

LAM1 Week 2

Dear Parent/Guardian,

During Week 2, we will review and support mastery of the identifying functions. Your child will work towards understanding how to classify relations and functions. The table below lists this week's tasks and practice problems. Resource documents are included; there, your child can find targeted support for the lesson.

Additionally, students can access both Math Nation and the Pearson textbook through ClassLink. Both sites offer instructional support including video lessons, practice quizzes and more.

We also suggest that students have an experience with math each day. Practicing at home will make a HUGE difference in your child's school success! Make math part of your everyday routine. Choose online sites that match your child's interests. Online math games, when played repeatedly, can encourage strategic mathematical thinking, help develop computational fluency, and deepen their understanding of numbers.

Links for additional resources to support students at home are listed below:

<https://www.cpalms.org/Public/ResourceCollection/Preview/268> - Student Tutorials

<https://www.hoodamath.com/games/highschool.html>

<https://www.khanacademy.org/resources/teacher-essentials>

<http://www.learnalberta.ca/content/mejhm/index.html>

<https://www.mangahigh.com/en-us/games/wrecksfactor>

<http://www.xpmath.com/forums/arcade.php?do=play&gameid=115>

Week 2 At A Glance	
MAFS.912.F-IF.1.1, MAFS.912.F-IF1.2	
Day 1	<input type="checkbox"/> Lesson Formalizing Relations and Functions
Day 2	<input type="checkbox"/> Practice Problems 1 <input type="checkbox"/> Identifying the Graphs of Functions - MFA\$
Day 3	<input type="checkbox"/> Practice Problems 2 <input type="checkbox"/> Identifying Functions - MFA\$
Day 4	<input type="checkbox"/> Cafeteria Functions - MFA\$
Day 5	<input type="checkbox"/> What Is a Function - MFA\$ <input type="checkbox"/> Writing Functions - MFA\$

Lesson - Formalizing Relations and Functions

When a relation is represented as a set of ordered pairs, the **domain** of the relation is the set of x -values. The **range** is the set of y -values.

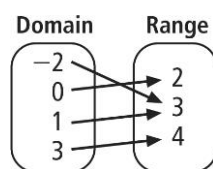
A relation where each value in the domain is paired with just one value in the range is called a **function**.

Problem

Identify the domain and range of the relation $\{(-2, 3), (0, 2), (1, 3), (3, 4)\}$. Represent the relation with a mapping diagram. Is the relation a function?

The domain (or x -values) is $\{-2, 0, 1, 3\}$.

The range (or y -values) is $\{2, 3, 4\}$.



Notice that each number in the domain is mapped to only one number in the range. This relation is a function.

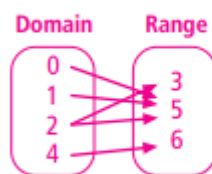
Exercises

Identify the domain and range of each relation. Use a mapping diagram to determine whether the relation is a function.

1. $\{(2, 3), (4, 6), (1, 5), (2, 5), (0, 5)\}$

2. $\{(3, 4), (5, 4), (7, 4), (8, 4), (10, 4)\}$

D: $\{0, 1, 2, 4\}$; R: $\{3, 5, 6\}$

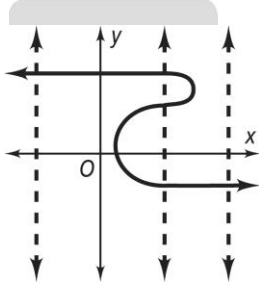


The relation is not a function.

You can determine whether or not a relation is a function by looking at the graph of the relation. If a vertical line is drawn anywhere on the graph and passes through two points of the relation, the relation is not a function. This is called the **vertical line test**.

Problem

Is the relation shown below a function? Use a vertical line test.



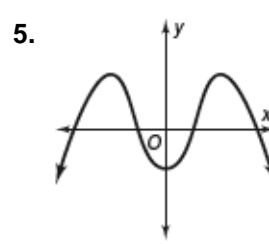
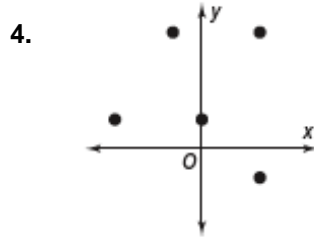
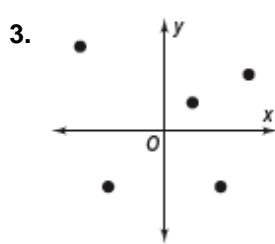
Notice that two of the dashed vertical lines pass through just one point on the graph.

