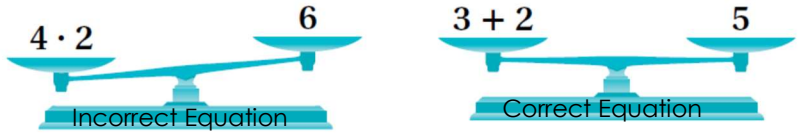
# Solutions to Equations

**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?***


***x=12 is a solution because 12 + 15 = 27***

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


***x=10 is NOT a solution because 10 + 15 ≠ 27***

**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) $9 + x = 21,\ for\ x = 11$ **NO**
2) $n - 12 = 5,\ for\ n = 17$
3) $25r = 75,\ for\ r = 3$ **YES**
4) $72 \div q = 8,\ for\ q = 9$
5) $28 + c = 43,\ for\ c = 15$ **YES**
6) $u \div 11 = 10,\ for\ u = 111$
7) $\frac{k}{8} = 4,\ for\ k = 24$ **NO**
8) $16x = 48,\ for\ x = 3$
9) $73 - f = 29,\ for\ f = 54$ **NO**
10) $67 - j = 25,\ for\ j = 42$
11) $39 \div v = 13,\ for\ v = 3$ **YES**
12) $88 + d = 100,\ for\ d = 2$
13) $14p = 20,\ for\ p = 5$ **NO**
14) $6w = 30,\ for\ w = 5$
15) $7 + x = 70,\ for\ x = 10$ **NO**
16) $6n = 174,\ for\ n = 29$

Replace each ◈ with a number that makes the equation correct.

17) $5 + 1 = 2 + ◈$ **4**
18) $10 - ◈ = 12 - 7$
19) $◈ \bullet 3 = 2 \bullet 9$ **6**
20) $28 \div 4 = 14 \div ◈$
21) $◈ + 8 = 6 + 3$ **NO1**
22) $12 \bullet 0 = ◈ \bullet 15$

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? **15 – x = 8, x represents how much she spent on lunch.**

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.