

- Penny Drop: 7 **1.OA.6** (5 minutes)
- Number Bond Dash: 7 **1.OA.6** (5 minutes)

Penny Drop: 7 (5 minutes)

Materials: (T) 7 pennies, 1 can

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

Show students 7 pennies. Have students close their eyes and listen. Drop some of the pennies in a can, one at a time. Ask students to open their eyes and guess how many pennies are still in the teacher's hand. Then, have students say how many pennies they heard drop and count on to 7, using the remaining pennies.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Provide a variety of ways to respond with Fluency Practice when students are not able to complete it the way it is intended. They can be given extra time or allowed to complete the activity orally. The goal of the task is for students to show what they know.

Number Bond Dash: 7 (5 minutes)

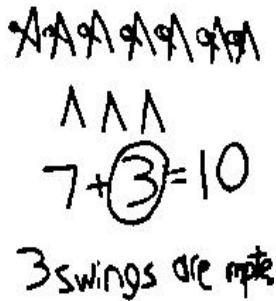
Materials: (T) Stopwatch or timer (S) Number bond dash 7 (Lesson 6 Fluency Template), marker to correct work

Note: By using the same system repeatedly, students can focus on the mathematics alone. The activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Follow the procedure for the Number Bond Dash (Lesson 2). Tell students to remember how many problems they get correct so they can try to improve their scores tomorrow.

Application Problem (5 minutes)

There are 10 swings on the playground, and 7 students are using the swings. How many swings are empty? Draw or write a number sentence to show your thinking. Use a sentence at the end to answer today's question: How many swings are empty?



**NOTES ON
MULTIPLE MEANS
OF ACTION AND
EXPRESSION:**

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.

Note: This problem serves as a bridge from the previous lesson's focus on solving for a missing addend.

Concept Development (35 minutes)

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: Hmm... 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.
- 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.

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

Problem Set (10 minutes)

Distribute Problem Set to students, and allow them to work independently or in small groups.

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

Student Debrief (10 minutes)

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

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.

- Look at Problems 1–4. In Problem 1, we have apples plus oranges, and that equals fruit. What about Problem 2? What about Problem 3? What about Problem 4? How is Problem 3 different from the others? (They are like units.)
- Look at Problem 5(g). Share what you wrote as your true number sentence. What is the total represented by each side of this true number sentence? (10.)
- If both sides equal 10, is $6 + 4 = 5 + 5$ the same as $10 = 10$? (Write this on the board.) Talk with your partner about why or why not.
- Look at the true number sentence you wrote for Problem 6(g). Think about what we just decided about Problem 5(g). What is another way you can write the true number sentence? ($8 = 8$.)
- Think about the goal of today's lesson. What does the equal sign tell us?

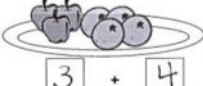
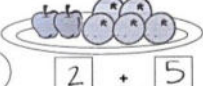
Exit Ticket (3 minutes)

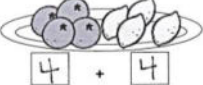
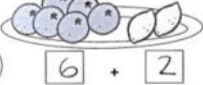
After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

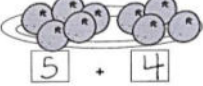
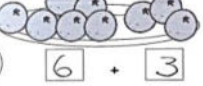
NYS COMMON CORE MATHEMATICS CURRICULUM/NYS COMMON Lesson 17 Problem Set 1•1

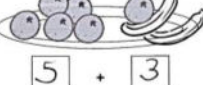
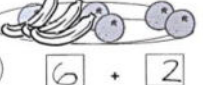
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Write an expression that matches the groups on each plate. If the plates have the same amount of fruit, write the equal sign between the expressions.

1.  $3 + 4 =$  $2 + 5$

2.  $4 + 4 =$  $6 + 2$

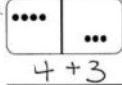
3.  $5 + 4 =$  $6 + 3$

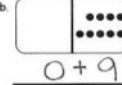
4.  $5 + 3 =$  $6 + 2$

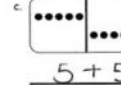
COMMON CORE Lesson 17: Understand the meaning of the equal sign by pairing equivalent expressions and constructing true number sentences. engage^{ny} 1.E.7

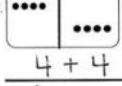
NYS COMMON CORE MATHEMATICS CURRICULUM/NYS COMMON Lesson 17 Problem Set 1•1

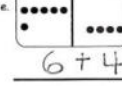
5. Write an expression to match each domino.