However, one of the dashed vertical lines passes through three points.

The relation is not a function.

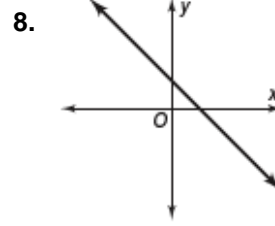
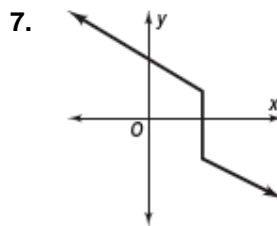
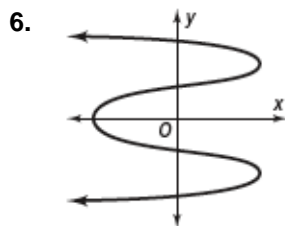
Exercises

Use the vertical line test to determine whether the relation is a function.



A function

Not a function



Practice Problems 1 – Relations and Functions

Identify the domain and range of each relation. Use a mapping diagram to determine whether the relation is a function.

1. $\{(2, 4), (8, 11), (9, 1), (4, 2)\}$

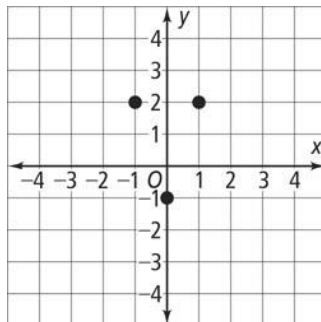
2. $\{(5, 2.2), (3, 2.6), (1, 2.6), (0, 2.5)\}$

3. $\{(-4, -6), (1, -2), (-4, 4), (-1, 2)\}$

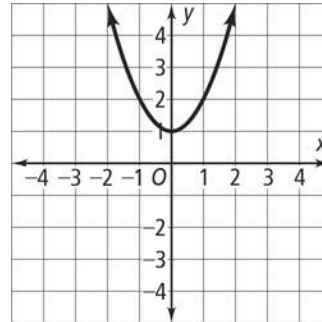
4. $\{(6, 5), (5, 6), (2, 2), (2, 6)\}$

Use the vertical line test to determine whether the relation is a function.

5.



6.



Find the range of each function for the given domain.

7. $f(x) = -4x + 3$; $\{-1, 0, 1, 2, 3\}$

8. $f(x) = x^3 + 1$; $\{-2, -1, 0, 1, 2\}$

9. $f(x) = x - 6$; $\{-5, -3, -1, 1, 3\}$

10. $f(x) = x^2 - 2$; $\{-4, -2, 0, 1, 3\}$

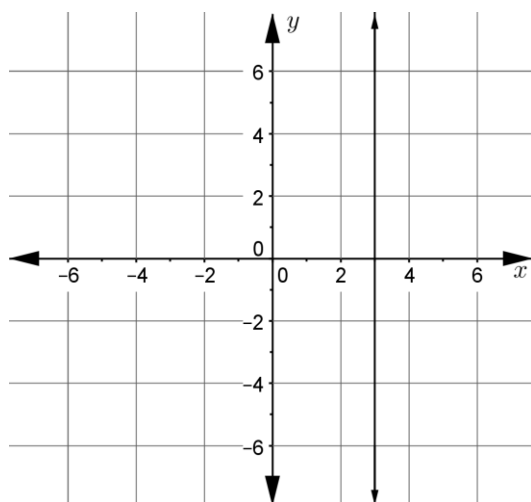
11. A tenth grade class is selling granola bars for a fundraiser. They earn \$0.75 for every granola bar that they sell. They have ordered 300 granola bars for the sale. The function $P(b) = 0.75b$ represents the profit P the class earns for each bar b they sell. Find a reasonable domain and range for the function.

12. The function $t(x) = 150x$ represents the number of words $t(x)$ you can speak in x minutes. How many words can you speak in 20 minutes?

