



Unit 13 Magnetism

Exercise 13.1 Magnets and magnetic materials

- 1 a He should bring the magnet and material close together and assess whether or not they attract.

Item	Attracted (✓) or not attracted (✗)
copper coin	✗
steel paper clip	✓
aluminium foil tray	✗
plastic cup	✗
wooden stick	✗
iron nail	✓
water in a cup	✗

- c Any other magnetic item e.g. a steel needle.
 - d Any other non-magnetic item e.g. a piece of string.
- 2 The door has a magnet on it. This is attracted to the steel door. The magnetic force between them keeps the door shut.

Exercise 13.2 Magnetic forces, making magnets

- 1 a Nikita is wrong; one object might be a permanent magnet and the other a piece of magnetic material.
- b The objects must both be permanent magnets. They repel because like poles have been brought together.
- c Bring a piece of unmagnetised steel close to **X** and then to **Y**. If it is not attracted by either, then neither **X** nor **Y** is a permanent magnet. (Alternatively, use a permanent magnet; no attraction **or** repulsion shows that neither **X** nor **Y** is a permanent magnet.)
- 2 a Unmagnetised on the left, magnetised on the right.
- b Each half has its domains lined up so each will be a small magnet, with N at one end and S at the other.

Exercise 13.3 Representing magnetic fields

- 1 a S at left-hand end, N at right.
- b Field lines come out of N pole.
- c Compass needles follow field lines, from N to S.
- d Field lines are closest together near the poles, so field is strongest there.
- e Students should shade field darkest near poles, fainter farther away.
- f Shading cannot show the direction of the field, only the relative strength.
- 2 a Both have N pole on left, S pole on right.
- b Attracting; unlike poles are close together.
- c Force arrows to right on A and to left on B.
- d Needle of compass between poles points directly from right to right.

Magnetism Exercises Answers

Daniela Niemeyer

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