

## 5.2

## Properties of Functions

## Lesson 4

## Connect

## Definitions:

**INDEPENDENT VARIABLE** - In a table of values this would be the first column. This is also set 1 in an ordered pair.

**DEPENDENT VARIABLE** - In a table of values this would be in the second column. In an ordered pair this would be the second set.

independent variable	Hours Worked, $h$	Gross Pay, $P$ (\$)	dependent variable
domain	1	12	range
	2	24	
	3	36	
	4	48	
	5	60	

The values of the independent variable are listed in the first column of a table of values. These elements belong to the domain.

The values of the dependent variable are listed in the second column of a table of values. These elements belong to the range.

A table of values usually represents a sample of the ordered pairs in a relation.

Jan 30-4:12 PM

Jan 30-4:17 PM

## Practice

## Describing Functions

## EXAMPLE 1

The table shows the masses,  $m$  grams, of different numbers of identical marbles,  $n$ .

a) Why is the relation also a function?

b) Identify the independent and dependent variables

Write the domain and range for the relation

Ind Number of Marbles, $n$	Dep Mass of Marbles, $m$ (g)
1	1.27
2	2.54
3	3.81
4	5.08
5	6.35
6	7.62

Handwritten notes: "only appear once" with an arrow pointing to the first column. "Domain" with a bracket under the first column. "Range" with a bracket under the second column.

## Practice

## Describing Functions

## YOU TRY!

The table shows the costs of student bus tickets,  $C$  dollars, for different numbers of tickets,  $n$ .

a) Why is the relation also a function?

b) Identify the independent and dependent variables

Write the domain and range for the relation

Ind Number of Tickets, $n$	Dep. Cost, $C$ (\$)
1	1.75
2	3.50
3	5.25
4	7.00
5	8.75

Handwritten notes: "only appear once" with an arrow pointing to the first column. "Domain" with a bracket under the first column. "Range" with a bracket under the second column.

Jan 30-4:17 PM

Jan 30-4:17 PM

Connect

Definitions:

Equations and functions

Equations	Parts of an Equation
$y = 3x + 2$ <i>Slope y-intercept form</i>	Independent Variable $x$ Dependent Variable $y$ Rate of Change $3$ (slope) Constant $2$ starting point

Jan 30-4:17 PM

Connect

Definitions:

Equations and functions

Functions	Parts of an Equation
$f(x) = 3x + 2$	Independent Variable $x$ Dependent Variable $f(x)$ Rate of Change $3$ Constant $2$

Jan 30-4:17 PM

Practice

Describing Functions

YOU TRY!

Describe each equation as a Function:

Equation:	Function:
$y = 3x + 5$	$f(x) = 3x + 5$
$y = \frac{x}{2} - 10$	$f(x) = \frac{x}{2} - 10$
$y = -4x - 12$	$f(x) = -4x - 12$
$y = \frac{c}{3} - 14$	$f(c) = \frac{c}{3} - 14$

Jan 30-4:17 PM

Connect

EXAMPLE:

Given the following equation: P. 269

$$V = -0.08d + 50$$

a) Write the equation in function notation:

$$f(d) = -0.08d + 50$$

b) Determine the value of  $V(600)$   *$V(600)$  is the value of  $V$  when  $d = 600$*

$$V(600) = -0.08(600) + 50$$

$$= -48 + 50$$

$$= 2$$

c) Determine the value of  $d$  when  $V(d) = 26$

$$V(d) = -0.08d + 50$$

$$26 = -0.08d + 50$$

$$26 - 50 = -0.08d$$

$$-24 = -0.08d$$

$$\frac{-24}{-0.08} = \frac{-0.08d}{-0.08}$$

$$d = 300$$

Jan 30-4:17 PM

Given the following equation:

$$C = 25n + 1000$$

a) Write the equation in function notation:

$$C(n) = 25n + 1000$$

b) Determine the value of  $C(100)$

$$\begin{aligned} C(100) &= 25(100) + 1000 \\ &= 2500 + 1000 \\ &= 3500 \end{aligned}$$

c) Determine the value of  $n$  when  $C(n) = 5000$

$$\begin{aligned} C(n) &= 25n + 1000 \\ 5000 &= 25n + 1000 \\ 5000 - 1000 &= 25n \end{aligned}$$

$$\begin{array}{r} 4000 = 25n \\ \underline{25} \quad \underline{25} \\ 160 = n \end{array}$$

Jan 30-4:17 PM

Textbook Questions:

Page 271 # 6, 7, 9

Page 272 # 14, 15, 16

Jan 30-4:17 PM