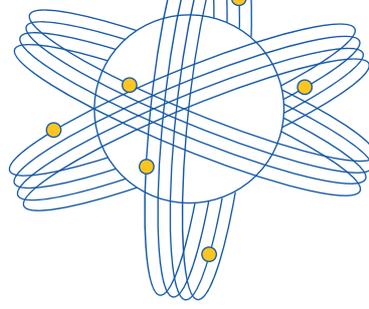


Iceberg Density Experiment



Water density can be a tricky concept to float. This experiment takes household items to make the concept a little more familiar and fun.

But first, let's make some predictions!

Have a go at making your best guess using the questions below:

1. Will the ice float or sink?
2. What will the ice look like in the water?
3. Will adding salt to the water affect how the ice floats?
4. Will the ice melt faster or slower in the different waters?

Instructions:

1. Create your iceberg. Pour water into your balloon, making sure that it will fit into your bowls. Add a few drops of blue food colouring (optional). Place your balloon in the freezer until completely frozen
2. Create your water conditions. Fill up your bowls with enough water for the iceberg to submerge (go underwater) entirely. The first bowl is your fresh water with no salt. The second bowl is your ocean water with 3 tbsp of salt. The third bowl is your Dead Sea water with 10-12 or more tablespoons of salt.
3. Take your iceberg out of the freezer and carefully separate the balloon from the iceberg using scissors (**adult supervision required**). Carefully drop your iceberg into the first bowl with the fresh water and observe what happens. You can use a ruler to measure how much of the ice is above the water. Next place your iceberg in the bowl with 3 tbsp of salt (ocean water). How much of the ice is floating above the water? Finally, move your iceberg to the third bowl with the most salt (The Dead Sea). Record your observations.

What you will need:

- Water
- 1 Balloon
- 2-3 Bowls (preferably glass so you can see the whole "iceberg")
- Salt
- Freezer
- Blue food colouring (optional)
- Scissors (to cut balloon)

Extra for Experts!

- Take an egg, will it float or not float in the freshwater or salt water? Test out your egg theory in both the fresh and salt water and talk about your findings.

Reflect:

- What else could you change about the water to affect how the iceberg floats?
- Did the iceberg melt at a different rate (speed) in the types of water?

How does it work?

Water has a greater density than ice. When you add salt to the water you further increase its density. This changes the buoyancy force, or the upward force exerted by a fluid on a submerged object. Everything on Earth has a measurable density. **Water density is interesting because when it freezes, its molecules expand and move further apart.** This causes the frozen ice molecules to be less dense than water, even though it has changed from a liquid to a solid.