

RAFT IDEAS

Topics: Motion, Force, Energy, Measurement, Critical Thinking, Invention

Materials List

- ✓ Metal or plastic spoon
- ✓ Rubber band (1 ½")
- ✓ Spool or plastic roller
- ✓ Pompons, cotton balls or other small, soft objects
- ✓ Measuring stick or tape

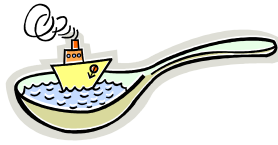
This activity can be used to teach:

- Forces & Motion (Next Generation Science Standards: Physical Science, Grade 3, 2-1 & 2-2; Middle School, 2-2; High School, 2-1)
- Energy (Next Generation Science Standards: Physical Science, Grade 4, 3-1; Middle School, 3-5)



Spoon Slinger

Make and use a spoon catapult.



Students create a simple lever machine and learn about load, force, and fulcrum placement.

Assembly

1. Place a rubber band around the spoon handle near the spoon bowl and wrap it a couple of times.
2. Put the plastic roller or spool under the spoon, pull the end of the rubber band around the roller and over the other end of the spoon in order to attach the roller to the bottom on the spoon handle. (Depending on the size of the rubber band, you may need to add several twists in order to hold the roller and the spoon together tightly.)
3. Use a pencil or a finger in the open end of the plastic roller or spool to hold it steady. Make sure that the roller or spool can still rotate.

To Do and Notice

1. Put a small, soft object, such as a pompon or cotton ball, into the spoon bowl. Tap the spoon handle at the opposite end of the bowl to fling the pompon. Measure the height and distance that the pompon flies.
2. Slide the rubber band and roller to change the position to be nearer one end of the spoon, or in the middle, and observe any changes in height or distance of the pompon flight.
3. Try using a heavier pompon. Does the height or distance change?

Science Behind the Activity

This catapult activity demonstrates one use of a lever. A lever is a simple machine that provides a mechanical advantage in moving or applying force to an object. A lever is made up of a fulcrum, applied force and a load. In this case, the spool or plastic roller is the fulcrum, tapping the handle applies force and the pompon in the spoon bowl is the load. Other common levers include a teeter-totter, scissors, boat oars, pliers, and a shoehorn.

Assessment

Ask questions to determine whether students can identify or predict how changes in force relate to changes in the direction, height, speed, or distance of the pompon. Have students measure and record the distance the pompon travels based on the position of the fulcrum. Can they correctly analyze and interpret the results?

Related RAFT Resources

Check out these related Idea Sheets: *Staple Remover Catapult*, *Flingy Thingy*, *Catapult*, *Craft Stick Catapults*.

Web Resources (Visit www.raft.net/raft-idea?isid=711 for more resources!)