







### Procedure

1. Use plastic, aluminum foil, and tape to cover your boat.
2. Put your boat in the water and test to see how many pennies it can hold without sinking.

### Expected results

Results will vary, but the boat covered in plastic and aluminum foil should hold more pennies than the simple paper boat. In our tests, the covered boat held more than 80 pennies before sinking.



## EXPLAIN

### 4. Have a class discussion about why the aluminum foil and plastic helped the boat hold more weight.

Explain that since the plastic and aluminum foil do not absorb water, the water could not touch the paper and could not absorb into it and make it weak. This helped the boat stay stiffer longer without collapsing and sinking. Also, the more “watertight” they made their boat (with the help of the tape), the less water seeped in, making the boat better able to stay afloat and to hold more weight (the pennies).

## EXTEND

### 6. Explain that a juice box is like an inside-out-boat.

Show the illustration [Juice Box](#). You can also bring in a juice box that you have cut open to show students how the box is made.

Explain to students that the boat they made is like a box that needs to keep liquid (water) on the outside. A juice box is a box that needs to keep liquid (juice) on the *inside*.

Juice boxes are made from stiff paper. They have an *inside* lining of plastic and aluminum foil so the paper doesn't get soggy and weak from the *inside*. They are like an inside-out version of the boat students made. Their boats had an *outside* lining of aluminum foil and plastic so the paper didn't get soggy and weak from the *outside*.

Remind students that the properties of materials are important when thinking about making a product that needs to work in a certain way.

