

# Multiplication Situations

NCTM Standards 1, 2, 6, 7, 8, 9, 10  
Common Core State Standards 4.OA 1

## Lesson Planner

### STUDENT OBJECTIVES

- To interpret the statement “times as many” as a multiplicative comparison
- To write a multiplication equation to represent a multiplicative comparison

## 2 Teach and Practice

### MATERIALS

Extended Activity

- A Situations That Use Multiplication**  
(CCRG pp. CC 29–CC 30)
- B Creating and Solving Word Problems**  
(TG p. 470)
- C Multiplication Situations** (TG p. 471)

- CCRG: Explore Master, Multiplication Word Problems

## Lesson Notes

Replace the current Teach and Practice Activity A in **Lesson 6.9** with this extended activity. Use Activity A before Activity B.

### About the Activity

In Activity A, students solve word problems involving multiplication. Students interpret the statement “times as many” as a multiplicative comparison, and write a multiplication equation to represent this situation.

# 2 Teach and Practice

## A Situations That Use Multiplication



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MIN

**Purpose** To solve multiplication word problems that represent everyday situations

**Introduce** Students should work with partners. Give each student a copy of Explore Master: Multiplication Word Problems. Explain that students will see different contexts in which multiplication can be used to solve problems as they answer the questions on this page.

**Task** Have students complete the Explore page. You may wish to read the problems aloud with students. Encourage students to consider using other operations besides multiplication to solve the problems. You might also tell students that the last problem on the page is a challenge, since more than one step is required to answer the question. (They need first to figure out how many baskets of 6 apples are needed to get 659 apples, then to find the cost of that many baskets.)

**Share** Once students have had a chance to work through the page, go over their answers as a class. Have students explain the process they used for solving each problem, and ask them to explain why they decided to solve the problem in the way that they did.

Chapter 6  
Lesson 9

Name \_\_\_\_\_ Date \_\_\_\_\_

### EXPLORE Multiplication Word Problems


Read each problem and decide whether you would use multiplication to answer the question. If you would not use multiplication, what operation would you use? Then solve the problems.

1 Nina has 6 pairs of pants and 8 different shirts. How many different outfits can she make with her clothes?  
 $6 \times 8 = 48$  outfits

2 Eric is putting all 36 of his shirts into 4 drawers. He puts the same number of shirts in each drawer. How many shirts will he put in each drawer?  
 $36 \div 4 = 9$  shirts

3 Jenna has 5 times as many paints as she does paintbrushes. She has 25 paintbrushes. How many paints does she have?  
 $25 \times 5 = 125$  paintbrushes

4 There are 659 students in a school. The principal orders 1 apple for each student. Apples are sold in baskets of 6 for 85¢. How much will this order cost?  
 $659 \div 6 = 109.83$   
 $110 \times .85 = 93.50$



\$ 93.50

Explore Master: Multiplication Word Problems

### Materials

- For each student:  
Explore: Multiplication Word Problems

NCTM Standards 1, 2, 6, 7, 8, 9, 10  
CCSS 4.OA.1

### Concept Alert

Some students may notice that the situations they encounter or describe in which multiplication is used can also be modeled with division number sentences. For example, in Problem 2, students could have solved  $36 \div 4 = \blacksquare$  to figure out how many shirts would go in each drawer, or they could have solved  $4 \times \blacksquare = 36$ . Even if students don't bring this up, you might point it out as it may help students to further relate the operations of multiplication and division, as well as to give students strategies for completing division sentences.

## Teacher Story

“A few of my students were stuck when I asked them to write a word problem, so I suggested that they create a word problem about the school store featured on LAB p. 118. Giving them a specific situation to write about made the task a lot easier for them.”

Guide students to recognize there are alternate methods of answering these questions. Also, convey to students that there may be several valid ways to solve these problems. For example, to solve Problem 1, some students might have reasoned that each pair of pants can be matched with 8 different shirts, making 8 different outfits for each pair of pants, and  $8 + 8 + 8 + 8 + 8 + 8 = 48$  possible different outfits. Other students may have realized that they could simply multiply the number of pants by the number of shirts to find that there are 48 possible outfits. Still others may use manipulatives or draw pictures to show the different outfits, or act out the combinations. Similarly, to solve Problem 2, some students may suggest that the situation can be described as  $4 \times \blacksquare = 36$ , while others might say that the situation can be described as  $36 \div 4 = \blacksquare$ .

You may wish to point out that there are different types of multiplication situations in these problems. For example, Problem 2 is a multiplication situation with equal groups where the group size is unknown. Problem 3 is a multiplicative comparison situation with an unknown product.

## Talk Math

- 1 ? Would the product be the same if the numbers of items in a problem switched from “23 apples in each of 19 baskets” to “19 apples in each of 23 baskets”? Explain. Yes; Possible answer: The order of factors in a multiplication problem does not matter.
- 2 ? Write a product to represent this phrase: “22 children on each of 14 buses.”  $22 \times 14$
- 3 ? What is a reasonable estimate for the product you wrote? Possible estimate: 200
- 4 ? What are the units in this estimate, buses or children? Children

## Ongoing Assessment

- Can students decide what operation to use when working a word problem?
- Do the students connect multiplication to real world situations?
- Can students write word problems that represent every day situations?

# EXPLORE

## Multiplication Word Problems

Read each problem and decide whether you would use multiplication to answer the question. If you would not use multiplication, what operation would you use? Then solve the problems.

- ① Nina has **6 pairs of pants** and **8 different shirts**. How many different outfits can she make with her clothes?

outfits

- ② Eric is putting all **36 of his shirts** into **4 drawers**. He puts the same number of shirts in each drawer. How many shirts will he put in each drawer?

shirts

- ③ Jenna has **5 times as many** paints as she does paintbrushes. She has 25 paintbrushes. How many paints does she have?

paintbrushes

- ④ There are **659 students** in a school. The principal orders **1 apple** for each student. Apples are sold in baskets of **6 for 85¢**. How much will this order cost?



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