

Lesson 1.01 Introduction to Functions

Students will be able to:

- **Content Objective:** Determine whether a relation is a function and considered one to one and evaluate functions using function notation.
- **Language Objective:** Explain which input will complete a relation.



Warm Up

Given the pattern below, fill in the next two terms:

2, 6, 10, 14, 18, _____, _____

What type of pattern does this sequence represent?



Vocabulary Review

Fill in the blanks using the word bank below

1. A _____ is a set of ordered pairs.
2. The first element of an ordered pair is known as the _____ and the second is the _____.
3. A relation for which every element of the input associates to only one element of the output is known as a _____.
4. A function for which every element of the output associates to only one element in the in the input is known as _____.

Word Bank

Input
Function
One to One
Relation
Output



Graphic Organizer

Function	One to One Function
<ul style="list-style-type: none"> ▪ A relation is a function if it assigns one output for each input. ▪ Passes the _____ line test ▪ Written as $f(x)$, which is read f of x <div style="text-align: center;"> </div>	<ul style="list-style-type: none"> ▪ A function is one to one if for each element of the range there is a unique domain. ▪ Passes the _____ line test



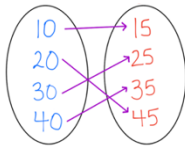
Skill 1: Ordered Pairs

Determine if the relations are functions and whether they are one to one.

a. $\{(4,5), (6,5), (8,2)\}$

Function? _____ One to one? _____

b.



Function? _____ One to one? _____

c.

<i>x</i>	0	2	4
<i>y</i>	2	4	6

Function? _____ One to one? _____



Exercise 1: Ordered Pairs

Determine if the relations are functions and whether they are one to one.

a. $\{(3,3), (9,9), (10,7)\}$

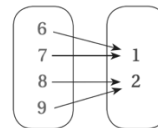
Function? _____ One to one? _____

b.

<i>x</i>	3	7	3
<i>y</i>	8	11	11

Function? _____ One to one? _____

c.



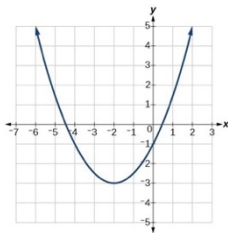
Function? _____ One to one? _____



Skill 2: Graphs

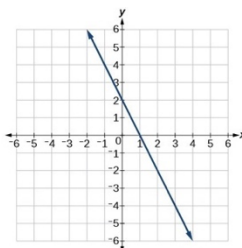
Determine if the graphs are considered functions and whether they are one to one.

a.



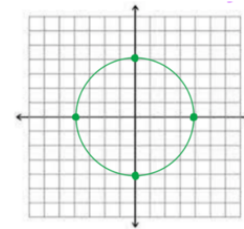
Function? _____ 1:1? _____

b.



Function? _____ 1:1? _____

c.



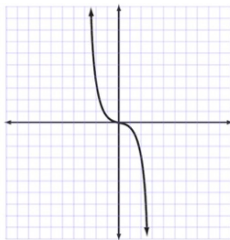
Function? _____ 1:1? _____



Exercise 2: Graphs

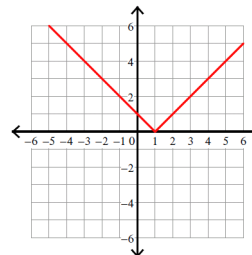
Determine if the graphs are considered functions and whether they are one to one.

a.



Function? _____ 1:1? _____

b.



Function? _____ 1:1? _____



Skill 3: Function in Context

A fitness center charges a \$10.00 sign-up fee and then \$15 each month for membership. Fill in the table below for the missing values.

- Which values represent the inputs? Which values represent the outputs?
- Write an equation $c(x)$ to model the function in the scenario.
- How much will the fitness center charge after 20 months?

Number of months	Total Amount charged
0	
1	
2	
3	
4	



Exercise 3: Function in Context

Daniel has \$500 in his checking account to start. Every week Daniel withdraws \$30 cash from his checking account to pay his bills. If no new money is deposited into his checking account, fill in the table below.

Number of weeks	0	1	2	3	4
Amount in checking					

- Which values represent the inputs? Which values represent the outputs?
- Write an equation $f(x)$ to model the function in the scenario.
- If Daniel wants to buy a bicycle that costs \$240 after 8 weeks, will he have enough money in his checking account?



Write It Out

What value of k will make the following relation a function? Explain your choice.

$$\{(1,4), (9, -2), (5,2), (0, -3), (k, 9)\}$$

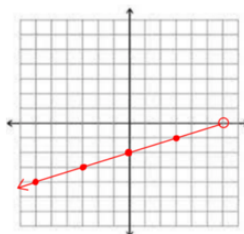
- 4
- 0
- 1
- 5



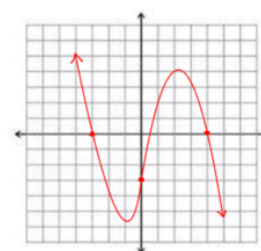
Check Point

Circle the graph that represents a one-to-one function.

a.



b.





1.01 Problem Set

Name: _____

1. Determine if the following are functions and if they are one- to-one by writing “yes” or “no” on the line.

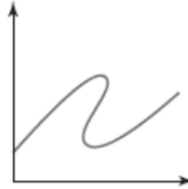
a.

$\{(1,6), (1,1), (7, -3), (2,0)\}$

Function? _____

One to one? _____

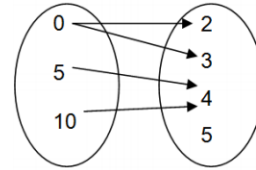
b.



Function? _____

One to one? _____

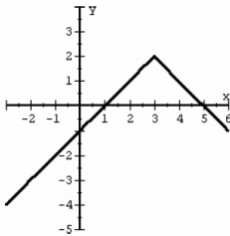
c.



Function? _____

One to one? _____

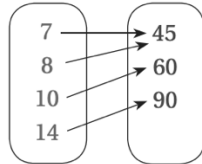
d.



Function? _____

One to one? _____

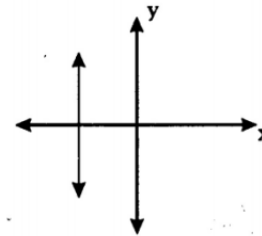
e.



Function? _____

One to one? _____

f.



Function? _____

One to one? _____

2. Makayla is paid \$18 a day for watching her neighbor’s puppy while they travel. Fill in the table below using this information.

Number of days	0				
Total Amount earned					

a. Which values represent the inputs? Which values represent the outputs

b. Write an equation $A(x)$ to model the function in the scenario, where x is the number of days and $A(x)$ is the total amount earned.

c. How much will Makayla make on the 20th day?