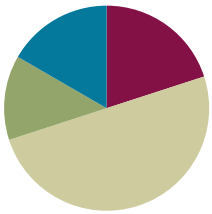
Lesson 3

Objective: Use math drawings to represent equal groups, and relate to repeated addition.

Suggested Lesson Structure



Fluency Practice	(12 minutes)
Concept Development	(30 minutes)
Application Problem	(8 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**

Fluency Practice (12 minutes)

- Happy Counting by Fives **2.NBT.2** (3 minutes)
- Sprint: Subtraction Within 20 **2.OA.2** (9 minutes)

Happy Counting by Fives (3 minutes)

T: Let's do some Happy Counting!

T: Let's count by fives, starting at 0. Ready? (Point up rhythmically until a change is desired. Close hand to indicate a stopping point. Point down to count in the opposite direction. Continue, periodically changing direction.)

S: 0, 5, 10, 15, 20. (Switch.) 15, 10. (Switch.) 15, 20, 25, 30, 35, 40. (Switch.) 35, 30, 25. (Switch.) 30, 35, 40, 45. (Switch.) 40, 35, 30. (Switch.) 35, 40, 45, 50. (Switch.) 45, 40, 35. (Switch.) 40, 45, 50. (Switch.) 45, 40, 35, 30, 25, 20, 15.

T: Excellent! Try it for 30 seconds with your partner, starting at 0. Partner A, you are the teacher today.

Sprint: Subtraction Within 20 (9 minutes)

Materials: (S) Subtraction Within 20 Sprint

Note: Students subtract from numbers within 20 to gain mastery of subtracting fluently.

Concept Development (30 minutes)

Materials: (T) Counters (S) Personal white boards

In this lesson, students continue working at the pictorial level, using math drawings to represent equal groups and relating those groups to repeated addition. They also use addition strategies, such as doubles, to add more efficiently.

T: (Display counters showing 4 groups of 4.) What repeated addition sentence matches this model?

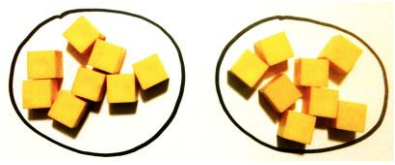
S: 4 + 4 + 4 + 4 = ____.

T: Yes! (Point to each 4.) To find the total, I can think 4 + 4 is 8, 8 + 4 is 12, and 12 + 4 is 16.

T: Can anyone think of a faster way to solve?

S: You can use doubles!

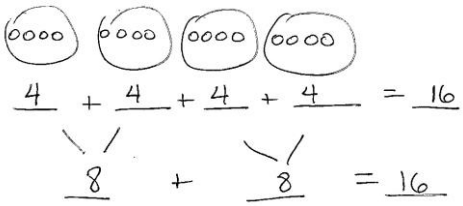
T: Can you explain what you mean?



S: I know 4 + 4 is 8, and there's another 4 + 4, which is 8. And 8 + 8 is 16.

T: (Move the counters to show how the pairs of 4 make 2 groups of 8.) You used a known doubles fact, 4 + 4, to be efficient.

T: Let me show what I just did in writing. (Draw the 4 groups of 4 on the board with a blank line beneath each group.) What addition sentence matches this picture?



S: 4 + 4 + 4 + 4 = ____. (Record as they speak.)

T: (Draw the number bond to show the bundling.)

T: Use the picture to talk with your partner about this question: How are 4 groups of 4 the same as 2 groups of 8?

S: If we draw a big circle around the first two groups of 4, and a big circle around the other two groups of 4, we'd have 2 groups of 8! → There are two 4s inside of each 8. → They both equal 16.

T: Let's try another one. This time let's draw it on our boards. Draw a group of 5 circles. I like to circle mine so it's easy to see each group. (Model as students do the same.)

T: Now show 5 more. (Model, and continue in this way until students have drawn 4 groups of 5.)

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

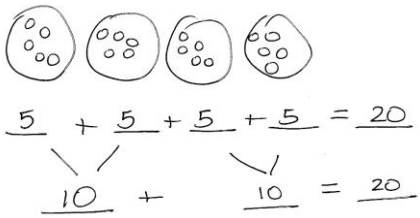
Use a Rekenrek as an alternate way to show repeated addition. Show the same number of beads along the left side, and then show the repeated addition sentence that goes with the beads. For example, show 3 rows of 4 beads, and then write 4 + 4 + 4 to show the addition.

T: Tell your partner the repeated addition sentence that matches your model, and explain how they relate to each other.

