

ELECTROMAGNETS QUIZ QUESTIONS

- Fold these sheets along the centre line so you can only see the questions
- Answer the questions in writing on lined paper without using your notes
- Check your answers
- Re-test yourself - the more often you try to remember facts, the more difficult it is to forget them!

QUESTION

ANSWER

1	What's a solenoid?	A long coil of wire
2	List the three factors that can change the strength of an electromagnet.	<ol style="list-style-type: none">1. Current in the wire (increasing current increases strength of magnet)2. Number of turns on the solenoid (more turns of wire increases strength)3. Adding a core of soft iron to the solenoid increases strength
3	List three devices you may find in a school that all use electromagnets	Here are just some examples of correct answers: loudspeakers, headphones, bells, door locks/catches, anything using an electric motor (e.g. vacuum cleaner, refrigerator, oven)
4	Define 'electromagnet'	A magnet that uses an electric current to switch on and off its magnetic field. It has a solenoid (coil of wire) wrapped around an iron core.
5	Give an example of an industrial use of an electromagnet	Here are three examples of correct answers: <ol style="list-style-type: none">1. On overhead cranes to lift, move or separate steel scrap or products2. In power station generators3. On maglev trains

6	Give two advantages of electromagnets compared to permanent magnets	They can be switched on and off The strength of the magnetic field can be changed They can be made very large if needed
7	Describe the core of an electromagnet	The core fits inside the solenoid (coil of wire) and isn't part of an electrical circuit. It's made from soft iron because it's easy to magnetise and de-magnetise (steel would stay magnetic after switching off the current).
8	What happens when an electric current is passed through a wire?	A magnetic field is generated around the wire.
9	What are field lines?	The shape and direction of the magnetic field around a permanent or electromagnet.
10	What surrounds the solenoid in a simple electric motor?	A magnetic field from a permanent magnet.
11	Current is the flow of what?	The flow of electric charge (electrons).
12	Which direction do field lines always go?	From the north to the south pole of the magnet.
13	How could you show the field lines around an electromagnet?	Either – scatter iron filings (iron powder) on a sheet of paper above the magnet, then photograph or sketch over the pattern that the filings move into Or – place a small compass (plotting compass) in different positions around the magnet and record its direction in each position.
14	How could you demonstrate that you've made a simple electromagnet stronger?	Pick up a larger object, or extra objects. For example – show the electromagnet picking up five paperclips, then add more turns to the solenoid and show it can pick up more than five.
15	Are magnetic forces contact forces?	No. They're non-contact forces as they can act at a distance.