

# Examiners' Report/ Principal Examiner Feedback

June 2011

360Science

GCSE Science  
Multiple Choice Paper P1a (5009)

GCSE Physics  
Multiple Choice Paper P1a (5045)

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June 2011

Publications Code UG028755

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## 5009 Science/ 5045 Physics (P1a) Examiners' Report

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### Foundation Tier

The performance of candidates indicated that they had been well prepared by centres for this examination. In 10 out of the first 16 questions over 60% of candidates identified the correct response. Candidates showed good understanding of energy efficient lamps and ability to analyse data about different types of lamp. Candidates showed a good understanding of solar panels including the energy transformation and over 60% could identify the energy change in an electric motor.

However, only 30% knew that an energy transfer of 12 J/s equated to a power of 12 W and just under half of the Foundation candidates could work out the cost of using a 2 kW for a time of 2 hours. Just over 40% of candidates could calculate how long a battery with a capacity of 8 Ah could supply a current of 2 A.

### Overlap Questions

The overlap questions discriminated well between the Foundation and Higher tier candidates, and in the respective tiers most discriminated well between strong and weak candidates. Almost 70% of candidates could identify a graph of a direct current but just fewer than 40% knew that to measure the current in a lamp an ammeter should be connected in series with the lamp. Candidates found it difficult to predict how current varied with resistance and less than 20% thought that the largest current would be in the circuit with the smallest resistance.

Only 30% of Foundation tier candidates knew that the particles moving through a current carrying wire were negatively charged electrons.

### Higher Tier

In seven out of the eight common questions more than 50% of candidates chose the correct response.

80% of candidates correctly identified a graph of a direct current but only 48% thought that the largest current would be in the circuit with the smallest resistance.

Apart from this, candidates were well prepared to answer questions on electric current, efficiency and analyse data on wind turbines.

In the Higher tier-only questions, candidates displayed a very good understanding of how the output from a generator varied with increasing speed of rotation. Candidates also displayed a good understanding of the use of the fuse and earth wire, and could calculate resistance from a current–voltage graph.

Candidates also displayed a very good understanding of how to use an ammeter and voltmeter to investigate how current in a resistor varies with the voltage across the resistor.

However, less than 25% of Higher tier candidates knew that a straight line current–voltage graph indicated constant resistance. Once again many Higher tier candidates were unable to convert W to kW when calculating the cost of using an electrical appliance. This type of unit conversion should be practised more often by all candidates.

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Order Code UG028755 June 2011

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