

Solve Linear Equations

Question 1 .

Solve the following equation for x.

$$8x + 3 = 51$$

- A. 3
- B. 8
- C. 6
- D. 9

Question 2 .

Directions: Drag the tiles to the correct boxes to complete the pairs. Not all tiles will be used.

Match each linear equation with the correct solution.

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Question 3 .

Which value for x makes the following equation true?

$$33 = 7x + 5$$

- A. 8
- B. 196
- C. 6
- D. 4

Question 4 .Which step should be used to find the value of x ?

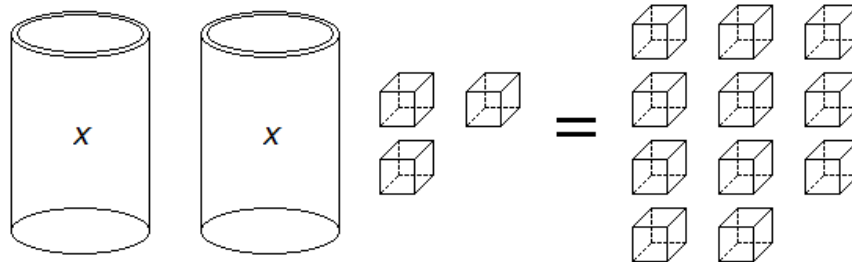
$15x = 45$

- A. add 15 to both sides
- B. multiply both sides by 15
- C. divide both sides by 15
- D. subtract 15 from both sides

Question 5 .Which value for x makes the sentence true?

$2x = 14$

- A. 9
- B. 14
- C. 12
- D. 7

Question 6 .The model below represents the equation $2x + 3 = 11$.What is the first step in finding the value of x ?

- A. Add 11 cubes to each side of the model
- B. Subtract 3 cubes from each side of the model
- C. Add 3 cubes to each side of the model
- D. Divide the cubes equally among the 2 cups

Question 7 .

What is the last step when solving the equation below for x ?

$$2x - 8 = 32$$

- A. Add 2 to each side of the equation.
- B. Divide each side of the equation by 2.
- C. Multiply each side of the equation by 2.
- D. Subtract $2x$ from each side of the equation.

Question 8 .

What is the first step when solving the equation below for x ?

$$7x + 6 = 8$$

- A. Multiply each side of the equation by 7.
- B. Subtract 6 from each side of the equation.
- C. Add 8 to each side of the equation.
- D. Subtract 7 from each side of the equation.

Question 9 .

Directions: Drag each tile to the correct box.

In hoping to make it onto the school's Gold Team, Bryan, Eli, and Damien took golf lessons over the summer.

Bryan signed up to take 4 lessons with a semi-pro instructor, and each lesson cost \$32.00 for a 45-minute session. The instructor advised Bryan to buy a bag of bulk practice balls to use during his lessons. After buying a bag of 32 golf balls, the total cost for his lessons and golf balls is \$132.48.

Eli signed up to take 6 lessons with a pro instructor, and each lesson cost \$52.00 for a 1-hour session. Eli bought a bag of bulk practice balls to use during his lessons. After buying a bag of 40 golf balls, the total cost for his lessons and golf balls is \$319.20.

Damien signed up to take 5 lessons with pro instructor, and each lesson cost \$28.00 for a 30-minute session. Based on the instructor's advise, he bought a bag of 24 golf balls to use during his lessons. The total cost for his lessons and golf balls is \$144.08.

Place the students in order from the least amount to the greatest amount that they paid per golf ball.

Damien

Bryan

Eli

, ,

Question 10 .

The model shown can be used to solve the equation $2x = 12$.

$$\begin{array}{l} \boxed{x} \\ \boxed{x} \end{array} = \begin{array}{l} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \\ \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \end{array}$$

Which model shows a step in solving this equation?

- A. $\boxed{x} = \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1}$
- B. $\boxed{x} = \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1}$
- C. $\boxed{x} = \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1}$
- D. $\boxed{x} = \begin{array}{l} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \\ \boxed{1} \boxed{1} \boxed{1} \end{array}$

Answers

1. C
2. --
3. D
4. C
5. D
6. B
7. B
8. B
9. --
10. B

Explanations

1. Keep in mind that the goal is to get x by itself.

$$\begin{aligned} 8x + 3 &= 51 \\ 8x + 3 - 3 &= 51 - 3 \\ 8x &= 48 \\ 8x \div 8 &= 48 \div 8 \\ x &= 6 \end{aligned}$$

