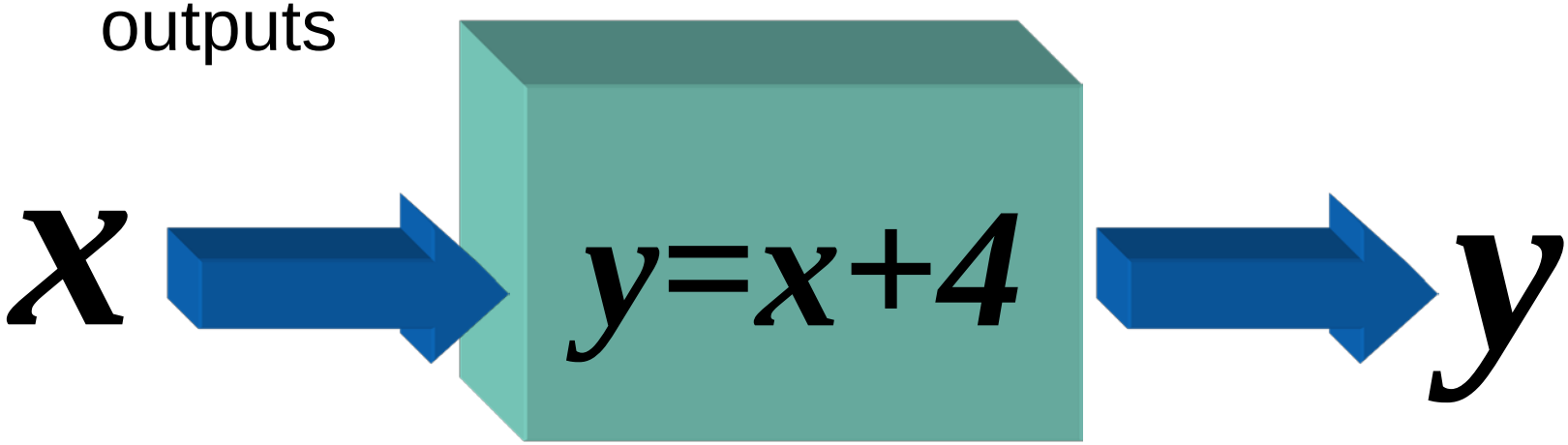
6.1

Relations & Functions

Functions

A **function** is a type relationship between inputs and outputs



- **Input**
- **Domain**
- **Independent Variable**
- **Output**
- **Range**
- **Dependent Variable**

x								
y								

Functions

An **ordered pair** is the combination of the input and output written in the form (x,y).

x	-1	0	1	4	6
y	1	2	3	6	8

a) Write the table as a set of ordered pairs

b) Identify the domain and range of the relation

Domain - _____

Range - _____

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

Decide among these charts, which ones are functions.

Input	Output
2	6
3	9
4	12
5	15
6	18

Input	Output
2	8
3	8
4	8
5	8
6	8

Input	Output
2	0
2	1
3	2
3	3
4	4

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

Decide if the following ordered pairs are functions. Explain.

a) (0,3), (1,4), (2,5), (3,6)

b) (0,4), (1,7), (1,12), (2,6)

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

Which relation is a function?

