

# 4.1H What's a Function and Function Notation

Name: \_\_\_\_\_ Per: \_\_\_\_\_

SHOW YOUR WORK FOR FULL CREDIT. NO WORK, NO CREDIT. NO WORK IN PEN.

- A function is a rule that assigns to each input exactly one \_\_\_\_\_.
- Mrs. Daley asked her students how many pets they have. Some responses are shown in the table below.

Student number (x)	1	2	3	5	8	13	21
Number of Pets (y)	3	1	0	3	2	3	7

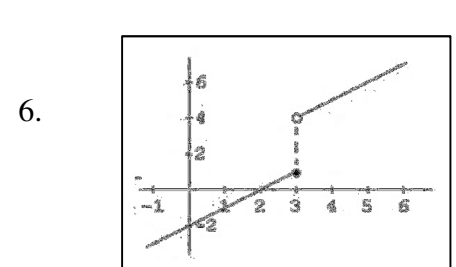
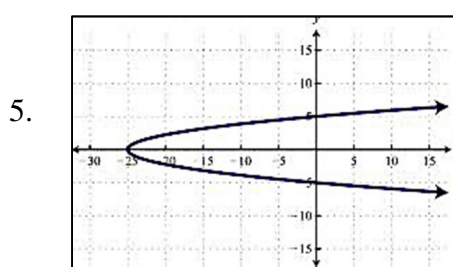
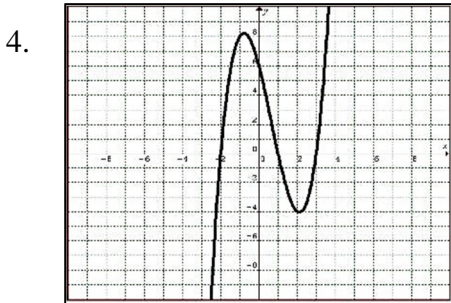
Is the relation a function? \_\_\_\_\_ Explain \_\_\_\_\_

- Mrs. Burton asked her students how tall they were and organized the data by age.

Student Age (x)	15	12	13	14	12	11	16
Height (y)	5'5"	5'1"	5'9"	6'1"	4'11"	4'10"	5'10"

Is the relation a function? \_\_\_\_\_ Explain. \_\_\_\_\_

Are the following relations functions? **Explain.** Then tell if the relation is continuous or discrete.



Is the relation a function? \_\_\_\_\_ Is the relation a function? \_\_\_\_\_ Is the relation a function? \_\_\_\_\_  
 Explain: \_\_\_\_\_ Explain: \_\_\_\_\_ Explain: \_\_\_\_\_  
 Is it continuous or discrete? \_\_\_\_\_ Is it continuous or discrete? \_\_\_\_\_ Is it continuous or discrete? \_\_\_\_\_

- $\{(-3, -7), (-1, -3), (4, -7), (2, 3), (4, 7)\}$

Is the relation a function? \_\_\_\_\_  
 Explain: \_\_\_\_\_  
 Is it continuous or discrete? \_\_\_\_\_

- $\{(0, 1), (3, -3), (1, 2), (-4, 8), (2.5, 7)\}$

Is the relation a function? \_\_\_\_\_  
 Explain: \_\_\_\_\_  
 Is it continuous or discrete? \_\_\_\_\_

- Express the relation of the ordered pairs as a table AND graph.

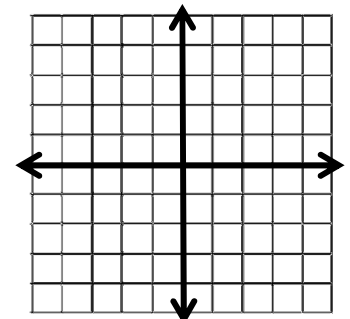
$\{(4, 5), (-3, -2), (2, 5), (0, -4), (1, 3), (2, 0)\}$

Is it continuous or discrete? \_\_\_\_\_

Should you connect the points on your graph?  
 \_\_\_\_\_

Explain \_\_\_\_\_

x	f(x)



- Is the above relationship a function? \_\_\_\_\_ Explain \_\_\_\_\_

Evaluate the functions at the given numbers:

11.  $f(x) = 3x - 8$

- a.  $f(1) =$  \_\_\_\_\_
- b.  $f(-3) =$  \_\_\_\_\_
- c.  $f(5) =$  \_\_\_\_\_
- d.  $f(0) =$  \_\_\_\_\_
- e.  $f(x) = -2,$  \_\_\_\_\_