S: 5 + 5 + 5 + 5 = ____. → The 5 stands for how many are in each group. → There are 4 groups of 5, so we add four fives.

T: Correct! Tell your partner two different ways you could add to find the total.

S: 5 + 5 = 10. 10 + 5 = 15. 15 + 5 = 20. → We can use doubles. 5 + 5 = 10, and 10 + 10 = 20. → We could skip count: 5, 10, 15, 20.

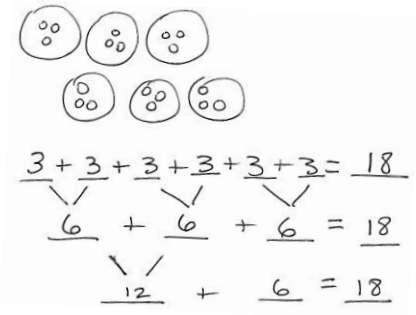


T: I like the way you made the connection between repeated addition and skip counting!

T: Let's think about 4 groups of 5 and 2 groups of 10. How are they the same?

S: They both equal 20. → They're the same, you're just grouping the circles differently. → There are two fives in each group of 10.

T: That's a clever way to look at it!



T: Now show me 6 groups of 3. (Model as students do the same.)

T: Let's write the repeated addition sentence. Say it with me as you write. (Model as students do the same.)

S: 3 + 3 + 3 + 3 + 3 + 3 = ____.

T: How can we group the addends to find the total?

S: Use doubles! → 3 + 3 = 6.

T: Okay, so let's add all our doubles. What is the new repeated addition?

MP.3

S: 6 + 6 + 6.

T: What doubles fact can we use now?

S: 6 + 6 = 12!

T: Yes! And 12 + 6 is?

S: 18!

T: So we can group addends into pairs and use doubles to add quickly. And if there's an extra addend, we just add on that amount.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

At this point, some students may make the connection between repeated addition and multiplication. Praise their observation, but keep the focus on repeated addition for the lessons and assessments. Multiplication will be taught in Grade 3.

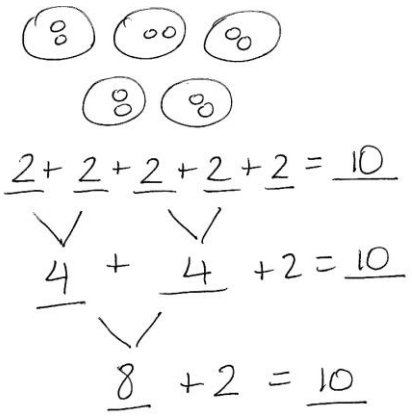
T: Let's do one more before you work on the Problem Set.

T: Draw 5 groups of 2 circles. (Model as students do the same.)

T: Write the repeated addition sentence as I do the same. Say it with me as you write. (Model.)

S: 2 + 2 + 2 + 2 + 2 = ____.

T: Group the addends. 2 + 2 is…?
S: 4.
T: And 2 + 2 is…?
S: 4.
T: And we have 2 more. Now we have 4 + 4 + 2.
T: Can we group another pair of addends?
S: Yes! 4 + 4 = 8.
T: Plus 2 more?
S: 10!
T: Excellent work!



Problem Set (10 minutes)

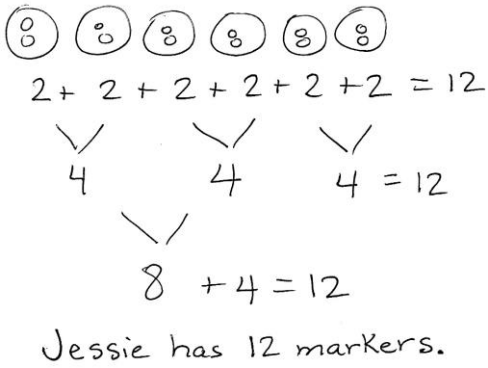
Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the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

Application Problem (8 minutes)

Markers come in packs of 2. If Jessie has 6 packs of markers, how many markers does she have in all?

a. Draw groups to show Jessie's packs of markers.
b. Write a repeated addition sentence to match your drawing.
c. Group addends into pairs and add to find the total.

Note: This problem is intended for independent practice, giving students a context in which to practice drawing equal groups, writing the corresponding repeated addition sentence, and using doubles as a strategy to add efficiently.



