Lesson 9
Solving Equations

NAME:

⬚ Start by navigating to the Online Lesson for instructions.

Objectives

⊘ Solve one- and two-step equations containing variables and integer coefficients

⊘ Solve one- and two-step equations containing variables and fractions (coefficients and/or constant terms)

⊘ Use substitution. This includes checking a solution to a single variable equation

Why?

Learning how to work with equations (even those with fractions!) helps you figure out unknowns in real life, like cost, distance, or time. When you check your answer with substitution, you make sure it really works! These steps build the foundation for algebra and problem solving in higher math and everyday situations.

🔭 Explore

🔭 Solving Equations

▷ *Fill in the notes as you watch the video in the Online Lesson.*

■ To solve an equation, _____ x (or other variable) on

_____ of the equal sign.

■ Whatever you do to one side of an equation, you _____ do on the

other side to maintain _____.

  ▪ You will do the _____ (inverse) operation to isolate the

  variable. For example:

   ▪ If 2 is subtracted from x, you will _____ 2 to both sides.

   ▪ If 3 is multiplied by x, you will _____ by 3 (or multiply by $\frac{1}{3}$)

   on both sides.

   ▪ With a fraction, if $\frac{4}{5}$ is multiplied by x, you will divide by $\frac{4}{5}$ which is the

   same as multiplying by the reciprocal _____.

■ Remember to combine any _____ before solving.

■ Your final answer should have all fractions written in _____ form.

■ To check that your answer is correct, _____ the value of the variable back into the original equation.

> In Algebra 1, you will learn how to clear fractions or decimals from an equation before solving.

Example 1

▷ *Complete the example as you watch the video in the Online Lesson.*

Solve.

$$\frac{2}{7}x + 6 = 2$$

Plan

$$\cdot \frac{2}{7} \uparrow$$

$$+6 \uparrow$$

Implement

Explain

◂ Subtract 6 from both sides

◂ Multiply by the reciprocal on both sides

◂ Simplify the fraction

Check

Example 2

▷ *Complete the example as you watch the video in the Online Lesson.*

Solve.

$$\frac{8}{5}(x+3) = -\frac{1}{2}$$

Plan

Distribute $\dfrac{8}{5}$

Implement

Explain

◀ Distribute

◀ Subtract

◀ $LCD(2,5) = 10$

◀ Multiply by the reciprocal

Check

> You can review how to make a problem-solving plan in the "Problem Solving" skills lesson in Bridge Materials.

✎ Practice

Complete the problems. Show your work.

1) $-\dfrac{7}{3}x + \dfrac{21}{4} = \dfrac{3}{4}$

2) $-4 = 4x + 9$

1) $\dfrac{4}{5}x - 7 = 5$

2) $-\dfrac{31}{8}x = \dfrac{9}{2}$

3) $\dfrac{5}{4}(x + 16) = 20$

4) $-\dfrac{1}{2}x + \dfrac{2}{3} = \dfrac{4}{3}$

Complete the problems. Show your work.

5) $\quad -\dfrac{3}{4}x + \dfrac{7}{8} = \dfrac{3}{8}$

6) $\quad -\dfrac{1}{3}(8x - 6) = 6$

7) $\quad \dfrac{x}{8} + 3 = -2$

8) $\quad \dfrac{1}{3}(x - 2) = 4$

9) $\quad \dfrac{9}{4}x - 2 = 7$

10) $\quad \dfrac{x}{5} - 12 = 3$

To continue, return to the Online Lesson.