LESSON 11

Objective

Explore "counting back" as a subtraction strategy.

Common Core State Standards

- **1.OA.5** Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
- **1.OA.6** Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

Operations and Algebraic Thinking

Explore Counting Back

Just as children need to understand that adding involves joining two quantities to form a whole, they must understand that subtracting involves separating a whole into parts. In any subtraction problem, it is important to establish which is the whole and to count the whole before beginning to count back. It is equally important to find a way of marking or separating the portion that is taken away. Reminding children about the real-world context of a problem should reinforce the idea of taking away or separating the whole into parts.

Try It! *Perform the Try It! activity on the next page.*

Talk About It

Discuss the Try It! activity.

- Ask children to give examples of situations in which they might need to count back in order to take away numbers from a total.
- **Ask:** *How many children were on the bus to start?*
- **Say:** *Three children got off the bus.* **Ask:** *How many are left on the bus?*

Solve It

With children, reread the problem. Ask children to draw a picture of 10 children on the bus and then find a way to show that 3 children have left the bus. Then have them identify how many children are left on the bus.

More Ideas

For other ways to teach about counting back—

- Have children make trains of Inchworms™ to model subtraction problems. For example, **say:** *Shelly bought 10 pieces of fruit on Monday morning and ate 2 pieces of fruit on Monday night. Count back from 10 to show how many pieces of fruit she has left.*
- Have children use Base Ten Blocks to model subtraction problems to build on taking away and to go beyond the subtraction algorithm. For example, **say:** *There are 12 cars in the parking lot. Then 4 cars leave at lunchtime.* **Ask:** *How many cars are still in the parking lot?*

Formative Assessment

Have children try the following problem.

There are 12 children waiting to be picked up from school. After 3 children have been picked up by their parents, how many children are left? Draw a circle around the correct answer.

A. 10
B. 15
C. 9

Try It! 30 minutes | Pairs

Here is a problem about counting back to subtract.

There were 10 children riding the school bus. At the first stop, 3 children got off the bus. How many children were left on the bus?

Introduce the problem. Then have children do the activity to solve the problem.

Give each pair of children 10 Snap Cubes®.

Materials

- Snap Cubes® (10 per pair)

1. Have children connect their cubes to make a train of 10.

2. Ask one child in each pair to count back 3 from 10 and take away 3 cubes from the train.

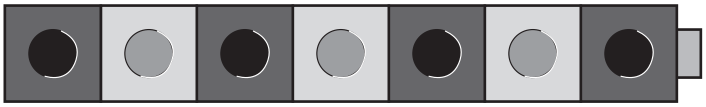
3. Ask children to count the number of cubes that remain in the train. Children should find that there are 7 cubes left in the train. Have children use cubes and counting back to solve additional subtraction problems.

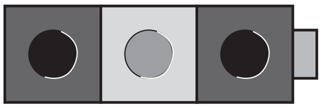
Look Out!

Check that children have subtracted rather than added and that the 3 subtracted cubes are separated from the others. At this age, children are more likely to join numbers than take away. Reinforcing the context of the problem (that children are leaving the group) will help them remember to subtract.

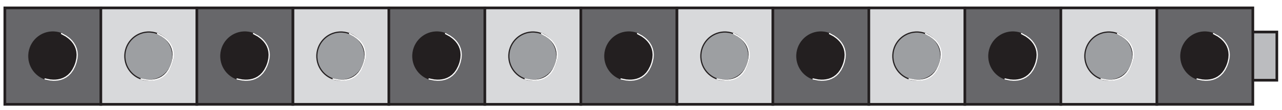
Answer Key

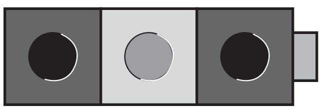
Use Snap Cubes. Make the model shown. Count back to find the answer. (Check students' work.)

1. 

– 

7 – 3 = 4

2. 

– 

13 – 3 = 10

Use Snap Cubes. Build each number sentence. Count back to find the answer. Draw the model.

3. 9 – 2 = 7

4. 10 – 4 = 6

5. 8 – 5 = 3

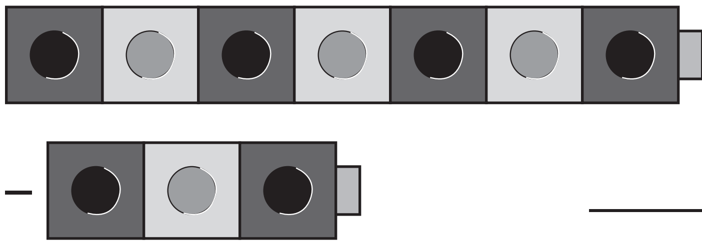
Answer Key

Challenge! Why does the "counting back" strategy work for subtraction?

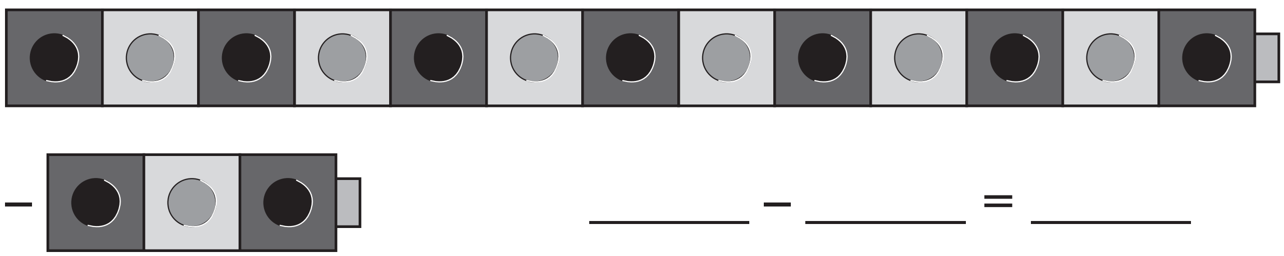
Challenge: (Sample) When you subtract, you are taking objects away from a set. The number left will be the answer to the subtraction sentence.

Name ______________________________

Use Snap Cubes. Make the model shown. Count back to find the answer.

1. 

______ – ______ = ______

2. 

______ – ______ = ______

Use Snap Cubes. Build each number sentence. Count back to find the answer. Draw the model.

3. 9 – 2 = ______

4. 10 – 4 = ______

5. 8 – 5 = ______

Name ________________________________

Challenge! Why does the "counting back" strategy work for subtraction?