

Ocean Tides

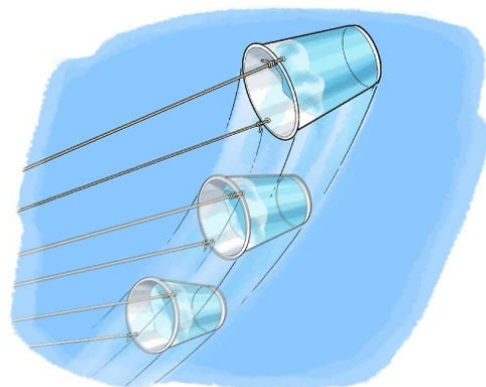
Materials:

- **String**
- **Small styrofoam or paper cups**
- **Water**
- **Hole punch**



Procedure:

1. Punch 2 holes on opposite sides close to the top of the cup.
2. Tie the ends of the string in the holes.
3. Fill the cup $\frac{1}{2}$ full with water.
4. Hold the end of the string and swing the cup starting side to side and working up to swinging around in a horizontal circle above your head.
5. Observe what happens to the water in the cup.



How did that work?

The cup turns sideways, but the water stays inside due to the effect of centripetal force. The gravitational pull of the moon causes the water in our oceans to bulge out

on the side of the earth facing the moon. There is a second bulge of ocean water on the opposite side also. The water moves outward in the cup as it is spinning because of centripetal force, but the cup prevents it from flying out. The movement of the earth around the sun produces centripetal force and the earth's gravitational pull keeps the ocean water from flying into outer space. The result of this centripetal force is a bulging of the ocean water on the earth that we call high tides.

