Chapter 5 & 6 Review Packet

Name: _____ **Date:** _____

Directions: Change the following equations from standard form to y=mx+b and find 5 terms of the given algebraic expression and graph them. (8 Points)

1). 2(x) + (y) = -2

Solve the equation to get the form y=mx+b

$2(x) + y = -2$

$-2(x) \quad -2(x)$

$y = -2(x) - 2$

sub in your X values

$y = -2(0) - 2 = -2$

$y = -2(1) - 2 = -4$

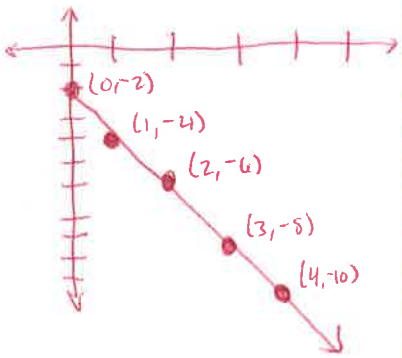
$y = -2(2) - 2 = -6$

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

$y = -2(4) - 2 = -10$

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

graph coordinates



2). 3(x) + 4(y) = 16

Solve the equation to get the form y=mx+b

$3(x) + 4(y) = 16$

$-3(x) \quad -3(x)$

$\frac{4(y)}{4} = \frac{-3(x) + 16}{4}$

$y = \frac{-3}{4}(x) + \frac{16}{4}$ Simplify $\Rightarrow$ $y = \frac{-3}{4}(x) + 4$

sub in your X values

$y = \frac{-3}{4}(0) + 4 = 4$

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

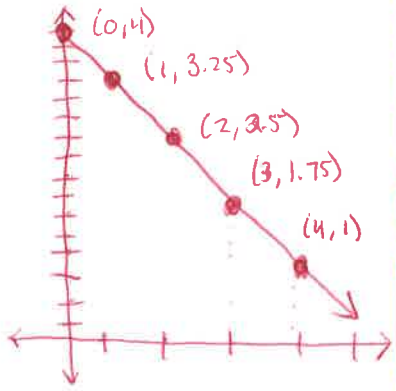
$y = \frac{-3}{4}(2) + 4 = 2\frac{1}{2}$

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

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

x	y
0	4
1	$3\frac{1}{4}$
2	$2\frac{1}{2}$
3	$1\frac{3}{4}$
4	1

graph coordinates



Directions: Find the X-intercept and the Y-Intercept for the following equations. (4 points)

3). 6(x) + 2(y) = 10

X-intercept

Sub 0 in for y

$6(x) + 2(0) = 10$

$6(x) + 0 = 10$

$\frac{6(x)}{6} = \frac{10}{6}$

$x = \frac{10}{6} = \frac{5}{3}$

X-intercept = $\frac{5}{3}$

Y-intercept

sub 0 in for x

$6(0) + 2(y) = 10$

$0 + 2(y) = 10$

$\frac{2(y)}{2} = \frac{10}{2}$

$y = 5$

Y-Intercept = 5

4). -13(x) + 5(y) = 130

X-intercept

sub in 0 for y

$-13(x) + 5(0) = 130$

$-13(x) + 0 = 130$

$\frac{-13(x)}{-13} = \frac{130}{-13}$

$x = -10$

x-intercept = -10

Y-intercept

sub in 0 for x

$-13(0) + 5(y) = 130$

$0 + 5(y) = 130$

$\frac{5(y)}{5} = \frac{130}{5}$

$y = 26$

Y-intercept = 26

Directions: Find the slope for the following problems. Identify (x_1, y_1) and (x_2, y_2). (4 points)

5). (-5, 3) and (-1, -4)

$x_1\ y_1$ $\quad$ $x_2\ y_2$

Use - Slope Formula

$$\frac{y_2-y_1}{x_2-x_1} = \frac{-4-3}{-1-(-5)}$$

$$\frac{-4-3}{-1+5} = \boxed{\frac{-7}{4}}$$

6). (15, 5) and (10, 1)

$x_2\ y_2$ $\quad$ $x_1\ y_1$

Use - Slope Formula

$$\frac{y_2-y_1}{x_2-x_1} = \frac{5-1}{15-10} = \frac{4}{5}$$

$$\boxed{\frac{4}{5}}$$

Directions: Find an equation for each problem in the form of y = m(x) + b. (4 points)

7). The slope is $\frac{4}{3}$ and (2,5) is on the line.

m $\quad$ x y

sub in your numbers.

$y = m(x) + b$

$5 = \frac{4}{3}(2) + b$

Solve for b

$5 = \frac{8}{3} + b$

$-\frac{8}{3} \quad -\frac{8}{3}$

$\frac{7}{3} = b$

create equation using slope and y-int.

