

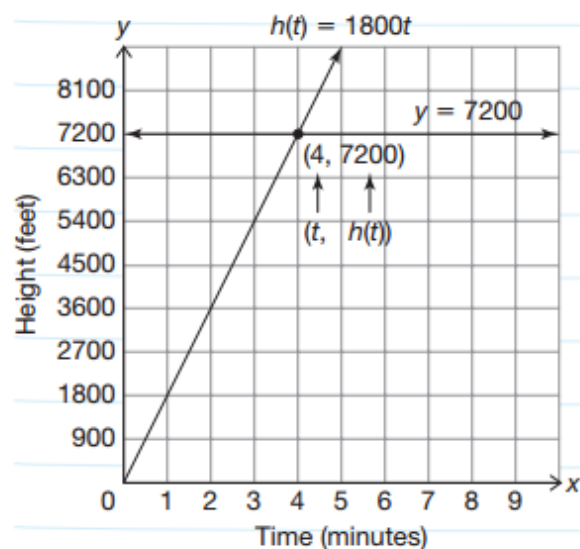
You can also use the graph to determine the number of minutes the plane has been flying (input value) given a height in feet (output value). Remember, the **solution** of a linear equation is any value that makes the open sentence true. If you are given a graph of a function, a solution is any point on that graph. The graph of any function,  $f$ , is the graph of the equation  $y = f(x)$ . If you have intersecting graphs, a solution is the ordered pair that satisfies both functions at the same time, or the **intersection point** of the graphs.

3. What does  $(t, h(t))$  represent?

To determine how many minutes it takes for the plane to reach 7200 feet using your graph, you need to determine the intersection of the two graphs represented by the equation  $7200 = 1800t$ .

The ordered pair  $(t, h(t))$  satisfies both equations at the same time. It is the intersection point of the two equations.

First, graph each side of the equation and then determine the intersection point of the two graphs.



$$\begin{array}{rcl}
 h(t) = 1800t & & h(t) = 1800t \\
 7200 = 1800t & & \\
 \downarrow & & \downarrow \\
 y = 7200 & & y = 1800x \\
 \text{Solution: } (4, 7200) & & 
 \end{array}$$

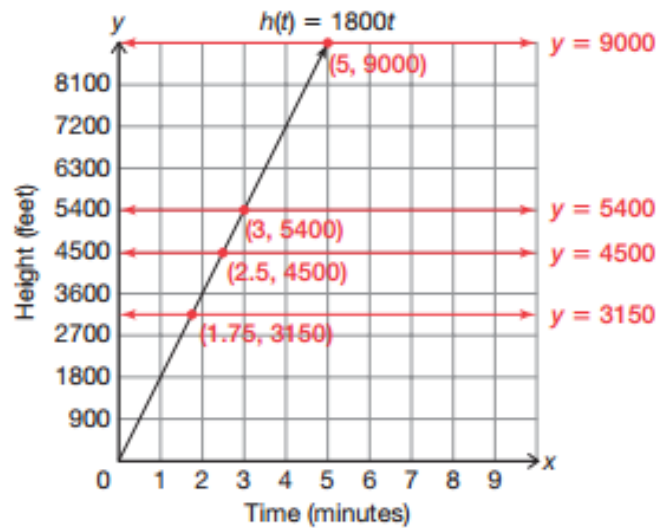
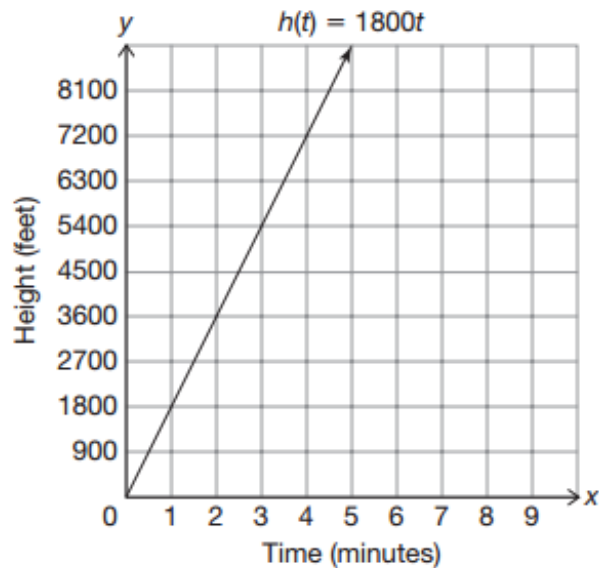
4. Explain the connection between the form of the function  $h(t) = 1800t$  and the equation  $y = 1800x$  in terms of the independent and dependent quantities.

The dependent quantities are represented by  $h(t)$  and  $y$  in each form. The independent quantities are represented by  $t$  and  $x$  in each form.

After takeoff, it takes the plane 4 minutes to reach a height of 7200 feet.

5. Use the graph to determine how many minutes it will take the plane to reach each height.

- a.  $h(t) = 5400$
- b.  $h(t) = 9000$
- c.  $h(t) = 3150$
- d.  $h(t) = 4500$



Label all your horizontal lines and the intersection points.



Were you able to get exact answers using the graph?



6. Compare and contrast your solutions using the graphing method to the solutions in Question 2, parts (a) through (d) where you used an algebraic method. What do you notice?

**The solutions are the same. Some solutions are hard to read on the graph, but solving the equation for the input value gives me an exact answer.**