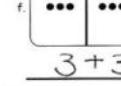
a.  $4 + 3$

b.  $0 + 9$

c.  $5 + 5$

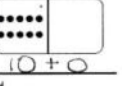
d.  $4 + 4$

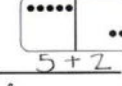
e.  $6 + 4$

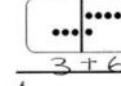
f.  $3 + 3$

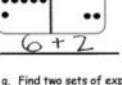
g. Find two sets of expressions from (a) - (f) that are equal. Connect them below with = to make true number sentences.

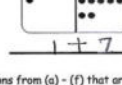
$5 + 5 = 5 + 5$ $6 + 4 = 6 + 4$

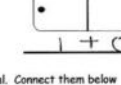
6. a.  $10 + 0$

b.  $5 + 2$

c.  $3 + 6$

d.  $6 + 2$

e.  $1 + 7$

f.  $1 + 0$

g. Find two sets of expressions from (a) - (f) that are equal. Connect them below with = to make true number sentences.

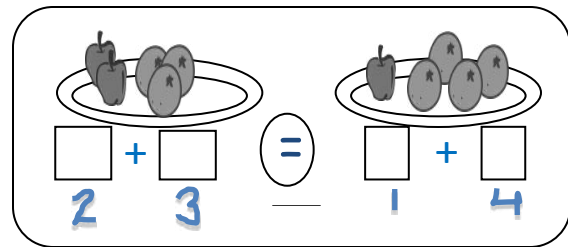
$6 + 2 = 6 + 2$ $1 + 7 = 1 + 7$

COMMON CORE Lesson 17: Understand the meaning of the equal sign by pairing equivalent expressions and constructing true number sentences. engage^{ny} 1.E.8

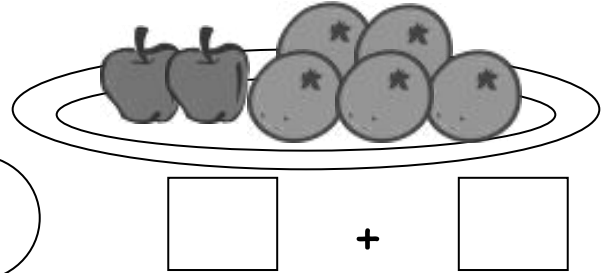
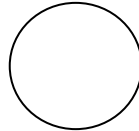
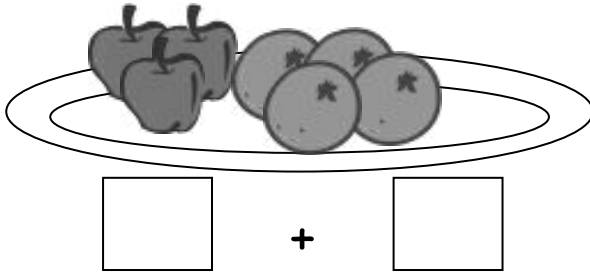
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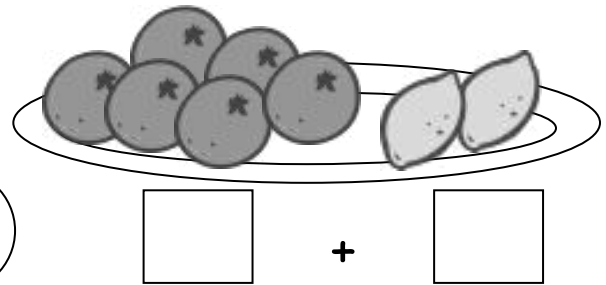
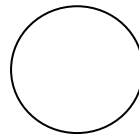
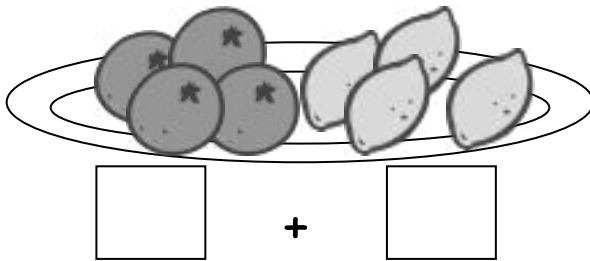
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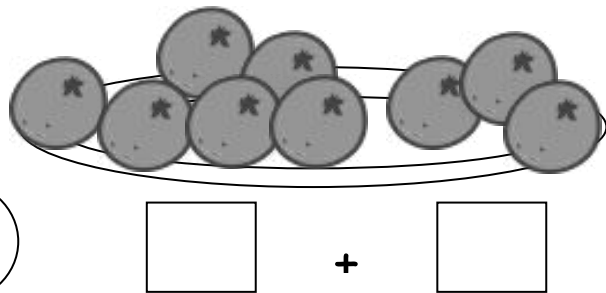
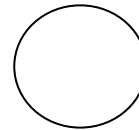
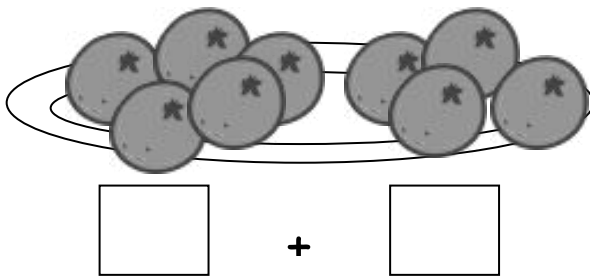
- 1.



