

5.7

Interpreting Graphs of Linear Functions

Lesson 10

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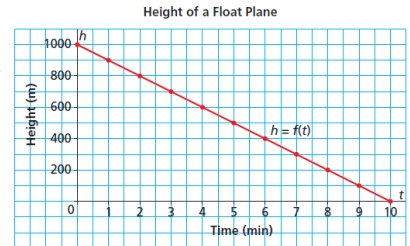
Connect

NOTES:

Float planes fly into remote lakes in Canada's Northern wilderness areas for ecotourism. This graph shows the height of a float plane above a lake as the plane descends to land.

a) Where does the graph intersect the vertical axis

1000



b) What point does this represent?

Constant
y-intercept
starting Point

x, y
(0, 1000)

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Connect

NOTES:

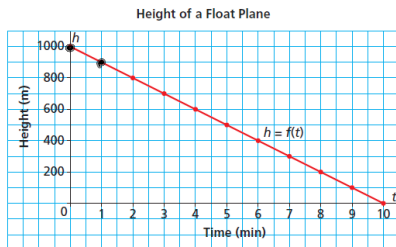
Float planes fly into remote lakes in Canada's Northern wilderness areas for ecotourism. This graph shows the height of a float plane above a lake as the plane descends to land.

c) What is the Domain?

$$0 \leq t \leq 10$$

d) What is the Range?

$$0 \leq h \leq 1000$$



e) What is the Rate of Change?

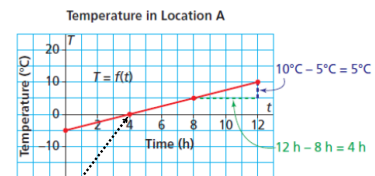
$$\frac{\Delta y}{\Delta x} = \frac{-1000}{1} = -1000$$

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Connect

NOTES:

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



The x-coordinate of the point where a graph intersects the x-axis is called the x-intercept or the horizontal intercept.

On this graph the x-intercept would be (4, 0)

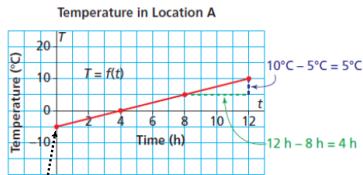
This point of intersection represents the time, after 4 hours, when the temperature is 0°C .

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Connect

NOTES:

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



The y-coordinate of the point where a graph intersects the y-axis is called the y-intercept or the **vertical intercept**.

On this graph the y-intercept would be $(0, -5)$

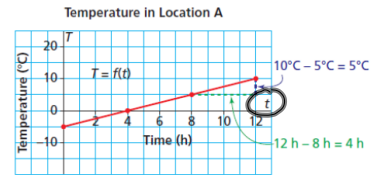
This point of intersection represents the initial temperature, -5°C .

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Connect

NOTES:

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



a) What is the domain?

$$0 \leq t \leq 12$$

b) What is the Range?

$$-5 \leq T \leq 10$$

c) What is the Rate of Change?

$$\frac{5}{4}$$

d) Write the equation of the line

$$T = \frac{5}{4}t - 5$$

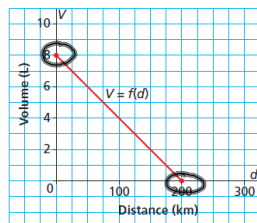
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Practice

EXAMPLE 1

Determine Intercepts, Domain, and Range of the Graph of a linear Function.

Volume of Gas in a Scooter



a) What is the x-intercept?

$$(200, 0)$$

b) What is the y-intercept?

$$(0, 8)$$

c) What is the Domain?

$$0 \leq d \leq 200$$

d) What is the Range?

$$0 \leq V \leq 8$$

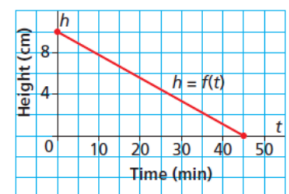
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Practice

YOU TRY!

Determine Intercepts, Domain, and Range of the Graph of a linear Function.