12.  $g(x) = -9 - 5x$

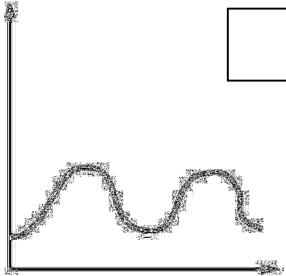
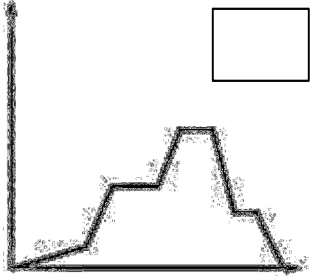
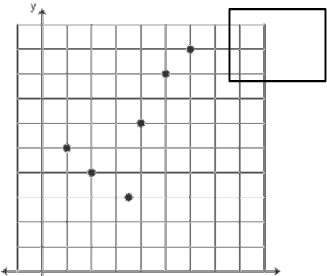

- a.  $g(-3) =$  \_\_\_\_\_
- b.  $g(0) =$  \_\_\_\_\_
- c.  $g(4) =$  \_\_\_\_\_
- d.  $g(6) =$  \_\_\_\_\_
- e.  $g(x) = 21,$  \_\_\_\_\_

13.  $h(x) = x^2 + 1$

- a.  $h(-2) =$  \_\_\_\_\_
- b.  $h(0) =$  \_\_\_\_\_
- c.  $h(1) =$  \_\_\_\_\_
- d.  $h(3) =$  \_\_\_\_\_
- e.  $h(x) = 26,$  \_\_\_\_\_

14. Match each story with a graphical representation. Tell if the representation is **discrete or continuous**.

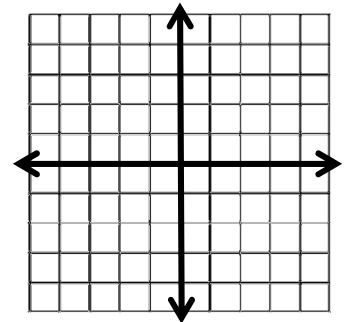
- I. The number of ice cream cones sold on a hot summer day tracked by the hour.
- II. The amount of money in a bank account where money is frequently deposited and occasionally withdrawn.
- III. The amount of air in a person's lungs.
- IV. The elevation of a hiker as he hikes a mountain.

 _____ Discrete/Continuous	 _____ Discrete/Continuous	 _____ Discrete/Continuous	 _____ Discrete/Continuous
--	--	---	--

15. Given  $f(x) = 3 - 4x$ .

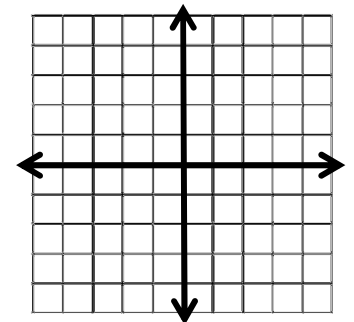
- a. Fill in the table
- b. Sketch a graph.
- c. Is the relation a function? \_\_\_\_\_  
Explain: \_\_\_\_\_
- d. Is it discrete or continuous? \_\_\_\_\_

$x$	$f(x)$
-3	
-2	
0	
1	
	-5



16. Using the following statements:

- a. Translate the following into coordinate points.
  - i.  $f(-1) = 1$  \_\_\_\_\_
  - iii.  $f(1) = -1$  \_\_\_\_\_
  - ii.  $f(2) = 7$  \_\_\_\_\_
  - iv.  $f(3) = 0$  \_\_\_\_\_
- b. Graph the points.
- c. Is your graph a function? \_\_\_\_\_  
Explain: \_\_\_\_\_
- d. Is it discrete or continuous? \_\_\_\_\_



17. Batman throws a batstar at the Joker. Gordon calculates the height of the batstar in flight by the formula  $H(t) = -16t^2 + 96t + 112$  where the  $H$  is the height in feet and  $t$  is the time in seconds.

- a. Find  $H(2)$  \_\_\_\_\_ What does  $H(2)$  mean? \_\_\_\_\_
- b. What does  $H(t) = 256$  mean? \_\_\_\_\_

**Extra Credit:** Find  $t$  when  $H(t) = 256$  \_\_\_\_\_