

Planet Paths

Step 1. Do research to fill out the chart below:

Planet	Average distance from the sun, in millions of miles <i>d</i>	Time duration of orbit, in years <i>t</i>
Mercury		
Venus		
Earth	93.0	1.00
Mars		
Jupiter		
Saturn		
Neptune		
Uranus		

Step 2. Graph the data from the chart, with *average distance from the sun* as the independent variable and *time* as the dependent variable. Describe the pattern you see.

Step 3. Try to find a value of k for each of these functions which creates a curve that matches the graph of planet paths. To do this:

- a) Put in the data for one planet to get a value of k .
- b) Use that value of k to plot the function.
- c) See how closely your function matches the function of planet paths.

Function #1: $t = kd$

Function #2: $t = kd^2$

Function #3: $t = kd^3$

Function #4: $t = kd^{1/2}$

Function #5: $t = kd^{3/2}$

Which is the correct function? _____

What is the value of k ? _____