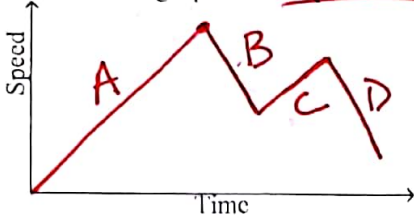


Algebra 1 - Chapter 4 PRE-TEST

\_\_\_\_\_ / 40 points

Short Answer: Show all work for full credit

1 (2 points) Sketch a graph of the speed of a bicyclist in a race. **Label each section with the letter.**



- A - A cyclist starts a race & accelerates to his top speed
- B - He comes to a hill and struggles to climb it.
- C - He goes over the hill and accelerates down it
- D - He brakes at the bottom to take a sharp left turn

2 (2 points) Use a pattern to complete both missing numbers to the linear function in the table.

x	y
0	17
1	12
2	7
3	2
10	-33

$m = -5$   
 $b = 17$

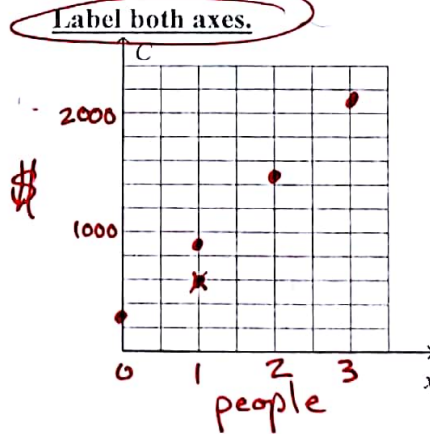
$y = -5x + 17$   
 $-5(10) + 17$   
 $-50 + 17$   
 $-33$

3 (3 points) Shaun is the accountant to a bank, and is responsible for payroll. Each employee is paid \$600 a week. The bank also spends \$300 a week on basic utilities no matter how many people are working.

A) (1pt) Complete the table.  $C$  = total cost for the bank to run for the week &  $x$  = number of employees working that week.

x	C
0	\$300
1	\$900
2	\$1500
3	\$2100

B) (2 pts) Choose an appropriate scale and graph the table of values.



4 (2 points) Write a function (equation) for each table.

A)

x	y
0	-5
1	-2
2	1
3	4
4	7

$y = 3x - 5$

$y = mx + b$

+3

B)

x	y
0	0
1	3
2	12
3	27
4	48

Guess + check

$y = 3x^2$

x	y
1	3 (3·1)
2	6 (3·2)
3	9 (3·3)
4	12 (3·4)

5 (4 points) Mr. Visser's beard grows approximately 2 mm per day. He currently has a beard that is 11 mm long.

Write the function in function notation:	Define Independent Variable:	Define Dependent Variable:	Graph the function.
$y(x) = 2x + 11$ <i>Save</i>	$x = \text{days}$	$y = \text{total length}$	

*first*

6 (2 points) Write a function in function notation for the area ( $A$ ) of a rectangle if the width is five more than three times the length ( $l$ ).

$A = l \cdot w$        $w = 5 + 3l$   
 $A = l(5 + 3l)$

7 (3 points)

Determine whether each relation is a function. Write yes or no for each. *Vertical Line Test*

<i>yes</i>	<i>no</i>	<i>no</i>

8 (2 points)

Consider the relation: $\{(-2, 9), (9, 11), (0, -6), (5, -9)\}$ State the domain and range of the relation $(x)D: \{-2, 0, 5, 9\}$ $(y)R: \{-9, -6, 9, 11\}$	Is the relation a function? Explain. <i>yes, every input has one output.</i>
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9 (2 points) REVIEW: Solve the equation.

$$(-2) - 2 = \boxed{-5 + z} \quad (-2)$$

$$4 = -5 + z$$

$$\begin{array}{r} +5 \\ +5 \end{array}$$

$$\boxed{9 = z}$$

10 (2 points) REVIEW: Solve the absolute value equation:

$$\boxed{x = -5 \text{ and } 3}$$

by itself

$$|3x + 3| + 6 = 18$$

$$\begin{array}{r} -6 \\ -6 \end{array}$$

$$|3x + 3| = 12$$

split

*be careful!!!	pos $3x + 3 = 12$	neg $3x + 3 = -12$
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11 (2 points) REVIEW: Solve the following inequality.

