

LINES - ASSIGNMENT

NAME:

1. Graph using slope and y-intercept.

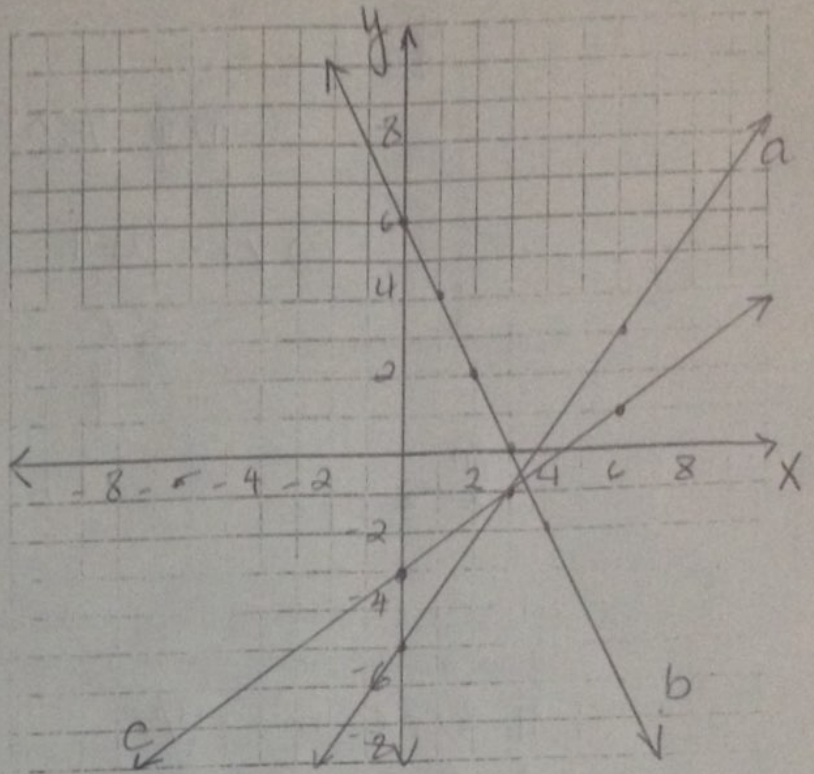
a. $y = \frac{4}{3}x - 5$

b. $y = -2x + 6$

c. $2x - 3y = 9$

$$\frac{2x-9}{3} = \frac{3y}{3}$$

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



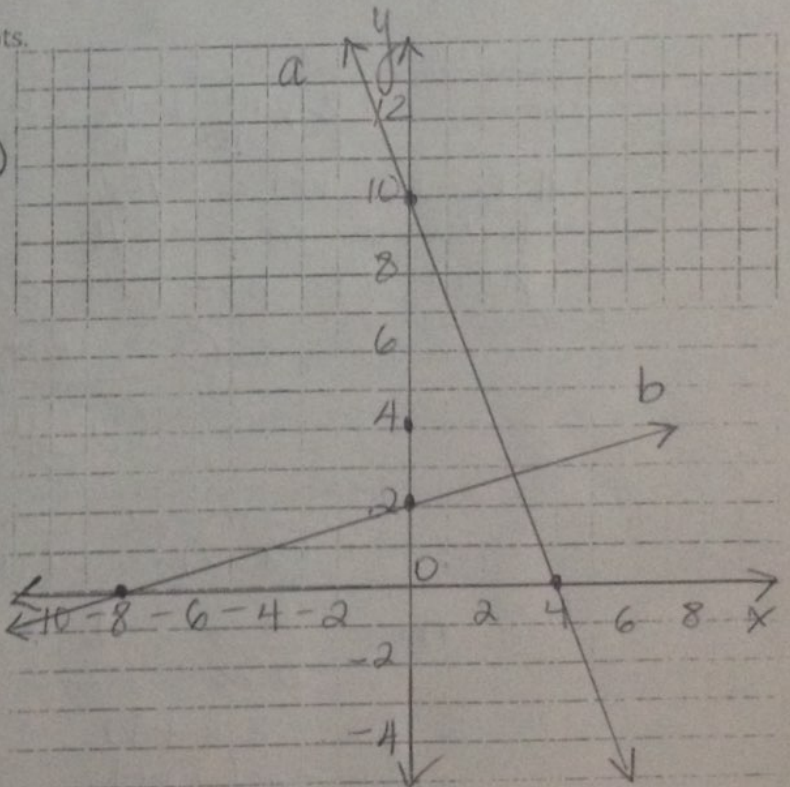
2. Graph using x- and y- intercepts.

