

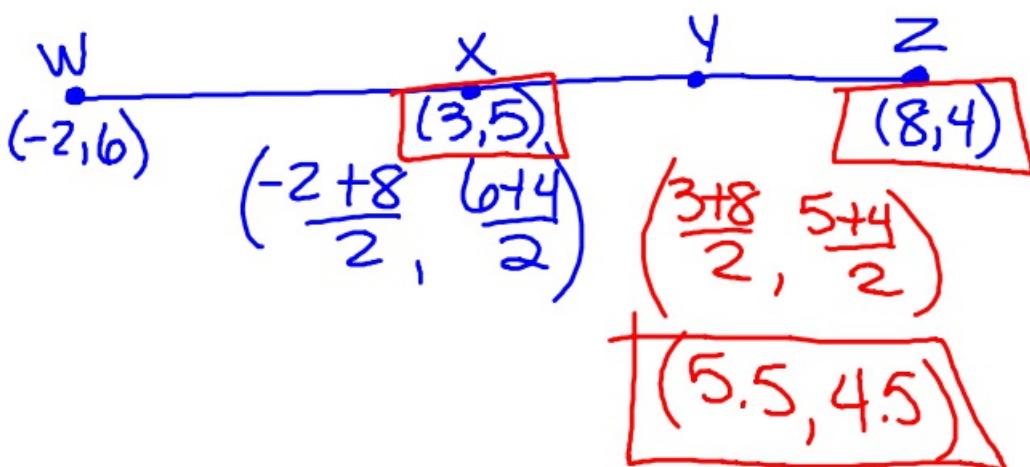
1. The length of a rectangle is 3 less than 4 times the width. If the perimeter is 144 cm, find the length of the rectangle.

$$\begin{array}{c}
 \text{length} = 4w - 3 \quad 4(15) - 3 \\
 \text{width} = w \quad 15 \\
 \text{rectangle diagram: } \begin{array}{c} 57 \\ | \\ 15w \\ | \\ 4w-3 \\ 57 \end{array} \\
 10w - 6 = 144 \\
 +6 \quad +6 \\
 \hline
 10w = 150 \\
 \hline
 10 \quad 10 \\
 w = 15
 \end{array}$$

2. The sum of three consecutive odd integers is -105. Find the value of the largest integer.

$$\begin{array}{r}
 x - 37 \quad 3x + 6 = -105 \\
 x+2 - 35 \quad -10 \quad -6 \\
 x+4 \quad \boxed{-33} \quad \frac{3x}{3} = \frac{-111}{3} \\
 \hline
 x = -37
 \end{array}$$

3. X is the midpoint of WZ and Y is the midpoint of XZ. Point W is at (-2, 6) and Point Z is at (8, 4), find the coordinates of point Y.



SUBSTITUTION

METHOD

STEPS TO SOLVE

1. Solve one equation for x or y
2. Plug in this expression into the other equation and Solve for the variable.
3. Plug in your answer into the revised equation from Step 1 and Solve for the other variable.

Substitution Method

Is one equation solved
for a specific variable?

$$(-1, -6)$$

$$y = 6x \quad y = 6(-1) \quad y = -6$$

$$2x + 3y = -20$$

$$2x + 3(6x) = -20$$

$$2x + 18x = -20$$

$$\frac{20x}{20} = \frac{-20}{20}$$
$$x = -1$$

Substitution Method

$$\begin{aligned}x &= \textcircled{4y + 7} \\2\textcircled{x} - 6y &= 12\end{aligned}$$

$$\begin{aligned}x &= 4(-1) + 7 \\x &= 3\end{aligned}$$

$$2(4y+7) - 6y = 12$$

$$8y + 14 - 6y = 12$$

$(3, -1)$

$$\begin{array}{r}2y + 14 = 12 \\ \underline{-14} \quad -14 \\ 2y = -2\end{array}$$

$$\begin{array}{r}2y = -2 \\ \underline{2} \quad \underline{2} \quad y = -1\end{array}$$

Substitution Method

(2, 5)

$$\begin{array}{l} 2x - 3y = -11 \\ \cancel{2x + y = 9} \quad 2(2) + y = 9 \\ \hline y = -2x + 9 \quad y = 5 \end{array}$$

$$2x - 3(-2x + 9) = -11$$

$$2x + 6x - 27 = -11$$

$$\begin{array}{r} 8x - 27 = -11 \\ +27 \quad +27 \\ \hline 8x = 16 \end{array}$$

$$x = 2$$

Substitution Method

11.

$$y = 4x - 1$$

$$y = 4(-2) - 1$$

$$y = 2x - 5$$

$$y = -8 - 1$$

$$\begin{array}{r} 4x - 1 = 2x - 5 \\ -2x \quad -2x \\ \hline 2x - 1 = -5 \\ +1 \quad +1 \\ \hline 2x = -4 \\ \frac{2x}{2} \quad \frac{-4}{2} \\ \end{array}$$

$(-2, -9)$

$$x = -2$$

⑫

$$\begin{array}{l} x - 3y = -2 \\ 10\cancel{x} + 8y = -20 \end{array}$$

$$\begin{array}{r} x - 3y = -2 \\ + 3y \quad + 3y \\ \hline x = 3y - 2 \end{array}$$

$$\boxed{(-2, 0)}$$

$$\begin{array}{r} 10(3y - 2) + 8y = -20 \\ 30y - 20 + 8y = -20 \\ 38y - 20 = -20 \\ + 20 \quad + 20 \\ \hline 38y = 0 \\ \frac{38y}{38} = \frac{0}{38} \\ y = 0 \end{array}$$