

## 2.2 Solving Harder Equations

### Need To Know



- Solve equations that require both properties.
- Solve equations with like terms on both sides.
- Simplifying equations with fractions and decimals.

## Solve Equations - Review

Solve for x

$$\frac{2}{3}x = 8$$

Recall Solving Equations

- Goal:
  - Get the unknown by itself.
- How:
  - Make equivalent equations that undo all the operations associated with the unknown.
  - Show your thinking by writing the operations on BOTH sides of the equal sign.



## Solve Equations

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Solve for  $x$

$$7 + 1 = 2x - 6x$$

Solving Equations

(stated more simply)

- Goal:
  - Get  $x$  by itself.
  
- How:
  - Simplify
  - Whatever you do to one side do to the other side.



## Solve Multi-step Equations

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Solve for  $x$

$$4x + 3 = -13$$

The idea of solving

Equation diagram



## Solve Multi-step Equations

Solve

$$3x + 4 = -15$$

### Summarize Steps

- Simplify
- Use the add property on both sides
- Use the multiplication property to get x by itself
- Check your answer



## Solve Multi-step Equations

Solve

$$2(x - 3) + 3 = 9$$

### Steps to Solve

Simplify

- 1.
- 2.
- 3.

Use Add Property to

1. Get variable on one side
2. Get constant terms on the other side

Use Multiplication Property

1. Get unknown by itself

Check



## Solve Multi-step Equations

Solve for z:

$$5z + 6 = 3z - 6$$

### Steps to Solve

Simplify

- 1.
2. Clear parentheses
3. Clear like terms

Use Add Property to

1. Get variable on one side
2. Get constant terms on the other side

Use Multiplication Property

1. Get unknown by itself

Check



## Solve Multi-step Equations

Solve

$$7(x - 3) + 5 = 4(3x - 2) - 8$$

### Steps to Solve

Simplify

- 1.
2. Clear parentheses
3. Clear like terms

Use Add Property to

1. Get variable on one side
2. Get constant terms on the other side

Use Multiplication Property

1. Get unknown by itself

Check



## Solve Equations w/ Fractions

Solve for x:

$$\frac{1}{3}x + \frac{2}{5} = \frac{4}{15} + \frac{3}{5}x - \frac{2}{3}$$

### Steps to Solve

Simplify

- 1.
2. Clear parentheses
3. Clear like terms

Use Add Property to

1. Get variable on one side
2. Get constant terms on the other side

Use Multiplication Property

1. Get unknown by itself

Check



## Solve Equations w/ Decimals

Solve for z:

$$0.91 - 0.2z = 1.23 - 0.6z$$

### Steps to Solve

Simplify

1. Clear fractions
2. Clear parentheses
3. Clear like terms

Use Add Property to

1. Get variable on one side
2. Get constant terms on the other side

Use Multiplication Property

1. Get unknown by itself

Check

end