

## It's All Relative

### Purpose

Students will recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve problems.

### Materials

*For the teacher:* transparency of Black Line Master (BLM)

*It's All Relative*

*For each student:* approximately 50 counters, copy of BLM

*It's All Relative*

### Activity

#### A. Introduction

1. Tell students the following problem: Four children are playing and each child has five marbles. How many marbles do they have in all?
2. Have students use their counters to show the problem.  
[Four sets of five counters.]
3. Ask the students how they would find the answer.  
[By multiplying or adding.]
4. When students have found the answer, ask them how they could check it. [By dividing or subtracting.]
5. Summarize the problem by writing all the number sentences involved:

$$4 \times 5 = 20, 5 + 5 + 5 + 5 = 20,$$

$$20 \div 4 = 5 \text{ (or } 20 \div 5 = 4),$$

$$20 - 5 - 5 - 5 - 5 = 0$$

#### B. Group Activity

1. Divide students into groups of three or four and give each student a copy of the BLM *It's All Relative*.
2. Have groups work the problems on the BLM and show each answer in two ways.
3. Have students check their answers using an inverse operation.
4. Ask students to summarize each problem by writing all the number sentences involved.

(continued)

connecting  
across the  
curriculum



#### English/ Language Arts

Have students write and solve their own problem situations involving multiplication and division.

MEETING  
INDIVIDUAL  
NEEDS



Help students who are having difficulties by assisting them to model the problems with counters and see how they could use two different operations.

Standards Links  
4.2.2, 4.2.3, 4.2.4

**Activity (continued)** 

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**C. Discussion**







1. When students have finished the problems on the BLM, discuss the patterns in their answers. These should include:
  - a. you can solve some problems using addition and multiplication;
  - b. you can solve other problems using subtraction and division;
  - c. you can check multiplication using division;
  - d. you can check division using multiplication.
2. Accept also that you can check addition and subtraction using one another of these, although this is not so directly relevant to this activity.

**Questions for Review** 

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**Basic Concepts and Processes**

During the activity, discuss the following questions with students to gauge their understanding of the indicators:

-  Do you think you should [*multiply/divide/add/subtract*] in this problem?
  -  Which numbers should you [*multiply/divide/add/subtract*]?
  -  Why should you do that?
  -  What other operation could you use?
  -  How are you going to check your answer?
  -  Have you written all the number sentences for this problem?
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## *It's All Relative*

**Solve the following word problems. Show your problems and answers in two ways. Check your answers using a different operation.**

1. Martha babysits for her neighbors' children. She makes \$2.00 per hour. How much money will she make for four hours of babysitting? Six hours? Eight hours?

Now decide how much money Martha will make if she babysits twice on a Saturday: from 1:00 p.m. to 3:00 p.m. and again from 6:00 p.m. to 9:00 p.m.

2. A fence is 27 meters long and has sections of three meters in length. How many sections are in the fence?
3. A 56-pound sack of birdseed is poured equally into eight smaller bags. What is the weight of birdseed in each bag?
4. You use a five-gallon bucket to fill your garden pond. It takes you 15 buckets full of water to fill the pond. What is the capacity of the pond?
5. A multi-pack of chocolate bars costs \$1.20 and contains six bars. You and two friends share the multi-pack, taking two bars each. How much should each of you pay?

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## Teacher Directions

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Have students solve each problem and show their answer in two ways, usually either multiplication and addition or division and subtraction. Have students check their answers using the inverse operation.

## Answer Key

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1. Four hours:  $4 \times 2 = 8$  and  $2 + 2 + 2 + 2 = 8$

(check:  $8 \div 2 = 4$  or  $8 \div 4 = 2$ )

or, less likely,  $8 - 2 - 2 - 2 - 2 = 0$  or  $8 - 4 - 4 = 0$ )

Six hours:  $6 \times 2 = 12$  and  $2 + 2 + 2 + 2 + 2 + 2 = 12$

(check:  $12 \div 2 = 6$  or  $12 \div 6 = 2$ )

or, less likely,  $12 - 2 - 2 - 2 - 2 - 2 - 2 = 0$  or  $12 - 6 - 6 = 0$ )

Eight hours:  $8 \times 2 = 16$  and  $2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 16$

(check:  $16 \div 2 = 8$  or  $16 \div 8 = 2$ )

or, less likely,  $16 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 = 0$  or  $16 - 8 - 8 = 0$ )

Saturday:  $5 \times 2 = 10$  and  $2 + 2 + 2 + 2 + 2 = 10$

(check:  $10 \div 2 = 5$  or  $10 \div 5 = 2$ )

or, less likely,  $10 - 2 - 2 - 2 - 2 - 2 = 0$  or  $10 - 5 - 5 = 0$ )

2.  $27 \div 3 = 9$  and  $27 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 = 0$

(check:  $9 \times 3 = 27$  or  $3 \times 9 = 27$ )

or, less likely,  $3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 27$  or  $9 + 9 + 9 = 27$ )

3.  $56 \div 8 = 7$  and  $56 - 8 - 8 - 8 - 8 - 8 - 8 - 8 = 0$

(check:  $7 \times 8 = 56$  or  $8 \times 7 = 56$ )

or, less likely,  $8 + 8 + 8 + 8 + 8 + 8 + 8 + 8 = 56$  or  $7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 56$ )

4.  $15 \times 5 = 75$  and  $15 + 15 + 15 + 15 + 15 = 75$

(check:  $75 \div 5 = 15$  or  $75 \div 15 = 5$ )

or, less likely,  $75 - 15 - 15 - 15 - 15 - 15 = 0$ )

5.  $120 \div 3 = 40$  and  $120 - 40 - 40 - 40 = 0$

(check:  $3 \times 40 = 120$  or  $40 \times 3 = 120$ )

or, less likely,  $40 + 40 + 40 = 120$ )