

8. Fill out the chart with your equation and notice the relationship between time and displacement. The second column is displacement, and the third column is how many times farther than the displacement from one second.

Time (sec)	Displacement (cm) (From your equation)	$= \frac{\Delta x_{t=?}}{\Delta x_{t=1}}$
1.0	$= \frac{1}{2}(54)t^2 = \frac{1}{2}(54)(1)^2 = 27\text{cm}$	$= \frac{27}{27} = 1$
2.0	$= \frac{1}{2}(54)(2)^2 = 108\text{cm}$	$= \frac{108}{27} = ?$
3.0	Etc.	Etc.
4.0		
5.0		
6.0		
7.0		
8.0		

Next Section—

Hint 1—Your acceleration and displacement (like the radius of the earth) should be in the **same units**. Just make my life easier: **work in meters, please**.

GIANT HINT 2—You are going to be doing a lot of calculating with big numbers. WRITE A TABLE IN THE OPEN SPACE ON THE HANDOUT. One you calculate a number: WRITE IT DOWN (WID). I can't help you find your mistake if all of your work was done in the calculator.

Hint 3—Remember that the circumference of a circle (and thus the earth)  $= 2\pi r$ . You are given the radius of the earth (Write It Down), so you can calculate the circumference of the earth (WID), and then 1/4 of the circumference (WID [get the picture?]). Once you have this distance (1/4 the way around the earth) you can put it into your equation:  $x = 1/2(at^2)$  and solve for the time. Converting to days should be easy.

Hint 4— You are asked to find how long it takes for the last 3/4 of the time. Why not calculate the time for the whole distance and subtract what you found in the previous part?

Once you are done with the times, do this—Look at the table at the top of the page. How far did the object go in 1 second? How far did it go in 2 seconds? How do these distances compare? How far did your object go in 2 seconds? How far did it go in 4 seconds? How do these distances compare? If you look hard you will see a pattern.