

Name Key Date \_\_\_\_\_

Exam Date and Time: \_\_\_\_\_

**Read and answer all questions accordingly. All work and problems must be done on your own paper or done on this page for graph paper only and work must be shown. No work = No Credit = NO EXCEPTIONS. It is worth two quiz grades.**

**Unit 1-1**

Evaluate Expressions: Show all steps and work.

- 1)  $b - a$ , for  $b = 7$  and  $a = -5$       2)  $-1 - 2n^3$  for  $n = 2$   
 $\{12\}$        $\{-17\}$
- 3)  $3m - n$  for  $m = -5$  and  $n = -8$       4)  $-2m^2 + 4$  for  $m = -3$   
 $\{-7\}$        $\{14\}$
- 5) Corey hires a band to play for his birthday. The band charges a flat fee of \$250, plus \$100 per hour. Write an equation that best describes the cost,  $c$ , of the band in relation to the time,  $t$ , that they play?  
 $c = \$100t + 250$
- 6) Twice the sum of three times a number and two.  $2(3x+2)$
- 7) The product of five and a number over sixteen.  $\frac{5x}{16}$
- 8) Nine decreased by twice a number is the same as four plus the number.  $9 - 2x = 4 + x$
- 9) Sam earns \$5 an hour delivering pizzas plus he gets \$20 per week for gas. His weekly pay is represented by the function  $y = 5x + 20$  where  $x$  is the number of hours he works and  $y$  is his total pay for the week. Match the following for this situation:

5 dependent quantity      5 rate of change  
(0,20) y-intercept      x independent quantity

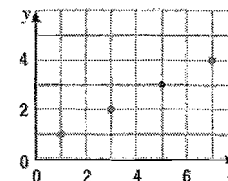
10) The squares below show a pattern.

Stage 1	□□
Stage 2	□□□□□
Stage 3	□□□□□□□□
Stage 4	□□□□□□□□□□

Write a function rule that can be used to determine the number of squares at stage  $n$ ?  $4n - 2$

11) Jamal has to do push-ups at tennis practice. The function  $h = 2p + 72$  represents the relationship between his heart rate,  $h$ , and the number of push-ups completed,  $p$ . Which is the independent quantity in the function? push-ups

12) Is this <sup>graph</sup> discrete or continuous? Explain why.  
Discrete; Points are NOT connected

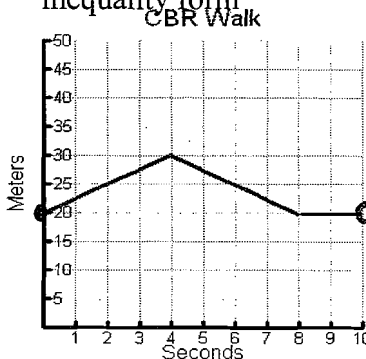


13) Give an example of each of the following.

Commutative Property:  $2x + 3 = 3 + 2x$   
 Associative Property:  $2 + (3x + 4) = (2 + 3x) + 4$   
 Distributive Property:  $2(3x + 4) = 6x + 8$

**Unit 1-2**

1) Identify the domain and range for the walk graphed below in inequality form



Domain:  $0 \leq x \leq 10$

Range:  $20 \leq y \leq 30$

Is this Discrete or Continuous?  
Continuous

2)  $5y - 4 = 11$

$\{3\}$

3)  $\frac{3}{2}v + 2 = 20$

$\{12\}$

4)  $\frac{1}{2}(4x + 8) = 4x$

$\{2\}$

5)  $2 - 15n = 5(-3n + 2)$

$\{\emptyset\}$

No Solution

6)  $c + 2c - 5 - 5c = 7$

$\{-6\}$

7)  $2x - 4 = 2(x - 2)$

$\{\mathbb{R}\}$

All Real Numbers

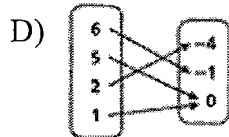
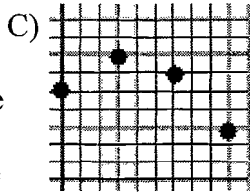
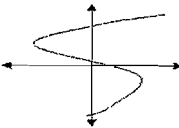
8) Fill in the missing step. 9) Which of these is NOT a function?

$9x - 18 = 27$

$9x = 45$

$x = 5$

(A)  $\{(2,3), (3,5), (2,4), (1,6)\}$  (B)

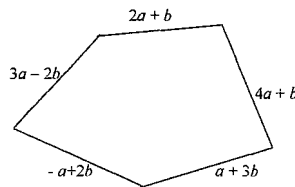


10) The domain of the function,  $y = 3x + 6$  is 0, 1, 2, 3. What is the range of the function?

$\{6, 9, 12, 15\}$

11) What is the perimeter of this figure?

$9a + 5b$



12) Which of the following statements correctly translates into the equation  $y = 5x + 11$ ?

