Algebra 1 Midterm Review Name: _____

Directions: Read each question carefully. Answer each question completely. Show all of your work.

Chapter 1

1) Match the property with the equation illustrating the property. Please use CAPITAL letters!

_____	$-a(-1)=a$	A. Associative Property of Addition
_____	$0+a=a$	B. Associative Property of Multiplication
_____	$a\times\frac{1}{a}=1$	C. Commutative Property of Addition
_____	$a+(-a)=0$	D. Commutative Property of Multiplication
_____	$a+b=b+a$	E. Distributive Property
_____	$a+(b+c)=(a+b)+c$	F. Inverse Property of Addition
_____	$(a\cdot b)\cdot c=c\cdot(a\cdot b)$	G. Inverse Property of Multiplication
_____	$3(a-b)=3a-3b$	H. Identity Property of Addition
_____	$a(0)=0$	I. Identity Property of Multiplication
_____	$(ab)c=a(bc)$	J. Multiplication Property of Zero
_____	$1\times(-a)=-a$	K. Multiplication Property of -1

2) Write an expression for the phrase *2 times the quantity x minus 7*. _____

3) Evaluate: $(ab)^2$ if a = 2 and b = -4 _____

4) Evaluate: $-x+2y$ if x = 8 and y = 5 _____

5) Simplify: $2\left[3^2\cdot 32+12\div 4\right]$ _____

6) Simplify: $\frac{1}{3}x(-6+27y-51z)$ _____

7) Evaluate $\frac{a}{b}$ for a = $-\frac{4}{5}$ and b = $\frac{2}{15}$ _____

8) Evaluate -7^4 _____

Chapter 2

1) $\frac{2}{3}x - 3 = 7$ _____

2) $5(y+5) = 55$ _____

3) $2 = \frac{10+y}{-3}$ _____

4) $6x + 5 = 4x - 5$ _____

5) $7w + 8 - w = 8w - 2(w-4)$ _____

6) $\frac{2}{3}x - \frac{8}{3} = -4$ _____

7) The sum of four consecutive odd integers is -72. Write an equation to model this situation. Find the value of the four integers.

Equation: _____

Integers: _____

8) At 9:00 on Saturday morning, two bicyclists heading in opposite directions pass each other on a bicycle path. The bicyclist heading north is riding 7 km/hr faster than the bicyclist heading south. At 10:30, they are 43.5 km apart. Find the two bicyclists' rates.

Equation: _____

Rate (North): _____

Rate (South): _____

9) Solve the formula for the area of a trapezoid $A=\frac{1}{2}(b_1+b_2)h$ for b_2. _____

10) Solve the equation $5a+7b=8a-9$ for a. _____

Chapter 3

Directions: Solve and graph.

1) $x-7\geq -10$ _____

2) $-\frac{x}{2}<-8$ _____

3) $x+10-2(x-14)>0$ _____

4) $12m+11-3m>4m-(17-9m)$ _____

5) $-4\leq 2x-4<2$ _____

6) $8x-15<-15$ or $9x+11\geq 20$ _____

Directions: Solve the following equations.

7) $|3x+9|<27$ _____

8) $|d+2|\geq 6$ _____

9) $3|x|-16=26$ _____

10) $-2|a-7|=-28$ _____

Chapter 5

1) Define *function*: _____

2) What is the vertical line test: _____

3) Evaluate $g(x)=-x^2+5$ for x = -3. _____

4) Evaluate $h(x)=5x+7$ for x = 8. _____

5) Write the function rule for the table. _____

x	y
-1	2
0	4
1	6
2	8

6) Write the function rule for the table. _____

x	f(x)
-1	9
1	9
3	17
5	33

7) Find the range of $f(x) = -x + 22$ for the domain {-8, -6, 4, 7}. _____

8) Find the domain and range of the relation. Is it a function?

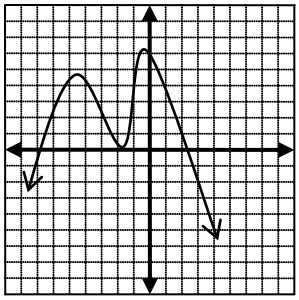
{(-4, 6), (-2, 6), (0, 4), (3, 4)}

Domain: _____

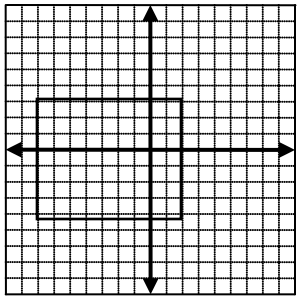
Range: _____

Function? _____

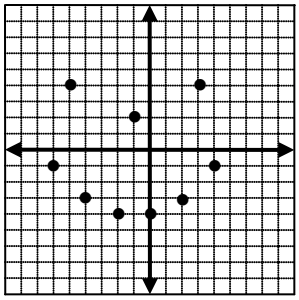
9) Are the following graphs a function?



