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GCSE Combined Science (AQA Trilogy) · Physics

Magnetism and Electromagnetism · Tiered Worksheet

Section A: Foundation

Permanent and induced magnets

1) State what is meant by a magnetic field. [1]

2) State the rule for how like and unlike magnetic poles interact when brought close together. [2]

3) Is the magnetic force between two magnets a contact force or a non-contact force? Explain your answer. [2]

4) Describe the difference between a permanent magnet and an induced magnet. [2]

5) State what happens to an induced magnet's magnetism when it is removed from the magnetic field that induced it. [1]

Magnetic fields and electromagnets

6) Explain how a plotting compass can be used to find the shape of the magnetic field around a bar magnet. [2]

7) State the direction magnetic field lines point outside a magnet, and state where a magnet's field is strongest. [2]

8) Describe how a compass works, and explain what this suggests about the Earth's core. [2]

9) State two factors that affect the strength of the magnetic field around a current-carrying wire. [2]

10) Explain how shaping a current-carrying wire into a solenoid changes its magnetic field, compared to a straight wire. [2]

11) Explain how adding an iron core to a solenoid affects its magnetic field, and name the resulting device. [2]

12) Describe a simple method for demonstrating that a current-carrying wire produces a magnetic field. [2]

Section B: Higher (in addition to Section A)

The motor effect

13) Define the motor effect. [2]

14) State the equation used to calculate the force on a current-carrying conductor in a magnetic field, and give the unit of each quantity. [2]

15) A straight conductor of length 0.4 m carries a current of 3 A at right angles to a magnetic field of magnetic flux density 0.5 T. Calculate the force on the conductor. [3]

16) Describe what each of the thumb, first finger, and second finger represent when using Fleming's left-hand rule. [3]

17) State two factors, other than the current, that affect the size of the force on a current-carrying conductor in a magnetic field. [2]

18) Explain how the motor effect causes a current-carrying coil in a magnetic field to rotate, forming the basis of an electric motor. [3]

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