

# Multiplicative Comparison

## Math Focus Points

- ◆ Solving word problems that involve multiplicative comparison

Today's Plan	Materials
<p><b>1</b> ACTIVITY <b>Introducing Multiplicative Comparison Problems</b></p> <p> </p>	
<p><b>2</b> ACTIVITY <b>Multiplicative Comparison Problems</b></p> <p> </p>	<ul style="list-style-type: none"> <li>• <i>Student Activity Book</i>, p. 15A or <b>C2, Multiplicative Comparison Problems</b> Make copies. (as needed)</li> </ul>
<p><b>3</b> DISCUSSION <b>Comparison Problems</b></p> <p> </p>	<ul style="list-style-type: none"> <li>• Students' completed copies of <i>Student Activity Book</i>, p. 15A or C2 (from Activity 2)</li> </ul>
<p><b>4</b> SESSION FOLLOW-UP <b>Daily Practice</b></p>	<ul style="list-style-type: none"> <li>• <i>Student Activity Book</i>, p. 15B or <b>C3, More Multiplicative Comparison Problems</b> Make copies. (as needed)</li> <li>• <i>Student Math Handbook</i>, pp. 29–34</li> </ul>

## Ten-Minute Math

**Today's Number** Students write expressions that equal 348. They must use multiples of 10 and only subtraction in each expression. For example:  $400 - 50 - 2 = 348$  and  $348 = 1,000 - 500 - 100 - 40 - 12$ . Collect a few expressions to write on the board.

- How do you know this expression equals 348?
- How did you use multiples of 10?

## 1

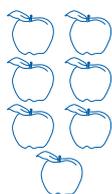
## ACTIVITY

## Introducing Multiplicative Comparison Problems

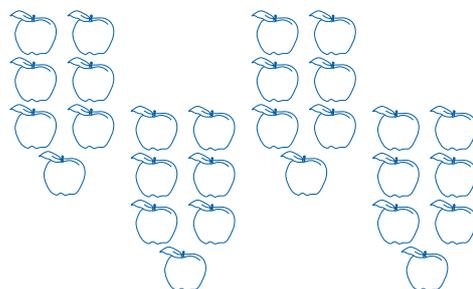


You have worked on multiplication problems about equal groups of things. You have also worked on multiplication problems using arrays. Here is another type of multiplication problem: *Darlene picked 7 apples. Juan picked 4 times as many apples. How many apples did he pick?*

Ask a student to draw a picture that shows what is happening in the problem.



Darlene



Juan

What equation can we write that represents what is happening in this problem?

**Students might say:**



“Since Juan has 4 times as many apples, he has 28 apples. The equation is  $7 \times 4 = 28$ .”

Some students may suggest drawing a picture that shows 7 apples and 4 more apples or might suggest  $7 + 4$  as an equation. If this is the case ask the students to relate their picture or equation back to the problem and ask, “Did Juan pick just 4 more apples?”

Here is another problem: *Franco’s daughter is 2 feet tall. Franco is 3 times as tall as his daughter. How tall is he?* In this problem, Franco’s height is compared to his daughter’s height. What equation can we write that represents what is happening in this problem?

Write  $2 \times 3 = \underline{\quad}$  on the board.

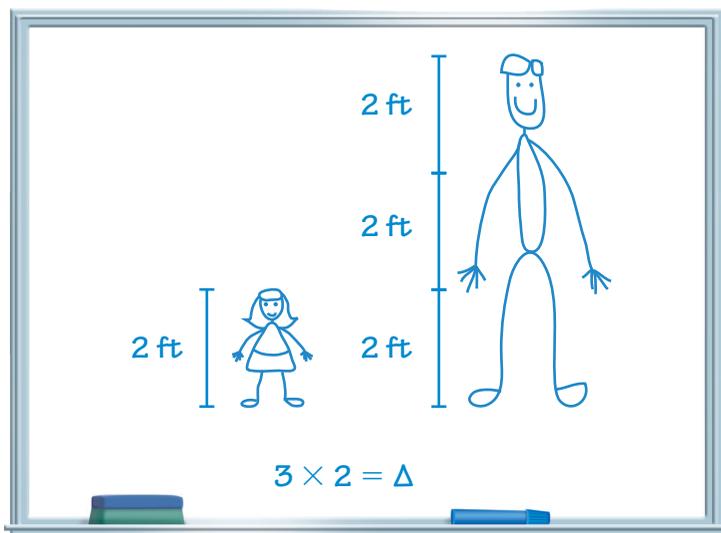
Where is the 2 in this problem? Where is the  $\times 3$  in this problem?... What is unknown?... We could use an underline to represent what is unknown, but we could also represent the unknown in other ways.