_____



_____



_____

10)Nick earns $6.00 per hour for mowing lawns.

a. Write a function rule to describe the amount of money *m* earned is a function of the number of hours *h* spent mowing lawns. _____

b. How much does Nick earn if he works 2 hours and 30 minutes? _____

8) Find the constant of variation for $6x = -y$ _____

9) Find the constant of variation for $7x + 6y = 0$ _____

11)Write the equation of the direct variation that includes the point (-2, 20) _____

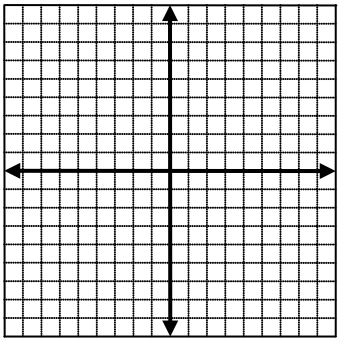
Chapter 6

1) Graph the following equations in slope-intercept form.

a. $y = \frac{3}{5}x - 8$

m = _____

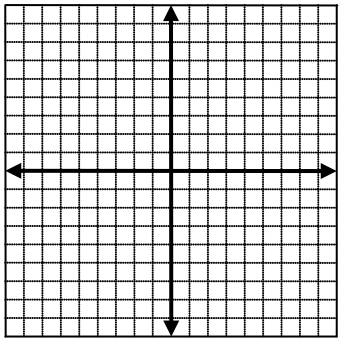
b = _____



b. $3y = -x + 6$

m = _____

b = _____

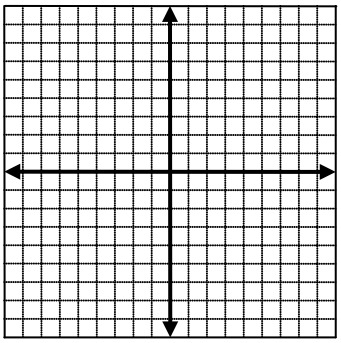


2) Graph the following equations in standard form.

a. $6x - 4y = 24$

x-int = _____

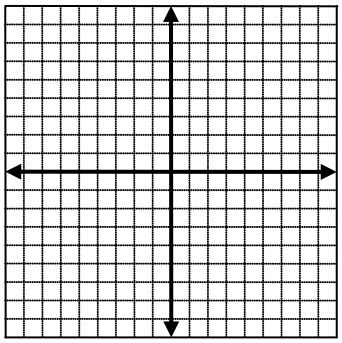
y-int = _____



b. $-6x + 15y = -30$

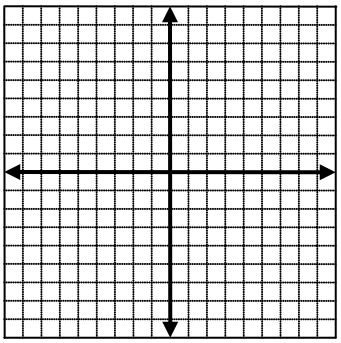
x-int = _____

y-int = _____

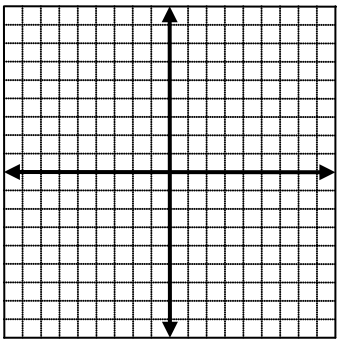


3) Graph the following equations.

a. $y = -7$

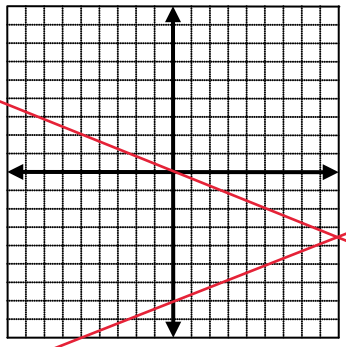


b. $x = 6$

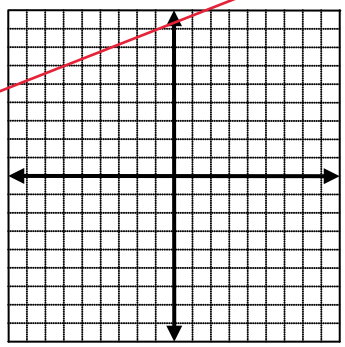


4) Graph the following equations.

a. $y = |x - 2|$



b. $y = |x + 3| + 4$



5) Write the equation for each translation of $y = |x|$.

a. 9 units down _____

b. left 2 units and up 3 units _____

6) Tell whether the lines for each pair of equations are *parallel, perpendicular,* or *neither*.

a. $y = 3x - 8$
$3x - y = -1$ _____

b. $3x + 2y = -5$
$3y - 18 = 2x$ _____

7) Write an equation for the line parallel to each given line and the point that passes through the given point.

a. $y = 2x - 7$ thru (3, 4) _____

b. $-7x - 3y = 3$ thru (9, -7) _____

8) Write an equation for the line perpendicular to each given line and the point that passes through the given point.

