

## **Planet Paths**

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

Planet	Average distance	Time duration of
	from the sun, in millions of miles	orbit, in years
	d	t
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 <u>independent</u> variable and *time* as the <u>dependent</u> variable. Describe the pattern you see.

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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 = kd²
Function #3:	t = kd³
Function #4:	t = kd½
Function #5	$t = kd^{3/2}$

Which is the correct function?

What is the value of k? \_\_\_\_