REASONING 2.4

DEVELOPING CONCEPTS

Subtraction of Integers

For use with Lesson 2.4

GOAL

Use reasoning to find a pattern for subtracting integers.

MATERIALS

- algebra tiles

Student Help

LOOK BACK
For help with using algebra tiles, see p. 77.

Question

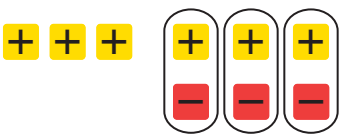
How can you model the subtraction of positive integers with algebra tiles?

Explore

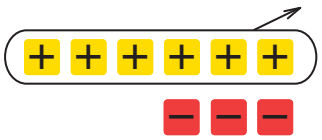
Use algebra tiles to model $3 - 6$.

1. Use 3 yellow tiles to model $+3$.

2. Before you can remove 6 yellow tiles you need to add three "zero pairs."



3. To subtract 6 from 3, remove six of the yellow tiles.



4. The remaining tiles show the difference of 3 and 6.

Complete: $3 - 6 =$ ___?___

Think About It

Use algebra tiles to find the difference. Sketch your solution.

1. $7 - 2$ **2.** $2 - 3$ **3.** $4 - 7$

4. $-3 - 5$ **5.** $-5 - 8$ **6.** $-1 - 2$

Use algebra tiles to find the sum. Sketch your solution.

7. $7 + (-2)$ **8.** $2 + (-3)$ **9.** $4 + (-7)$

10. $-3 + (-5)$ **11.** $-5 + (-8)$ **12.** $-1 + (-2)$

LOGICAL REASONING **Based on your results from Exercise 1–12, determine whether the statement is *true* or *false*. Explain.**

13. To subtract a positive integer, add the opposite of the positive integer.

14. When you subtract a positive integer, the difference is always negative.

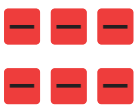
Question

How can you model subtraction of negative integers with algebra tiles?

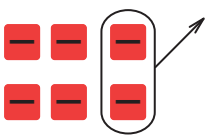
Explore

Use algebra tiles to model $-6 - (-2)$.

1. Use 6 red tiles to model -6.



2. To subtract -2 from -6, remove 2 red tiles.



3. The remaining tiles show the difference of -6 and -2.

Complete: $-6 - (-2) =$ **?**

Think About It

Use algebra tiles to find the difference. Sketch your solution.

1. $4 - (-2)$ **2.** $8 - (-1)$ **3.** $3 - (-4)$

4. $-7 - (-3)$ **5.** $-5 - (-1)$ **6.** $-6 - (-6)$

Use algebra tiles to find the sum. Sketch your solution.

7. $4 + 2$ **8** $8 + 1$ **9.** $3 + 4$

10. $-7 + 3$ **11.** $-5 + 1$ **12.** $-6 + 6$

LOGICAL REASONING **Based on your results from Exercises 1–12, determine whether the statement is *true* or *false*. Explain.**

13. To subtract a negative integer, add the opposite of the negative integer.

14. When you subtract a negative integer, the difference is always negative.