

Foundations to Algebra
5.1.1 Multi Variable Equation Practice

Name: Key
Date: _____ Period: _____

Solve each of the following equations for y.

State the growth rate and the y-intercept for all equations.

1.) $2x + y = 0$

$$\frac{-2x}{-2x} \quad \frac{-2x}{-2x}$$

$$y = -2x$$

GR = -2 y-int. = (0,0)

2.) $-2x + y = 3$

$$\frac{+2x}{+2x} \quad \frac{+2x}{+2x}$$

$$y = 2x + 3$$

GR = 2 y-int. = (0,3)

3.) $3x - y = 3$

$$\frac{-3x}{(-1)} \quad \frac{-3x}{(-1)}$$

$$(-1) - y = (-3x + 3)(-1)$$

$$y = 3x - 3$$

GR = 3 y-int. = (0,-3)

4.) $\frac{1}{2}x + 2y = 4$

$$\frac{-\frac{1}{2}x}{2} \quad \frac{-\frac{1}{2}x}{2}$$

$$\frac{2y}{2} = \frac{-\frac{1}{2}x + 4}{2}$$

$$y = \frac{-\frac{1}{2}x}{2} + \frac{4}{2}$$

$$y = -\frac{1}{4}x + 2$$

GR: (-1/4) y-int. = (0,2)

5.) $3y - 2x = 6$

$$\frac{+2x}{3} \quad \frac{+2x}{3}$$

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

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

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

GR = (2/3) y-int. = (0,2)

6.) $x + y = 10$

$$\frac{-x}{-x} \quad \frac{-x}{-x}$$

$$y = (-x) + 10$$

GR = (-1) y-int. = (0,10)

7.) $x + 2y = 6$

$$\frac{-x}{2} \quad \frac{-x}{2}$$

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

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

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

GR = (-1/2) y-int. = (0,3)

8.) $3y + 6 = 2x$

$$\frac{-6}{3} \quad \frac{-6}{3}$$

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

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

GR = (2/3) y-int. = (0,-2)

9.) $4x - 2y = 8$

$$\frac{-4x}{-2} \quad \frac{-4x}{-2}$$

$$\frac{-2y}{-2} = \frac{-4x + 8}{-2}$$

$$y = \frac{-4x}{-2} + \frac{8}{-2}$$

$$y = 2x - 4$$

GR = 2 y-int. = (0,-4)

10.) $4x - 2y = 8$

$$\frac{-4x}{-2} \quad \frac{-4x}{-2}$$

$$\frac{-2y}{-2} = \frac{-4x + 8}{-2}$$

$$y = \frac{-4x}{-2} + \frac{8}{-2}$$

$$y = 2x - 4$$

GR = 2
y-int. = (0,-4)

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11.) $7x - 2y = 14$

$$\frac{-7x}{-2} \quad \frac{-7x}{-2}$$

$$\frac{-2y}{-2} = \frac{-7x + 14}{-2}$$

$$y = \frac{-7x}{-2} + \frac{14}{-2}$$

$$y = \frac{7}{2}x - 7$$

12.) $-4x - 4y = 8$

$$\frac{+4x}{-4} \quad \frac{+4x}{-4}$$

$$\frac{-4y}{-4} = \frac{4x + 8}{-4}$$

$$y = -x - 2$$

GR = (-1) y-int. = (0,-2)

13.) $\frac{1}{3}y + 6x = -12$

$$\begin{array}{r} -6x \quad -6x \\ \hline (3) \frac{1}{3}y = (-6x - 12)(3) \\ y = -18x - 36 \end{array}$$

GR = -18

y-int = (0, -36)

16.) $-3x - 4y = -24$

$$\begin{array}{r} +3x \quad +3x \\ \hline -4y = 3x - 24 \\ -4 \quad -4 \\ \hline y = -\frac{3}{4}x + 6 \end{array}$$

GR = $(-\frac{3}{4})$ y-int = (0, 6)

19.) $-x + 2y = 6$

$$\begin{array}{r} +x \quad +x \\ \hline 2y = x + 6 \\ 2 \quad 2 \\ \hline y = \frac{1}{2}x + 3 \end{array}$$

GR = $\frac{1}{2}$

y-int = (0, 3)

14.) $6x = -3y - 15$

$$\begin{array}{r} +15 \quad +15 \\ \hline 15 + 6x = (-3y) \\ -3 \quad -3 \\ \hline \frac{15}{-3} + \frac{6x}{-3} = y \end{array}$$

$-5 + -2x = y$

$y = -2x - 5$

GR = (-2) y-int = (0, -5)

17.) $\frac{4}{3}x + \frac{2}{3}y = \frac{1}{3}$

$$\begin{array}{r} 3(\frac{4}{3}x + \frac{2}{3}y) = \frac{1}{3} \cdot 3 \\ 4x + 2y = 1 \\ -4x \quad -4x \\ \hline 2y = -4x + 1 \\ \frac{2y}{2} = \frac{-4x + 1}{2} \end{array}$$

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

GR = -2 y-int = (0, $\frac{1}{2}$)

20.) $4x - 3y = 2$

$$\begin{array}{r} -4x \quad -4x \\ \hline -3y = -4x + 2 \\ -3 \quad -3 \end{array}$$

$y = \frac{4}{3}x - \frac{2}{3}$

$y = \frac{4}{3}x + (-\frac{2}{3})$

GR = $(\frac{4}{3})$

y-int = (0, $-\frac{2}{3}$)

15.) $-4y - 16 = -8x$

$$\begin{array}{r} +16 \quad +16 \\ \hline -4y = -8x + 16 \\ -4 \quad -4 \end{array}$$

$y = \frac{-8x}{-4} + \frac{16}{-4}$

$y = 2x + (-4)$

GR = 2 y-int = (0, -4)

18.) $-x + 3y = -9$

$$\begin{array}{r} +x \quad +x \\ \hline 3y = x - 9 \\ 3 \quad 3 \end{array}$$

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

GR = $\frac{1}{3}$

y-int = (0, -3)