

# **Lesson 3.5 Continued**

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## **Multi-Step Equations**

# Writing Equations

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It costs \$3.00 to rent bowling shoes. It costs \$2.50 for each game you play. If you have \$10.00, how many games can you play?

## 1st: Analyze Types of Costs

<p><b>Fixed</b></p> <p>You pay a set amount</p> <p>\$3.00</p>	<p><b>Adjustable</b></p> <p>You pay an amount per use</p> <p>Variable</p> <p>\$2.50</p>
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## Writing Equations

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It costs \$3.00 to rent bowling shoes. It costs \$2.50 for each game you play. If you have \$10.00, how many games can you play?

Add Costs Together = Total

$$\$3.00 + \$2.50x = \$10.00$$

2 games

$$\begin{array}{r} 3 + 2.5x = 10 \\ -3 \qquad \qquad -3 \\ \hline 2.5x = 7 \\ \frac{2.5x}{2.5} = \frac{7}{2.5} \end{array}$$

$$x = 2.8$$

# Writing Equations

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A cell phone company charges a monthly fee plus \$0.25 for each text message. The monthly fee is \$30.00. If your bill at the end of the month was \$59.50, how many text messages did you have?

## 1st: Analyze Types of Costs

Fixed	Adjustable
You pay a set amount	You pay an amount per use
$\$30.00$	$0.25 m$

## Writing Equations

A cell phone company charges a monthly fee plus \$0.25 for each text message. The monthly fee is \$30.00. If your bill at the end of the month was \$59.50, how many text messages did you have?

Add Costs Together = Total

$$\$30.00 + 0.25m = \$59.50$$

$$30 + 0.25m = 59.5$$

$$- 30$$

$$- 30$$

$$0.25m = 29.5$$

$$\underline{0.25}$$

$$\underline{0.25}$$

$$m = 118$$

118 messages

## Solve a 2-Step Equation with fractions

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Solve  $\frac{x}{8} - \frac{1}{2} = -\frac{7}{2}$  Check your solution.

$$\frac{\cancel{8} \cdot x}{\cancel{8}} = -3 \cdot 8$$

$$-\frac{6}{2} = -3$$

$$x = -24$$

## Solve a 2-Step Equation with fractions

### Clear the Fractions

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Find the least common multiple  
("what can 8 and 2 both divide into?")

$$8 \left( \frac{x}{8} - \frac{1}{2} = -\frac{7}{2} \right)$$

$$\cancel{8} \cdot \frac{x}{\cancel{8}} - \frac{1}{\cancel{2}} \cdot \cancel{4} = -\frac{7}{\cancel{2}} \cdot \cancel{4}$$

$$\begin{array}{r} x - 4 = -28 \\ +4 \quad +4 \\ \hline \end{array}$$

$$x = -24$$

## Solving Multi-Step Equations Simplifying First!

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$$3y - 8y + 10 = 30$$

■ Combine Like Terms

■ Cancel Constant with +/-

■ Cancel Coefficient with \*/÷

Check:

$$-5y + 10 = 30$$
$$\begin{array}{r} -10 \\ -10 \end{array}$$

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$$\frac{-5y}{-5} = \frac{20}{-5}$$

$$y = -4$$



## Solving Multi-Step Equations Using the Distributive Property

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$$-40 = -8(y + 9)$$

- Distributive Property
- Cancel Constant with +/-
- Cancel Coefficient with \*/-

Check:

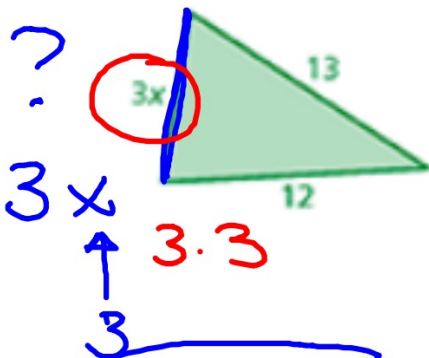
$$\begin{array}{r} -40 = -8y - 72 \\ +72 \qquad \qquad \qquad +72 \\ \hline 32 = -8y \\ \hline \frac{-8}{-8} \qquad \frac{-8}{-8} \\ -4 = y \end{array}$$

## Geometry Application!

Write and solve an equation to find the missing length

{Psst! this will be on the test!}

The perimeter is 34



Side length  
9

$$34 = 12 + 13 + 3x$$

$$\begin{array}{r} 34 = 25 + 3x \\ - 25 \quad - 25 \\ \hline \end{array}$$

$$\frac{9}{3} = \frac{3x}{3}$$

$$\boxed{3 = x}$$

## Solving Multi-Step Equations Challenge Equations!

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- Distributive Property
- Combine Like Terms
- Cancel Constant with +/-
- Cancel Coefficient with \*/-

Check:  $1\frac{2}{5}$  or  $1.4 = x$

$$\begin{array}{r} 2(1 - 5x) + 4 = -8 \\ 2 - 10x + 4 = -8 \\ 6 - 10x = -8 \\ \underline{-6} \qquad \qquad \qquad -6 \\ -10x = -14 \\ \underline{-10} \qquad \qquad \underline{-10} \end{array}$$

## **Homework**

**Pg 112 and 113**

**#21-27 odd**

**#29-34 all**

**#36 and 37**