

## Assessment Matrix- 8th grade Unit 8D: Functions

Name \_\_\_\_\_ Homeroom \_\_\_\_\_

Multiple Choice	Short Answer 1	Short Answer 2

Standard Number	Standard	Item #								Mastery
8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	1	10	14						
8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	8	13							
8.F.B.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.	2	3	4	5	7	8			
8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	6	12	15						
8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	11								

## 8th grade Unit 8D: Functions

Name \_\_\_\_\_ Homeroom \_\_\_\_\_

### Multiple Choice

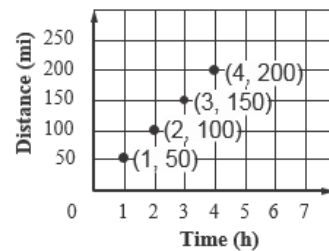
Identify the choice that best completes the statement or answers the question.

- 1) Which ordered pair is *not* a point on the graph of  $y = \frac{1}{2}x - 7$ ?

a)  $(1, -6\frac{1}{2})$                       c)  $(0, -7)$   
b)  $(-2, -8)$                       d)  $(2, 8)$

- 2) The graph at the right shows Hunter's distance from home each hour he is on a car trip. How many miles will he be from home after 10 hours?

a) 350 miles                      c) 500 miles  
b) 400 miles                      d) 550 miles



- 3) What is the rate of change between the points  $(3, 8)$  and  $(5, 4)$ ?

a)  $-2$                       c)  $2$   
b)  $-\frac{3}{2}$                       d)  $\frac{3}{2}$

- 4) Which table represents a linear function?

a) 

$x$	5	3	1	-1
$y$	6	8	10	12

c) 

$x$	-2	0	2	4
$y$	0	1	3	6

b) 

$x$	-3	-1	1	3
$y$	1	4	9	16

d) 

$x$	7	4	1	-2
$y$	-1	-3	-6	-9

- 5) Given this numeric representation of a linear function, find the rate of change.

a) 2                      c) 5  
b) 3                      d) 9

$x$	$f(x)$
0	2
3	11
5	17

6) A box of 38 giant pretzels costs \$8.59. A box of 52 giant pretzels costs \$10.69. Assuming this relationship is linear, what is the rate of change?

- a) 15 cents per pretzel      c) 23 cents per pretzel  
b) 21 cents per pretzel      d) 37 cents per pretzel

7) What is the rate of change between the points (0, 7) and (-2, 11)?

- a) -2      c) 2  
b)  $-\frac{1}{2}$       d)  $\frac{1}{2}$

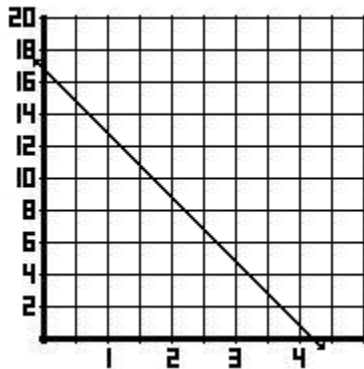
8) Which of the following functions has the greatest output when the input value is 4?

a)

Input	Output
2	1
4	2
6	3
8	4

b)  $y = 3x - 7$

c)



d) The function that adds two to each input value.

9) Which of the following represents a function that is not linear?

a)

Input	Output
3	9
4	12
6	18
7	21

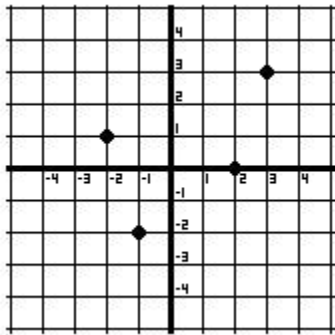
c)

Input	Output
1	7
2	3
3	-1
4	-5

b)  $y = 4.3x + 12.6$

d)  $y = x^2$

Use the graph below for question 10.



