

KEY

Name: _____

Date: _____

Linear Test Review

y-intercept
↓
(0, y)

① How do you find the y-intercept...

In a table? find when $x=0$ $\begin{array}{r} x|y \\ 0|y \end{array}$ As an ordered pair? (0, y)
 On a graph? where the graph crosses the y-axis
 In an equation? b $y = mx + \boxed{b}$

② Write at least 4 different ways to express the word slope?

1) $\frac{y}{x}$ or $\frac{\Delta y}{\Delta x}$ 2) $\frac{\text{rise}}{\text{run}}$
 3) $\frac{y_2 - y_1}{x_2 - x_1}$ 4) m

③ Rearrange the following equations into slope-intercept form ($y = mx + b$)

State the slope and y-intercept for each once you've rearranged:

$$\begin{array}{r} 9x - 2y = 36 \\ -9x \quad -9x \end{array}$$

$$\frac{2y}{-2} = \frac{-9x + 36}{-2}$$

$$\boxed{y = \frac{9}{2}x - 18}$$

or

$$\boxed{y = 4.5x - 18}$$

$$\begin{array}{r} 3x + 5y = 115 \\ -3x \quad -3x \end{array}$$

$$\frac{5y}{5} = \frac{-3x + 115}{5}$$

$$\boxed{y = -\frac{3}{5}x + 23}$$

or

$$\boxed{y = -0.6x + 23}$$

$$\begin{array}{r} -3x + 8y + 16 = 0 \\ -16 \quad -16 \end{array}$$

$$\frac{-3x + 8y}{+3x} = \frac{-16}{+3x}$$

$$\frac{8y}{8} = \frac{3x - 16}{8}$$

$$\boxed{y = \frac{3}{8}x - 2}$$

④ Write the following in point-slope form using the slope and one point:

$$m = \frac{3}{4}, (-2, -6)$$

$$y - (-6) = \frac{3}{4}(x - (-2))$$

$$\boxed{y + 6 = \frac{3}{4}(x + 2)}$$

$$m = -0.2, (4, -8)$$

$$y - (-8) = -0.2(x - 4)$$

$$\boxed{y + 8 = -0.2(x - 4)}$$

$$\boxed{y - y_1 = m(x - x_1)}$$

⑤ The value of y varies directly with x. When $y = 34, x = \frac{1}{2}$. What is the value of y when x is $2\frac{1}{2}$? proportional → setup a proportion!

$$\frac{y}{x} = \frac{34}{0.5} = \frac{y}{2.5}$$

$$\boxed{y = 170}$$

⑥ The value of y varies directly with x. When $y = 102, x = 20$. What is the value of y when x is $\frac{3}{5}$?

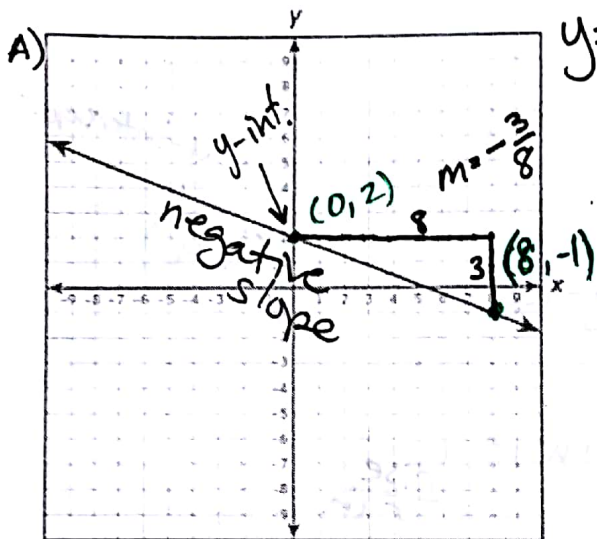
$$\frac{y}{x} = \frac{102}{20} = \frac{y}{0.6} \quad \boxed{y = 3.06}$$

⑦ Given $f(x) = 8(2 - x)$, what is the value of $f(-6)$?

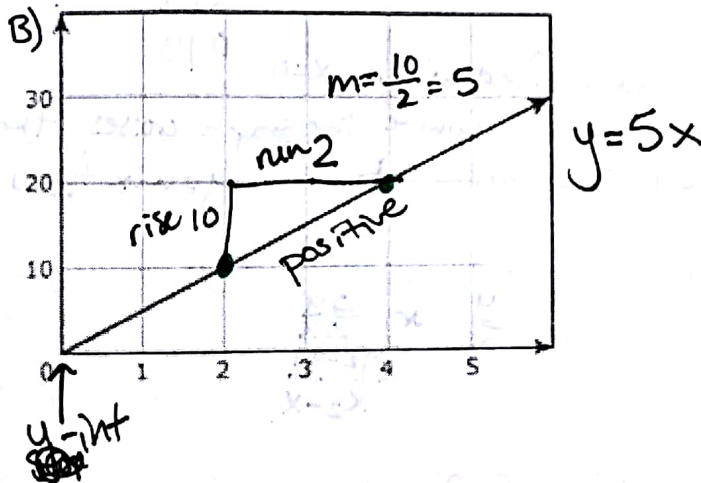
$$\begin{aligned} f(x) &= 8(2 - (-6)) \\ &= 8(2 + 6) \\ &= 8(8) = \boxed{64} \end{aligned}$$

x plug in to all x values

8) Write an equation based on the following graphs: $y = mx + b$



$$y = -\frac{3}{8}x + 2$$



$$y = 5x$$

9) Using the tables below,

A. find the slope and use one point from the table to create an equation in point-slope form AND B. use the y-intercept to create an equation in slope-intercept form.

Choose any point from the table

i)

x	-6	-5	-4	-3	-2	-1	0
y	-12	-10	-8	-6	-4	-2	0

Annotations: Δx +1, Δy +2, slope = $\frac{2}{1} = 2$, y-int.

i) $y = 2x$

i) $y - (-12) = 2(x - (-6))$

i) $y + 12 = 2(x + 6)$

iii)

3	5	7	9	11
12	14	16	18	20

Δy +2, $m = \frac{2}{2} = 1$

ii)

x	y
-2	-4
-1	-1
0	2
1	5
2	8

Annotations: Δy m = $\frac{3}{1}$, Δx +1, y +3, $m = 3$, y-int = b

+k $y = 3x + 2$

ii) $y = 3x + 2$

ii) $y - 8 = 3(x - 2)$

10) Write 4 sets of ordered pairs that are on the graph of the function $y = 10 - 4x$

graph + ctrl "+"

x	y	x	y
0	10	2	2
1	6	3	-2

Calculations: $y = 10 - 4(2) = 2$, $y = 10 - 4(0) = 10$, $y = 10 - 4(1) = 6$, $y = 10 - 4(3) = -2$

11) Bradley NJHS has a monthly budget of x dollars. Every month, \$200 is spent on purchasing concession supplies. One-third of the remaining budget is spent on monthly meetings. Write a function that can be used to find the amount of dollars spent on monthly meetings.

$X = \text{budget}$

200 out of the budget

$X - 200 = \text{leftover} \cdot \frac{1}{3}$

$y = \frac{X - 200}{3}$