



Float that boat!

Background knowledge

Boats are built so they can float on water. A boat builder must consider both the shape and weight of the boat. Remember, weight is an object's response to the pull of gravity. When an object is placed in water, the water pushes upward against it. This upward push is known as buoyancy. The force of gravity pulls the boat down. In order for the boat to float above water, the buoyant force must be greater than the force of gravity.



Upward Gravity

Science activity

Objects weigh less in water than in air because of the buoyant force. Mason used a spring balance to measure and compare the weights of different objects in air and in water. His results are given in the table below.



Object	Weight in air (N)	Weight in water (N)
stone	12 N	8 N
wood block	20 N	0 N
plastic hair clip	5 N	1 N
metal pan	500 N	3 N

Use the table above to work out which objects will float. Explain your conclusions.

Science investigation

Build a boat out of about 1 square foot of aluminum foil. Choose about 200–300 pennies. Predict how many pennies your boat can hold before sinking. Explain your design.