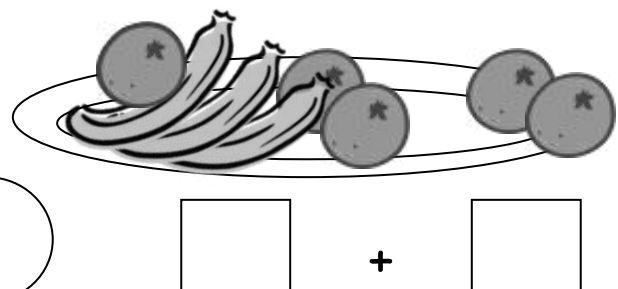
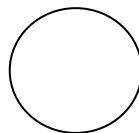
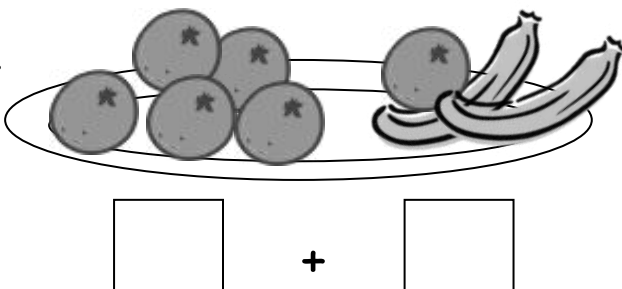
- 2.



- 3.



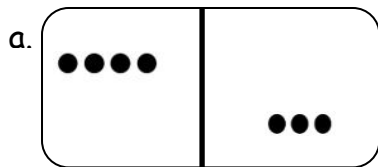
- 4.

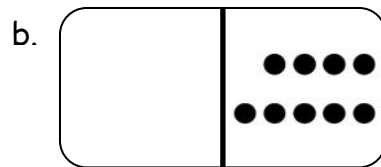


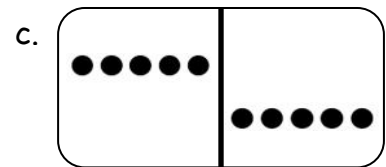


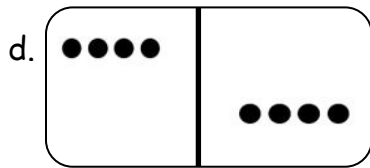
$$2+5$$

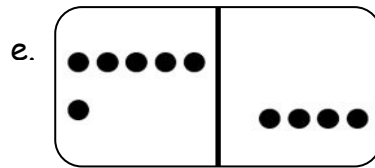
5. Write an expression to match each domino.

