

Testing materials to choose the right one

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

Name: _____ Date: _____ Class: _____

Which materials suit which jobs? In this lab you test five strips for conductivity, magnetism, hardness and flexibility, then use your table to match each material with a use. You need only simple equipment.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS1-3

Aim

To compare the conductivity, magnetism, hardness and flexibility of five common materials.

Equipment

- 1.5 V cell and holder, small bulb and holder, three wires with clips
- Bar magnet
- Steel nail
- Strips of equal size: copper, aluminium, steel, wood, plastic
- Notebook

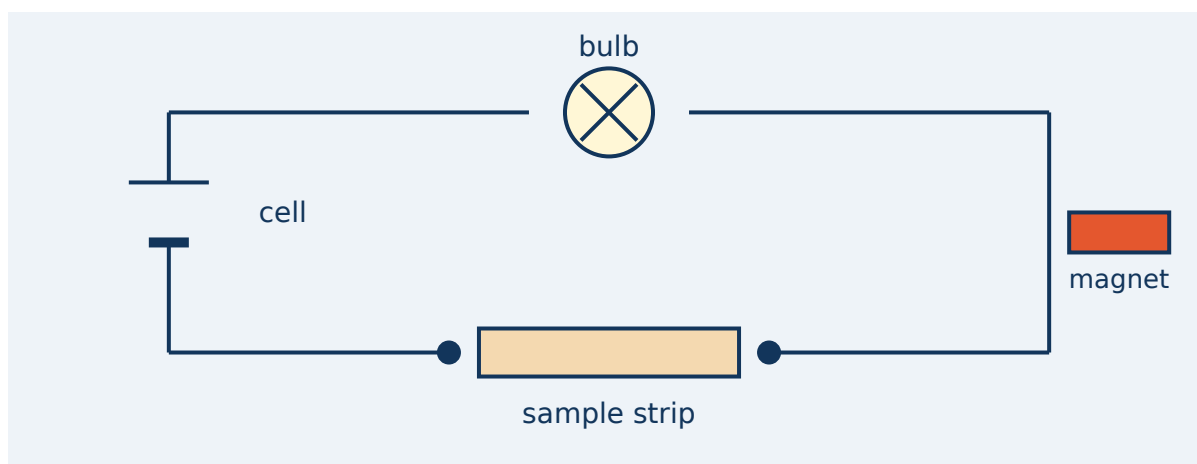
Safety

Safety

Metal strips can have sharp edges: handle them with care. Never connect a wire straight across the cell, because it gets hot. Wear safety goggles when you bend strips.

Method

1. Build the circuit with a gap and join the clips across the gap.
2. Place each strip in the gap in turn and note if the bulb lights.
3. Hold the magnet close to each strip and note if it is attracted.
4. Scratch each strip firmly once with the steel nail and record if a mark appears.
5. Hold each strip over the edge of a bench and press the free end gently. Rate its flexibility from 1 (rigid) to 5 (bends easily).



Set-up for the conductivity test; the magnet is used separately.

Results

Sample class results:

Material	Bulb lights?	Attracted by magnet?	Scratched by nail?	Flexibility (1-5)
Copper	Yes	No	Yes	4
Aluminium	Yes	No	Yes	4
Steel	Yes	Yes	No	2
Wood	No	No	Yes	2
Plastic	No	No	Yes	5

Analysis questions

Question 1 Conductors

1. List the materials that are conductors. What do they have in common?

Question 2 Magnetic material

1. Which material is magnetic? Which two metals are conductors but not magnetic?

Question 3 Hardest material

1. Which material is the hardest in this lab? Give the evidence.

Question 4 Flexible and insulating

1. Name the material that is both the most flexible and an insulator. Suggest one use.

Question 5 Best handle

1. Which material would you choose for the handle of a garden tool that must not bend? Explain.

Question 6 Reliability

1. Give two ways to make the flexibility rating more reliable.

Question 7 Improvement

1. Describe an improvement that replaces the 1-5 rating with a measurement.