

# Reasonable Domain and Range Example

Joe buys DVDs at \$15 each. He has enough money to buy at most 3 DVDs.

Write a function to describe the situation. Find a reasonable domain and range of the function.

Money spent is \$15.00 for each DVD.  
 $f(x)$  = \$15.00 •  $x$

If Joe buys  $x$  DVDs, he will spend  $f(x) = 15x$  dollars.

Joe only has enough money to purchase 0, 1, 2, or 3 DVDs. A reasonable domain is  $\{0, 1, 2, 3\}$ .

Substitute the domain values into the function rule to find the range values.

<b><math>x</math></b>	<b>1</b>	<b>2</b>	<b>3</b>
<b><math>f(x)</math></b>	<b><math>15(1) = 15</math></b>	<b><math>15(2) = 30</math></b>	<b><math>15(3) = 45</math></b>

A reasonable range for this situation is  $\{\$0, \$15, \$30, \$45\}$ .

# Reasonable Domain and Range Example (Continuous)

Bill puts his glass of water into the refrigerator. The water's temperature starts at 76°F, but drops 2 degrees every minute until it reaches the refrigerator's temperature of 36°F.

Write a function to describe the situation. Find a reasonable domain and range of the function.

After  $x$  minutes, the temperature will be  $t(x) = 76 - 2x$  degrees Fahrenheit.

The temperature needs to drop 40 degrees, so it will take 20 minutes. The temperature is dropping continuously, so write the domain and range using inequalities.

**Reasonable domain:  $0 \leq x \leq 20$**

**Reasonable range:  $36 \leq y \leq 76$**

# WORKSHEET

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A car rental company charges \$10 an hour (a part of an hour rounds up to the next hour) to rent a car. The limit to the number of hours you can rent the car is 8 hours.

a. Write a rule in function notation for this situation.

$$f(x) = 10x$$

b. What is a reasonable domain and range for this situation?

**Domain: {0,1,2,3,4,5,6,7,8}**

**Range: {0,10,20,30,40,50,60,70,80}**

The American Sycamore tree grows approximately 6 feet per year until they reach a maximum height of about 66 ft.

a. Write a rule in function notation for this situation.

$$f(x) = 6x$$

b. What is a reasonable domain and range for this situation?

$$\text{Domain: } 0 \leq x \leq 11$$

$$\text{Range: } 0 \leq y \leq 66$$

Mary earns \$8 per hour proofreading advertisements for a local newspaper. She works 5 hours per day.

a. Write a rule in function notation for how much Mary earns.

$$f(x) = 8x$$

b. What is a reasonable domain and range for this situation?

**Domain: {0,1,2,3,4,5}**

**Range: {0,8,16,24,32,40}**

Ms. Bolus was born 22 inches long and grew approximately 3 inches per year until she reached a maximum height of 5'1".

a. Write a rule in function notation for Ms. Bolus' growth.

$$f(x) = 3x + 22$$

b. What is a reasonable domain and range for this situation?

$$\text{Domain: } 0 \leq x \leq 13$$

$$\text{Range: } 22 \leq y \leq 61$$

The fastest marathon runner averages 13 miles every hour. A marathon is 26.2 miles total.

a. Write a rule in function notation for the situation.

$$f(x) = 13x$$

b. Find a reasonable domain and range of the function.

**Domain:  $0 \leq x \leq 2.01538$**

**Range:  $0 \leq y \leq 26.2$**

Pedro is making chocolate chip cookies. He has a bag of chocolate chips that contains 150 chocolate chips. He is very particular about his cookies, so he makes sure that there are exactly 15 chocolate chips in each cookie.

a. Write a rule in function notation to calculate the **number of chocolate chips left in the bag.**

$$f(x) = 140 - 15x$$

b. Find a reasonable domain and range of the function.

**Domain: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}**

**Range: {5, 20, 35, 50, 65, 80, 95, 110, 125, 140 }**

# HOMework

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Worksheet