

1-4 Special Cases

Objectives:

- I can identify solutions of equations
- I can solve equations that have one solution, no solution, and infinitely many solutions

Types of solutions:

$-2 = 7$
No SOLUTION

$x = -9$
ONE SOLUTION

$5 = 5$
INFINITELY
MANY / ALL
SOLUTIONS

Evaluate the following equations for the indicated variable

#	VAR
4m - 4 = 4m	4m
-4 = 0	

No Solution

8p - 1 = 5p - 1 + 3p	
8p - 1 = 8p - 1	✓
8p	8p
-1 = -1	

All Solutions

$$\begin{array}{r}
 \text{Varz} \\
 5p - 14 = 8p + 4 \\
 +14 \quad \quad +14 \\
 \hline
 5p = 8p + 18 \\
 -8p \quad \quad -8p \\
 \hline
 -3p = 18 \\
 \frac{-3p}{-3} = \frac{18}{-3} \\
 p = -6
 \end{array}$$

$$\begin{array}{r}
 \text{Varz} \\
 p - 4 = -9 + p \\
 \cancel{p} \quad \quad \quad \cancel{p} \\
 -4 = -9 \\
 \\
 \text{No} \\
 \text{Solution}
 \end{array}$$

$$14n + 34 = 2(17 + 7n)$$

$$\begin{array}{r} 14n + 34 = 34 + 14n \\ -14n \quad -14n \\ \hline 34 = 34 \end{array}$$

ALL SOLUTIONS

$$2(4x - 3) - 8 = 4 + 2x$$

$$8x - 6 - 8 = 4 + 2x$$

$$\begin{array}{r} 8x - 14 = 4 + 2x \\ -2x \quad -2x \\ \hline 6x - 14 = 4 \end{array}$$

$$\begin{array}{r} 6x - 14 = 4 \\ +14 \quad +14 \\ \hline 6x = 18 \end{array}$$

$$\frac{6x}{6} = \frac{18}{6}$$

$$x = 3$$

$$24a - 22 = -4(1 - 6a)$$

$$\cancel{24a} - 22 = -4 + \cancel{24a}$$

$$-22 = -4$$

No Solution

$$\frac{1}{3}(6b - 9) = 2b + 2$$

$$\cancel{2b} - 3 = \cancel{2b} + 2$$

$$-3 = 2$$

No Solution

The equation for perimeter of a rectangle is $P = 2l + 2w$, where l represents the length and w the width.

a. Solve the formula for l

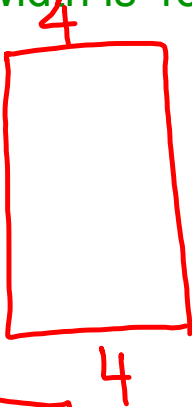
$$P = 2l + 2w$$

$$\begin{array}{r} -2w \\ \hline P - 2w = 2l \end{array}$$

$$\frac{P - 2w}{2} = l$$

b. Find the length of a rectangle where the width is 4cm and the ~~length~~ perimeter is 20cm

PERIMETER

$$\frac{20 - (2 \cdot 4)}{2} = \frac{20 - 8}{2} = \frac{12}{2}$$


$$= 6 \text{ cm}$$

Determine the solution to the following equations

$$3n - 5 = -8(6 + 5n)$$

$$-3(4x + 3) + 4(6x + 1) = 43$$