

Date: _____

5.1A Rearranging Linear EquationsRecall: A **linear equation** is an equation with one or two variables with degree 1.

Ex.

$3x - 5y = 2$

$y = \frac{2}{3}x + 5$

$y - 4 = 0$

$3x + y + 9 = 0$

To graph a linear equation (using a table of values or other method) it is generally best to have the equation in the form $y = mx + b$.When this is not the case we rearrange the equation; using equation solving techniques (do the opposite to both sides) we solve for y .

$$\begin{aligned}
 2x - 1 &= 9 \\
 2x &= 10 \\
 x &= 5
 \end{aligned}$$

Ex. Solve each equation for y :

$$\begin{aligned}
 a) \quad 3x + y &= 5 \\
 -3x \quad -3x \\
 y &= 5 - 3x
 \end{aligned}$$

$$y = -3x + 5$$

$$\begin{aligned}
 b) \quad -2x + y &= -6 \\
 +2x \quad +2x \\
 y &= -6 + 2x
 \end{aligned}$$

$$y = 2x - 6$$

$$\begin{aligned}
 c) \quad -6x + 2y &= -8 \\
 +6x \quad +6x \\
 2y &= 6x - 8
 \end{aligned}$$

$$\begin{aligned}
 \frac{2y}{2} &= \frac{6x}{2} - \frac{8}{2} \quad * \div \\
 y &= 3x - 4 \quad \text{all terms!}
 \end{aligned}$$

$$\begin{aligned}
 d) \quad 5x - y &= 4 \\
 -5x \quad -5x \\
 -y &= -5x + 4 \\
 \frac{-y}{-1} &= \frac{-5x}{-1} + \frac{4}{-1}
 \end{aligned}$$

$$y = 5x - 4$$

$$\begin{aligned}
 e) \quad 6x - 3y &= 12 \\
 -6x \quad -6x \\
 -3y &= -6x + 12 \\
 \frac{-3y}{-3} &= \frac{-6x}{-3} + \frac{12}{-3}
 \end{aligned}$$

$$y = 2x - 4$$

$$\begin{aligned}
 f) \quad 3x + 2y &= 10 \\
 -3x \quad -3x \\
 2y &= -3x + 10 \\
 \frac{2y}{2} &= \frac{-3x}{2} + \frac{10}{2}
 \end{aligned}$$

$$\begin{aligned}
 y &= -\frac{3}{2}x + 5 \\
 \uparrow \\
 \text{fraction! (reduce?)}
 \end{aligned}$$

$$\begin{aligned}
 g) \quad 3y - 2x &= 0 \\
 +2x \quad +2x \\
 3y &= 2x
 \end{aligned}$$

$$\begin{aligned}
 \frac{3y}{3} &= \frac{2x}{3} \\
 y &= \frac{2}{3}x
 \end{aligned}$$

$$\begin{aligned}
 h) \quad -9x - 3y + 4 &= 0 \\
 +3y \quad +3y \\
 -9x + 4 &= 3y
 \end{aligned}$$

$$\begin{aligned}
 3y &= -9x + 4 \\
 \frac{3y}{3} &= \frac{-9x}{3} + \frac{4}{3} \\
 y &= -3x + \frac{4}{3}
 \end{aligned}$$

$$\begin{aligned}
 i) \quad -4x + 6y + 8 &= 0 \\
 +4x \quad +8 \quad +4x \quad -8 \\
 6y &= 4x - 8
 \end{aligned}$$

$$\begin{aligned}
 \frac{6y}{6} &= \frac{4x}{6} - \frac{8}{6} \\
 y &= \frac{2}{3}x - \frac{4}{3}
 \end{aligned}$$

Practice: WS7.1A(148/239) – work on separate sheet