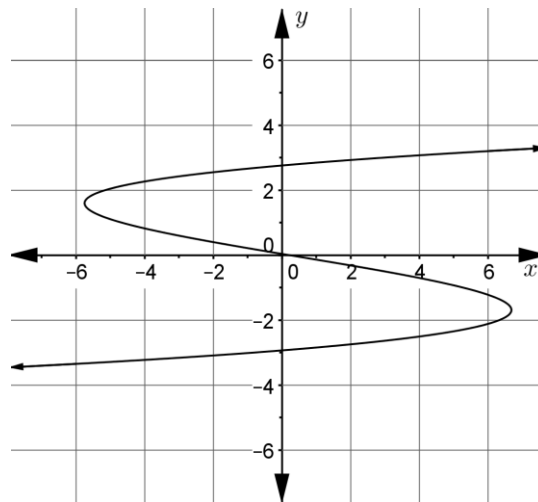
Name _____ Date _____

For each graph, x is the independent variable, and y is the dependent variable. Determine which of the graphs represent a function and which do not. Justify each of your choices.

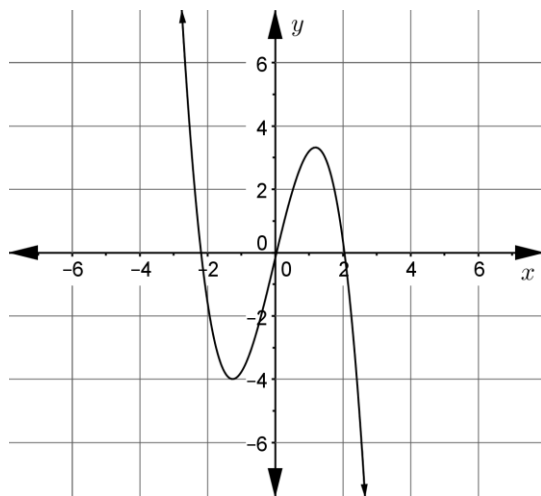
1. a)



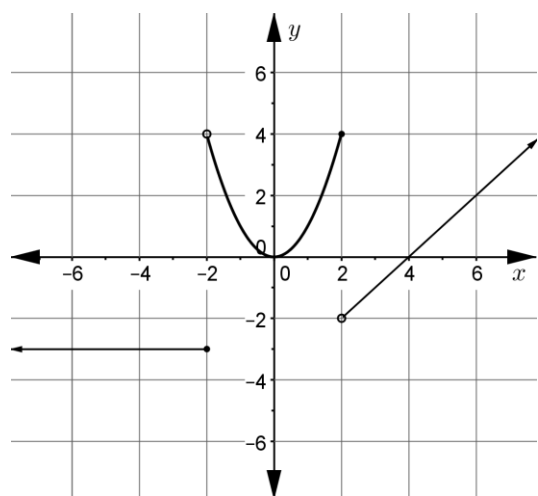
b)



c)



d)



2. If you used the vertical line test, explain how and why the vertical line test works.

Practice Problems 2 – Relations and Functions

Identify the domain and range of each relation. Use a mapping diagram to determine whether the relation is a function.

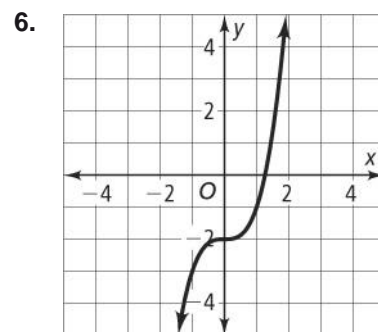
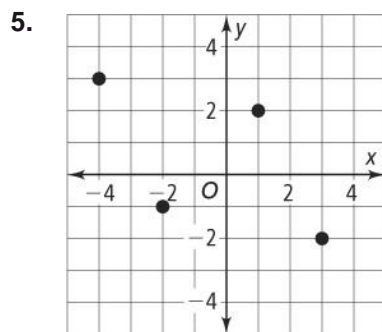
1. $\{(3, 6), (5, 7), (7, 7), (8, 9)\}$

2. $\{(0, 0.4), (1, 0.8), (2, 1.2), (3, 1.6)\}$

3. $\{(5, -4), (3, -5), (4, -3), (6, 4)\}$

4. $\{(0.3, 0.6), (0.4, 0.8), (0.3, 0.7), (0.5, 0.5)\}$

Use the vertical line test to determine whether the relation is a function.



