

Solving Equations Containing Decimals

Warm Up

Problem of the Day

Lesson Presentation

Lesson Quizzes

Solving Equations Containing Decimals

Warm Up

Solve.

1. $x - 17 = 32$

$x = 49$

2. $y + 11 = 41$

$y = 30$

3. $\frac{w}{5} = 18$

$w = 90$

4. $12x = 108$

$x = 9$

5. $x - 9 = 20$

$x = 29$

Problem of the Day

A bowling league has 156 players evenly distributed on 39 teams. If 40 players switch to another league and the number of teams is reduced to 29, will there be the same number of players on each team?

yes; 4

Solving Equations Containing Decimals

***Learn** to solve one-step equations that contain decimals.*

Solving Equations Containing Decimals

Students in a physical education class were running 40-yard dashes as part of a fitness test. The slowest time in the class was 3.84 seconds slower than the fastest time of 7.2 seconds.

You can write an equation to represent this situation. The slowest time s minus 3.84 is equal to the fastest time of 7.2 seconds.

$$s - 3.84 = 7.2$$



Solving Equations Containing Decimals

Remember!

You can solve an equation by performing the same operation on both sides of the equation to isolate the variable.

Solving Equations Containing Decimals

Additional Example 1: Solving Equations by Adding and Subtracting

Solve.

A. $n - 2.75 = 8.3$

$$\begin{array}{r} n - 2.75 = 8.30 \\ + 2.75 \quad + 2.75 \\ \hline n \quad \quad = 11.05 \end{array}$$

Use the Addition Property of Equality. Add 2.75 to both sides.

B. $a + 32.66 = 42$

$$\begin{array}{r} a + 32.66 = 42.00 \\ - 32.66 \quad - 32.66 \\ \hline a \quad \quad = 9.34 \end{array}$$

Use the Subtraction Property of Equality. Subtract 32.66 from both sides.

Solving Equations Containing Decimals

Check It Out: Example 1

Solve.

A. $n - 1.46 = 4.7$

$$\begin{array}{r} n - 1.46 = 4.70 \\ + 1.46 \quad + 1.46 \\ \hline n = 6.16 \end{array}$$

Use the Addition Property of Equality. Add 1.46 to both sides.

B. $a + 27.51 = 36$

$$\begin{array}{r} a + 27.51 = 36.00 \\ - 27.51 \quad - 27.51 \\ \hline a = 8.49 \end{array}$$

Use the Subtraction Property of Equality. Subtract 27.51 from both sides.

Solving Equations Containing Decimals

Additional Example 2A: Solving Equations by Multiplying and Dividing

Solve.

$$\frac{x}{4.8} = 5.4$$

$$\frac{x}{4.8} = 5.4$$

$$\frac{x}{4.8} \cdot 4.8 = 5.4 \cdot 4.8$$

$$x = 25.92$$

Use the Multiplication Property of Equality. Multiply by 4.8 on both sides.

Solving Equations Containing Decimals

Additional Example 2B: Solving Equations by Multiplying and Dividing

Solve.

$$9 = 3.6d$$

$$\frac{9}{3.6} = \frac{3.6d}{3.6}$$

$$\frac{9}{3.6} = d$$

$$2.5 = d$$

Use the Division Property of Equality. Divide by 3.6 on both sides.

Think: $9 \div 3.6 = 90 \div 36$

Solving Equations Containing Decimals

Check It Out: Example 2A

Solve.

$$\frac{x}{3.5} = 2.4$$

$$\frac{x}{3.5} = 2.4$$

$$\frac{x}{3.5} \cdot 3.5 = 2.4 \cdot 3.5$$

$$x = 8.4$$

Use the Multiplication Property of Equality. Multiply by 3.5 on both sides.

Solving Equations Containing Decimals

Check It Out: Example 2B

Solve.

$$9 = 2.5d$$

$$\frac{9}{2.5} = \frac{2.5d}{2.5}$$

$$\frac{9}{2.5} = d$$

$$3.6 = d$$

Use the Division Property of Equality. Divide by 2.5 on both sides.

Think: $9 \div 2.5 = 90 \div 25$

Solving Equations Containing Decimals

Additional Example 3: Problem Solving Application



A board-game box is 2.5 inches tall. A toy store has shelving measuring 15 inches vertically in which to store the boxes. How many boxes can be stacked in the space?



