

Density: why things float or sink

Grade 6 science (Year 7 · Class 6) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test covers calculating density, using the formula in both directions, and explaining floating and sinking. Show every step of your working and write units. The paper lasts 45 minutes and has 20 marks.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS1-2

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Define density (2 marks)

State what density is and give the formula, defining each symbol.

Question 2 Unknown metal block (3 marks)

A metal block measures 10.0 cm by 3.0 cm by 2.0 cm and has a mass of 162 g. Aluminium is 2.7 g/cm³ and iron is 7.9 g/cm³.

- Calculate the volume of the block. (1 mark)
- Calculate its density. (1 mark)
- Identify the metal. (1 mark)

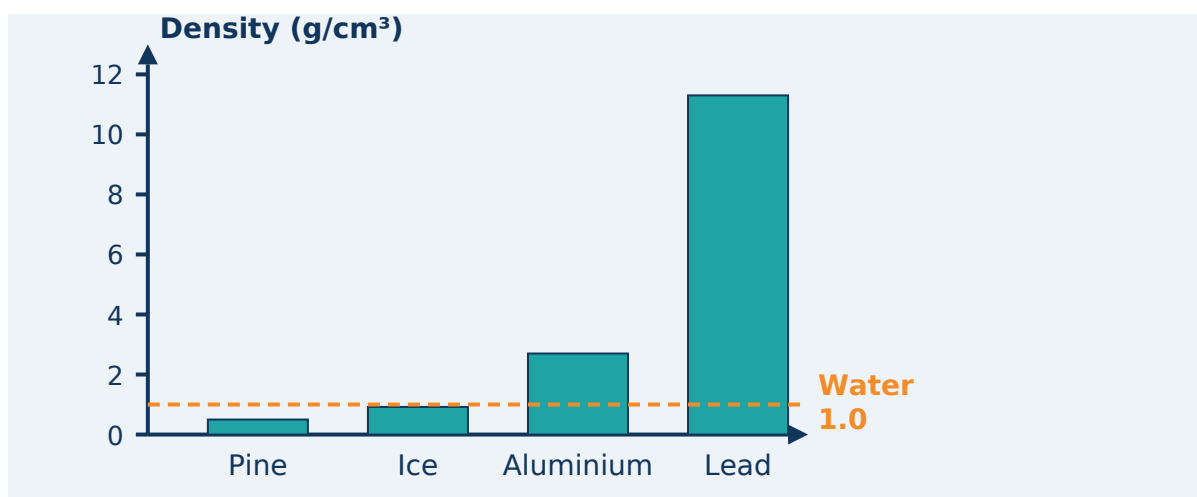
Question 3 Mass of sea water (2 marks)

Sea water has a density of 1.03 g/cm³. Calculate the mass of 400 cm³ of sea water.

Question 4 Bar chart (3 marks)

Use the bar chart.

- State which two materials float in water. (1 mark)
- Read the density of lead. (1 mark)
- Calculate how many times denser lead is than aluminium, to one decimal place. (1 mark)



Densities of four materials; the dashed line marks water.

Question 5 Steel ship (3 marks)

Explain why a steel ship floats although steel is denser than water.

Question 6 Sealed metal box (3 marks)

A sealed metal box has a mass of 480 g and a volume of 600 cm³.

- Calculate its density. (1 mark)
- State, with a reason, whether it floats in water. (1 mark)
- Calculate the percentage of the box under the surface when it floats. (1 mark)

Question 7 Density units (2 marks)

- Convert 13.6 g/cm³ to kg/m³. (1 mark)
- Convert 1.2 kg/m³ to g/cm³. (1 mark)

Question 8 Salt and the egg (2 marks)

An egg sinks in a glass of tap water but floats when several spoons of salt are stirred in. Explain this observation.