

Activity 8: Cork Boats

Materials:

Sink, bath, or bin filled part way with water

Cork

Ruler

Plasticine (or play dough if it's not in the water for too long)

Scissors

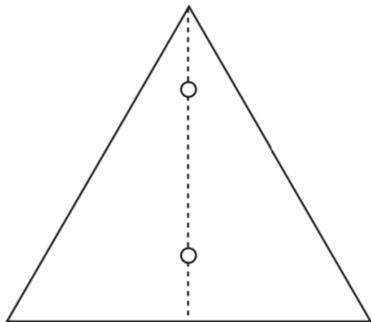
Toothpicks (round)

Cardstock paper (or another thick paper)

The challenge in this activity is to make a cork sail boat that will float upright and be stable.

Procedure

1. Have the student predict how they can make the cork sail boat float upright and be stable.
2. Cut out a triangular sail from cardstock paper about 5 cm - 6 cm in width and 8 cm high.



3. Using a sharp instrument, make two holes in the sail, one above the other along the mid-line from the base to the apex of the sail.
4. Push a round toothpick into the bottom of the cork and another into the top so they are secure.
5. Slip the toothpick through the two holes of the sail. Test the cork sailboat in water. It will not remain upright.
6. Challenge the student to find a solution to the problem. One solution is to add plasticine to a toothpick placed below the sail (in the water).

The student will hopefully discover the action of a keel as a counter weight.



7. Draw a picture of the successful cork boat and record observations.

Science Notes

Students will discover that adding a ball of plasticine on the end of the bottom toothpick will make the cork boat remain upright. The mass of the plasticine prevents the cork from rolling over, and the greater the mass the more stable the cork boat. Teachers are encouraged to order the corks from the Distribution Centre as they are less dense than wine bottle corks. Students will have difficulty pushing a toothpick through a cork used for wine bottles.

The cork boat activity teaches children that *stability* can be increased by positioning a counterbalance directly below a boat which, in effect, lowers the center of gravity. This is achieved with the addition of a keel. The *keel* is a streamlined fin directly below the centre of the boat which runs bow to stern (front to back).

A keel achieves balance in two ways:

- *It works as a counterbalance (most keels are weighted) similar to the cork boat activity with the difference being that a keel is streamlined to reduce drag.*
- *Stability is increased because the water on either side of the keel creates resistance helping to maintain the boat's stability.*