Student Debrief (10 minutes)

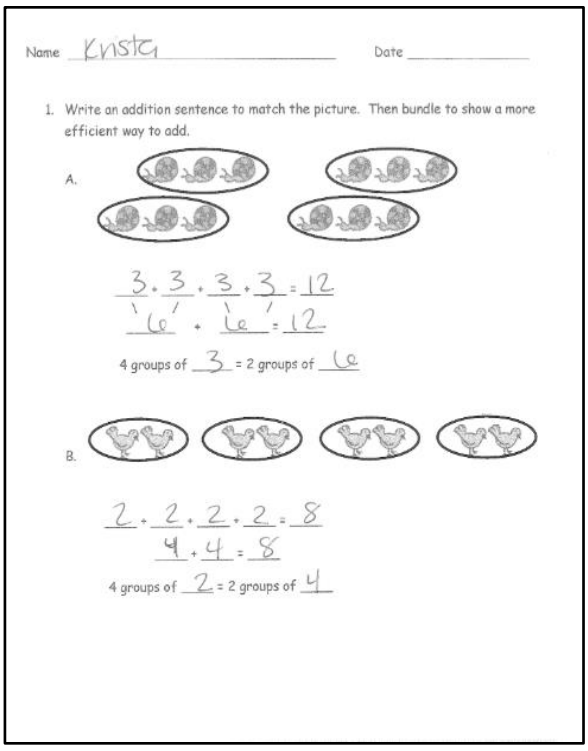
Lesson Objective: Use math drawings to represent equal groups, and relate to repeated addition.

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.

You may choose to use any combination of the questions below to lead the discussion.

- For Problem 1(a), how did you show a more efficient way to add? How do you know that 4 groups of 3 and 2 groups of 6 are equal?
- For Problem 1(b), how did you bundle the addends into new groups? What was your new number sentence? Why didn't the total change?
- For Problem 1(c), how did you make fewer groups? Which number sentence enabled you to add more efficiently? (Note: Students might answer that the longer one was more efficient because they were able to skip count by twos.)
- For Problem 2(a), how was this problem different from the previous ones? Does every group have a partner? How did you find the total?
- For Problem 2(b), how many pairs did you find? How many new groups did you make? Why did you add on 3?
- What strategies did we use today to add more efficiently?


Name Krista Date

1. Write an addition sentence to match the picture. Then bundle to show a more efficient way to add.

A.

3 + 3 + 3 + 3 = 12

6 + 6 = 12

4 groups of 3 = 2 groups of 6

B.

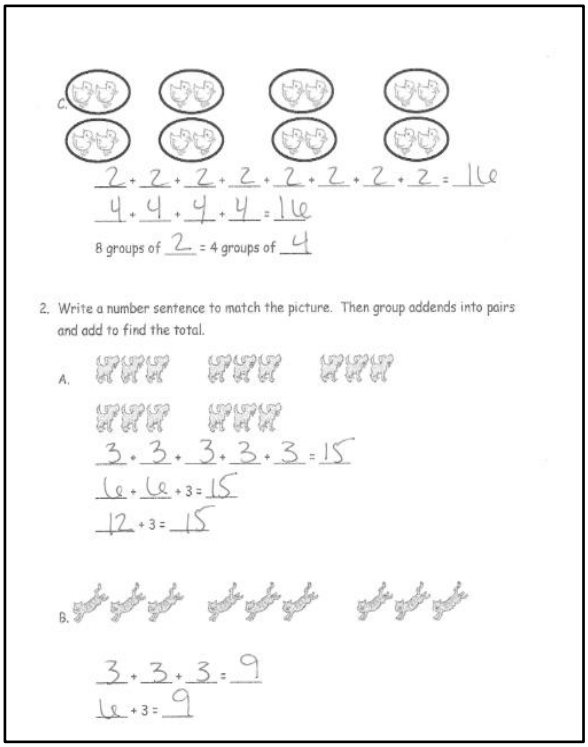
2 + 2 + 2 + 2 = 8

4 + 4 = 8

4 groups of 2 = 2 groups of 4

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.


C.

2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 16

4 + 4 + 4 + 4 = 16

8 groups of 2 = 4 groups of 4

2. Write a number sentence to match the picture. Then group addends into pairs and add to find the total.

A.

3 + 3 + 3 + 3 + 3 = 15

6 + 6 + 3 = 15

12 + 3 = 15

B.

3 + 3 + 3 = 9

6 + 3 = 9

A

Correct _____

Subtract.

