

## Objective

Multiply with a two-digit number.

## Common Core State Standards

- **4.NBT.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

## Number and Operations in Base Ten

## Multiply with a Two-Digit Number

Students might have used strategies such as modeling an array, grouping Base Ten Blocks, and skip counting on a hundred chart to multiply with smaller numbers. In this lesson, students use blocks to model and solve more complicated multiplication problems involving two-digit multipliers and three-digit products. It is important for students to have a solid foundation of knowledge in multiplication before they move on to exploring division problems in later lessons, so that they can see the relationship between the two.

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

## Talk About It

Discuss the Try It! activity.

- Discuss the terms *factor* and *product*. **Ask:** Which blocks show the factors? Which show the product?
- **Ask:** How did you use the model to find the answer? Guide students to discuss how they used the model to break down the two factors into smaller numbers. Students should explain that they multiplied the smaller numbers, then added to find the total.
- **Ask:** How could we model the problem if we change it to  $13 \times 25$ ?

## Solve It

With students, reread the problem. Have students draw a picture to show how to use blocks to solve the problem. Then have them label their drawing to show which blocks represent the factors and which show the product.

## More Ideas

For other ways to teach about multiplying with a two-digit number—

- Set up a learning center with Two-Color Counters and a list of problems such as  $33 \times 12$ ,  $20 \times 25$ , and  $15 \times 37$ . Challenge students to model and solve the problems using counters.
- Have students work in groups to make up two-digit number multiplication problems and use Base Ten Blocks and repeated addition to solve each problem.

## Formative Assessment

Have students try the following problem.

*Samantha is making goody bags for her birthday party. She is making 15 bags, and each bag will have 11 items in it. Which expression can be used to find how many items she needs?*

- A.  $11 + 15$       B.  $11 - 15$       C.  $11 \times 15$       D.  $11 \div 15$

## Try It! 30 minutes | Groups of 4

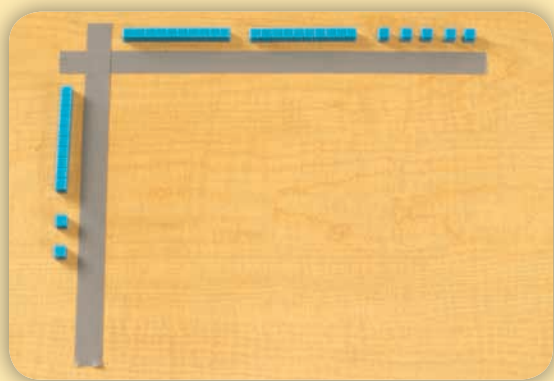
Here is a problem about multiplying with a two-digit number.

Rita's class is having a bake sale. Each student in Rita's class will bring in 12 treats to sell. There are 25 students in Rita's class. How many treats will the class bring in altogether?

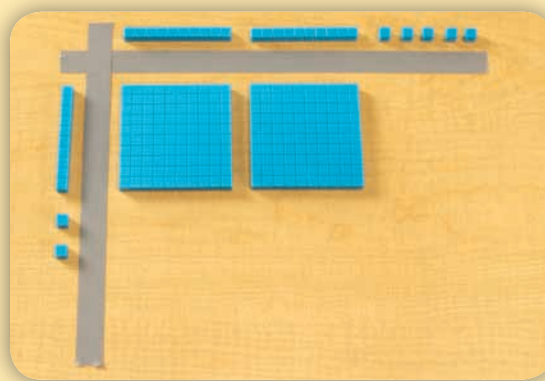
Introduce the problem. Then have students do the activity to solve the problem. Distribute Base Ten Blocks, two long pieces of masking tape, paper, and pencils to groups. Write  $12 \times 25$  on the board. Explain to students that they will multiply  $12 \times 25$  by building rectangles and squares using blocks.

### Materials

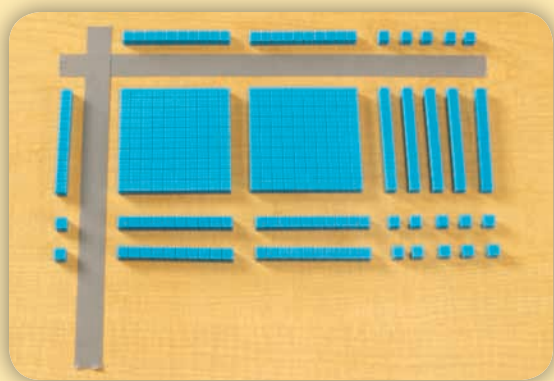
- Base Ten Blocks (5 flats, 15 rods, and 30 units per group)
- masking tape (2 long pieces per group)
- paper (1 sheet per group)
- pencils (1 per group)



1. Have students represent 25 with blocks by placing them horizontally along the top of their grid. Then have students represent 12 along the vertical side of their grid.



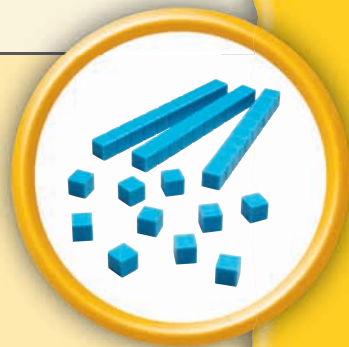
2. Instruct students to begin filling in the intersection of each row and column using a block that has the same dimensions as the one on the horizontal and the vertical portion of the grid. Assist students in completing their grids.



3. **Say:** Count the total number of flats, rods, and units to find the answer to  $12 \times 25$ . Have students write down the number they find.

### ⚠ Look Out!

Watch for students who don't properly complete the array. For example, students might think they are done after completing only one row. Give students two more pieces of masking tape to complete a rectangular field for their answer. **Say:** *When you've multiplied all the numbers, the blocks in your answer should form a large rectangle.*



Use Base Ten Blocks to build each model. Add blocks to complete the product. Complete the grid. Write each multiplication sentence. (Check students' work.)

1.

$20 \times 13 = 260$

2.

$14 \times 16 = 224$

Build each problem and product using Base Ten Blocks. Then sketch the model. Write the product. (Check students' models.)

3.  $32 \times 12 = 384$



4.  $45 \times 17 = 765$



Find each product.

5.  $52 \times 11 = 572$

6.  $38 \times 17 = 646$

7.  $24 \times 21 = 504$

8.  $22 \times 34 = 748$

9.  $16 \times 19 = 304$

10.  $41 \times 14 = 574$



## Answer Key

**Challenge!** Name the Base Ten Blocks you would use to build the model for Problem 9. Explain the exchanges you made to name the product. Draw a picture to help.

Challenge: (Sample) 1 flat, 15 rods, and 54 units. I exchange the 54 units for 5 rods and 4 units giving me 1 flat, 20 rods, and 4 units. I exchange the 20 rods for 2 flats giving me 3 flats and 4 units. The product is 304.

---

---

---

---

---

---

---

---

---

---

---