






Traveling in Orbit



Imagine you're floating through space. You plan to travel in a straight line from Point A (where you are now) to Point B (where you want to go). As you travel along this straight flight path, however, the Sun's gravity pulls you along the Sun's orbit, causing you to travel in a curve instead of along your originally planned path. In order to reach your destination, you must account for the Sun's gravitational pull when planning your path from Point A to Point B. Follow the steps below to create your own path.

MATERIALS

cardboard (about the size of a standard piece of paper) 

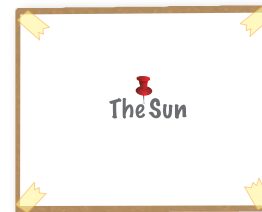
white paper 
 tape 

pushpin 
 colored pencils 

string 
 2 small objects (coins, beads, etc.) 

INSTRUCTIONS

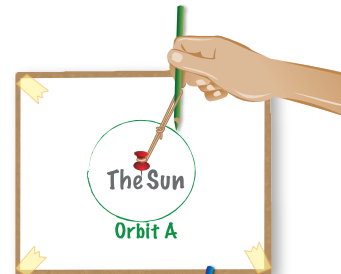
- 1 Attach the paper to the cardboard by taping down its four corners. Stick the pushpin in the center of the paper, piercing through the cardboard underneath. Label this pin "The Sun."



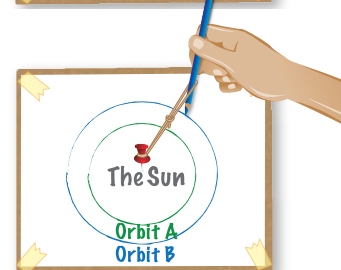
- 2 Use your notebook ruler and a pair of scissors to measure and cut a piece of string 6 inches long. Tie the ends of the string together to create a loop.



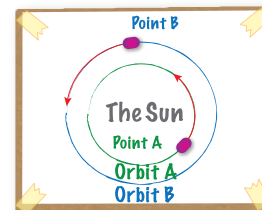
- 3 Choose a colored pencil. Hook one end of the loop around the pushpin and the other end around the pencil. Fully stretch the string and draw a circle around the Sun, using the resistance of the string as your guide. Label this circle "Orbit A."



- 4 Cut another piece of string 10 inches long. Tie the ends of the string together to create a second loop. Using the same method but a different colored pencil, draw another circle around the Sun. Label this circle "Orbit B."



- 5 Place your 2 small objects on the circles, one on each orbital path. These objects represent Point A and Point B. Use your fingers to slide these objects along their orbits at the same time.



- 6 Now, continuing to move both items along their orbital paths, slide Point A toward Point B. When Point A meets Point B, does it travel along a straight or curved line? Think about all the things astronauts must consider while traveling in orbit.

