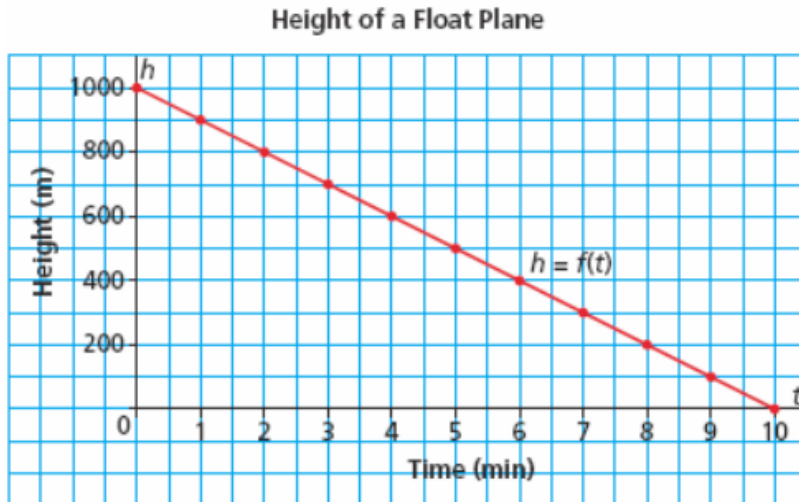


Section 5.7 Interpreting Graphs of Linear Functions

Example 1

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.



- Where does the graph intersect the vertical axis, h ?
- What are the coordinates of this point? What does the point represent in this situation?

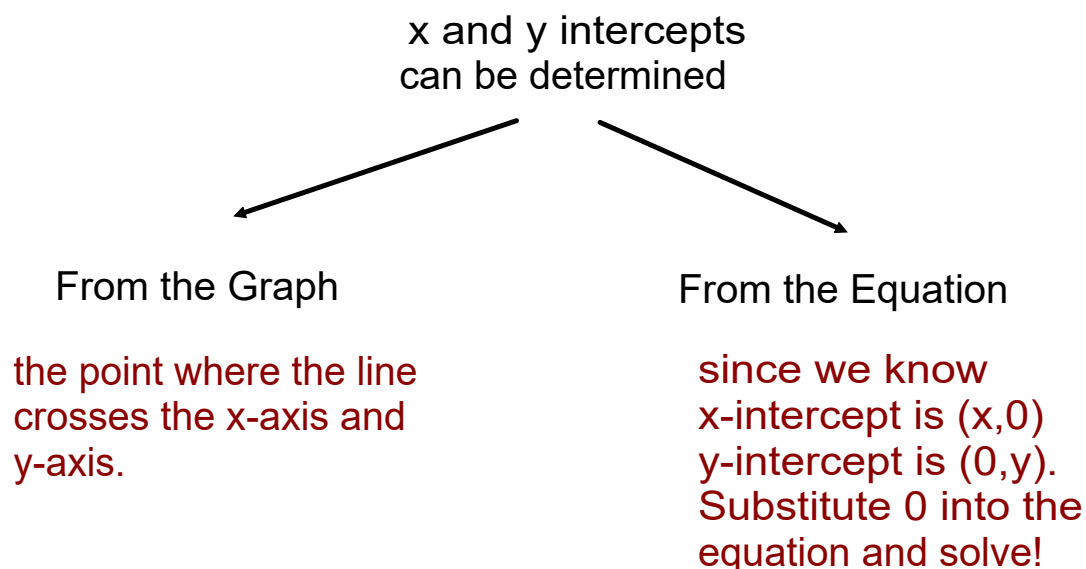
Note:

- This point is called a **vertical intercept** or **y-intercept**.
- It's the point where the line that's graphed intersects the vertical/ y – axis.
- For every y -intercept the x -coordinate is zero.
- The coordinates of a y -intercept will always be $(0,y)$.

- c) Where does the graph intersect the horizontal axis, t ?
- d) What are the coordinates of this point? What does the point represent in this situation?

Note:

- This point is called a **horizontal intercept** or **x-intercept**.
- It's the point where the line that's graphed intersects the horizontal/x – axis.
- For every x-intercept the y-coordinate is zero.
- The coordinates of a y-intercept will always be $(x,0)$.



Example 2

Refer to the function $f(x) = -2x + 7$, and answer the following questions.

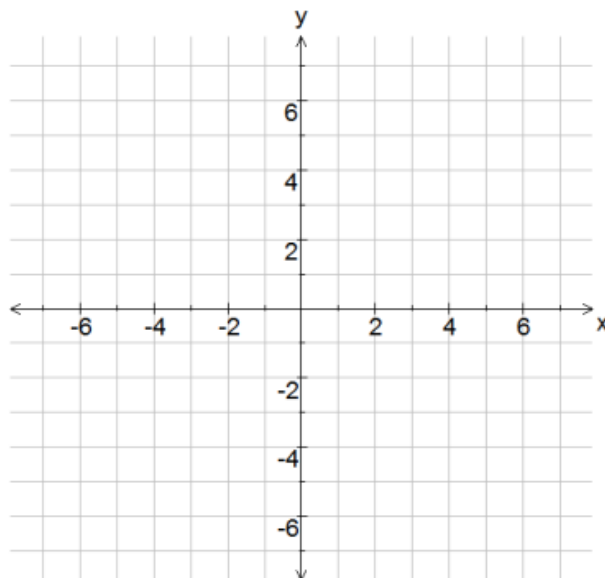
a) Without graphing determine the x-intercept of the function.

HINT!!! Every x-intercept is $(x, 0)$

b) Without graphing determine the y-intercept of the function.

HINT!!! Every y-intercept is $(0, y)$

c) Sketch the graph.

