



Icebergs

Icebergs form around the edges of Antarctica where glaciers flow off the land and into the sea. Icebergs are primarily made of frozen water.

Water is special because it is the only liquid, which, once in its solid form does not sink in their liquid. Solid iron will sink in molten iron and solid wax will sink in melted wax but ice floats on water...but **how much ice is above the surface of water and how much is hidden from view?** This experiment will help you work out the answer.

Equipment needed

- ice cube
- glass of water
- ruler
- measuring cylinder

Experiment

Take an ice cube and lower it into a glass of water.

Draw a picture of the ice cube in the glass, remember to show the water level?

How can you measure the volume of ice above the surface? (Would paint work? What type of paint?)

Water based paints will not work because they will dissolve, smear and your result will not be accurate.

To get a visual picture of the ice cube volume

- 1. Using paint or a waterproof marker pen, mark where the water level is on the ice cube.*
- 2. Scoop the ice cube out of the glass, making sure not to smudge the mark.*
- 3. Measure the volume of the cube with a ruler.*
- 4. Pour a known amount of water (say 50ml) into a measuring cylinder.*
- 5. Holding the ice cube with tweezers lower it into the water and note the volume.*
- 6. Subtract this volume from the volume of the ice cube, this is the volume of ice showing.*

More advanced work

The reason that ice floats on water is that the particles, of which water is made, are held further apart when in the solid ice form than in the liquid water. Therefore there are fewer particles in the solid ice than in the liquid water.

What fraction of an iceberg is hidden?

Equipment needed

- ice cube
- ruler
- measuring cylinder

Experiment

Measure the volume of an ice cube in cubic centimeters using a ruler.

ice cube volume =

Once you have measured the volume of the ice cube put it in a measuring cylinder and leave it to melt. Measure the volume of water formed.

volume of melted ice cube =

What is the difference between the volume of the ice cube and the volume of water when it is melted?

Why would it be more accurate to repeat the experiment with several ice cubes?

Using more cubes will give a bigger volume of water so reducing measuring errors.