# Magnetism: independent written practice

Student activity • observation and reasoning

YEAR 11 / LESSON 85 / PHYSICS + SCIENCE (DOUBLE AWARD)

## The question

**Can you explain magnetic effects independently before using feedback?**

Complete an original timed practice set and use the answer guidance to improve scientific explanations.

## Equipment

- Booklet, pencil and ruler

Independent paper-based work only; no practical equipment is required.

Course coverage: Shared Physics / Double Award: Review of shared magnetism and motor-effect specification points.

## Plan, model or apparatus sketch

**Draw labelled magnetic-field, current and force arrows where relevant.**

# Method and reasoning

Read the whole sequence before starting

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**1.** Work independently for fifteen minutes on the six prompts. Use labelled arrows, correct technical vocabulary and complete sentences where needed.

**2.** Sketch a bar-magnet field and explain how a plotting compass determines direction without treating field lines as physical threads.

**3.** Explain how a piece of soft iron can become magnetised near a permanent magnet and why removing it often reduces its magnetism.

**4.** Draw a current-carrying wire in a field, predict a force using the left-hand rule, and state what changes if just one direction reverses.

**5.** Explain the need for a split-ring commutator in a simple d.c. motor and alternating current in a loudspeaker.

**6.** Check the guidance, retain the original responses and write one corrected diagram plus one improved explanation. This task gives no official grade or exam-board mark.

## Cleanup

- Retain original answers and corrections.

# Record your evidence

Blank spaces are for your own work

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## Reference and task data

Original practice questions only. A valid motor diagram must name the chosen current direction, field direction and resulting force. Different consistent orientations can be correct.

| Question | Initial response | Improvement |
|---|---|---|
| Field and compass | | |
| Induced magnetism | | |
| Motor effect | | |
| Applications | | |

**Show your calculations, labelled model or correction here.**

# Explain and evaluate

Use evidence and show calculation steps where relevant

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**1.** What do external field-line arrows mean?

**2.** How does a plotting compass help?

**3.** What is induced magnetism?

**4.** What happens when only the current reverses?

**5.** Why use a split-ring commutator?

**6.** Why does alternating current produce sound in a speaker?