

## **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.

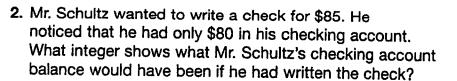
#### **Guided Practice**

- 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?



- 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° over 6 hours. What integer shows the average hourly temperature change of the liquid?

# TEST PREP

9. The temperature in Bensonville dropped 3°F each hour for 4 hours. What was the total temperature change over the 4-hour period?

C 7°F

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**B** -7°F

D 12°F

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

( -/-

F 9

H -

**G** 8

J —9

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