a. $y = -\frac{1}{4}x + 7$ thru (1, 1) _____

b. $y - 1 = 4x$ thru (12, -6) _____

9) Write the following equations in slope-intercept form.

a. $y - 8 = \frac{-1}{3}(x + 18)$ _____

b. $-2x - 3y = -12$ _____

10)Write the following in standard form using only integers.

a. $y = -\frac{4}{5}x + \frac{6}{5}$ _____

b. $y = \frac{5}{2}x - 22$ _____

11)Write an equation in point-slope form using the given information.

a. (4, 7); $m = -\frac{1}{2}$ _____ b. (-3, 4) & (1, 6) _____

12) Write the equation of the line that passes through the points (-2, 1) and (6, -1) in slope-intercept form. _____

13)Find the slope of the following linear function. _____

a. 9x + 4y = -36

14)Find the x and y-intercepts for the following equation. x-intercept _____

a. $y = \frac{2}{3}x - 8$ y-intercept _____

15)Is the relationship shown by the data linear? If so, write the equation in point-slope form.

a. _____ b. _____

x	y
2	3
3	7
4	11
6	19

x	y
-7	-3
-5	0
-1	3
3	7

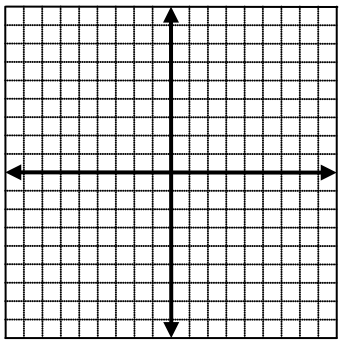
16)Find the rate of change: You burn 400 calories in one hour and you burn 1200 calories in 3 hours. _____

Chapter 7

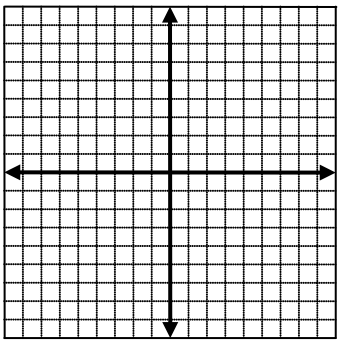
1) Is (40, 30) a solution to the system $\begin{matrix} 3x-4y=0 \\ 2x+y=110 \end{matrix}$? (Prove your answer.) _____

2) Solve the following systems of equations by graphing.

a. $\begin{matrix} y=\frac{5}{3}x-4 \\ y=2x-6 \end{matrix}$ _____



b. $\begin{matrix} 3x+4y=12 \\ 4y-8=-2x \end{matrix}$ _____



3) Solve the following systems by substitution.

a. $\begin{matrix} y=5x+5 \\ y=15x-1 \end{matrix}$ _____

b. $\begin{matrix} 5x+6y=-76 \\ x+2y=-44 \end{matrix}$ _____

4) Solve the following systems by elimination.

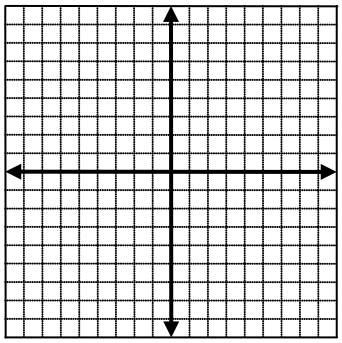
a. $\begin{matrix} 7x+15y=32 \\ x-3y=20 \end{matrix}$ _____

b. $\begin{matrix} 9x-34=-5y \\ -2y+8x=-2 \end{matrix}$ _____

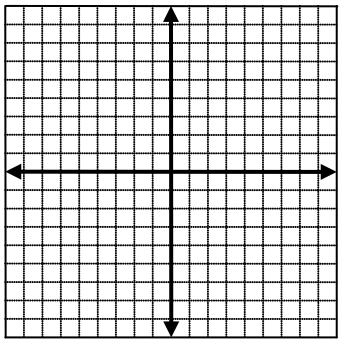
5) Is (2, -3) a solution to the system $\begin{matrix} y < -x + 3 \\ -2x + 4y \geq 0 \end{matrix}$? (Prove your answer.) _____

6) Solve the following systems of inequalities.

a. $\begin{matrix} y \leq 2x - 3 \\ -2x + y > 5 \end{matrix}$



b. $\begin{matrix} 6x + 4y > 12 \\ -3x + 4y < 12 \end{matrix}$



7) A jar containing only nickels and dimes contains a total of 60 coins. The value of all the coins in the jar is $4.45. Write and solve a system of equations to find the number of nickels and dimes in the jar. _____

8) At a local ballpark, the team charges $5 for each ticket and expects to make $1400 in concessions. The team must pay its players $2000 and pay all other workers $1600. Each fan gets a free bat that costs the team $3 each. How many tickets must be sold to break even? _____

9) The length of a rectangle is 3 feet more than three times the width. If the perimeter of the rectangle is 46 feet, find the dimensions of the rectangle. (Write and solve a system of equations.) _____