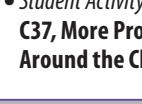


Multiplying by Multiples of 10

Math Focus Points

- ◆ Multiplying by multiples of 10
- ◆ Understanding the effect of multiplying by multiples of 10

Today's Plan	Materials
ACTIVITY 1 Counting Around the Class	
ACTIVITY 2 Solving Counting Around the Class Problems	 <ul style="list-style-type: none"> • Student Activity Book, pp. 39A–39B or C35–C36, Problems About Counting Around the Class Make copies. (as needed)
DISCUSSION 3 Multiplying by Multiples of 10	 <ul style="list-style-type: none"> • Students' completed copies of Student Activity Book, pp. 39A–39B or C35–C36 (from Activity 2)
SESSION FOLLOW-UP 4 Daily Practice	 <ul style="list-style-type: none"> • Student Activity Book, p. 39C or C37, More Problems About Counting Around the Class Make copies. (as needed)

Ten-Minute Math

Counting Around the Class Ask students questions about an imaginary class that is counting by 10s.

When the class had finished counting, the last number was 220.

How many students are in the class?

What number did the 10th person say?

What number did the 15th person say?

What number would they get to if they counted around again?

For each question, collect answers as well as explanations about how students found their answer.

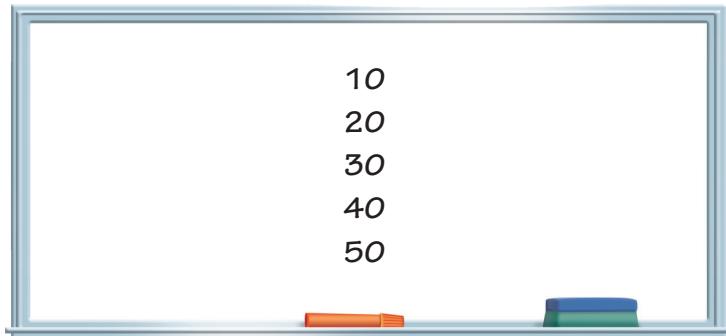
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ACTIVITY

Counting Around the Class



Follow the usual process to count around the class by 10s. Record the numbers students say in a column on the board.



After counting, students will likely notice patterns in the sequence of numbers you have recorded, similar to the work they did with skip-counting by 10s in Investigation 2.

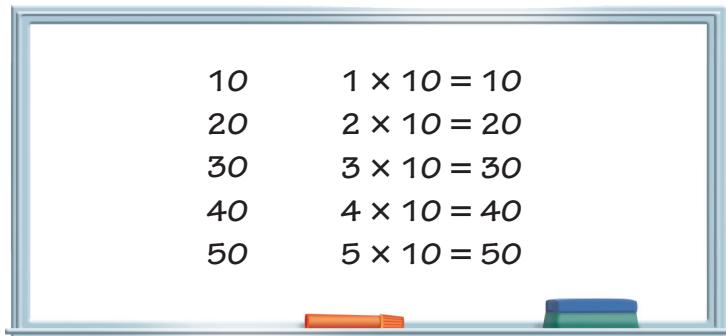
Students might say:

“Every number ends in zero.”



“Person 2’s number is 2 with a zero on it. Person 3’s number is 3 with a zero on it. It keeps going like that.”

Connect this activity to multiplication notation, asking students to help you write an equation for each of the first few products.



Then, ask questions that require students to work in the reverse.

What if we look at the number 70? How many people do you think counted? (7) What's an equation to show that? ($7 \times 10 = 70$) The equation 7 times 10 means that 7 people each counted by 10. And the seventh person said 70.

Do this for several products. Then, repeat the process, this time counting by 20s.

Finally, present a problem set in the context of Counting Around the Class.

I'm going to tell you a story about a class that was counting around the class. This class was counting around the class by 30s. Turn and talk to a partner—what number did the fourth person say?

