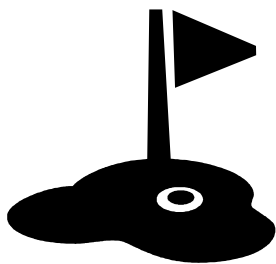


Golf-ing Graphing



Tiger Woods is a great golfer who uses the path of a parabola to judge how far a golf ball must travel to reach the green. Obviously, distance is an important measurement depending on where the green is located, but sometimes height must be a concern as well. The golf ball takes the path of a parabola and you can track the height of the ball of one particular shot using this equation:

$$y = -\frac{4}{5}x^2 + 16x$$

The variables x and y are assigned as follows:

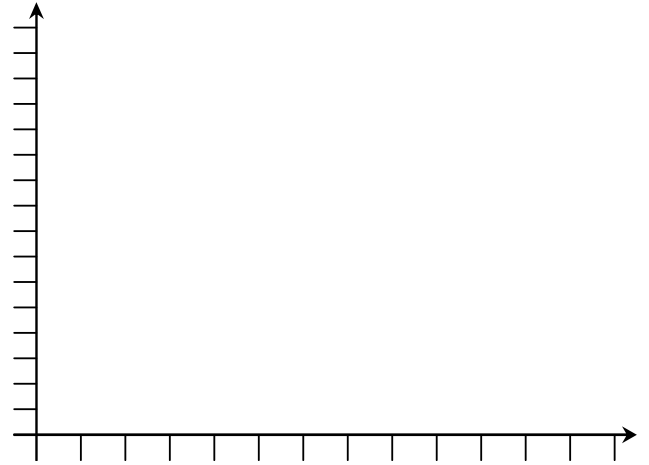
Let x = time (in seconds) Let y = height (in feet)



1. Does the parabola of this golf shot open up or down? Explain how you know before graphing.
2. Generate a table of values in order to graph the function. Use the values 0, 5, 10, 15, and 20 seconds for the “ x ” values. Substitute those values into the given equation to find the “ y ” values.

Time in Seconds (x)	Height in Feet (y)
0	
5	
10	
15	
20	

3. Label and number the axes.
4. Graph the points as ordered pairs.
5. What does the x represent in this graph?
6. What does the y represent in this graph?
7. Does the parabola have a maximum or minimum point?
8. What is this point called?
9. What is the axis of symmetry in the form of $x=?$
{ see hint \rightarrow }



9. Hint: to find the axis of symmetry of a parabola you can use the formula $x = \frac{-b}{2a}$

10. What is the number value of the maximum or minimum?
{use your answer from #9 (the x value) to substitute in the parabolic equation to find the y value; hence (x,y) }
11. How long will the ball be in the air before its first bounce?
12. What is the height of the golf ball at:
0 sec.= _____ft; 5 secs. = _____ft; 10 secs. = _____ft; 15 secs. = _____ft;
20 secs. = _____ft.
13. What is the highest the golf ball reaches?