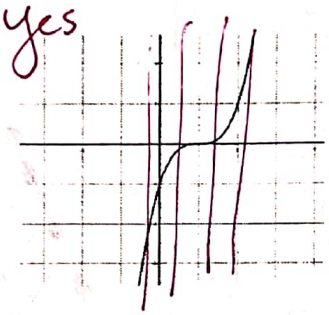
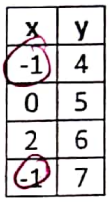
Algebra 1
Unit 2 Review

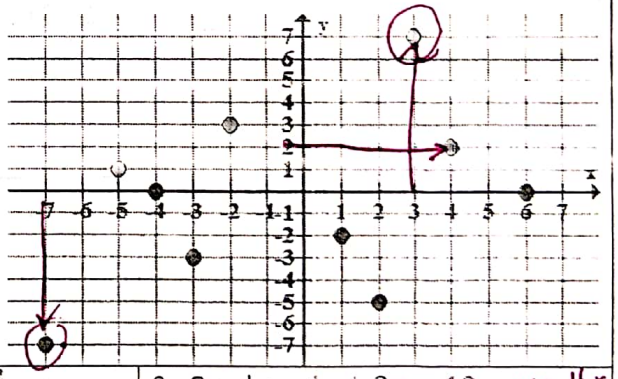
Name: Answer key
Date: _____ Block: _____

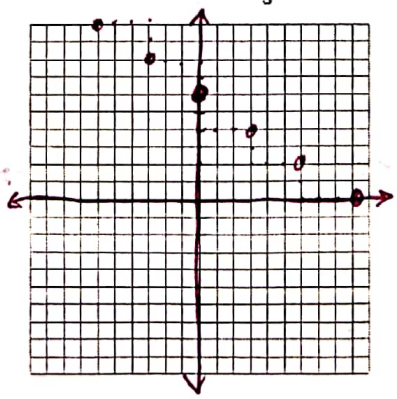
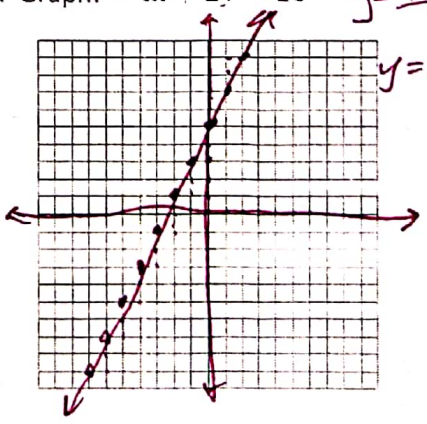
What you need to know & be able to do	Things to remember	Examples	
Determine if a relation is a function.	Every input only has one output (each 'x' only has one 'y') Use the vertical line test on graphs.	1. Determine if the graph is a function. yes 	2. Determine if the table represents a function.  no
Evaluate functions.	f(x) function notation f(2) means you must substitute a '2' for every 'x' in the function!	3. Evaluate f(4). $f(x) = x^2 + 3x - 1$ $f(4) = 4^2 + 3(4) - 1$ $f(4) = 16 + 12 - 1$ $f(4) = 27$	4. Find the value of $f(x) = 4x - 2$ when $x = -1$. $f(-1) = 4(-1) - 2$ $f(-1) = -4 - 2$ $f(-1) = -6$

5. Find the value of f(5). none
6. Find the value of x for f(x)=2. x=4
7. Identify the maximum and minimum in function notation.