10) Which of the following input-output tables corresponds to the graph above?

a)

Input	Output
-2	1
-1	-2
0	2
3	3

c)

Input	Output
-2	1
-1	-2
2	0
3	3

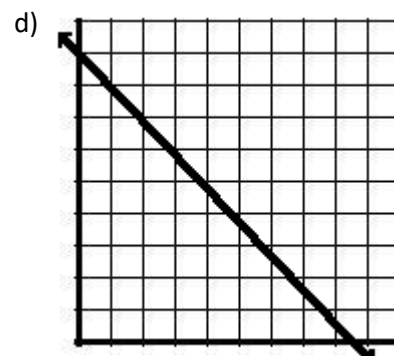
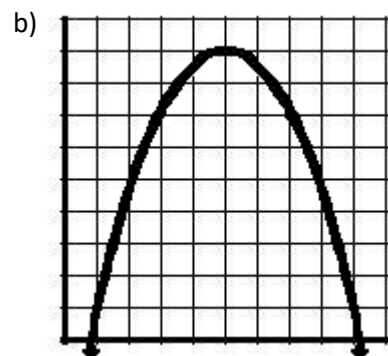
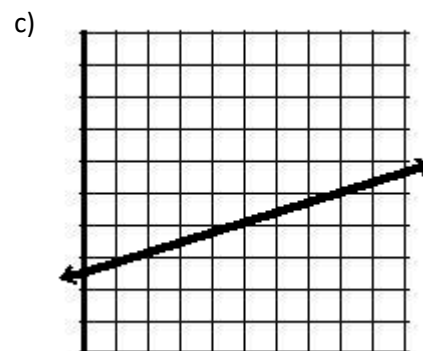
b)

Input	Output
-2	-1
-1	2
0	2
3	3

d)

Input	Output
-2	-1
-1	2
2	0
3	3

11) Which of the following shows a decreasing, nonlinear graph?



12) The following table shows the cost for renting a truck.

Number of days	1	2	3	4	5	6
Cost of rental (dollars)	26	34	42	50	58	66

Which of the following equations represents this data?

a)  $C = 6d + 26$

c)  $C = 10d + 16$

b)  $C = 8d + 18$

d)  $C = 26d + 66$

13) Lars's monthly cost of sending text messages can be represented by the function  $y = 0.05x$ , where  $y$  represents the total cost and  $x$  represents the number of text messages. The table below shows Ania's monthly cost of sending text messages. Which statement is *not* true?

Messages	Cost (\$)
20	10
30	11
40	12
50	13

a) Ania's initial cost is greater than Lars's initial cost.

b) Ania pays more per text than Lars.

c) Lars pays \$7.50 for sending 150 text messages.

d) Ania pays \$20 for sending 150 text messages.

### Short Answer

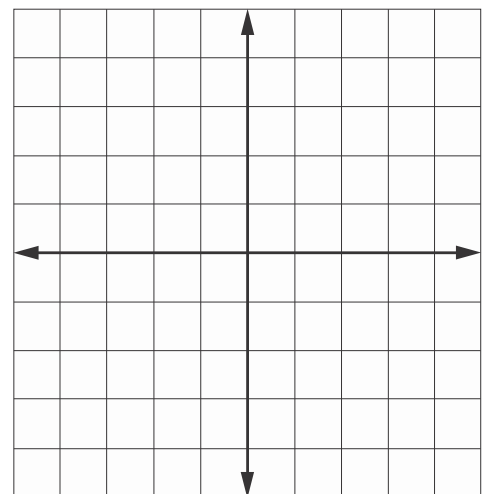
Please work the following question in the spaces provided.

14) Use the function  $y = x^2 - 2$ .

a. Construct a table of values using five different inputs.

b. Construct a graph of the function.

x	y



**Extended Response #15**

The total cost of renting a lawn mower from Lawns Inc. is represented by the function  $y = 10x + 15$ , where  $x$  represents the number of hours and  $y$  represents the total cost. The cost of renting a lawn mower from Green Lawn is shown in the table.

Number of Hours	Cost (\$)
2	38
3	47
4	56
5	65

A) Compare the rate of change for each company. Explain

B) Represent the total cost of renting lawn mower from Green Lawn using an equation.

C) Which company should you rent from if you need a lawn mower for 6 hours? *Explain your reasoning.*

## 8th grade Unit 8D: Functions

Name \_\_\_\_\_ Homeroom \_\_\_\_\_

### Answer Key

- 1.) D
- 2.) C
- 3.) A
- 4.) A
- 5.) B
- 6.) A
- 7.) A
- 8.) D
- 9.) D
- 10.) C
- 11.) A
- 12.) B
- 13.) D

14.) Answers may vary.

15.) a) Lawns, Inc.: \$10 per hour; Green Lawn: \$9 per hour

b)  $C = 9x + 20$

c) Lawns, Inc. cost is \$75, Green Lawn cost is \$74, so Green Lawn is less expensive.