

## 3-6

## Study Guide and Intervention

## Writing Two-Step Equations

You can use two-step equations to represent situations in which you start with a given amount and then increase it at a certain rate.

**Example** **PRINTING:** A laser printer prints 9 pages per minute. Liza refilled the paper tray after it had printed 92 pages. In how many more minutes will there be a total of 245 pages printed?

**EXPLORE** You know the number of pages printed and the total number of pages to be printed. You need to find the number of minutes required to print the remaining pages.

**PLAN** Let  $m$  = the number of minutes. Write and solve an equation. The remaining pages to print is  $9m$ .

remaining pages + pages printed = total pages

$$9m + 92 = 245$$

**SOLVE**

$$9m + 92 = 245$$

$$9m + 92 - 92 = 245 - 92$$

$$9m = 153$$

$$9m = \frac{153}{9}$$

$$m = 17$$

**EXAMINE** The remaining 153 pages will print in 17 minutes. Since  $245 - 153 = 92$ , the answer is correct.

**Exercises**

Solve each problem by writing and solving an equation.

- METEOROLOGY** During one day in 1918, the temperature in Granville, North Dakota, began at  $-33^\circ$  and rose for 12 hours. The high temperature was about  $51^\circ$ . About how many degrees per hour did the temperature rise?
- SAVINGS** John has \$825 in his savings account. He has decided to deposit \$65 per month until he has a total of \$1800. In how many months will this occur?
- SKYDIVING** A skydiver jumps from an airplane at an altitude of 12,000 feet. After 42 seconds, she reaches 4608 feet and opens her parachute. What was her average velocity during her descent?
- FLOODING** The water level of a creek has risen 4 inches above its flood stage. If it continues to rise steadily at 2 inches per hour, how long will it take for the creek to be 12 inches above its flood stage?

3-6**Skills Practice*****Writing Two-Step Equations***

Translate each sentence into an equation. Then find each number.

1. Eleven less than 5 times a number is 24.
2. The quotient of a number and  $-9$  increased by 10 is 11.
3. Five less than the product of  $-3$  and a number is  $-2$ .
4. Fifteen more than twice a number is  $-23$ .
5. The difference between 5 times a number and 4 is 16.
6. Nine more than  $-8$  times a number is  $-7$ .
7. The difference between 12 and ten times a number is  $-28$ .
8. Seven more than three times a number is 52.
9. Eleven less than five times a number is 19.
10. Thirteen more than four times a number is  $-91$ .
11. Seven less than twice a number is 43.

Solve each problem by writing and solving an equation.

12. **SHOPPING** The total cost of a suit and 4 ties is \$292. The suit cost \$200. Each tie cost the same amount. Find the cost of one tie.
13. **AGES** Mary's sister is 7 years older than Mary. Their combined ages add up to 35. How old is Mary?

 **3-6 Practice****Writing Two-Step Equations**

Translate each sentence into an equation. Then find each number.

1. Eight less than 7 times a number is  $-29$ .
2. Twenty more than twice a number is 52.
3. The difference between three times a number and 11 is 10.
4. One more than the difference between 18 and seven times a number is  $-9$ .
5. Eight times a number plus 6 less than twice the number is 34.
6. 26 more than the product of a number and 17 is  $-42$ .
7. Twelve less than the quotient of a number and 8 is  $-1$ .

Solve each problem by writing and solving an equation.

8. **ANIMAL TRAINING** Last summer, Gary trained 32 more dogs than Zina. Together they trained 126 dogs. How many dogs did Gary train?
9. **SALES** Julius sold five times as many computers as Sam sold last year. In total, they sold 78 computers. How many computers did Julius sell?
10. **TRACK** In one season, Ana ran 18 races. This was four fewer races than twice the number of races Kelly ran. How many races did Kelly run?
11. **BASEBALL** André hit four more home runs than twice the number of home runs Larry hit. Together they hit 10 home runs. How many home runs did André hit?