Equations with two variables

$9x+2y=15$ $y=x^2-4$ $2x-y>6$

solutions to these equations are not a single number because there are two variables.

solutions come in pairs with a value for x and a value for y. For each x value there is generally only one y value. Rather than always writing x=#, y=#. The convention is to use ordered pairs to represent the solutions.

ordered pairs: (x,y)

Finding solutions

$2x + 3y = 12$

$(0, \underline{4})$ $(\underline{6}, 0)$ $(4, \underline{\frac{4}{3}})$

$2(0) + 3y = 12$

$\frac{3y}{3} = \frac{12}{3}$

$y = 4$

$2x + 3 \cdot 0 = 12$

$\frac{2x}{2} = \frac{12}{2}$

$x = 6$

$2 \cdot 4 + 3y = 12$

$8 + 3y = 12$

$-8 \quad -8$

$\frac{3y}{3} = \frac{4}{3}$

$y = \frac{4}{3}$

$\frac{1}{3}x - 2y = 6$

$(18, 0)\ (6, -2)\ (0, -3)$

$y=0$ $x=6$ $x=0$

$\frac{1}{3}x - 2\cdot 0 = 6$

$3\left(\frac{1}{3}x = 6\right)$

$x = 18$

$\frac{1}{3}\cdot 6 - 2y = 6$

$2 - 2y = 6$

$-2 \quad\quad -2$

$\frac{-2y}{-2} = \frac{4}{-2}$

$y = -2$

$\frac{1}{3}\cdot 0 - 2y = 6$

$\frac{-2y}{-2} = \frac{6}{-2}$

$y = -3$

Your turn!

$-3x + \frac{1}{2}y = 6$

$(-2, 0), (-\frac{1}{3}, 10) (-\frac{8}{3}, -4)$

Homework:

p. 104 # 13-18

ADV: p. 105 # 21-33 multiples of 3