

**3.1**

**Learning Target: Understand how to graph linear functions.**

I can determine whether relations are functions.

I can find the domain and range of a function.

I can identify the independent and dependent variables of functions.

Write the meaning of each vocabulary term.

relation - a pairing between 2 sets

- first set = input      second set = output

- mapping diagram
- table / list of ordered pairs
- rule / equation
- graph

function - a relation that pairs each input with exactly one output

- allows for prediction

domain - set of all allowable inputs

range - set of all allowable outputs

independent variable - variable (letter) used to represent input values

$x$

dependent variable - variable used to represent the output values

$y$

- depends on the value of the independent variable
- $y$  depends on  $x$
- $y$  is a function of  $x$

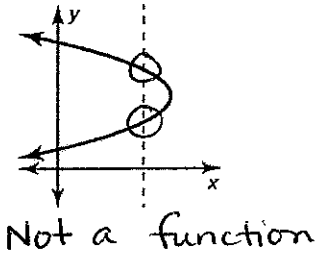
**3.1** Notetaking with Vocabulary (continued)

**Core Concepts**

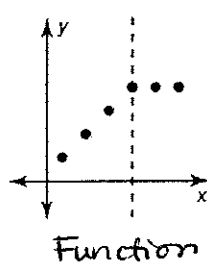
**Vertical Line Test (VLT)**

**Words** A graph represent a function when no vertical line passes through more than one point on the graph.

**Examples** Function



~~Not a function~~

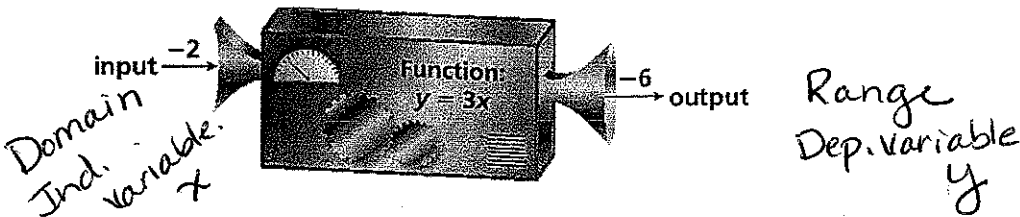


**Notes:**

**The Domain and Range of a Function**

The **domain** of a function is the set of all possible input values.

The **range** of a function is the set of all possible output values.



**Notes:**

**3.1** Notetaking with Vocabulary (continued)

**Practice**

In Exercises 1 and 2, determine whether the relation is a function. Explain.

1.

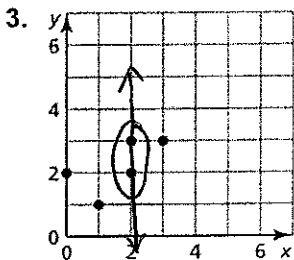
Input, $x$	-2	0	1	-2
Output, $y$	4	5	4	5

The table does not represent a function because the input -2 has two outputs.

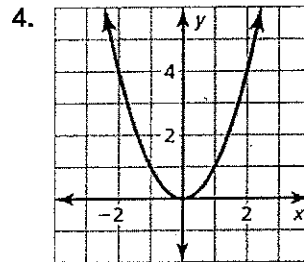
2.  $(0, 3), (1, 1), (2, 1), (3, 0)$

Yes, the ordered pairs represent a function because each input has exactly one output.

In Exercises 3 and 4, determine whether the graph represents a function. Explain.

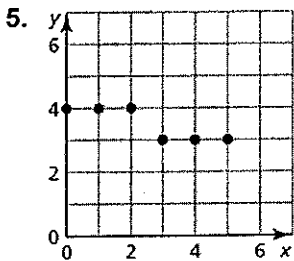


No, it fails the VLT.

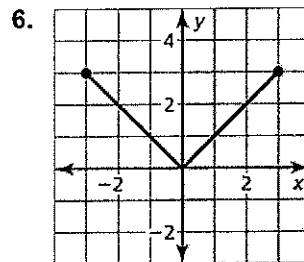


Yes, the graph passes the VLT.

In Exercises 5 and 6, find the domain and range of the function represented by the graph.



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



$D: \{-3 \leq x \leq 3\}$   
 $R: \{0 \leq y \leq 3\}$

7. The function  $y = 12x$  represents the number  $y$  of pages of text a computer printer can print in  $x$  minutes.

a. Identify the independent and dependent variables.

$x$   $y$

b. The domain is 1, 2, 3, and 4. What is the range?

$R: \{12, 24, 36, 48\}$