

## 4-5 Two-Step Equations

**Objective:** To solve equations using two steps.

### Terms to Know

**Solving two-step equations** Using the following rules for solving an equation:

First undo the addition or subtraction using the inverse operation.

Then undo the multiplication or division using the inverse operation.

**Example 1** Solve  $3n - 1 = 11$ . Check the solution.

**Solution**

$$3n - 1 = 11$$

$$3n - 1 + 1 = 11 + 1 \quad \leftarrow \text{Add 1 to both sides.}$$

$$3n = 12$$

$$\frac{3n}{3} = \frac{12}{3}$$

$\leftarrow$  Divide both sides by 3.

$$n = 4$$

The solution is 4.

*Check:*

$$3n - 1 = 11$$

$$3(4) - 1 \stackrel{?}{=} 11$$

$$12 - 1 \stackrel{?}{=} 11$$

$$11 = 11 \quad \checkmark$$

**Solve. Check each solution.**

- |                     |                      |
|---------------------|----------------------|
| 1. $5n - 30 = -20$  | 2. $-10 = -3m + 5$   |
| 3. $2d - 14 = -24$  | 4. $-30 = 9c + 6$    |
| 5. $2 = 3r + 8$     | 6. $-5t + 10 = -15$  |
| 7. $-4u - 2 = -30$  | 8. $3z - 5 = 7$      |
| 9. $27 = -5v + 7$   | 10. $-3q - 4 = 5$    |
| 11. $-4 = 2r + 6$   | 12. $-7b + 10 = -11$ |
| 13. $5c - 2 = -37$  | 14. $-3r + 9 = 0$    |
| 15. $10 = -7s + 10$ | 16. $6x - 8 = -20$   |
| 17. $9a - 1 = 17$   | 18. $-13 = 2y - 5$   |
| 19. $-5p - 7 = 28$  | 20. $8t - 3 = 21$    |
| 21. $40 = 13q - 12$ | 22. $-76 = 19s - 38$ |
| 23. $2f - 7 = -9$   | 24. $76 = -11w - 23$ |