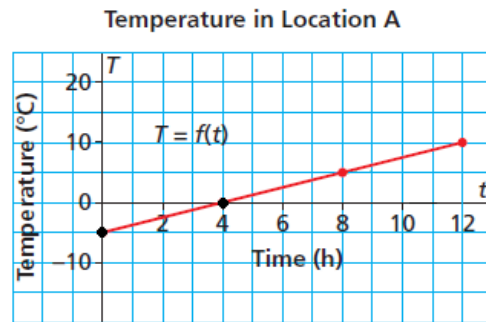


d) Does the point $(-10, 26)$ lie on the line? Verify your answer algebraically

Your Turn

Example 3

Refer to the graph of temperature changing over time.



- a) What is the y-intercept?
What does it represent?

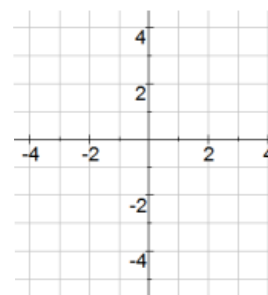
- b) What is the x-intercept? What does it represent?

Example 4 Refer to the function $f(x) = 4x - 3$.

- a) Without graphing, determine the y-intercept of the function.

- b) Without graphing, determine the x-intercept of the function.

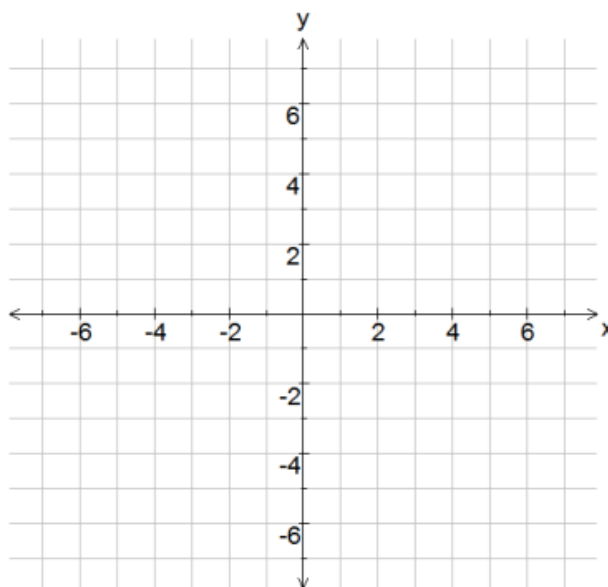
- c) Sketch the graph of the function.



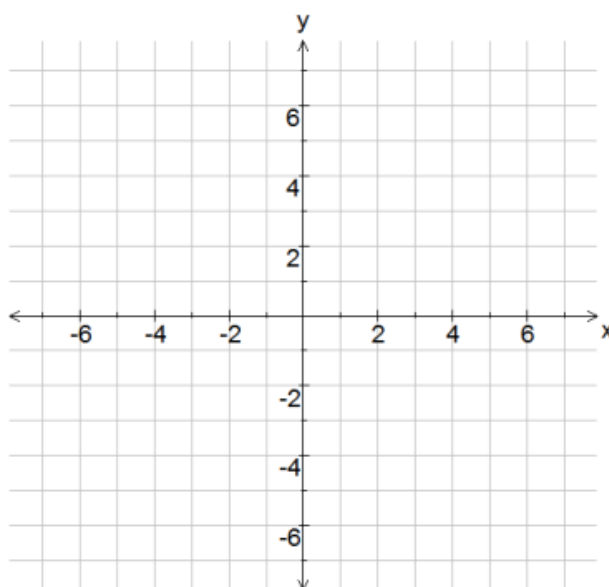
Example 5

A linear function can also be graphed when given an intercept and the rate of change.

- a) Graph the line that has a vertical intercept of 6 and a rate of change of -2 .



- b) Graph the line that has a vertical intercept of 1 and a rate of change of $\frac{1}{2}$



Note:

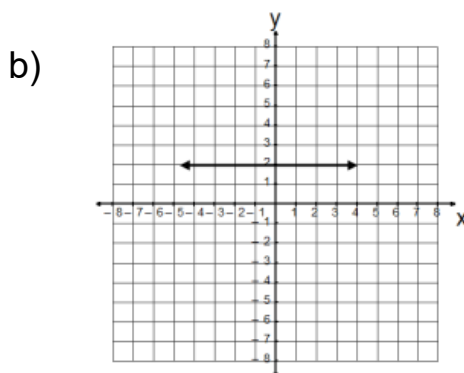
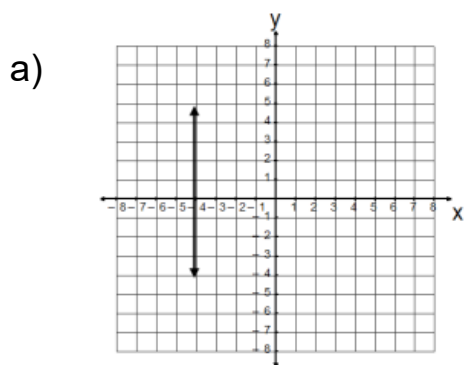
Every **slanted or oblique line** will have two intercepts, the x-intercept and the y-intercept.

Think About It...

What type of line will have only one intercept?

Example 6

Determine the x - intercept, the y-intercept and the equation of each line, if possible.



c) Which lines will have an infinite number of intercepts?

<p>Work Book Questions</p> <p>p.319 #4ab, 6ab, 7abc, 8ab, 9abcde, 16ab, 17abcd</p>	<p>Extra Practice Questions</p> <p>p.319 #5ab, 6cd, 10abc, 18ab</p>
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