$y = m(x) + b$

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

8). Passes through (4, 3) and (6, 9)

Find slope first

$$\frac{y_2-y_1}{x_2-x_1} = \frac{9-3}{6-4} = \frac{6}{2} = 3 \text{ (slope)}$$

Use slope and one coordinate to create your equation (4,3)

$y = mx + b$

$3 = 3(4) + b$

$3 = 12 + b$

$-12 \quad -12$

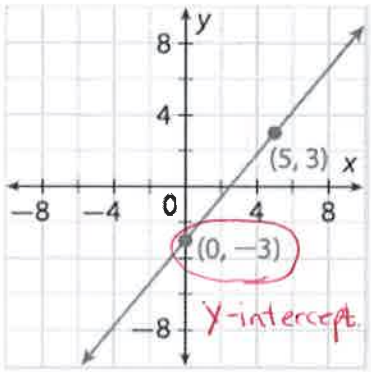
$-9 = b$

Create equation using slope and y-int.

$y = mx + b$

$$\boxed{y = 3(x) - 9}$$

9).



Find slope between two points

$$\frac{y_2-y_1}{x_2-x_1} = \frac{3-(-3)}{5-0} = \frac{6}{5}$$

Create equation using slope and y-int.

$y = m(x) + b$

$$\boxed{y = \frac{6}{5}(x) - 3}$$

Directions: Find an equation for each problem in the form of $y - y_1 = m(x - x_1)$. (4 points)

10). Slope is 5 and (-3, 4) is on the line.

use $y - y_1 = m(x - x_1)$

sub in your numbers

$y - y_1 = m(x - x_1)$

$y - 4 = 5(x - (-3))$

$$\boxed{y - 4 = 5(x + 3)}$$

11). (2, 5) and (6, 15) is on the line.

$x_1\ y_1$ $\quad$ $x_2\ y_2$

Find slope first

$$\frac{y_2-y_1}{x_2-x_1} = \frac{15-5}{6-2} = \frac{10}{4} = \frac{5}{2}$$

create equation by subbing in your slope and your (x_1, y_1) coordinate

$y - y_1 = m(x - x_1)$

$$\boxed{y - 5 = \frac{5}{2}(x - 2)}$$

12). A candle burned at a steady rate. After 32 minutes, the candle was 11.2 inches tall. Eighteen minutes later, it was 10.75 inches tall. Use the equation $y - y_1 = m(x - x_1)$ to find an algebraic expression and the height of the candle after 2 hours.

use the information as coordinates

(32, 11.2) (50, 10.75)

Find slope

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{10.75 - 11.2}{50 - 32} = \frac{-.45}{18} = -.025$

sub into your equation

$y - y_1 = m(x - x_1)$

$y - 11.2 = -.025(x - 32)$

sub in 2 hours which = 120 minutes

$y - 11.2 = -.025(120 - 32)$

Solve for y

$y = 9$

Directions: Convert the following problems into the standard form equation of A(x) + B(y) = C. (4 points)

13). Slope is 3 and (1, 4) is on the line.

sub your numbers into the equation

$y - y_1 = m(x - x_1)$

$y - 4 = 3(x - 1)$

$y - 4 = 3x - 3$

$+4 \quad +4$

$y = 3x + 1$

$-3x \quad -3x$

$-3x + y = 1$

14). (6, 11) and (5, 9) is on the line.

$x_2, y_2 \qquad x_1, y_1$

find slope first

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - 9}{6 - 5} = \frac{2}{1} = 2$

sub into your equation

$y - y_1 = m(x - x_1)$

$y - 9 = 2(x - 5)$

$y - 9 = 2x - 10$

$+9 \qquad +9$

$y = 2x - 1$

$-2x \quad -2x$

$-2x + y = -1$

Directions: Compare the following problem functions. (8 points)

15). An experiment compares the heights of two plants over time. A plant was 5 cm tall at the beginning of the experiment and grew 0.3 centimeters each day. The function f (t) represents the height of the plant (in centimeters) after t days. The graph shows the height of the second plant, g (t) (in centimeters), as a function of time t (in days). Find the rate of change g(t) and compare it to the rate of change for f (t).

$f(t) = .3(x) + 5$

→ since the plant is already 5 inches tall. That represents our y-intercept.

→ .3 centimeters every day represents our slope

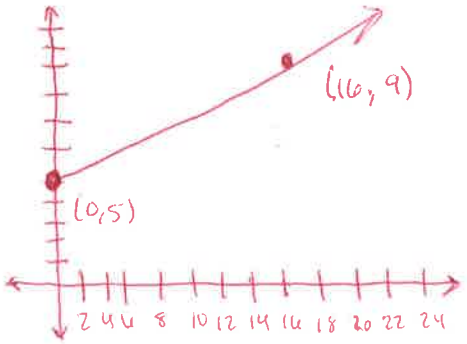
$f(t) = .3(x) + 5$

slope = .3

y-int. = 5

$g(t) = \frac{1}{4}(x) + 5$

→ since the graph crosses the y-axis at (0,5) that is our y-intercept.



→ now find your slope using the two pts.

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{9 - 5}{16 - 0} = \frac{4}{16} = \frac{1}{4}$

slope = $\frac{1}{4} \approx .25$

y-int. = 5

→ now compare your slopes and y-intercepts.

$f(t) > g(t)$, in terms of slope

$f(t) = g(t)$, in terms of y-intercept