REASONING 2.5

DEVELOPING CONCEPTS

Multiplication of Integers

For use with Lesson 2.5

GOAL

Use reasoning to find a pattern for multiplying integers.

MATERIALS

- paper
- pencil

Question

How can you use addition to find the product of integers?

Explore

1 Copy and complete the table. Use repeated addition to find the product.

Product	Equivalent sum	Solution
$3(-3)$	$-3 + (-3) + (-3)$	-9
$2(-5)$	$-5 + (-5)$	?
$4(-2)$	?	?

2 Copy and complete the table. Use the definition of opposites and your results from Step 1 to find the product.

Product	Use definition of opposites	Use result from Step 1	Solution
$-3(-3)$	$-(3)(-3)$	$-(-9)$	9
$-2(-5)$	$-(2)(-5)$	$-(?)$	?
$-4(-2)$	?	?	?

Think About It

Use repeated addition to find the product.

1. $3(2)$ **2.** $4(5)$ **3.** $2(-6)$ **4.** $5(-3)$

Use the definition of opposites and repeated addition to find the product.

5. $-2(6)$ **6.** $-3(4)$ **7.** $-5(-5)$ **8.** $-4(-3)$

LOGICAL REASONING **Based on your results from Exercises 1–8, complete the statement with *always*, *sometimes*, or *never*.**

9. The product of two positive integers is __?__ positive.

10. The product of a positive and a negative integer is __?__ positive.

11. The product of two negative integers is __?__ negative.