

Data Table 1

Use this Data Table to help you locate the planets on your roll of toilet paper. After you have finished this part of the activity, complete the last two columns of the table. The scale for this activity is one sheet = 10,000,000 miles.

Objects in the Solar System	Number of paper sheets from the sun	Number of paper sheets from the previous object	Distance from previous object in miles	Distance from the sun in miles
Sun	0	0		
Mercury	3.6	3.6		
Venus	6.7	3.1		
Earth	9.3	2.6		
Mars	14.1	4.8		
Jupiter	48.4	34.3		
Saturn	88.7	40.3		
Uranus	176.6	90		
Neptune	280	101		
Pluto	366.4	86.4		

Complete the data table using a calculator. To find the distance from the sun, multiply the number of sheets from the sun X 10,000,000. To find the distance from the previous object, multiply that number of sheets X 10,000,000.

EXAMPLE: $10,000,000$
 $\times 3.6$

 $36,000,000$

Data Table 2

Now you are ready to calculate the next set of data. We want to find out just how long it would take to travel through space at a normal Earth speed of 70 miles per hour. To find the number of hours it would take to get from one planet to another, divide the number of miles from Data Table 1 by 70. To calculate the number of days, divide that answer by 24, and to find the number of years, divide that answer by 365. You are going to be amazed at your results!!

Complete the following calculations:

	Time in hours (Divide distance by 70)	Time in days (Divide answer in column 1 by 24)	Time in years (Divide column 2 by 365)
Earth to Mercury	814,286	33,929	93
Earth to Mars			
Mars to Jupiter			
Jupiter to Saturn			
Saturn to Uranus			
Uranus to Neptune			
Neptune to Pluto			

Would it be practical to send a manned spacecraft to study the outer planets?

What might be some of the problems with sending probes to the outer planets to send back data?

Answer Key

Data Table 1

Sun	0	0	0	0
Mercury	3.6	3.6	36,000,000	36,000,000
Venus	6.7	3.1	31,000,000	67,000,000
Earth	9.3	2.6	26,000,000	93,000,000
Mars	14.1	4.8	48,000,000	141,000,000
Jupiter	48.4	34.3	343,000,000	484,000,000
Saturn	88.7	40.3	403,000,000	887,000,000
Uranus	176.6	90	900,000,000	1,766,000,000
Neptune	280	101	1,010,000,000	2,800,000,000
Pluto	366.4	86.4	864,000,000	3,664,000,000

Data Table 2

Earth to Mercury	814,286	33,929	93
Earth to Mars	685,714	28,571	78
Mars to Jupiter	490,000	20,417	56
Jupiter to Saturn	575,714	23,988	66
Saturn to Uranus	1,285,714	53,571	147
Uranus to Neptune	63,000,000,000	2,625,000,000	7,191,781
Neptune to Pluto	12,343,000	514,292	1,409

1. It would not be practical to send manned spacecraft to the outer planets because of the extreme amount of time that it would take to reach them. It would be difficult to provide food and a breathable atmosphere for that amount of time.

2. Some of the problems would include the time it would take for the probes to reach the outer planets. Probes would be exposed to meteoroids, asteroids and intense solar radiation. It would take a long time for the signals from the probe to be relayed back to Earth. Finally, if something goes wrong with the probe while it is out in space, there would be no way to fix it.

Vocabulary:

Scale Model - A small version of a larger object that is built to exact proportions.

Planet Labels

Mercury	Venus	Earth
Mars	Jupiter	Saturn
Uranus	Neptune	Pluto
Sun		