2. To solve an equation in one variable, use inverse operations to isolate the variable and solve for x .

$$\begin{aligned} \frac{x}{-2} &= 2 \\ x &= 2(-2) \\ x &= -4 \end{aligned}$$

$$\begin{aligned} x - (-2) &= 6 \\ x &= 6 + (-2) \\ x &= 4 \end{aligned}$$

$$\begin{aligned} 3x + 5 &= 2 \\ 3x &= 2 - 5 \\ x &= \frac{-3}{3} \\ x &= -1 \end{aligned}$$

$$\begin{aligned} \frac{x - 11}{2} &= -5 \\ x - 11 &= -5(2) \\ x &= -10 + 11 \\ x &= 1 \end{aligned}$$

The correct matches are as shown.

$\frac{x}{-2} = 2$	←→	$x = -4$
$x - (-2) = 6$	←→	$x = 4$
$3x + 5 = 2$	←→	$x = -1$
$\frac{x - 11}{2} = -5$	←→	$x = 1$

3. Use inverse operations to isolate x .

$$\begin{aligned} 33 &= 7x + 5 \\ 33 - 5 &= 7x + 5 - 5 \\ 28 &= 7x \\ 28 \div 7 &= 7x \div 7 \\ 4 &= x \end{aligned}$$

4. Use opposite operations to isolate x to solve the equation. In the equation, x is multiplied by 15.

The opposite of multiplication is division, so **divide both sides of the equation by 15** to find the value of x .

5. Keep in mind that the goal is to get x by itself.

$$\begin{aligned} 2x &= 14 && \text{Divide both sides by 2.} \\ 2x \div 2 &= 14 \div 2 \\ x &= 7 \end{aligned}$$

6. The first step to solve the equation is to isolate the variable term using opposite operations.

$$\begin{aligned} 2x + 3 &= 11 \\ 2x + 3 - 3 &= 11 - 3 \end{aligned}$$

Therefore, the first step in finding the value of x is to **subtract 3 cubes from each side of the model**.

7. Use inverse operations to isolate x . Start by isolating $2x$ by adding 8 to each side of the equation.

$$\begin{aligned} 2x - 8 + 8 &= 32 + 8 \\ 2x &= 40 \end{aligned}$$

Next, isolate x by dividing each side of the equation by 2.

$$\begin{aligned} 2x \div 2 &= 40 \div 2 \\ x &= 20 \end{aligned}$$

Therefore, the last step to isolate x is to **divide each side of the equation by 2**.

8. Use inverse operations to isolate x . Start by isolating $7x$ by subtracting 6 from each side of the equation.

$$\begin{aligned} 7x + 6 - 6 &= 8 - 6 \\ 7x &= 2 \end{aligned}$$

Therefore, the first step to isolate x is to **subtract 6 from each side of the equation**.

9. Calculate how much each of them paid per golf ball.

Bryan took 4 lessons at \$32.00 each for a total of \$128.00. He also bought 32 golf balls for x each. The cost of the lessons and the golf balls total \$132.48. Set up a linear equation and solve for the cost per golf ball, x .

$$32x + \$128.00 = \$132.48$$

$$32x = \$4.48$$

$$x = \$0.14$$

Therefore, Bryan paid \$0.14 per golf ball.

Eli took 6 lessons at \$52.00 each for a total of \$312.00. He also bought 40 golf balls for x each. The cost of the lessons and the golf balls total \$319.20. Set up a linear equation and solve for the cost per golf ball, x .

$$40x + \$312.00 = \$319.20$$

$$40x = \$7.20$$

$$x = \$0.18$$

Therefore, Eli paid \$0.18 per golf ball.

Damien took 5 lessons at \$28.00 each for a total of \$140.00. He also bought 24 golf balls for x each. The cost of the lessons and the golf balls total \$144.08. Set up a linear equation and solve for the cost per golf ball, x .

$$24x + \$140.00 = \$144.08$$

$$24x = \$4.08$$

$$x = \$0.17$$

Therefore, Damien paid \$0.17 per golf ball.

So, placing the students in order from the least amount to the greatest amount paid per golf ball gives the following.

Bryan , Damien , Eli

10. To solve an equation, perform inverse operations on both sides to keep the equation balanced. The given equation is solved in one step below.

$$2x = 12$$

$$2x \div 2 = 12 \div 2$$

$$x = 6$$

The model that represents $x = 6$ is shown below.

$$\boxed{x} = \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1} \boxed{1}$$