

BUOYANCY / LESSON OVERVIEW

Objectives

The students will:

- Define buoyancy;
- Learn how volume, surface area, and density relate to buoyancy;
- Learn the adaptations that sharks have that help them maintain their buoyancy.

Lesson Summary

Part 1. What is Buoyancy?

In physics, buoyancy is the upward force on an object immersed in a fluid which allows the object to float. Students will learn the basic concepts of buoyancy and the history behind its principles.

Part 2. Volume, Surface Area, and Density

In general, heavy objects sink and light objects float. However, this is not always the case. After all, large ships such as the M/V OCEARCH float! Students will learn what factors determine whether or not an objects sinks or floats.

Part 3. Sharks and Buoyancy

Sharks have many amazing adaptations to help them survive and thrive in the ocean, including an unusual adaptation that helps them stay buoyant in the water - their large, oily liver.

Activity 1. Float a Boat!

Using their basic knowledge of buoyancy, density, surface area, and volume students will design and make a foil boat. They will test their boat's ability to float using pennies. The student that gets the most pennies in their boat without it sinking wins!

Activity 2. What Floats?

Students will experiment with different types of object and determine if they float or not. Students will then determine why they float or not.

Materials

- Large plastic rectangular bin
- Foil
- Lots of pennies or other small lightweight objects
- Water
- Nail
- Sponge
- Piece of wood
- Bottle cap
- Plastic utensil
- Aluminum can (one empty and one full)
- Orange (one peeled and one unpeeled)