Section Overview

SECTION 11A

Two-Step Equations — Lesson 11-1

Why? To work effectively with formulas in science, students must be able to solve multi-step equations. Solving two-step equations is a stepping stone to solving multi-step equations and two-step inequalities.

To solve, reverse the order of operations and use inverse operations.

$$8x + 15 = 39$$
$$-15 \quad -15$$
$$8x = 24$$
$$\frac{8x}{8} = \frac{24}{8}$$
$$x = 3$$

Subtract 15 from both sides of the equation.

Divide both sides of the equation by 8.

Multi-Step Equations — Lessons 11-2, 11-3

Why? Students will have to combine like terms when they solve equations with variables on both sides.

Combine like terms.
Then solve as a two-step equation.

$$6y - 2 + y = 40$$
$$7y - 2 = 40$$
$$+2 \quad +2$$
$$7y = 42$$
$$\frac{7y}{7} = \frac{42}{7}$$
$$y = 6$$

Combine like terms.

Add 2 to both sides.

Divide both sides by 7.

Equations with Variables on Both Sides — Lesson 11-4

Why? Students encounter more-complex equations as they study algebra and geometry. These more-complex equations are usually solved by extending the skills learned in this chapter.

To solve, the variable terms must be on one side of the equation.

$$3m + 15 = -5m - 9$$
$$5m + 3m + 15 = -5m + 5m - 9$$
$$8m + 15 = -9$$
$$-15 \quad -15$$
$$8m = -24$$
$$\frac{8m}{8} = \frac{-24}{8}$$
$$m = -3$$

Add $5m$ to both sides of the equation.

Combine like terms.