Understand the Problem

Rewrite the question as a statement.

Find the number of boxes that can be placed on the shelf.

*List the **important information**:*

- *Each board-game box is 2.5 inches tall.*
- *The store has shelving space measuring 15 inches.*

Solving Equations Containing Decimals

Additional Example 3 Continued



Make a Plan

The total height of the boxes is equal to the height of one box times the number of boxes. Since you know how tall the shelf is you can write an equation with b being the number of boxes.

$$2.5b = 15$$

Solving Equations Containing Decimals

Additional Example 3 Continued



Solve

$$2.5b = 15$$

$$\begin{array}{r} 2.5b = 15 \\ \hline 2.5 \quad 2.5 \end{array}$$

Use the Division Property of Equality.

$$b = 6$$

Six boxes can be stacked in the space.

Solving Equations Containing Decimals

Additional Example 3 Continued



Look Back

You can round 2.5 to 3 and estimate how many boxes will fit on the shelf.

$$15 \div 3 = 5$$

So 6 boxes is a reasonable answer.

Solving Equations Containing Decimals

Check It Out: Example 3



A canned good is 4.5 inches tall. A grocery store has shelving measuring 18 inches vertically in which to store the cans. How many cans can be stacked in the space?



Understand the Problem

Rewrite the question as a statement.

Find the number of cans that can be placed on the shelf.

*List the **important information**:*

- Each can is 4.5 inches tall.*
- The store has shelving space measuring 18 inches.*

Solving Equations Containing Decimals

Check It Out: Example 3 Continued



Make a Plan

The total height of the cans is equal to the height of one can times the number of cans. Since you know how tall the shelf is you can write an equation with c being the number of cans.

$$4.5c = 18$$

Solving Equations Containing Decimals

Check It Out: Example 3 Continued



Solve

$$4.5c = 18$$

$$\begin{array}{r} 4.5c = 18 \\ \hline 4.5 \quad 4.5 \end{array}$$

Use the Division Property of Equality.

$$c = 4$$

Four cans can be stacked in the space.

Solving Equations Containing Decimals

Check It Out: Example 3 Continued



Look Back

You can round 4.5 to 5 and 18 to 20 estimate how many cans will fit on the shelf.

$$20 \div 5 = 4$$

So 4 cans is a reasonable answer.

Lesson Quizzes

Standard Lesson Quiz

Lesson Quiz for Student Response Systems

Solving Equations Containing Decimals

Lesson Quiz

Solve.

1. $x - 14.23 = 19.5$ $x = 33.73$

2. $12.6c = -103.32$ $c = -8.2$

3. $\frac{x}{9.3} = 6.1$ $x = 56.73$

4. $m + 12.97 = -14.35$ $m = -27.32$

5. The French Club is selling coupon books for \$8.25 each. How many books must be sold to bring in \$5,940?
 720 books

Solving Equations Containing Decimals

Lesson Quiz for Student Response Systems

1. Solve.

$$m + 13.55 = -15.45$$

A. $m = -28$

B. $m = -29$

C. $m = -30$

D. $m = -31$

Solving Equations Containing Decimals

Lesson Quiz for Student Response Systems

2. Solve.

$$x - 16 = 18.7$$

A. $x = -35.13$

B. $x = -2.27$

C. $x = 2.27$

D. $x = 35.13$

Solving Equations Containing Decimals

Lesson Quiz for Student Response Systems

3. Solve.

$$14.8a = -102.12$$

A. $a = 7.3$

B. $a = 6.9$

C. $a = -6.9$

D. $a = -7.3$

Solving Equations Containing Decimals

Lesson Quiz for Student Response Systems

4. Solve.

$$\text{— } \overline{\overline{8.6}}^x 72$$

A. $x = 56.13$

B. $x = 61.92$

C. $x = 63.02$

D. $x = 64$

Solving Equations Containing Decimals

Lesson Quiz for Student Response Systems

5. A fashion show ticket costs \$7.75 per person. How many fashion show tickets must be sold to generate \$4,805?

A. 600 tickets

B. 620 tickets

C. 640 tickets

D. 660 tickets