- [A] Renting a surfboard at Bob's Surf Shack costs \$5 per hour.
- [B] Renting a surfboard at Bob's Surf Shack costs \$11 per hour plus an initial fee of \$5.
- [C] Renting a surfboard at Bob's Surf Shack costs \$11 for the first hour and \$5 for every additional hour.
- [D] Renting a surfboard at Bob's Surf Shack costs \$5 per hour plus an initial fee of \$11.

13) Amy's Ice Cream charges \$2 for a scoop of ice cream plus \$0.75 for each topping. If Joe's total charge for a scoop of ice cream is \$3.50, write an equation that can be used to find out how many toppings he bought.  $0.75x + 2 = 3.50$

Unit 2-1

1) Solve for  $w$ ,  $A = 2(l + w)$   $w = \frac{A}{2} - l$

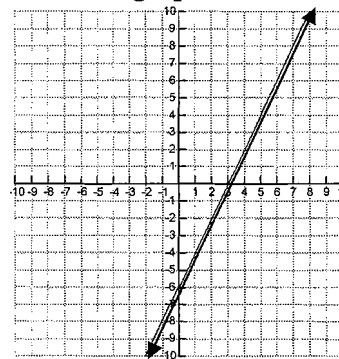
2) Circle all of the equations that are linear.

[A]  $f(x) = 3x^2 + 2x - 4$  (B)  $f(x) = 3x + 7$  [C]  $f(x) = \frac{3}{x} - 5$  (D)  $y = 5$

(E)  $6x + y = 3$  (F)  $f(x) = 3$  [G]  $y = \frac{6}{x}$  (H)  $y = 2x + 1$

3) Find the slope of the line going through the points  $(-2, 6)$  &  $(1, 3)$ .  $-1$

Use this graph below to answer the following questions:



4) What is the slope?  $2$

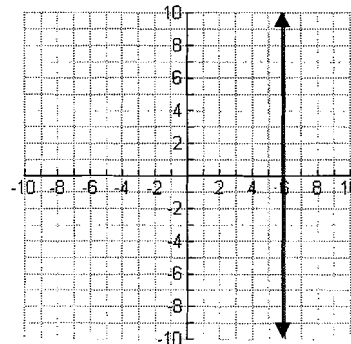
5) What is the  $y$ -intercept?  $(0, -6)$

6) What is the equation?  $y = 2x - 6$

7) Write the equation of the line if it has been shifted up 6 units. Then draw it.

$y = 2x$

Use this graph below to answer the following questions:



8) What is the slope? undefined

9) What is the  $y$ -intercept? none

10) What is the equation?  $x = 6$

11) Determine the  $x$  and  $y$ -intercepts of  $-x + 5y = 15$ . Make sure to write it correctly.

$x$ -int:  $(-15, 0)$        $y$ -int:  $(0, 3)$

12) Clyde's Carpet Cleaners charged your parents a flat rate of \$25 plus a fee of \$75 for each room cleaned. Their bill was \$325. Write the equation and determine the slope of this function.

Equation:  $75x + 25 = 325$       Slope:  $75$

**Unit 2-2**

1) Establish the slope and the  $y$ -intercept for this equation,  $-2x + 6y = 24$ .

$m = \frac{1}{3}$        $y$ -int:  $(0, -4)$

2) Establish the slope and the  $y$ -intercept for this equation,  $y = 3$ .

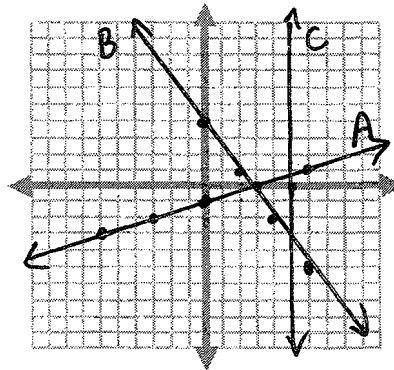
$m = \text{zero}$        $y$ -int:  $(0, 3)$

Graph the information.

3) Graph the line with slope  $\frac{1}{3}$  that passes through  $(-6, -3)$ . Label it A.

4) Graph the line with the slope of  $-\frac{3}{2}$  and the  $y$ -int of  $(0, 4)$ . Label it B.

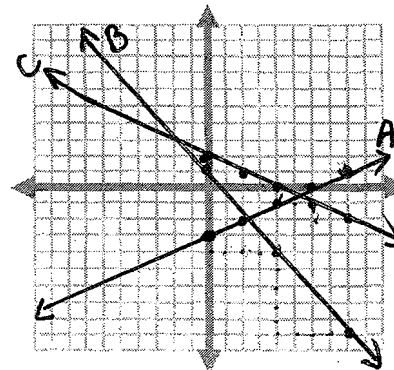
5) Graph  $x = 5$  Label it C.



6) Graph  $y = \frac{1}{2}x - 3$  and label it A.

7) Graph  $y = -\frac{5}{4}x + 1$  and label it B.

8) Graph  $2x + 4y = -8$  and label it C.