1	11 - 10 =		23	19 - 9 =	
2	12 - 10 =		24	15 - 6 =	
3	13 - 10 =		25	15 - 7 =	
4	19 - 10 =		26	15 - 9 =	
5	11 - 1 =		27	20 - 10 =	
6	12 - 2 =		28	14 - 5 =	
7	13 - 3 =		29	14 - 6 =	
8	17 - 7 =		30	14 - 7 =	
9	11 - 2 =		31	14 - 9 =	
10	11 - 3 =		32	15 - 5 =	
11	11 - 4 =		33	17 - 8 =	
12	11 - 8 =		34	17 - 9 =	
13	18 - 8 =		35	18 - 8 =	
14	13 - 4 =		36	16 - 7 =	
15	13 - 5 =		37	16 - 8 =	
16	13 - 6 =		38	16 - 9 =	
17	13 - 8 =		39	17 - 10 =	
18	16 - 6 =		40	12 - 8 =	
19	12 - 3 =		41	18 - 9 =	
20	12 - 4 =		42	11 - 9 =	
21	12 - 5 =		43	15 - 8 =	
22	12 - 9 =		44	13 - 7 =	

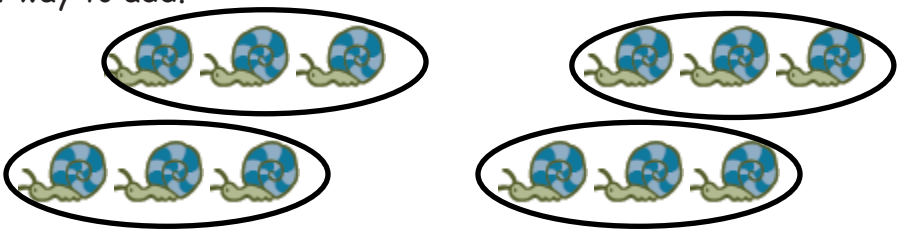
B Improvement _____ # Correct _____

Subtract.

1	11 - 1 =		23	16 - 6 =	
2	12 - 2 =		24	14 - 5 =	
3	13 - 3 =		25	14 - 6 =	
4	18 - 8 =		26	14 - 7 =	
5	11 - 10 =		27	14 - 9 =	
6	12 - 10 =		28	20 - 10 =	
7	13 - 10 =		29	15 - 6 =	
8	18 - 10 =		30	15 - 7 =	
9	11 - 2 =		31	15 - 9 =	
10	11 - 3 =		32	14 - 4 =	
11	11 - 4 =		33	16 - 7 =	
12	11 - 7 =		34	16 - 8 =	
13	19 - 9 =		35	16 - 9 =	
14	12 - 3 =		36	20 - 10 =	
15	12 - 4 =		37	17 - 8 =	
16	12 - 5 =		38	17 - 9 =	
17	12 - 8 =		39	16 - 10 =	
18	17 - 7 =		40	18 - 9 =	
19	13 - 4 =		41	12 - 9 =	
20	13 - 5 =		42	13 - 7 =	
21	13 - 6 =		43	11 - 8 =	
22	13 - 9 =		44	15 - 8 =	

Name _____ Date _____

1. Write an addition sentence to match the picture. Then bundle to show a more efficient way to add.

a. 

_____ + _____ + _____ + _____ = _____

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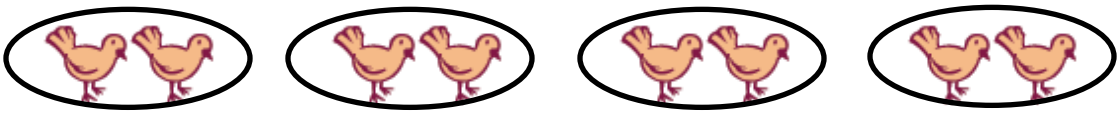
_____ + _____ = _____

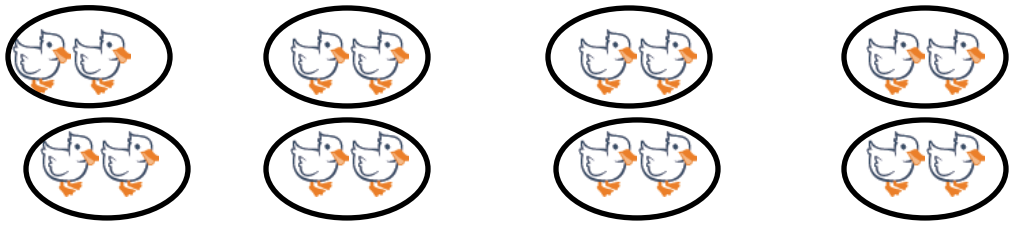
4 groups of _____ = 2 groups of _____

b. 

