

5.7

Solving a Linear Equation with Several Occurrences of the Variable: Problem Type 2

• Example 1

Solve

$$\frac{x}{2} - \frac{1}{3} = \frac{2x + 3}{6}$$

The LCD for $\frac{x}{2}$, $\frac{1}{3}$, and $\frac{2x + 3}{6}$ is 6. Multiply *each* term by 6.

$$6 \cdot \frac{x}{2} - 6 \cdot \frac{1}{3} = 6 \left(\frac{2x + 3}{6} \right) \quad \text{or} \quad 3x - 2 = 2x + 3$$

Solving for x , we have

$$3x - 2x = 3 + 2 \quad \text{or} \quad x = 5$$

To check, substitute 5 for x in the *original* equation. We get

$$\frac{5}{2} - \frac{1}{3} = \frac{13}{6} = \frac{2 \cdot 5 + 3}{6}$$

• • • CHECK YOURSELF 1

Solve and check.

$$\frac{x}{4} - \frac{1}{6} = \frac{4x - 5}{12}$$

• • • CHECK YOURSELF ANSWER

1. 3.

5.7 Exercises

Name _____

Section _____

Date _____

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1. _____

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10. _____

Solve each of the following equations for x .

1. $\frac{x}{2} + 3 = 6$

2. $\frac{x}{3} - 2 = 1$

3. $\frac{x}{2} - \frac{x}{3} = 2$

4. $\frac{x}{6} - \frac{x}{8} = 1$

5. $\frac{x}{5} - \frac{1}{3} = \frac{x-7}{3}$

6. $\frac{x}{6} + \frac{3}{4} = \frac{x-1}{4}$

7. $\frac{x}{4} - \frac{1}{5} = \frac{4x+3}{20}$

8. $\frac{x}{12} - \frac{1}{6} = \frac{2x-7}{12}$

9. $\frac{x}{4} - \frac{x}{5} = 2$

10. $\frac{x}{3} - \frac{x}{4} = 3$