Write  $2 \times 3 = ?$  and  $2 \times 3 = \Delta$  on the board.

What represents what is unknown in each of these equations?

[Jake] said the unknown is how tall Franco is. Work with a partner to draw a picture that shows this problem.

Ask one student to draw a picture that shows the problem on the board. Ask students where they see each part of the equation in the picture. Record the answer to the problem.



## 2 ACTIVITY Multiplicative Comparison Problems

30 MIN INDIVIDUALS

Students solve the problems on *Student Activity Book* page 15A or C2. For each problem, they write an equation that represents the problem, solve it, and show how they solved it.

For some problems, you might want to draw a picture to help you make sense of what is happening in the problem or to help you solve it.

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

Factors, Multiples, and Arrays

### Multiplicative Comparison Problems

Write an equation for each problem. Then solve the problem and show how you solved it.

1. Anna picked 6 apples. Sabrina picked 7 times as many apples. How many apples did Sabrina pick?
2. Jake's grandmother lives 8 miles away from him. His aunt lives 6 times as far away from him as his grandmother. How far away does his aunt live?
3. A tree in Helena's yard is 35 feet tall. Helena is 5 feet tall. The tree is how many times as tall as Helena?
4. Marisol has 12 stamps in her stamp collection. Cheyenne has 3 times as many stamps. How many stamps does Cheyenne have?
5. Amelia has 24 marbles. She has 6 times as many marbles as Steve. How many marbles does Steve have?
6. Tony's farm is 9 acres. Emaan's farm has 4 times as many acres. How many acres is Emaan's farm?

Session 1.6A Unit 1 15A

▲ Student Activity Book, Unit 1, p. 15A; Resource Masters, C2

**ONGOING ASSESSMENT: Observing Students at Work** 

Students solve multiplicative comparison problems. For Problems 3 and 5, students may write either a multiplication or a division equation.

- **Do students see these as another type of multiplication problem?** Do they know they need to multiply or divide, not add or subtract, to get the correct answer?
- **How do students solve the problems?** Do they draw pictures? Do they write an equation with a symbol for the unknown quantity? Do they just know the answers? Do they use known facts?

**DIFFERENTIATION: Supporting the Range of Learners** 

**Intervention** Some students may be unsure whether “4 times as many” means “a group plus 4 more groups” or “4 times the number of groups.” It may help these students to think about how 2 times, or twice, as many of something would look.

**ELL** Students may be unfamiliar with the phrase “times as many.” Write down a few simple problems with this phrase and together draw pictures for the problems. Then rearticulate that each picture shows “\_\_ times as many.”

**Extension** For students who easily solve these problems, give them some multiplication equations and ask them to write multiplicative comparison problems for the equations.

### 3 DISCUSSION

## Comparison Problems



15 MIN CLASS

**Math Focus Points for Discussion**

- ◆ Solving multiplicative comparison problems

Write Problem 3 from *Student Activity Book* page 15A or C2 on the board.

**This problem was different from some of the other problems on this sheet. Can someone draw a picture of what is happening in this problem? ... What do we know in this problem? What are we trying to find out?**

Students should understand that in this problem, the heights of Helena and the tree are both known and they are trying to find out how many times as tall the tree is.

**What equation did you write for this problem? How did you solve this problem?**

**Students might say:**



“My equation is  $35 \div 5 = ?$  I know 35 divided by 5 is 7. So the tree is 7 times as tall as Helena.”



“I thought: ‘what times 5 is 35?’ So I wrote  $? \times 5 = 35$ , and I knew it was 7.”

## 4

### SESSION FOLLOW-UP

## Daily Practice



**Daily Practice:** For reinforcement of this unit’s content, have students complete *Student Activity Book* page 15B or C3.



**Student Math Handbook:** Students and families may use *Student Math Handbook* pages 29–34 for reference and review. See pages 134–139 in the back of Unit 1.

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

Factors, Multiples, and Arrays Daily Practice

### More Multiplicative Comparison Problems

**NOTE:** Students solve multiplicative comparison problems.

Solve each problem and show how you solved it. Write an equation for each problem.

- Over the summer Noemi read 9 books. Sei read 4 times as many books. How many books did Sei read?
- Benson’s tomato plant is 3 feet tall. His corn plant is twice as tall as his tomato plant. How tall is his corn plant?
- Luke has lived in Suntown for 6 years. Yuson has lived in Suntown for 3 times as many years. How many years has Yuson lived in Suntown?
- Lake Chelan in Washington State is 55 miles long. Lake Chelan is 5 times as long as Long Lake in Maine. How long is Long Lake?

15B Unit 1 Session 1.6A

▲ Student Activity Book, Unit 1, p. 15B; Resource Masters, C3