_____ + _____ + _____ + _____ = _____

_____ + _____ = _____

4 groups of _____ = 2 groups of _____

c. 

_____ + _____ + _____ + _____ + _____ + _____ + _____ + _____ = _____

_____ + _____ + _____ + _____ = _____

8 groups of _____ = 4 groups of _____

2. Write a number sentence to match the picture. Then group addends into pairs and add to find the total.

a. 

_____ + _____ + _____ + _____ + _____ = _____

_____ + _____ + 3 = _____

_____ + 3 = _____

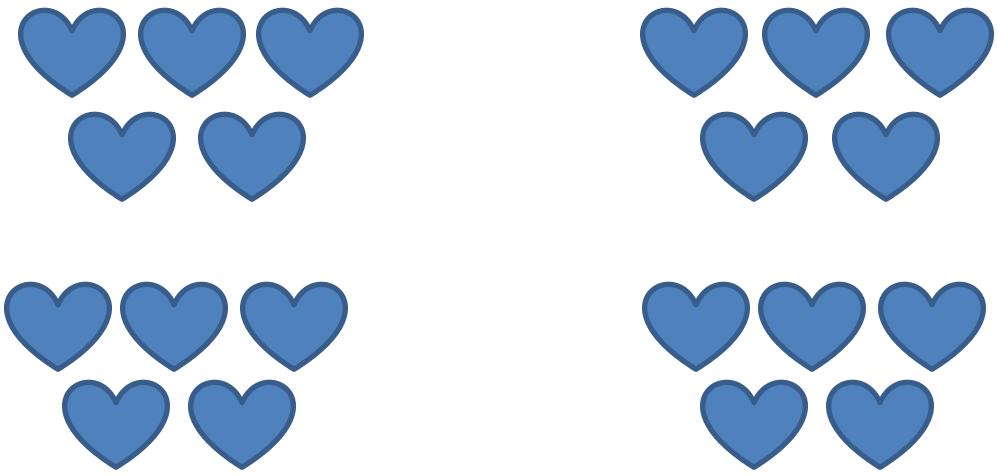
b. 

_____ + _____ + _____ = _____

_____ + 3 = _____

Name _____ Date _____

1. Write an addition sentence to match the picture. Then rebundle to show a more efficient way to add.



_____ + _____ + _____ + _____= _____

_____ + _____ = _____

4 groups of _____ = 2 groups of _____

Name _____ Date _____

1. Write an addition sentence to match the picture. Then rebundle to show a more efficient way to add.

a. 

_____ + _____ + _____ + _____ = _____

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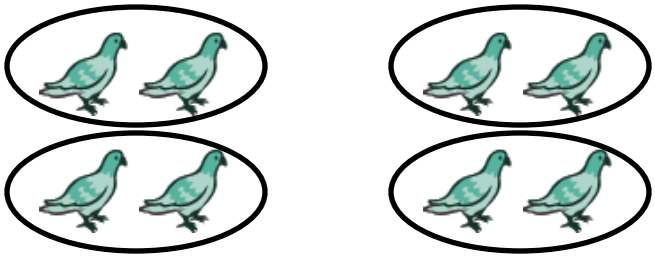
_____ + _____ = _____

4 groups of _____ = 2 groups of _____

b. 

_____ + _____ + _____ + _____ = _____

_____ + _____ = _____

4 groups of _____ = 2 groups of _____

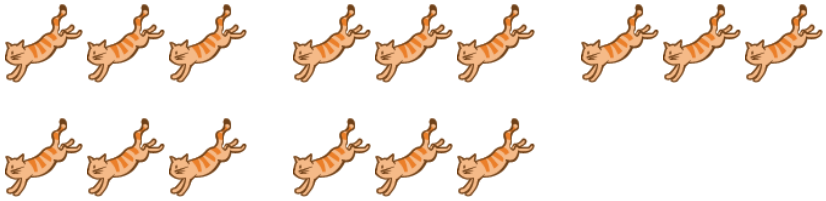
c. 

_____ + _____ + _____ + _____ = _____

_____ + _____ = _____

4 groups of _____ = 2 groups of _____

2. Write a number sentence to match the picture. Then group addends into pairs and add to find the total.

a. 

_____ + _____ + _____ + _____ + _____ = _____

_____ + _____ + 3 = _____

_____ + 3 = _____

b. 

_____ + _____ + _____ + _____ + _____ = _____

_____ + _____ + 2 = _____

_____ + 2 = __