

5.8 Systems of Equations in Geometry

What is Systems of Equations
 2 or more equations that
 are being compared
 solutions are a shared set of values

$$y = 3x \leftarrow \text{substitute } 3x \text{ for } y$$

$$2x + y = 10 \rightarrow 2x + 3x = 10 \quad y = 3x$$

$$\frac{5x}{5} = \frac{10}{5} \quad y = 3(2)$$

$$x = 2 \quad y = 6$$

$$m = 3n + 5 \quad m = 3(1) + 5 = 8$$

$$m = -2n + 10 \quad m = -2(1) + 10 = 8$$

$$3n + 5 = -2n + 10$$

$$\begin{array}{r} 3n + 5 = -2n + 10 \\ -5 \quad -5 \\ \hline 3n = -2n + 5 \\ +2n \quad +2n \\ \hline 5n = 5 \\ \frac{5n}{5} = \frac{5}{5} \\ n = 1 \end{array} \quad n = 1, m = 8$$

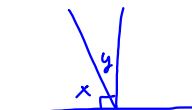
$$3x - 2y = 5$$

$$5x + y = \leftarrow \text{Rewrite to solve for } y \text{ to substitute}$$

substitute $-5x + 5$ for y

$$3x - 2y = 5$$

$$5x + y = 30$$



$$x + y = 90$$

$$x = 5y \leftarrow$$

$$5y + y = 90$$

$$\frac{6y}{6} = \frac{90}{6}$$

$$y = 15$$

$$x = 5(15)$$

$$x = 75$$