a. $5x + 2y = 20$

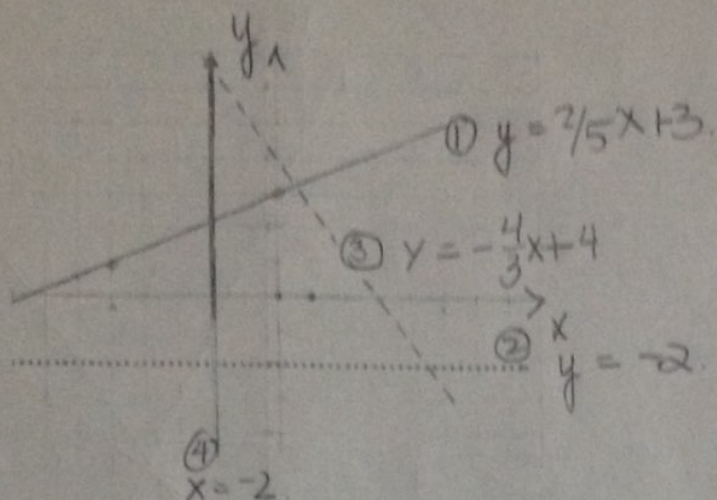
X-int (y=0).	y-int (x=0)
$\therefore 5x = 20$	$2y = 20$
$x = 4$	$y = 10$
$(4, 0)$	$(0, 10)$

b. $x - 4y + 8 = 0$

X-int	y-int
$x + 8 = 0$	$0 - 4y + 8 = 0$
$x = -8$	$-4y = -8$
$(-8, 0)$	$\frac{-4y}{-4} = \frac{-8}{-4}$
	$y = 2$
	$(0, 2)$



3. Determine the equation of each of the following lines.



4. A line has a slope of $-\frac{4}{5}$. determine the slope of a parallel line, a perpendicular line, and a line that is neither parallel or perpendicular.

|| line $m = -4/5$

⊥ line $m = 5/4$

neither $m = \frac{1}{2}$ (vary).

5. Do the same as in #4, where the given slope is 1.2 (no decimals are accepted as final answers)

$$1.2 \times \frac{10}{10} = \frac{12}{10} = \frac{6}{5}$$

|| line $m = 6/5$

⊥ line $m = -5/6$

neither $m = 1/2$ (vary).

6. Write an equation for each of the following lines:

a. Vertical line through $(5, -3)$ $x = 5$

b. Horizontal line through $(-2, -4)$ $y = -4$

c. A line with x-intercept of 2 and y-intercept of 4.

