

# Solutions to Equations

**Solutions to equations** are values for the variables that make the two sides equal.

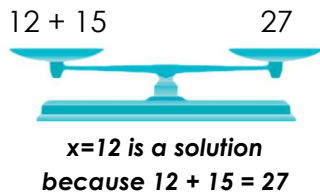
Think of a correct equation as a balanced scale.



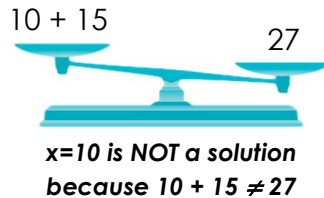
If an equation has a variable you can check to see if a number is a solution to an equation by substituting the number in for the variable. If you get the same number on both sides, you have found a solution to the equation.

**Example:** EQUATION:  $x + 15 = 27$

**Is  $x=12$  a solution?**



**Is  $x=10$  a solution?**



## You Try:

- 1) Is  $x = 3$  a solution to the equation,  $x + 5 = 10$ ?
- 2) Is  $y = 5$  a solution to the equation,  $\frac{30}{y} = 6$ ?
- 3) Is  $z = 12$  a solution to the equation,  $8z = 95$ ?

## You Try:

**Determine if the following value for the variable is a solution to the equation. Write yes or no.**

- 1)  $9 + x = 21$ , for  $x = 11$
- 2)  $n - 12 = 5$ , for  $n = 17$
- 3)  $25r = 75$ , for  $r = 3$
- 4)  $72 \div q = 8$ , for  $q = 9$
- 5)  $28 + c = 43$ , for  $c = 15$
- 6)  $u \div 11 = 10$ , for  $u = 111$
- 7)  $\frac{k}{8} = 4$ , for  $k = 24$
- 8)  $16x = 48$ , for  $x = 3$
- 9)  $73 - f = 29$ , for  $f = 54$
- 10)  $67 - j = 25$ , for  $j = 42$
- 11)  $39 \div v = 13$ , for  $v = 3$
- 12)  $88 + d = 100$ , for  $d = 2$
- 13)  $14p = 20$ , for  $p = 5$
- 14)  $6w = 30$ , for  $w = 5$
- 15)  $7 + x = 70$ , for  $x = 10$
- 16)  $6n = 174$ , for  $n = 29$

Replace each  $\diamond$  with a number that makes the equation correct.

- 17)  $5 + 1 = 2 + \diamond$
- 18)  $10 - \diamond = 12 - 7$
- 19)  $\diamond \cdot 3 = 2 \cdot 9$
- 20)  $28 \div 4 = 14 \div \diamond$
- 21)  $\diamond + 8 = 6 + 3$
- 22)  $12 \cdot 0 = \diamond \cdot 15$
- 23) Carla had \$15. After she bought lunch, she had \$8 left. Write an equation using the variable,  $x$ , to model this situation. What does your variable represent?
- 24) Seventy-two people signed up for the soccer league. After the players were evenly divided into teams, there were 6 teams in the league. Write an equation to model this situation using the variable,  $x$ .

# Scaffolded Equation Solving

Use the organizer below to practice solving one-step-equations.

<b>1</b>	Problem	$4x=48$	Problem	
	Inverse Operation <i>(On BOTH Sides)</i>		Substitution	
	Solution		Check	
<b>2</b>	Problem	$x - 8 = 11$	Problem	
	Inverse Operation <i>(On BOTH Sides)</i>		Substitution	
	Solution		Check	
<b>3</b>	Problem	$x + 13 = 42$	Problem	
	Inverse Operation <i>(On BOTH Sides)</i>		Substitution	
	Solution		Check	
<b>4</b>	Problem	$\frac{x}{8} = 15$	Problem	
	Inverse Operation <i>(On BOTH Sides)</i>		Substitution	
	Solution		Check	
<b>5</b>	Problem	$18x = 45$	Problem	
	Inverse Operation <i>(On BOTH Sides)</i>		Substitution	
	Solution		Check	
<b>6</b>	Problem	$x + 52 = 100$	Problem	
	Inverse Operation <i>(On BOTH Sides)</i>		Substitution	
	Solution		Check	

# More Equation Solving (+/-)

Solve each equation. Show ALL your work.

1) $x + 4 = 5$	2) $x - 1 = 3$
3) $y - 3 = 4$	4) $y + 5 = 5$
5) $s + 8 = 9$	6) $s - 7 = 0$
7) $n - 6 = 3$	8) $n + 9 = 11$

## More Equation Solving (x/÷)

Solve each equation. Show ALL your work.

1) $5x = 25$	2) $\frac{y}{4} = 7$
3) $\frac{n}{2} = 19$	4) $6g = 54$
5) $8b = 64$	6) $\frac{h}{6} = 11$
7) $\frac{f}{4} = 9$	8) $7s = 49$

## More Equation Solving (Mixed)

Solve each equation. Show ALL your work.

1) $6x = 96$	2) $\frac{y}{18} = 5$
3) $y - 84 = 212$	4) $y + 19 = 30$
5) $4b = 48.8$	6) $\frac{h}{3.2} = 10$
7) $n - 5.7 = 12$	8) $n + 8 = 13.4$