Discuss and record students' methods for solving the problem. Their strategies may include repeated addition, skip counting, or multiplying (e.g., thinking $4 \times 30 = 4 \times 3 \times 10$).

In your discussion, be sure to ask students to help you write an equation that represents what the problem is asking. ①

ACTIVITY

2

Solving Counting Around the Class Problems



30 MIN INDIVIDUALS

Students complete *Student Activity Book* pages 39A and 39B or C35 and C36. They solve problems about a group of up to 10 students counting around the class by multiples of 10. Encourage students to use multiplication equations to represent the problems they are solving.

ONGOING ASSESSMENT: Observing Students at Work

Students solve problems that involve multiplying 1-digit numbers by multiples of 10 up to 90.

- **How do students solve the problems?** Do they use repeated addition? Do they skip count? Do they turn the problem into one that involves multiplying two 1-digit numbers and then multiplying that product by 10?
- **What equations do students write to represent the problems?** Do they use multiplication notation correctly?

Teaching Note

1 Multiplication and Addition

Equations Some students will use an addition equation, such as $30 + 30 + 30 + 30 = 120$. Be sure to discuss how a multiplication equation such as $4 \times 30 = 120$ also represents the same problem.

Name _____	Date _____
Problems About Counting Around the Class (page 1 of 2)	
Write an equation to represent each problem. Then solve the problem and show your work.	
1. Denzel's class was counting around the class by 10s. What number did the 6th person say? Equation: _____	
2. Gina's class was counting around the class by 20s. What number did the 4th person say? Equation: _____	
3. Kenji's class was counting around the class by 30s. What number did the 5th person say? Equation: _____	

▲ Student Activity Book, Unit 5, p. 39A; Resource Masters, C35

Name _____	Date _____
Problems About Counting Around the Class (page 2 of 2)	
Write an equation to represent each problem. Then solve the problem and show your work.	
4. Nancy's class was counting around the class by 60s. What number did the 3rd person say? Equation: _____	
5. Adam's class was counting around the class by 90s. What number did the 5th person say? Equation: _____	
6. Keisha's class was counting around the class by 20s. What number did the 9th person say? Equation: _____	

▲ Student Activity Book, Unit 5, p. 39B; Resource Masters, C36



DIFFERENTIATION: Supporting the Range of Learners

Intervention Work with students who are having trouble to act out and/or make a representation of the problem they are trying to solve. **How many students have counted in this problem? 6?**

OK, so I'm going to draw 6 stick figures. Talk with students about how the drawing could help them solve the problem. Some label each figure with the number they are counting by, creating an addition problem. Others label each figure with the number that student would say, skip-counting to solve the problem. Some students may need to work on problems that use smaller multiples of 10, and use the skip counting charts they made in Investigation 2, and/or a 300 chart, to support them in figuring out the numbers each student would say.

Extension Encourage students who accurately finish the problems to look over their work and see if they notice anything special about multiplying by multiples of 10.

3

DISCUSSION

Multiplying by Multiples of 10



Math Focus Points for Discussion

- ◆ Multiplying by multiples of 10
- ◆ Understanding the effect of multiplying by multiples of 10

Gather students together to discuss a few of the problems on *Student Activity Book* pages 39A and 39B or C35 and C36.

How did you think about Problem 3?

Students might say:



"We did $30 + 30 + 30 + 30 + 30$. We figured out that that equals 150."



"We skip-counted 5 times: 30, 60, 90, 120, 150."

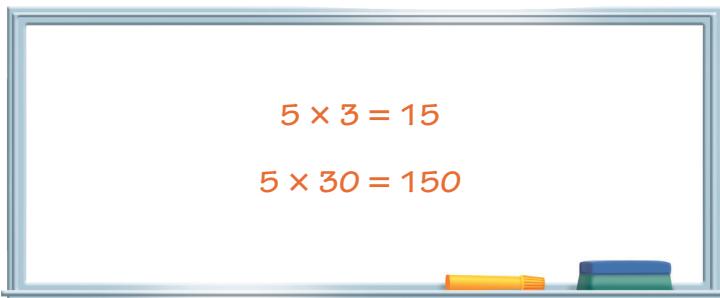


"We thought 5×30 . We knew that $5 \times 3 = 15$, so 5×30 is 10 times that or 150."

