

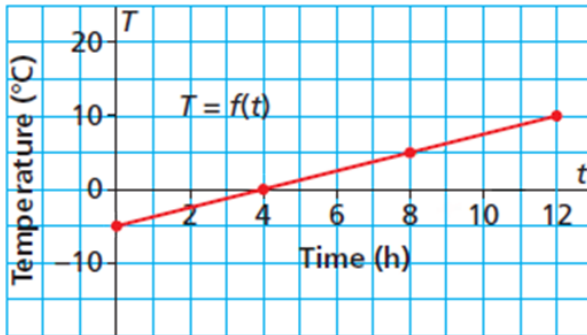
## 5.7: Investigation- Interpreting Graphs of Linear Functions

1.

Any graph of a line that is not vertical represents a function. We call these functions **linear functions**.

This graph shows the temperature,  $T$  degrees Celsius, as a function of time,  $t$  hours, for two locations.

Temperature in Location A



The point where the graph intersects the horizontal axis has coordinates ?  
The **horizontal intercept** is ? This point of intersection represents the time, after ? when the temperature is ?

The point where the graph intersects the vertical axis has coordinates ?  
The **vertical intercept** is ? This point of intersection represents the initial temperature, ?

The *domain* is: ?

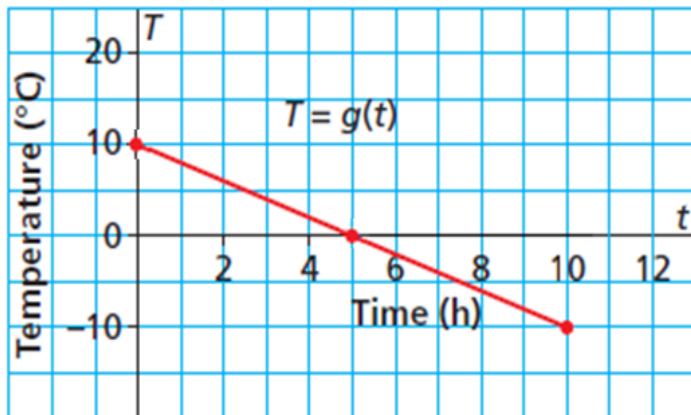
The *range* is: ?

The *rate of change* is:  $\frac{\text{change in } T}{\text{change in } t} = \frac{?}{?}$   
 $= ?$

The rate of change is positive because the temperature is increasing over time.

### Temperature in Location B

2.



The point where the graph intersects the horizontal axis has coordinates ?  
 The *horizontal intercept* is ? This point of intersection represents the time, after ? when the temperature is ?

The point where the graph intersects the vertical axis has coordinates ?  
 The *vertical intercept* is ? This point of intersection represents the initial temperature, ?

The *domain* is: ?

The *range* is: ?

The *rate of change* is:  $\frac{\text{change in } T}{\text{change in } t} = \frac{?}{?}$   
 $= ?$

The rate of change is negative because the temperature is decreasing over time.

## Example 1

## Determining Intercepts, Domain, and Range of the Graph of a Linear Function

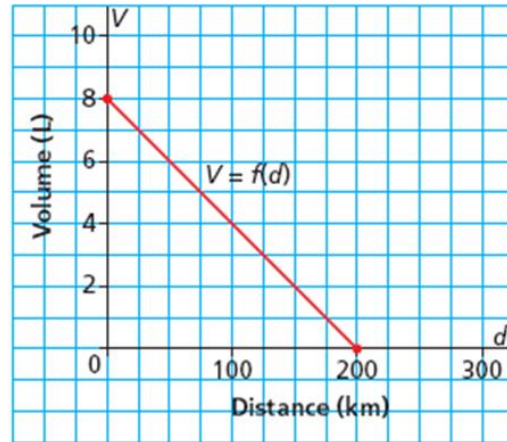
This graph shows the fuel consumption of a scooter with a full tank of gas at the beginning of a journey.

- Write the coordinates of the points where the graph intersects the axes. Determine the vertical and horizontal intercepts. Describe what the points of intersection represent.
- What are the domain and range of this function?



### SOLUTION

Volume of Gas in a Scooter



- What is the rate of change?

- Write an equation to represent the situation.

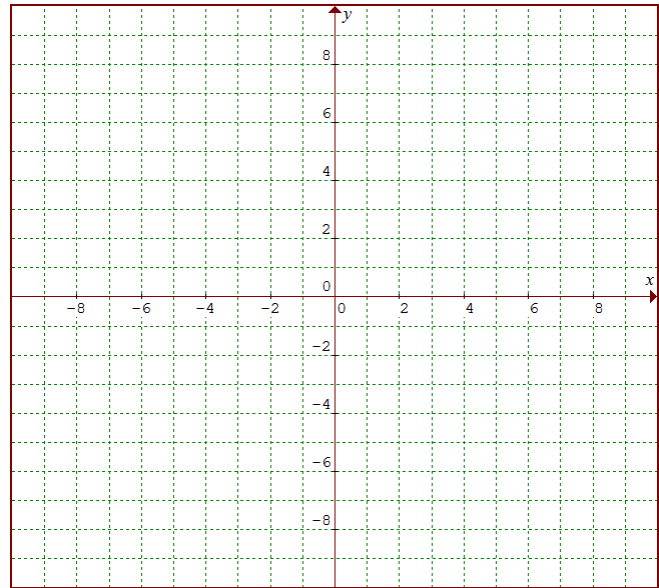
## Example 2

### Sketching a Graph of a Linear Function in Function Notation

Sketch a graph of the linear function  $f(x) = -2x + 7$ .



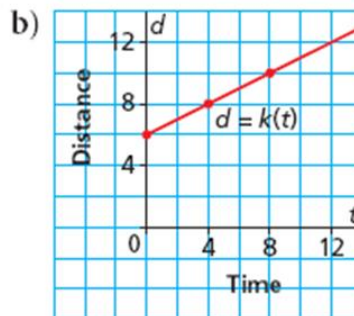
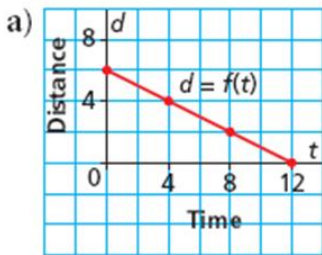
**SOLUTION**



## Example 3

### Matching a Graph to a Given Rate of Change and Vertical Intercept

Which graph has a rate of change of  $\frac{1}{2}$  and a vertical intercept of 6? Justify the answer.



**SOLUTION**