9) Is this equation,  $-12x = 6y$  a direct variation? If so, label the constant of variation. **YES**       $k = -2$

10) Is this equation,  $5x - 6y = 2$  a direct variation? If so, label the constant of variation. **NO**       ~~$k$~~

11) Suppose  $y$  varies directly as  $x$ , and  $y = 12$  when  $x = 5$ . Find  $y$  when  $x = 15$ .

$y = 36$

Find the value of  $x$  so that the function has the given value. Leave answers in IMPROPER FRACTION.

$f(x) = -6x + 5$	$g(x) = 2x - 3$	$h(x) = -\frac{1}{2}x - 7$
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12)  $f(3) = -13$       13)  $g(7) = 11$       14)  $h(-6) = -4$

15) Greg's Auto Repairs charges \$75 per hour for labor plus the cost of the broken parts. Mary's fan belt broke, and the parts for the new fan belt cost \$50. When she got her bill, she owed them \$275 for parts and labor. How many hours did Greg work on her car?

**3 hrs.**

**Unit 3-1**

1) Write a linear equation of the data given below.  $y = 5x + 3$

$x$	-2	0	1	3
$y$	-7	3	8	18

2) Write a linear equation of the data given below.  $y = 2x + 1$

$x$	-2	0	2	4	6
$y$	-3	1	5	9	13

3) Write an equation with the slope is 5 and  $y$ -intercept is  $(0, -7)$

$y = 5x - 7$

4) Write an equation where the slope is  $-4$  and the point is at  $(1, 1)$

$y = -4x + 5$

5) Write an equation where the slope is at zero and through the point of (2, 4)

$$y = 4$$

6) Write an equation where the slope is undefined and through the point of (-1, -5)

$$x = -1$$

7) Write an equation where the line passes through point (-3, 2) and (6, -1)

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

8) What is the slope of the line parallel to  $y = 5x + 6$  where the y-int is at (0, -3)?

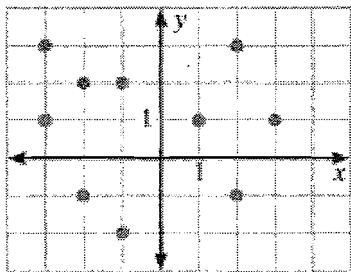
$$y = 5x - 3$$

9) In slope-intercept form, write the equation of the line that is perpendicular to  $y = -2x - 9$  and passes through (-2, -4).

$$y = \frac{1}{2}x - 3$$

Unit 3-2

1) What type of correlation is shown on this graph?

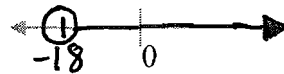


No Correlation

2) Circle all of the points that would work for this inequality,  $6x + y \leq 24$

- (A) (0, -3) (B) (-1, 30) (C) (6, 24) (D) (5, -5) (E) (0, 24)

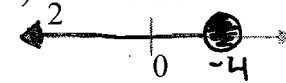
3)  $x + 5 > -13$



Inequality:  $x > -18$

Int. Not:  $(-18, \infty)$

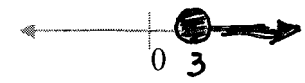
4)  $\frac{1}{2}x + 12 \leq 10$



Inequality:  $x \leq -4$

Int. Not:  $(-\infty, -4]$

5)  $1 - 3x \leq -14 + 2x$

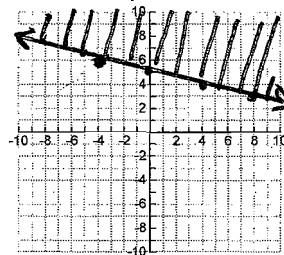


Inequality:  $x > 3$

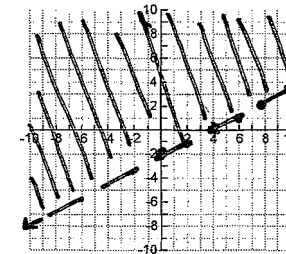
Int. Not:  $[3, \infty)$

Graph the following:

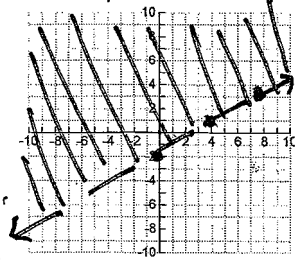
6)  $y \geq -\frac{1}{4}x + 5$



7)  $2x - 4y < 8$

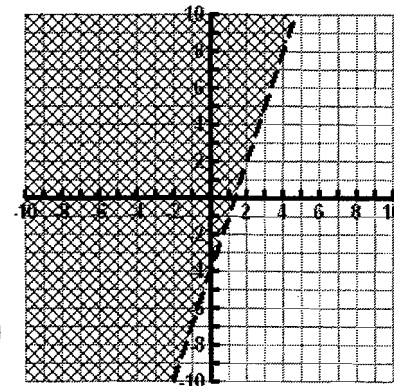


8)  $y > \frac{3}{4}x - 2$



9) Write the inequality for the graph on the right.

$$y < 3x - 4$$



10) Circle the points that make this inequality true.

- (0, 0) (0, -4) (4, 7) (-4, 0)

11) List 3 ways you will do to help you study for the midterm exam.