

Lesson Plan – 22

Subject: Physics

Topic: How much weight can your Boat Take?

Grade: 6 & 7

Sub – Topic: Buoyancy and Gravity

Duration: 30 mins

Aim:

To understand that the gravitational force is determined by the weight of the aluminium foil and the weight of the pins in the boat. The force of buoyancy is the weight of the water displaced by the boat.

Materials Required:

- Aluminium foil
- Bowl
- Scissors
- pins
- Water



[How Much weight can your boat take?](#)

Procedure:

Directions:

1. Cut a piece of aluminium foil 5 x 6 inches.
2. Fold up the sides of the boat so it will not sink and hold a cargo of pins.
3. Place the boat in the bowl of water. Begin adding pins for the boat's cargo.
4. See how many pins your boat can carry before it sinks.
5. Have some friends over and try this experiment with them. See which one of you can create the boat that will carry the greatest amount of cargo.
6. Be sure to dry the pins before you begin adding them as cargo because remember water has weight!
7. Have the person who created the boat begin adding pins to their boat while another person counts the number of pins as they are added to the boat.
8. Try different ways to distribute the weight of the pins on your barge so you can carry the maximum number.

Try another science experiment:

1. Create a boat out of aluminium foil that is 4 x 5 inches. Make a prediction about how many pins you will be able to carry as cargo in this boat.
2. Create boats out of clay and see if you can make them float and carry cargo.

Science behind the experiment:

- There are two primary forces and aluminium on this science experiment. The first force is gravity. Gravity is trying to pull the aluminium foil and pins downward. The force of buoyancy is pushing the boat toward the surface.
- The gravitational force is determined by the weight of the aluminium foil and the weight of the pins in the boat. The force of buoyancy is the weight of the water displaced by the boat.



The boat will float as long as the force of buoyancy is greater than the force of gravity and do not overload the boat so it will tip over or leak.

