

Will a Watermelon Float in Water?

Science/Language Arts K-8 (Extension for upper levels)

Objectives:

Understand buoyancy is not necessarily determined by size and weight
Extension – Understand the terms density, displacement, buoyancy, and flotation

Supplies:

Aquarium, tub, or container (large enough to place watermelon in)
Watermelon
Coins
Paper clips
Bottled water
Bouncy ball
Egg
Pencil
Chalk
(Ask students to bring additional objects from home to test.)
Paper towels
Water access
Computer access for extension



Lesson:

1. Fill large container with water.
2. Let students see and touch items class will be testing for buoyancy.
3. Ask students to predict which items will float and which ones will sink.
4. Give students time to complete a chart of their individual predictions or create a class chart, vote on each item, and record predictions on it. [Show a small visual here with object list, float, sink.]
5. Test each item. (If you have enough items, let each student place an item in the water.)
6. Ask class questions:
 - What surprised them? What didn't?
 - Does weight predict if an item will float or not?
 - Why do certain items float and others don't? What's the difference?

Continuation for lower levels:

7. Explain density in simple terms.

Density is how much stuff is within a space. For example, a ping-pong ball and golf ball are about the same size, but the golf ball has more stuff in it. It's denser than the ping-pong ball.

Many factors affect whether or not an object floats or not. One of them is density. If an object is less dense than the water it is placed in, it will float. If it is denser, it will sink.

Extension for upper levels:

1. Introduce/review definitions with class.

mass – the quantity of matter that a body contains, as measured by its acceleration under a given force or by the force exerted on it by a gravitational field. In general use, weight.

volume – the amount of space that a substance or object occupies, or that is enclosed within a container.

density – the degree of compactness of a substance. Degree of consistency measured by the quantity of mass per unit volume.

displacement – the occupation by a submerged body or part of a body of a volume that would otherwise be occupied by a fluid.

buoyancy – the ability or tendency to float in water or air or some other fluid. The power of a liquid to keep something afloat.

2. Break class up into groups to discuss these questions. (Groups should use Internet to do more extensive research of above-mentioned terms and answer questions.)

- What is the density of water?
- Why did the penny sink?
- Why did the watermelon float?
- How can a boat float if it's made out of metal?