max: $f(3) = 7$

min: $f(-7) = -7$

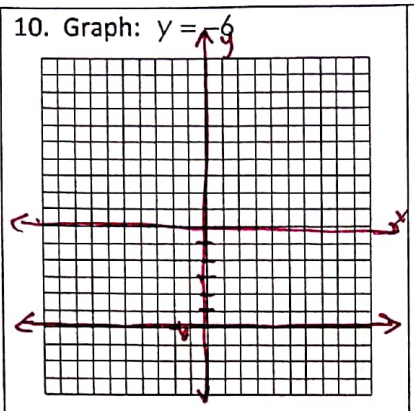
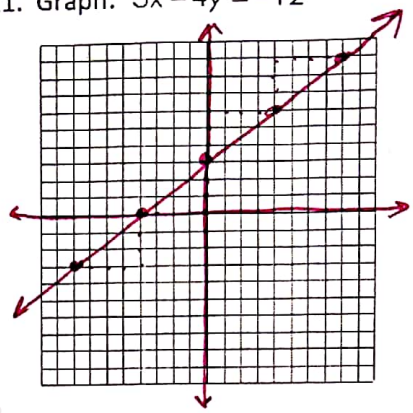
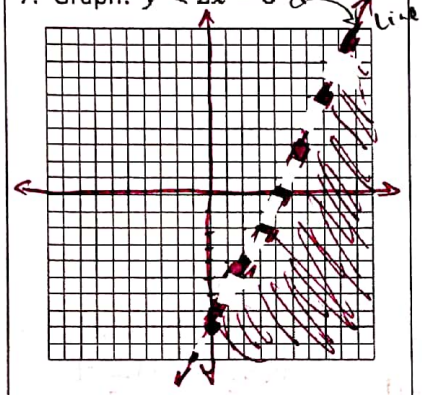
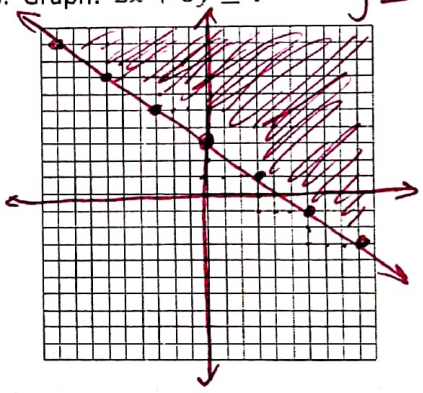
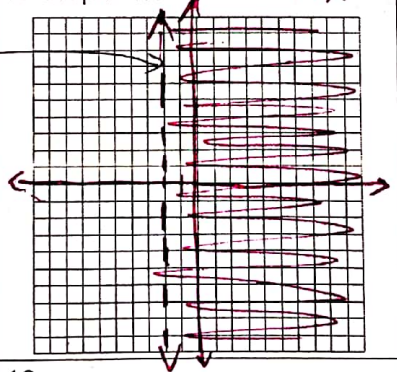
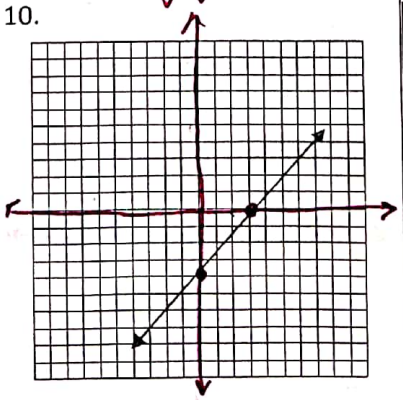


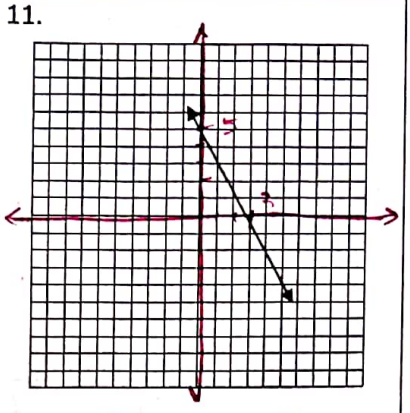
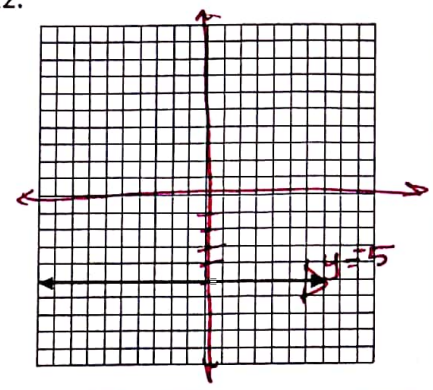
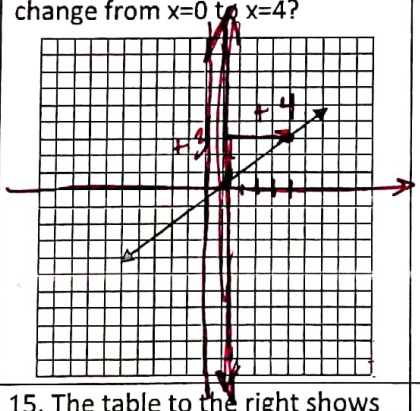
Graph a linear function.	$y = mx + b$ *Always graph the y-intercept first!	8. Graph: $f(x) = -\frac{2}{3}x + 6$ 	9. Graph: $-4x + 2y = 10$ $y = \frac{4x + 10}{2}$ $y = 2x + 5$ 

$3x-4y=-12$

$-4y=-3x-12$

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

		10. Graph: $y=-6$ 	11. Graph: $3x-4y=-12$ 
Graph a linear inequality.	Dashed line: $<$ *or* $>$ Solid line: $\leq$ *or* $\geq$ *Don't forget to shade!	7. Graph: $y<2x-8$ 	8. Graph: $2x+3y\geq 9$ $y\geq -\frac{2}{3}x+3$ 
		9. Graph: $x>-2$ 	
Identify important characteristics of a function.	x-intercept(s): where the graph crosses the x-axis. y-intercept(s): where the graph crosses the y-axis. maximum/minimum: the highest or lowest points.	10. 	Domain: $\mathbb{R}$ Range: $\mathbb{R}$ Interval of Increase: $\mathbb{R}$ Interval of Decrease: none Maximum: none Minimum: none End Behavior: As $x\to\infty$, $f(x)\to\infty$ As $x\to-\infty$, $f(x)\to-\infty$ Zeros: $x=3$ X-Intercept: $(3,0)$ Y-Intercept: $(0,-4)$