$(2, 0)$ $(0, 4)$

$$m = \frac{4-0}{0-2} = \frac{4}{-2} = -2$$

$$\therefore y = -2x + b$$

$$0 = -2(2) + b$$

$$0 = -4 + b$$

$$4 = b$$

→ $y = -2x + 4$

7. Determine the equation of a line with a slope of -3 and passing through $(\frac{2}{3}, -4)$.

$$m = -3, (\frac{2}{3}, -4)$$

$$y = -3x + b$$

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

$$-4 = -2 + b$$

$$-4 = -2 + b$$

$$-4 + 2 = b$$

$$-2 = b$$

$$\therefore y = -3x - 2$$

8. Determine the equation of a line with a slope of $-\frac{2}{3}$ and passing through $(1, -\frac{4}{7})$.

$$y = -\frac{2}{3}x + b, (1, -\frac{4}{7})$$

$$-\frac{4}{7} = -\frac{2}{3}(1) + b$$

$$3 \times (-\frac{4}{7}) + (\frac{2}{3}) = b$$

$$-\frac{12}{21} + \frac{14}{21} = b$$

$$\frac{2}{21} = b$$

$$y = -\frac{2}{3}x + \frac{2}{21}$$

9. Determine the equation of a line through the origin and $(4, 1)$.

$$m = \frac{1-0}{4-0} = \frac{1}{4}$$

$$y = \frac{1}{4}x + b$$

$$0 = \frac{1}{4}(0) + b$$

$$0 = b$$

$$\therefore y = \frac{1}{4}x$$

10. Determine the equation of a line through $(\frac{-4}{5}, 3)$ and $(-1, \frac{3}{5})$.

$$m = \frac{\frac{3}{5} - 3}{-1 - \frac{-4}{5}}$$

$$m = \frac{12}{5} \times \frac{1}{1}$$

$$m = \frac{\frac{3}{5} - \frac{15}{5}}{-\frac{5}{5} + \frac{4}{5}}$$

$$m = \frac{-\frac{12}{5}}{-\frac{1}{5}}$$

$$m = \frac{12}{5} \div \frac{1}{5}$$

11. Determine the equation of a line passing through point $(2, -7)$ and parallel to $y = \frac{-3}{5}x + \frac{5}{3}$.

$\therefore m = -\frac{3}{5}, (2, -7)$

$$y = -\frac{3}{5}x + b$$

$$-7 = -\frac{3}{5}(2) + b$$

$$-7 = -\frac{6}{5} + b$$

$$-\frac{7}{1} + \frac{6}{5} = b$$

$$\rightarrow -\frac{35}{5} + \frac{6}{5} = b$$

$$-\frac{29}{5} = b$$

$\therefore y = -\frac{3}{5}x - \frac{29}{5}$

12. Determine the equation of a line passing through $(-1, -3)$ and perpendicular to $y = \frac{3}{4}x - 4$.

$\therefore m = -\frac{4}{3}, (-1, -3)$

$$y = -\frac{4}{3}x + b$$

$$-3 = -\frac{4}{3}(-1) + b$$

$$-3 = +\frac{4}{3} + b$$

$$\rightarrow -\frac{3}{1} - \frac{4}{3} = b$$

$$-\frac{9}{3} - \frac{4}{3} = b$$

$$-\frac{13}{3} = b$$

$\therefore y = -\frac{4}{3}x - \frac{13}{3}$

13. Determine the equation of a line parallel to $3y = \frac{3}{2}x$ and with the same y-intercept as

$$4y = 3x + 7$$

$$By = \frac{2}{3}x$$

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

$$\frac{4y}{4} = \frac{3x+7}{4}$$

$$y = \frac{3}{4}x + \frac{7}{4}$$

$$\therefore b = \frac{7}{4}$$

$$y = \left(\frac{2}{3} \times \frac{1}{3}\right)x$$

$$y = \frac{2}{9}x$$

$$\therefore m = \frac{2}{9}$$

$\therefore y = \frac{2}{9}x + \frac{7}{4}$

14. Determine the equation of a line perpendicular to $5x - 2y = 4$ and with the same x-intercept as $5y = 7x - 6$.

$$\frac{5x-4}{2} = \frac{2y}{2}$$

$$\frac{5}{2}x - 2 = y$$

$$\therefore m = -\frac{2}{5}$$

$$5y = 7x - 6, \text{ x-int (y=0)}$$

$$5(0) = 7x - 6$$

$$0 = 7x - 6$$

$$\frac{6}{7} = \frac{7x}{7}$$

$$\frac{6}{7} = x$$

$$\therefore P\left(\frac{6}{7}, 0\right)$$

$$y = -\frac{2}{5}x + b, \left(\frac{6}{7}, 0\right)$$

$$0 = -\frac{2}{5}\left(\frac{6}{7}\right) + b$$

$$0 = -\frac{12}{35} + b$$

$$\frac{12}{35} = b$$

$\therefore y = -\frac{2}{5}x + \frac{12}{35}$