

Lesson 3-1

Example 1

Determine if 3 is a solution of each equation.

a. $5p + 2 = 19$

b. $6x - 2 = 4x + 4$

c. $k^2 + 5 = 15$

d. $-2x^2 = -6x$

Solution

Substitute 3 for the variable in each equation.

a. $5p + 2 = 19$

$5(3) + 2 = 19$

$15 + 2 = 19$

$17 \neq 19$

So 3 is not a solution.

b. $6x - 2 = 4x + 4$

$6(3) - 2 = 4(3) + 4$

$18 - 2 = 12 + 4$

$16 = 16$

So 3 is a solution.

c. $k^2 + 5 = 15$

$(3)^2 + 5 = 15$

$9 + 5 = 15$

$14 \neq 15$

So 3 is not a solution.

d. $-2x^2 = -6x$

$-2(3)^2 = -6(3)$

$-2(9) = -18$

$-18 = -18$

So 3 is a solution.

Example 2

Use mental math to solve each equation.

a. $w + 2 = 8$

b. $4m = 20$

Solution

a. $w + 2 = 8$

You know that $6 + 2 = 8$, so $w = 6$.

What number added to 2 equals 8?

b. $4m = 20$

You know that $4(5) = 20$, so $m = 5$.

Four times what number equals 20?

Example 3

- a. **SCIENCE** A cheetah ran 280 feet in 4 seconds. What was the cheetah's average speed, in feet per second?
- b. The formula for the perimeter of a rectangle is $P = 2\ell + 2w$, where ℓ is the length of the rectangle and w is the width. The perimeter of a rectangle is 14 centimeters. If the width of the triangle is 3 centimeters, what is the length?

Solution

a. $d = rt$

$$280 = r \cdot 4$$

Four times what number equals 280?

$$\text{Since } 70 \cdot 4 = 280, r = 70.$$

The cheetah's average speed was 70 feet per second.

b. $P = 2\ell + 2w$

$$14 = 2\ell + 2(3)$$

$$14 = 2\ell + 6$$

$$\text{Since } 14 = 8 + 6, 2\ell = 8 \text{ or } \ell = 4.$$

The length of the rectangle is 4 centimeters.