a) {(-3,5), (5,-3), (-3,-3)}

b) {(2,3), (2,4), (2,5)}

c) {(5,7), (6,8), (7,9)}

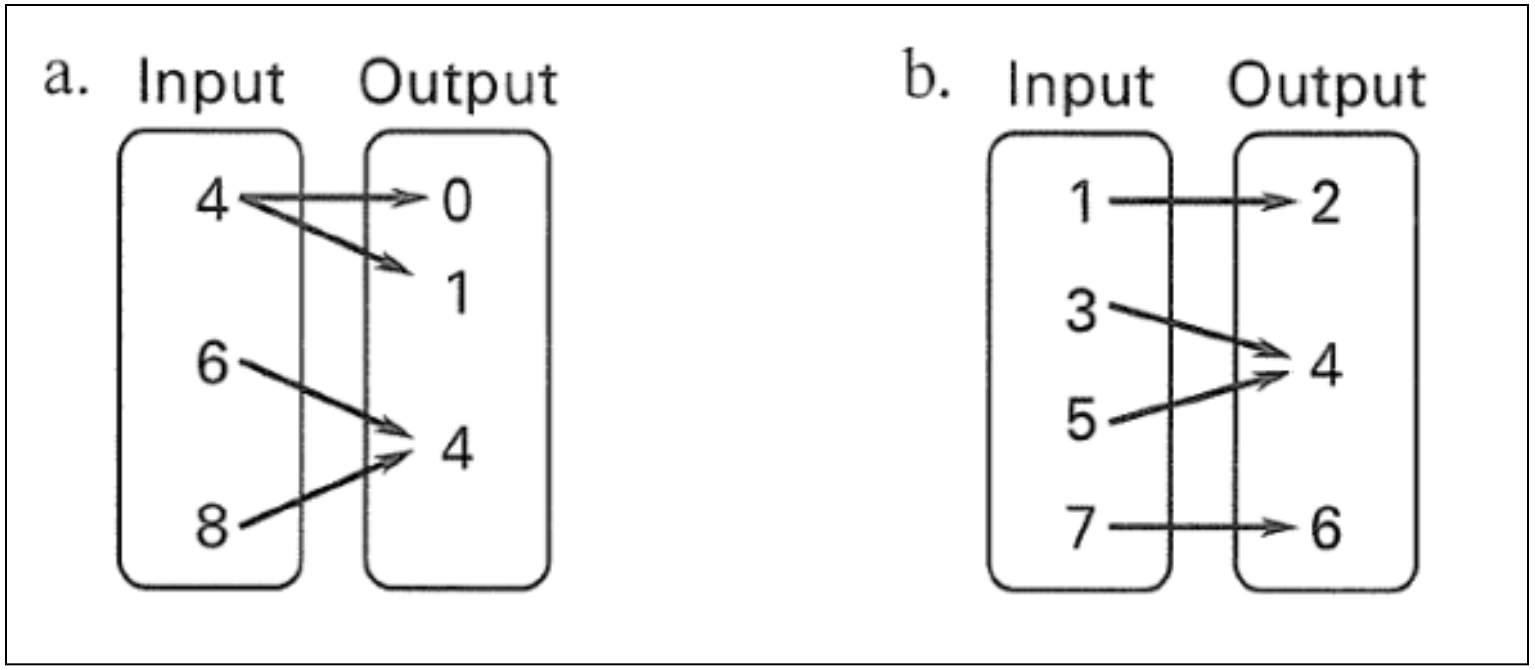
d) {(2,6), (3,5), (2,5)}

Functions

Not all relations are functions.

In order for it to be a **FUNCTION**, for every input ***x*** there has to be one output ***y***.

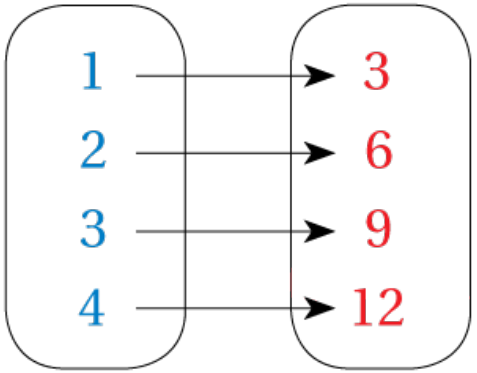
Decide whether the relation shown is a function. If it is a function, give the domain and range.



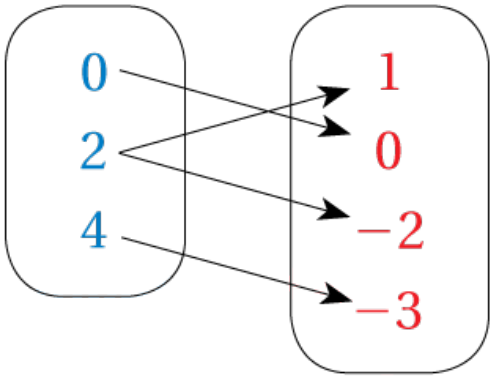
Functions

1) List the ordered pairs shown in the mapping diagram.

a.



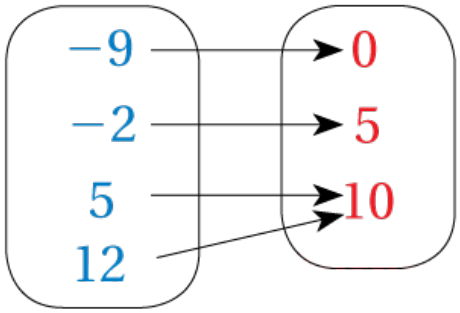
b.



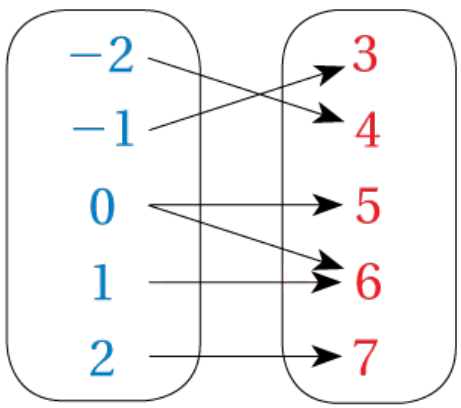
Functions

2) Determine whether each relation is a function.

a.

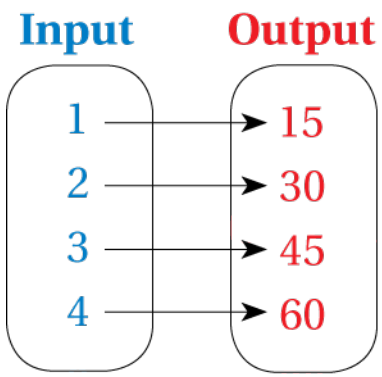


b.



Functions

3)



Consider the mapping diagram at the left.

a. Determine whether the relation is a function.

b. Describe the pattern of inputs and outputs in the mapping diagram.

Practice

The table shows the amount of money Miguel earns at his job for several numbers of hours.

Hours	2	5	7	8
Amount ($)	14	35	49	56

a) Write the table as a set of ordered pairs.

b) Identify the domain and range of the relation.

Practice

The domain of the function rule $y = x + 4$ is -2, 0, 2, 3, and 6. Make a table of ordered pairs that represents the function. Then identify the range of the function.

x					
$y=x+4$					

Understanding

Words that mean "*x*":

1. _____
2. _____
3. _____

Words that mean "*y*":

1. _____
2. _____
3. _____

At a community center, art lessons are offered at night for a fee of $12 per lesson.

a) Write a rule for the amount *y* you will spend as a function of the number *x* of lessons you attend.

b) Identify the independent and dependent variables.