7. The function $w(x) = 60x$ represents the number of words $w(x)$ you can type in x minutes. How many words can you type in 9 minutes?

8. Sound travels about 343 meters per second. The function $d(t) = 343t$ gives the distance $d(t)$ in meters that sound travels in t seconds. How far does sound travel in 8 seconds?

Name _____ Date _____

In each of the following, x is the independent variable and y is the dependent variable. Decide whether or not each relation is a function and justify your decision.

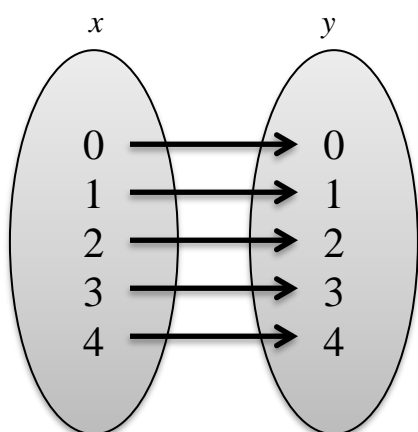
1.

x	y
1	3
1	3
1	4
1	6
1	7

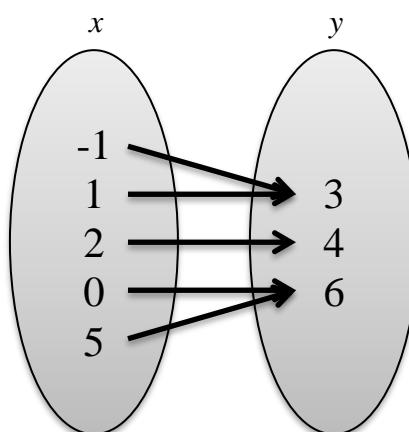
2.

x	y
0	5
2	5
3	5
3	5
4	5

3.

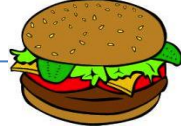


4.



Name _____ Date _____

Below is one of the cafeteria menus available at Sara's school. Use the information from the menu to answer the following questions.



Cafeteria Menu

Pizza Slice	\$1.79
Hot Dog	\$1.89
Hamburger	\$2.89
Cheeseburger	\$2.99
Bacon Burger	\$2.99
Grilled Chicken Sandwich	\$3.89
Fried Chicken Sandwich	\$3.89

1. Can the variable, *food item*, be considered a function of *price*, (**price, food item**)? Why or why not?

2. Can the variable, *price*, be considered a function of *food item*, (**food item, price**)? Why or why not?

Name _____ Date _____

Explain what a function is, including any important properties of functions.

Name _____ Date _____

Complete the table of values so that Table 1 represents y as a function of x , but Table 2 does not.

1.

x	y

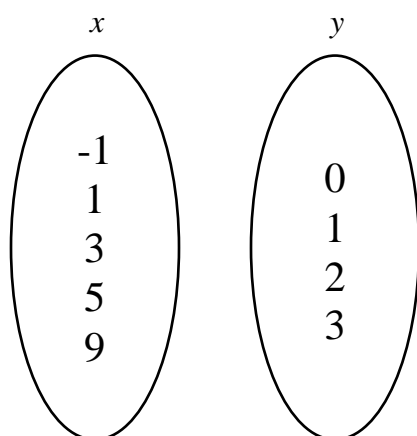
2.

x	y

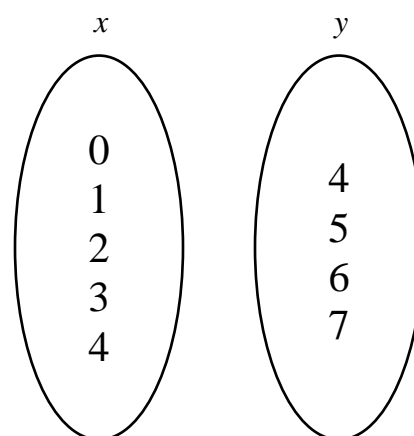
Justify and explain your answers.

Complete the mapping diagrams so that Diagram 3 represents y as a function of x , but Diagram 4 does not.

3.



4.



Justify and explain your answers.