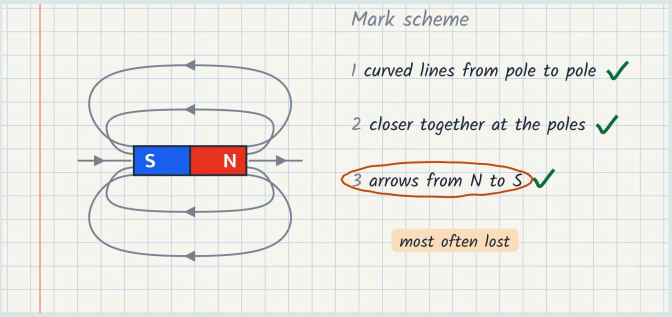
Exam workout

magnetism

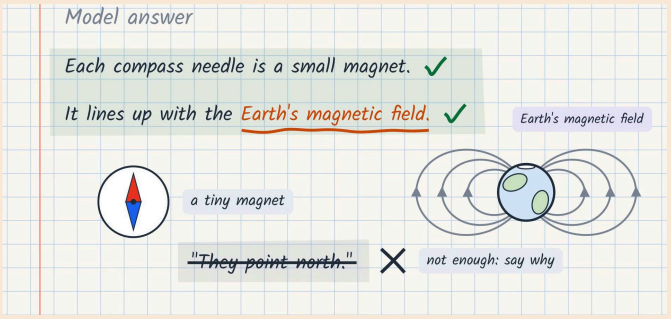
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Summary sheet

1 Prove a magnet; draw its field



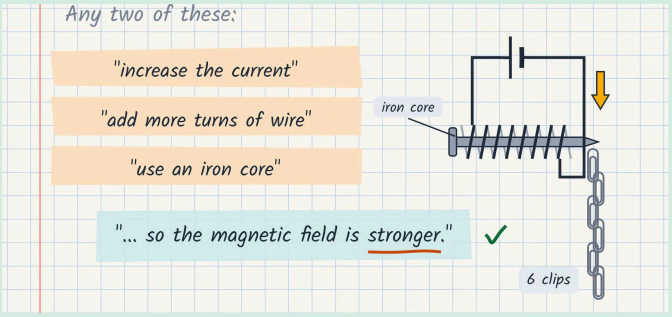
- Attraction is not proof: a **magnetic material** (iron) becomes an **induced magnet** and is attracted. Only **repulsion** proves a magnet.
- Field marks: curved lines pole to pole, **closer together at the poles**, **arrows from north to south**.

2 Compasses line up with the Earth's field



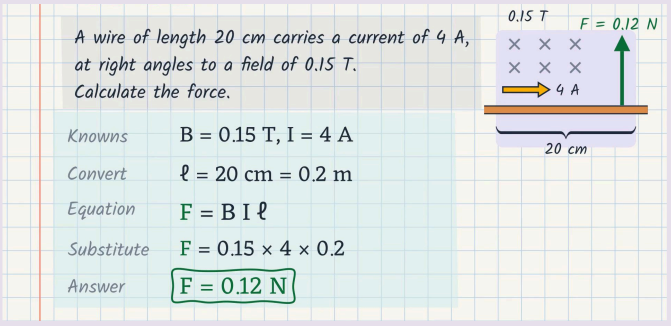
- Each compass needle is a **small magnet**. It **lines up with the Earth's magnetic field**.
- "They point north" is not enough: say **why**.

3 Electromagnets and a current's field



- Stronger electromagnet: **more current**, **more turns** or an **iron core**, 'so the magnetic field is stronger'.
- Show a current's field: compass close to the wire; **switch on, the needle moves**; switch off, it swings back; reverse the current, it moves the other way.

4 Higher: F = B I ℓ



- **Convert length to metres first**: 20 cm = 0.2 m, so F = 0.15 × 4 × 0.2 = **0.12 N**.
- Rearrange for the current: current = F ÷ (B ℓ) = 0.06 ÷ (0.3 × 0.1) = **2 A**.

Exam tip

Only repulsion proves a magnet, field arrows go north to south, and always say what gets stronger.

Check yourself

- 1 In an experiment on the force on a wire, the student changes the current and measures the force. Which is the independent variable?

Answers: 1. The current