



## SKILL 8: PROBLEM SOLVING: Operations with Integers

Integers are often used to solve problems that involve increases and decreases, gains and losses, or other quantities that may be greater than or less than zero.

### Example

**A computer store lowered the price of a laptop computer \$45 each month. The store did this over a 6-month period. What was the change in price over this period of time?**

**Read** The price of the laptop decreased by \$45 each month. This happened 6 different times.

**Plan** What integers describe the situation? The negative integer  $-45$  can be used to represent a *decrease* of \$45. The positive integer 6 represents the number of times the price was lowered. Since the change represented by  $-45$  occurred 6 times, multiply  $-45$  by 6.

**Solve** Find  $6 \cdot (-45)$ . You are multiplying integers that have different signs, so the product will be negative.

$$6 \cdot (-45) = -270$$

There was a change of  $-\$270$  in the price of the laptop computer.

**Look Back** Does your answer makes sense? The price changed by almost \$50 in each of 6 months. The number of dollars by which the price changed was almost \$300. Since \$270 is close to \$300, and since the change was a decrease, the answer,  $-\$270$ , makes sense.

### Guided Practice

1. A football team made a 15-yard gain on one play. On the next play, the team had an 8-yard loss. What was the total change? Was it an overall gain or loss?
  - a. The gain can be represented by the integer \_\_\_\_\_.
  - b. The loss can be represented by the integer \_\_\_\_\_.
  - c. The total change was \_\_\_\_\_ yards.
  - d. Since the total change is a positive integer, the team had an overall \_\_\_\_\_.

**SKILL 8: Practice**

Use integers to solve each problem.

1. In January, Doreen's bank balance decreased by \$50. In February, her balance increased by \$30. What was the total change in her balance?  
\_\_\_\_\_
2. Mr. Schultz wanted to write a check for \$85. He noticed that he had only \$80 in his checking account. What integer shows what Mr. Schultz's checking account balance would have been if he had written the check?  
\_\_\_\_\_
3. In golf, a score of 0 is called *even par*. One *over par* is represented by +1 and one *under par* is represented by -1. In a golf competition, a player had scores of +2, +1, -2, and 0. What was the player's total score?  
\_\_\_\_\_
4. Maria's score changes in a video game were +80, -90, and +40. What was the total change?  
\_\_\_\_\_
5. The price of a share of stock dropped \$35 over a 5-day period. The change in price was the same on each of the 5 days. What was the change in price each day?  
\_\_\_\_\_
6. On a test, the teacher gave +10 points for each correct answer, 0 points for a skipped question, and -5 points for each incorrect answer. There were 10 questions on the test. Alex had 8 correct answers and 2 incorrect answers. What score did Alex get?  
\_\_\_\_\_
7. A mountain climber reached the top of a mountain that was 10,000 ft above sea level. After descending 3,400 ft, he rested for an hour. What was the level at which he rested?  
\_\_\_\_\_
8. In a science experiment, the temperature of a liquid dropped  $30^\circ$  over 6 hours. What integer shows the average hourly temperature change of the liquid?  
\_\_\_\_\_

**TEST PREP**

9. The temperature in Bensonville dropped  $3^\circ\text{F}$  each hour for 4 hours. What was the total temperature change over the 4-hour period?

A  $-12^\circ\text{F}$       C  $7^\circ\text{F}$   
B  $-7^\circ\text{F}$       D  $12^\circ\text{F}$

Skill 8

10. Find  $-48 \div (-6)$ .

F 9                      H -8  
G 8                      J -9

Skill 7