$$2 < 4x - 2 < 14$$

$$\begin{array}{r} +2 \\ +2 \end{array}$$

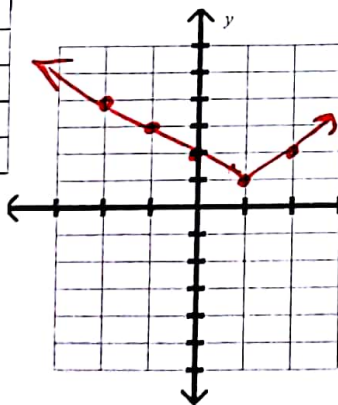
$$\frac{4}{4} < \frac{4x}{4} < \frac{16}{4}$$

$$\boxed{1 < x < 4}$$

12 (3 points) Graph the following function by making a table.

x	y
-2	4
-1	3
0	2
1	1
2	2

$$f(x) = |x - 1| + 1$$



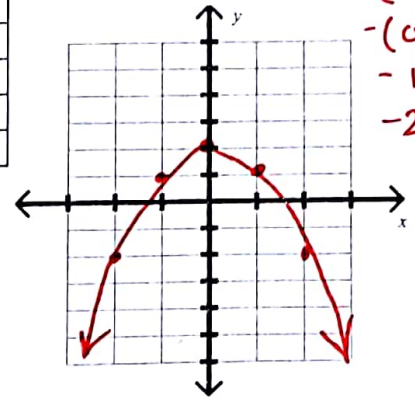
$$\begin{array}{l} |-2 - 1| + 1 = 3 + 1 \\ |-1 - 1| + 1 = 2 + 1 \\ |0 - 1| + 1 = 1 + 1 \\ |1 - 1| + 1 = 0 + 1 \\ |2 - 1| + 1 = 1 + 1 \end{array}$$

13 (3 points) Graph the following function by making a table.

x	y
-2	-2
-1	1
0	2
1	1
2	-2

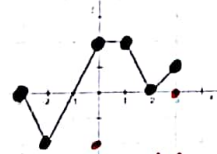
$$f(x) = -x^2 + 2$$

$-x \cdot x$



$$\begin{array}{l} -(-2)^2 + 2 \\ -(-1)^2 + 2 \\ -(0)^2 + 2 \\ -1^2 + 2 \\ -2^2 + 2 \end{array}$$

14 (2 points) Write the Domain & Range of the function using proper notation.



line

$$\text{D: } -3 \leq x \leq 3$$

$$\text{R: } -2 \leq y \leq 2$$

Points

$$\{-3, -2, 0, 1, 2, 3\}$$

$$\{-2, 0, 1, 2\}$$

Multiple Choice Identify the choice that best completes the statement or answers the question.

15 (1 point) Which vocabulary words are correctly matched with y-values?

$(x, y)$

- C**  A y; domain; dependent; input  
 B y; range; independent; input  
 C y; range; dependent; output  
 D y; domain; independent; input

16 (1 point) The length of a field in yards is a function ( $f$ ) of the length ( $n$ ) in feet. Write a function rule for this situation.

ft  $\rightarrow$  yards  
 $\div 3$

- A  $f(n) = 3n$   
 B  $f(n) = \frac{1}{3}n$   
 C  $f(n) = 12n$   
 D  $f(n) = \frac{n}{12}$

18 (1 point) For  $f(x) = 9x - 11$ , find  $f(-5)$ .

- A -56  
 B 34  
 C -144  
 D -47

$9(-5) - 11$   
 $-45 - 11$   
 $-56$

19 (1 point) A movie store sells DVDs for \$19 each. What is the cost ( $C$ ) of ( $n$ ) DVDs? Write a function and tell if the situation is continuous or discrete.

- A  $C = 19n$ ; discrete  
 B  $C = 19 + n$ ; discrete  
 C  $C = 19 + n$ ; continuous  
 D  $C = 19n$ ; continuous

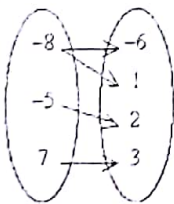
17 (1 point) Write the function that passes through the points (1, 2), (2, 4), (3, 8), (4, 16), and (5, 32).

- A  $y = 2x$   
 B  $y = 2^x$   
 C  $y = x^2 + 1$   
 D  $y = 2x^2$

20 (1 point) Identify the mapping diagram that represents the relation and determine whether the relation is a function.

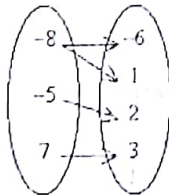
$\{(-8, -6), (-5, 2), (-8, 1), (7, 3)\}$

**A**



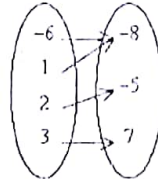
The relation is not a function.

**B**



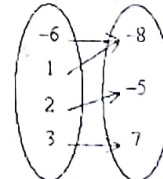
The relation is a function.

**C**



The relation is not a function

**D**



The relation is a function.