LESSON 1.7

GOAL
Represent functions as rules and as tables.

Vocabulary
A **function** consists of:

- A set called the **domain** containing numbers called **inputs**, and a set called the **range** containing numbers called **outputs.**
- A pairing of inputs with outputs such that each input is paired with exactly one output.

The input variable is called an **independent variable.**

The output variable is called the **dependent variable** because its value depends on the value of the input variable.

EXAMPLE 1
Identify the domain and range of a function

The input-output table shows the price of various lobsters at a fish market. Identify the domain and range of the function. Input (pounds)

Input (Pounds)	1.5	2.3	3.1	4.2
Output (dollars)	$7.80	$11.96	$16.12	$21.82

Solution
The domain is the set of inputs: 1.5, 2.3, 3.1, and 4.2.
The range is the set of outputs: 7.80, 11.96, 16.12, and 21.82.

Exercises for Example 1

Identify the domain and range of the function.

1.

Input	2	5	7	8
Output	5	11	15	17

2.

Input	1	3	4	7
Output	2	8	11	20

EXAMPLE 2
Make a table for a function
The domain of the function $y = x - 3$ is 2, 5, 8, and 11. Make a table for the function, then identify the range of the function.

Solution

X	2	5	8	11
$Y = x - 3$	$2 - 3 = -1$	$5 - 3 = 2$	$8 - 3 = 5$	$11 - 3 = 8$

The range of the function is –1, 2, 5, and 8.

Exercises for Example 2

Make a table for the function. Identify the range of the function.

3. y = 4*x*
   Domain: 0, 3, 5, and 7
4. y = 3*x* – 22
   Domain: 1, 2, 3, and 4

EXAMPLE 3
Write a function rule

Write a rule for the function.

Input	3	6	7	10
Output	15	30	35	50

Solution
Let *x* be the input, or independent variable, and let y be the output, or dependent variable. Notice that each output is 5 times the corresponding input. So, a rule for the function is
$y = 5x$
.

Exercises for Example 3

Write a rule for the function.

5.

Input	3	5	7	9
Output	14	16	18	20

6.

Input	6	7	8	9
Output	3	3.5	4	4.5

Answer Key

Lesson 1.7

Study Guide

1. domain: 2, 5, 7, 8; range: 5, 11, 15, 17
2. domain: 1, 3, 4, 7; range: 2, 8, 11, 20
3.

Input	0	3	5	7
Output	0	12	20	28

range: 0, 12, 20, 28

4.

Input	1	2	3	4
Output	1	7	7	10

range: 1, 4, 7, 10

5. $y = x + 11$
6. $y = \frac{1}{2}x$