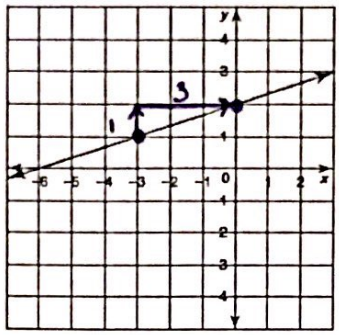
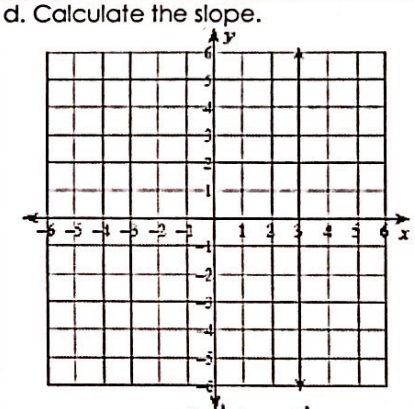
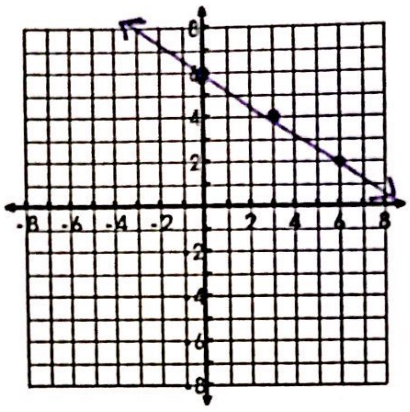
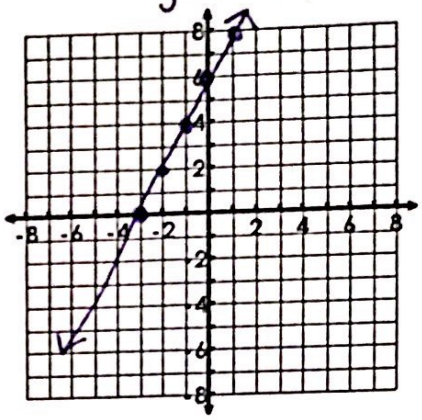
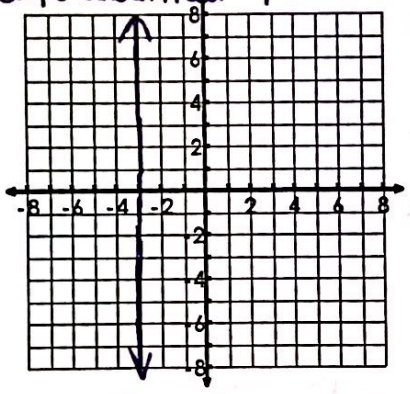
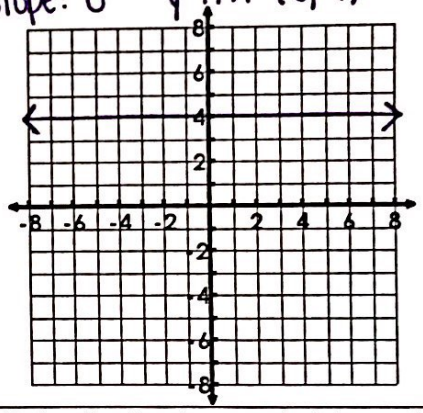
Algebra 1
Unit 5

Name: Key
Date: _____ Block: _____

Unit 5: Linear Functions Review

What you need to know & be able to do	Things to remember	Examples	
1. Calculate the slope (rate of change)	"slope" $m = \frac{y_2 - y_1}{x_2 - x_1}$ $\frac{\text{Change in y}}{\text{Change in x}}$	a. Calculate the slope. Then write the equation of the line.  $y = \frac{1}{3}x + 2$	b. Calculate the rate of change between the following points on a line. (0, -4) & (-3, 11) $x_1\ y_1 \quad x_2\ y_2$ $m = \frac{11 - -4}{-3 - 0} = \frac{15}{-3} = \boxed{-5}$
		c. Calculate the slope. x: −1, 0, 4, 10 y: 13, −2, −62, −152 (+1; −15) $\frac{\Delta y}{\Delta x} = \frac{-15}{1} = \boxed{-15}$	d. Calculate the slope.  undefined
2. Calculate the y-intercept	Point where graph crosses y-axis (0, b)	a. Name the y-intercept: x: 0, 1, 3, 4 y: 8, 6, 2, 0 (0, 8)	b. Name the y-intercept: $\boxed{(0, -1)}$ X: 2, 5, 6, 8, 10 Y: 3, 9, 11, 15, 19 (+3; +6; +2; +2) $\frac{\Delta y}{\Delta x} = \frac{6}{3} = 2$