	Domain: input, x-values Range: output, y-values Increase: where the graph looks like it's going "up hill". Decrease: where the graph looks like it's going "down hill". Constant: where the graph is horizontal. End-Behavior: $as\ x \to \infty, f(x) \to$ ___ $as\ x \to -\infty, f(x) \to$ ___	11.  Domain: $\mathbb{R}$ Range: $\mathbb{R}$ Interval of Increase: none Interval of Decrease: $\mathbb{R}$ Maximum: none Minimum: none End Behavior: As $x \to \infty$, $f(x) \to -\infty$ As $x \to -\infty$, $f(x) \to \infty$ Zeros: $x=3$ X-Intercept: (3, 0) Y-Intercept: (0, 5)	12.  Domain: $\mathbb{R}$ Range: none Interval of Increase: none Interval of Decrease: none (Constant: $\mathbb{R}$) Maximum: none Minimum: none End Behavior: As $x \to \infty$, $f(x) \to$ n/a As $x \to -\infty$, $f(x) \to$ n/a Zeros: none X-Intercept: none Y-Intercept: (0, -5)
Calculate the average rate of change.	"slope" $m = \frac{y_2 - y_1}{x_2 - x_1}$ $m = \frac{+3}{+4}$ $m = \frac{3}{4}$	13. What is the average rate of change from x=0 to x=4? 	14. Which function has the greater rate of change? Function 1: $y = 2x + 3$ $m = 2$ Function 2: (0, 4) (1, 8) (2, 12) $m = 4$ $x_1\ y_1\ x_2\ y_2$ $m = \frac{8-4}{1-0} = \frac{4}{1} = 4$
		15. The table to the right shows the distance (in meters) Runner A and Runner B ran at different time intervals. Which runner has a faster average speed from 20 to 31 seconds? (m)	x, y_A, y_B Time / Runner A / Runner B 0 / 0 / 0 9 / 120 / 120 20 / 168 / 213 31 / 287 / 287 $m_A = \frac{287-168}{31-20}$ $m_B = \frac{287-213}{31-20}$ $m_A =$ $m_B =$
Write the equation of a line.	$y - y_1 = m(x - x_1)$	16. Write the equation of the line that has a slope of $-\frac{1}{2}$ and contains the point (4, 6). $x_1\ y_1$ $(y-6) = -\frac{1}{2}(x-4)$ $y - 6 = -\frac{1}{2}x + 2$ $y = -\frac{1}{2}x + 8$	17. Write the equation of the line that contains the points (-2, 2) and (2, -2). $x_1\ y_1$ $x_2\ y_2$ $m = \frac{-2-2}{2+2} = \frac{-4}{4} = -1$ $y = mx + b$ $2 = -1(-2) + b$ $2 = 2 + b$ $0 = b$ $y = -x$

18. Write the equation of the line that is parallel to the line $y = -4x - 1$ and contains the point (1, 5).

$m = -4$

$5 = -4(1) + b$

$9 = b$

$y = -4x + 9$

19. Write the equation of the line that is perpendicular to the line $y = 3x + 2$ and contains the point (0, 11).

$m = 3$ $\perp$ $m = -\frac{1}{3}$

$11 = -\frac{1}{3}(0) + b$

$11 = b$

$y = -\frac{1}{3}x + 11$

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

$y = mx + b$

$3 = 5(0) + b$

$3 = b$

$y = 5x + 3$

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

x	2	+3	5	8	11
y	-6		-4	-2	0

$m = \frac{2}{3}$ $+2$ $(2, -6)$ $b = -\frac{22}{3}$

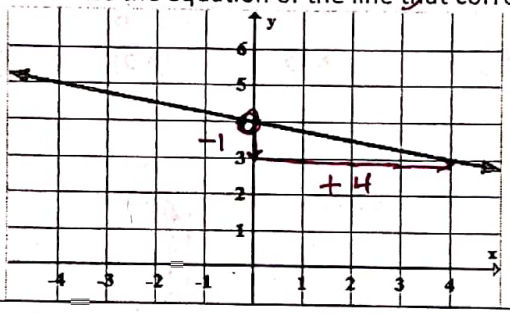
$-6 = \frac{2}{3}(2) + b$

$-6 = \frac{4}{3} + b$

$-\frac{18}{3} - \frac{4}{3} = b$

$y = \frac{2}{3}x - \frac{22}{3}$

22. Write the equation of the line that corresponds to the graph below:



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

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