Height of a Burning Candle



a) What is the x-intercept?

$$(45, 0)$$

b) What is the y-intercept?

$$(0, 10)$$

c) What is the Domain?

$$0 \leq t \leq 45$$

d) What is the Range?

$$0 \leq h \leq 10$$

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Practice **EXAMPLE 2**

Sketch a graph of the linear function $f(x) = -2x + 7$
 (To do this we need 3 points)

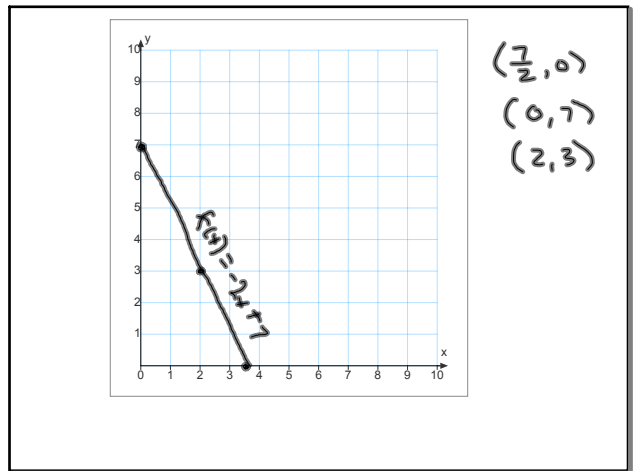
a) What is the x-intercept?
 $(\frac{7}{2}, 0)$

b) What is the y-intercept?
 $(0, 7)$

c) What is a third point?
 $f(2) = -2(2) + 7$
 $= -4 + 7$
 $f(2) = 3 \rightarrow (2, 3)$

d) Draw the graph.

Handwritten work:
 when $f(x) = 0$
 $0 = -2x + 7$
 $-7 = -2x$
 $-\frac{7}{2} = \frac{-2x}{-2}$
 $\frac{7}{2} = x$
 when $x = 0$
 $f(0) = -2(0) + 7$
 $f(0) = 7$



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Practice **YOU TRY!**

Sketch a graph of the linear function $f(x) = 4x - 3$
 (To do this we need 3 points)

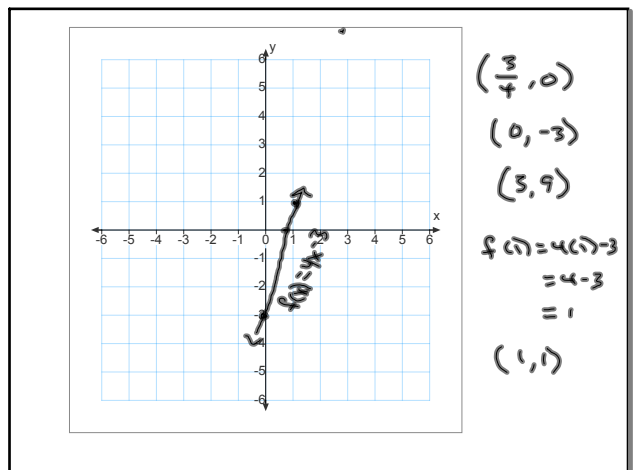
a) What is the x-intercept?
 $(\frac{3}{4}, 0)$

b) What is the y-intercept?
 when $x = 0$ $(0, -3)$
 $f(0) = 4(0) - 3$
 $f(0) = -3$

c) What is a third point?
 $(3, 9)$

d) Draw the graph.

Handwritten work:
 $f(x) = 0$
 $0 = 4x - 3$
 $3 = 4x$
 $\frac{3}{4} = x$
 $f(3) = 4(3) - 3$
 $= 12 - 3$
 $= 9$



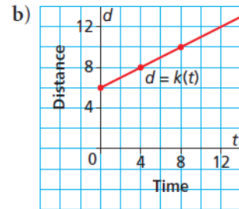
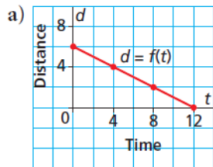
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Practice

EXAMPLE 3

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

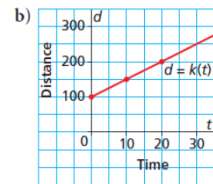
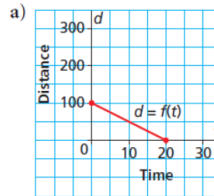


$$d(t) = \frac{1}{2}t + 6$$

Practice

YOU TRY!

Which graph has a rate of change of -5 and a vertical intercept of 100?



$$d(t) = -5t + 100$$

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Practice

HOMEWORK!

Textbook Questions:

Page 319 # 4, 5, 6ab, 7

Page 320 # 8, 9, 10

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