3. Graph a linear function	$y = mx + b$ *Always graph the y-intercept first and then use slope to determine next point. HOY VUX	a. Graph: $f(x) = -\frac{2}{3}x + 6$ 	b. Graph: $-4x + 2y = 12$ $+4x \quad +4x$ $\frac{2y}{2} = \frac{4x}{2} + \frac{12}{2}$ $y = 2x + 6$ 
		c. Graph x = -3. Name slope & y-intercept Slope: undefined y-int: none 	d. Graph y = 4. Name slope & y-intercept. Slope: 0 y-int (0, 4) 
4. Convert from standard to slope intercept form	Slope Intercept: y =mx + b Standard: Ax + By = C	a. Solve for y: $4x + 2y = 8$ $-4x \quad -4x$ $\frac{2y}{2} = \frac{-4x}{2} + \frac{8}{2}$ $y = -2x + 4$	b. Determine the slope and y-intercept: $3x - 6y = -12$. $3x - 6y = -12$ $-3x \quad -3x$ $\frac{-6y}{-6} = \frac{-3x}{-6} - \frac{12}{-6}$ $y = \frac{1}{2}x + 2$
5. Write the equation of a line.	$y = mx + b$	a. Write the equation of the line that has a slope of $-\frac{1}{2}$ and contains the point (4, 6). $y = mx + b$ $6 = -\frac{1}{2}(4) + b$ $6 = -2 + b$ $+2 \quad +2$ $8 = b$ $y = -\frac{1}{2}x + 8$	b. Write the equation of the line that contains the points (-2, 2) and (2, -6). $m = \frac{-6-2}{2--2} = \frac{-8}{4} = -2$ $y = mx + b$ $-6 = -2(2) + b$ $-6 = -4 + b$ $+4 \quad +4$ $-2 = b$ $y = -2x - 2$

c. Write the equation of the line that has a slope of 5 and y-intercept at (0, 3).

m = 5, b = 3

$y = 5x + 3$

d. Write the equation of the line the corresponds to the following table:

x	0	2	4	6	8
y	-8	-6	-4	-2	0

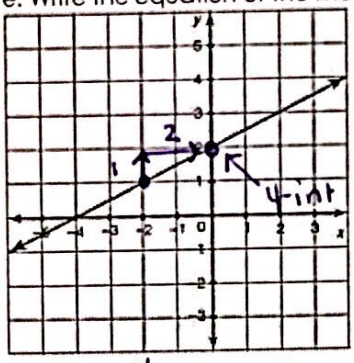
+2 +2

-2 +2

$\frac{\Delta y}{\Delta x} = \frac{2}{2} = 1$

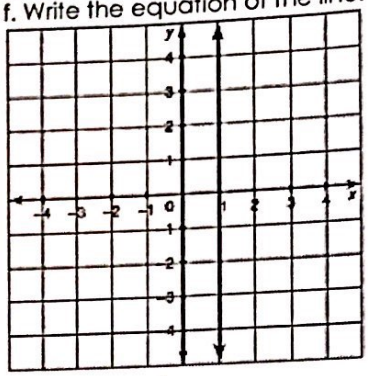
$\boxed{y = x - 8}$

e. Write the equation of the line:



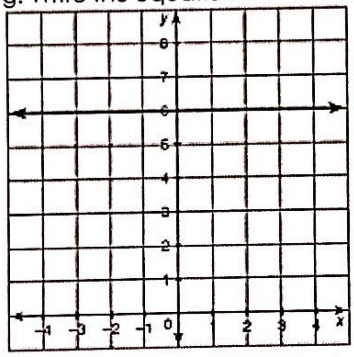
$y = \frac{1}{2}x + 2$

f. Write the equation of the line:



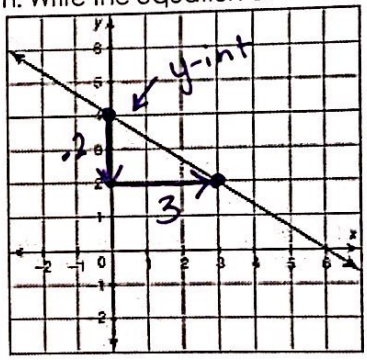
$x = 1$

g. Write the equation of the line:



$y = 6$

h. Write the equation of the line:



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