



Y9 Physics Grade Descriptors

In Science (Biology, Chemistry and Physics), students begin their GCSE courses at the start of Year 9. As a result, the attainment descriptors used within Science (Developing, Proficient, Confident and Mastery) are directly aligned to GCSE grading standards for Year 9. These descriptors will reflect how much progress they are making this year and will be the students' current working level in relation to GCSE expectations in science only. They should be interpreted alongside the corresponding GCSE grade ranges shown below.

- Developing GCSE grade 3-4
- Proficient GCSE grade 4-5
- Confident GCSE grade 5-6
- Mastery GCSE grade 6-7

Topic	Developing	Proficient	Confident	Mastery
Conservation & Dissipation of Energy	<ul style="list-style-type: none">• Identifies common energy stores and simple transfers.• States that energy is conserved and can be dissipated.• Recognises GPE and KE changes in simple contexts.• Identifies useful and wasted energy.	<ul style="list-style-type: none">• Describes changes in energy stores using correct terminology.• Applies conservation of energy in standard problems.• Uses equations for work done, GPE, KE, and efficiency with support.• Explains friction and energy dissipation in familiar contexts.	<ul style="list-style-type: none">• Applies energy equations independently in varied contexts.• Evaluates energy transfers, including dissipation and efficiency.• Solves multistep problems involving GPE/KE conversions.• Uses power and efficiency data to compare systems.	<ul style="list-style-type: none">• Applies conservation of energy to unfamiliar systems.• Combines and rearranges multiple energy equations.• Accounts for all energy changes within systems.• Critically evaluates efficiency limitations using evidence.

<p>Energy Transfer by Heating</p>	<ul style="list-style-type: none"> • Identifies good and poor thermal conductors. • Describes particle behaviour when materials heat up. • Identifies basic home insulation features. 	<ul style="list-style-type: none"> • Compares thermal conductivities using data. • Explains heating and cooling in terms of radiation rates. • Uses the specific heat capacity equation with support. • Describes how insulation reduces energy loss 	<ul style="list-style-type: none"> • Explains conduction using particle models. • Analyses cooling curves. • Performs multistep SHC calculations. • Evaluates insulation choices using numerical evidence. 	<ul style="list-style-type: none"> • Justifies material choices using conductivity and SHC. • Explains thermal processes using micro and macro models. • Evaluates heating experiments for reliability and validity. • Applies radiation balance to explain equilibrium temperature.
<p>Energy Resources</p>	<ul style="list-style-type: none"> • Identifies renewable and non-renewable resources. • Gives simple advantages and disadvantages of resources. • Describes basic operation of common energy systems. • Identifies simple environmental impacts of energy use. 	<ul style="list-style-type: none"> • Describes operation of fossil, nuclear, and renewable systems. • Compares energy resources using given data. • Explains why biofuels are considered carbon neutral. • Describes pollution and waste issues. 	<ul style="list-style-type: none"> • Compares resources in terms of reliability, cost, and output. • Explains operation of solar, geothermal, and tidal systems. • Evaluates environmental impacts using evidence. • Justifies energy choices with numerical data 	<ul style="list-style-type: none"> • Evaluates suitability of energy resources for complex scenarios. • Analyses long-term environmental and economic impacts. • Uses detailed evidence to compare energy options. • Constructs balanced arguments about energy policy.
<p>Electric Circuits</p>	<ul style="list-style-type: none"> • Identifies basic circuit components and symbols. • Draws and interprets simple circuit diagrams. 	<ul style="list-style-type: none"> • Describes charging by electron transfer. • Measures current and potential difference accurately. 	<ul style="list-style-type: none"> • Explains electric fields and charge interactions. • Analyses I–V graphs to determine resistance. 	<ul style="list-style-type: none"> • Applies electric field models to explain forces. • Combines equations to analyse complex circuits.

	<ul style="list-style-type: none"> • States simple ideas about current and resistance. • Identifies basic electrical hazards. 	<ul style="list-style-type: none"> • Uses $Q = It$ and $V = IR$ with support. • Calculates values in simple series and parallel circuits. 	<ul style="list-style-type: none"> • Uses circuit equations independently. • Investigates factors affecting resistance. 	<ul style="list-style-type: none"> • Interprets detailed I–V characteristics. • Evaluates circuit designs and experiments critically.
Electricity in the Home	<ul style="list-style-type: none"> • Identifies AC and DC supplies and mains features. • Identifies plug components and common hazards. • States that power is energy transferred per second. • Recognises energy use measured in kilowatt-hours. 	<ul style="list-style-type: none"> • Describes AC traces and mains characteristics. • Explains fuses, earthing, and insulation. • Calculates power and energy using equations. • Calculates electricity cost using kWh. 	<ul style="list-style-type: none"> • Analyses oscilloscope traces for voltage and frequency. • Explains why some appliances require earthing. • Performs multistep power and energy calculations. • Compares efficiency of devices quantitatively. 	<ul style="list-style-type: none"> • Explains AC and DC behaviour using electron models. • Combines equations to analyse household systems. • Evaluates appliance performance using data. • Diagnoses electrical issues using quantitative reasoning.