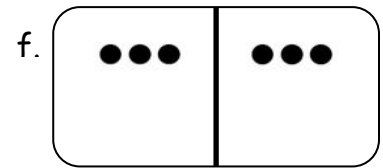




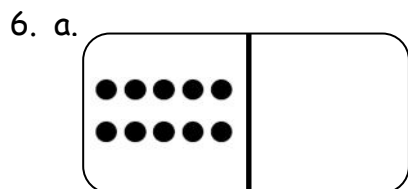


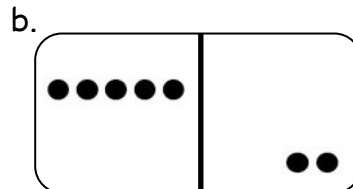


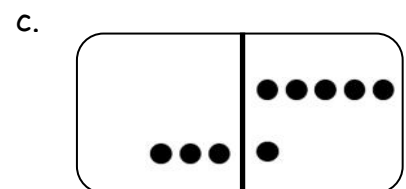


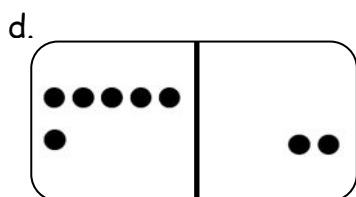


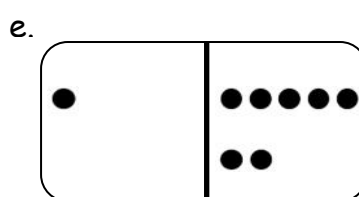
g. Find two sets of expressions from (a)–(f) that are equal. Connect them below with = to make true number sentences.

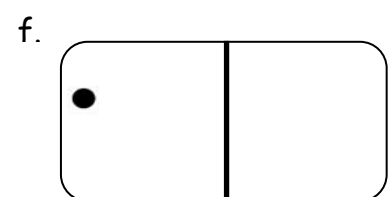










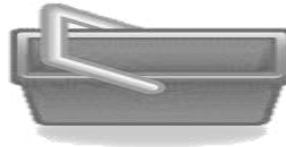
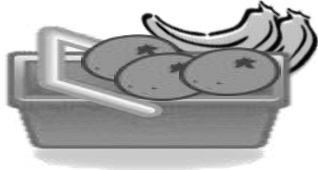


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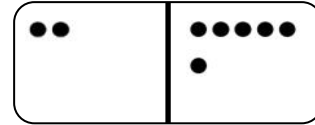
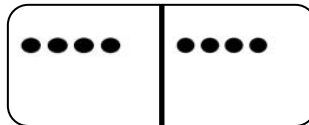
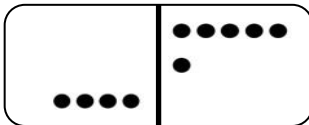
Name _____

Date _____

1. Use math drawings to make the pictures equal. Connect them below with = to make true number sentences.

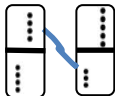


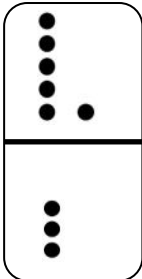
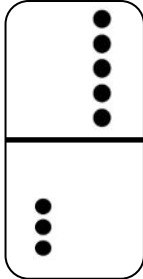
2. Shade the equal dominoes. Write a true number sentence.

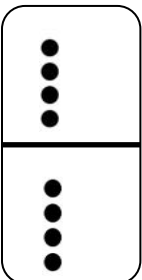
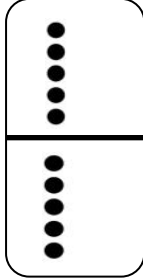


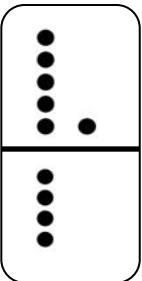
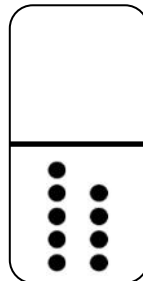
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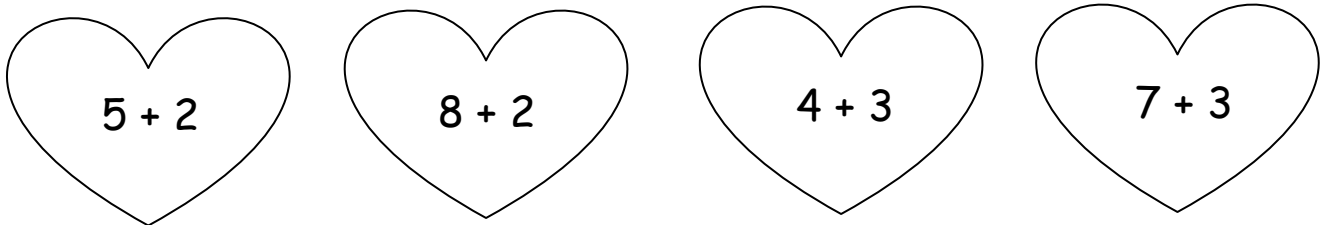
1. Match the equal dominoes. Then, write true number sentences.  $4+4=5+3$

a.   _____

b.   _____

c.   _____

2. Find the expressions that are equal. Use the equal expressions to write true number sentences.



- a. _____
- b. _____