If the strategy of “adding a zero” doesn’t come up, introduce it yourself.

One thing I was thinking about with this problem is about the relationship between 5×3 and 5×30 .

On the board, record the two problems, with students providing the products.



Take a minute to talk to a partner. What do you notice?

Discuss students’ ideas. It is likely that “adding a zero” to the product of 5×3 will come up. Try to help students see why this rule is true, namely, that $5 \times 30 = 5 \times 3 \times 10 = 15 \times 10$. **②**

Follow the same process for another problem or two. For each, be sure to look at the original problem rewritten to include “ $\times 10$.”

SESSION FOLLOW-UP

Daily Practice



Daily Practice: For reinforcement of this unit’s content, have students complete *Student Activity Book* page 39C or C37.

Math Note

② Adding a Zero Many students say that, to multiply by a multiple of 10, they can ignore the zero, multiply the other digits, and then “add the zero” to get the answer. For example, to find 5×30 , they can calculate $5 \times 3 = 15$, add then “add a zero” to 15 to find the answer 150. To ensure students understand the procedures they are using, some teachers react to such statements literally. [Keith] told me to add a zero. So $15 + 0$. Wait a minute. Does $15 + 0 = 150$? This “adding a zero” strategy is actually based on the associative property of multiplication. In this case, $5 \times 30 = 5 \times (3 \times 10) = (5 \times 3) \times 10 = 15 \times 10$.

Name Equal Groups	Date	Daily Practice
More Problems About Counting Around the Class <small>NOTE Students solve problems involving multiplying by 10s.</small> <small>MP.4, MP.6</small>		
Write an equation to represent each problem. Then solve the problem and show your work.		
1. Edwin’s class was counting around the class by 50s. What number did the 8th person say? Equation: _____		
2. Pilar’s class was counting around the class by 40s. What number did the 7th person say? Equation: _____		
3. Zhang’s class was counting around the class by 70s. What number did the 3rd person say? Equation: _____		
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▲ **Student Activity Book, Unit 5, p. 39C; Resource Masters, C37**

Problems About Counting Around the Class (page 1 of 2)

Write an equation to represent each problem.

Then solve the problem and show your work.

- 1.** Denzel's class was counting around the class by 10s.
What number did the 6th person say?

Equation: _____

- 2.** Gina's class was counting around the class by 20s.
What number did the 4th person say?

Equation: _____

- 3.** Kenji's class was counting around the class by 30s.
What number did the 5th person say?

Equation: _____

Problems About Counting Around the Class (page 2 of 2)

Write an equation to represent each problem.

Then solve the problem and show your work.

- 4.** Nancy's class was counting around the class by 60s.
What number did the 3rd person say?

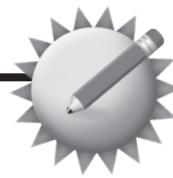
Equation: _____

- 5.** Adam's class was counting around the class by 90s.
What number did the 5th person say?

Equation: _____

- 6.** Keisha's class was counting around the class by 20s.
What number did the 9th person say?

Equation: _____



More Problems About Counting Around the Class

Write an equation to represent each problem.
Then solve the problem and show your work.

NOTE Students solve problems involving multiplying by multiples of 10.

SMH 43

- 1.** Edwin's class was counting around the class by 50s.
What number did the 8th person say?

Equation: _____

- 2.** Pilar's class was counting around the class by 40s.
What number did the 7th person say?

Equation: _____

- 3.** Zhang's class was counting around the class by 70s.
What number did the 3rd person say?

Equation: _____