

Electromagnetic Induction *Triple only*

1 · Key words: say it like this

learn this sentence

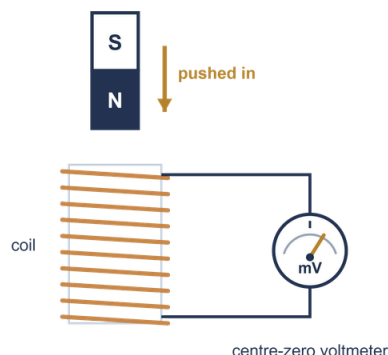
A _____ is _____ across the ends of a _____
when it _____ a _____.

Word bank: conductor · cuts · induced · magnetic field · voltage

Cutting the field. A voltage is only induced while the coil and the magnet are **moving relative to each other**, so the coil cuts the field. In a complete circuit, an **induced current** flows.

2 · A magnet and a coil

predict the voltmeter



When the **N pole** is **pushed into** the coil, the needle moves to the **right**.

What happens to the needle this time? Tick one direction and one size in each row.

Change	DIRECTION			SIZE OF READING		
	← left	→ right	no reading	bigger	smaller	same / zero
The magnet is held still inside the coil	☐	☐	☐	☐	☐	☐
The magnet is pulled out of the coil	☐	☐	☐	☐	☐	☐
The magnet is pushed in faster	☐	☐	☐	☐	☐	☐
A coil with more turns is used	☐	☐	☐	☐	☐	☐
The magnet is turned round: S pole pushed in	☐	☐	☐	☐	☐	☐
The magnet is pushed in more slowly	☐	☐	☐	☐	☐	☐

MAKE THE INDUCED VOLTAGE BIGGER

- ☐ Use **more turns** on the coil
- ☐ Move the magnet **faster**
- ☐ Use a **stronger** magnet

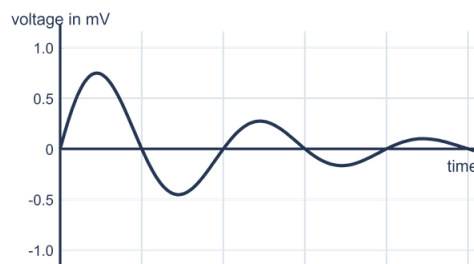
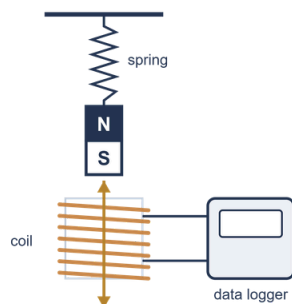
DIRECTION OF THE INDUCED VOLTAGE

- ☐ The induced voltage **changes direction** when the magnet's **direction** changes (in → out)
- ☐ ... or when the **other pole** goes in first
- ☐ No movement = no cutting = **no voltage**

3 · Exam-style question

6 marks

A magnet hangs on a spring above a coil. The coil is connected to a data logger. The magnet is pulled down and let go, so it bounces up and down through the coil. The graph shows the voltage.



- (a) Explain why the data logger records a voltage. [2]
 (b) Which feature of the graph shows that the voltage is alternating? [1]
 (c) Explain why the peaks on the graph get smaller. [2]
 (d) Suggest one change that would make the peaks bigger. [1]