

Level 789 Pathway: Physics GCSE Award

Yr	Physics GCSE Targets
11	<ul style="list-style-type: none"> a) Recall, rearrange and use all relevant formulas with correct SI units b) Critically evaluate experimental data/procedures, draw detailed conclusions and apply to a variety of contexts c) Fully explain the differences between velocity, absorption and reflection between types of waves in solids and liquids. d) Independently draw and explain ray diagrams for simple refraction, lenses and total internal reflection, and absorption e) Fully explain the life cycle of a star, including its relationship to gas laws + planet formation f) Explain fission and fusion, and how we use them to generate electricity. Critically evaluate issues with this g) Explain in detail electrical induction and uses of it in transformer, speakers and microphones h) Fully Explain the relationship between height and pressure in liquids and air i) Independently apply the conservation of momentum to calculate the outcome of a closed system collision
10	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Critically evaluate experimental data/ procedures, draw relevant conclusions, and apply to a wider context c) Understand and use the behaviour of electricity in series and parallel circuits and apply Ohm's law d) Draw, explain and interpret the 5 I-V graphs for components e) Use Newton's 3 laws including $F=ma$ and how this relates to change in momentum and motion f) Interpret displacement, velocity and acceleration time graphs and do calculations using gradients and areas g) Explain in detail how a motor works with the use of $F=BIL$ and interacting magnetic fields h) Calculate decay chains + half-lives for radioactive elements. Explain properties of α, β and γ radiation. Evaluate their use
9	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Critically evaluate experimental data /procedures, draw relevant conclusions, and apply to a wider context c) Explain the Conservation of Energy to explain energy transfers and calculate efficiency through formula and Sankey diagrams d) Use kinetic theory to fully explain specific heat capacity, specific latent heat and the gas laws e) Explain the EM spectrum in order and why each is useful for a specific purpose, including the use of wave theory f) Explain transfer from Work to PE to KE and to other forms and use the energy to calculate power and wasted energies
8	<ul style="list-style-type: none"> a) Know + use basic formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Prepare systematic and precise plans for investigations to generate and record accurate and reliable data c) Draw detailed conclusions and evaluations d) Describe magnetic fields, its effects and how to alter its strength including an electromagnet e) Explain why we have seasons, tides and eclipses using correct scientific terminology f) Independently interpret facts and identify trends about the solar system based on data g) Describe energy transfers in the terms of conduction, convection and radiation a) Describe how global resources are limited and the need to make things efficient, including calculating efficiency b) Draw a distance time graph and interpret them c) Draw force diagrams and explain how forces make things move using correct scientific terminology h) State what pressure is and how we can alter this pressure for different purposes
7	<ul style="list-style-type: none"> a) Know formulas e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, Resistance, Frequency b) Compare the workings of the eye and camera, and the ear and the microphone showing how they are similar c) Independently design and use parallel and series circuits d) Fully explain how changing variable such as length and thickness of a wire affects resistance e) State the main properties of light and sound including the law of reflection and the 2 types of waves f) Produce reliable data to analyse and present clearly in appropriate graphs with lines of best fit

Level 678 Pathway: Physics GCSE Award

Yr	Physics GCSE Targets
11	<ul style="list-style-type: none"> a) Recall, rearrange and use all relevant formulas with correct SI units b) Evaluate experimental data/procedures, draw detailed conclusions and apply to a variety of contexts c) Explain the differences between velocity, absorption and reflection between types of waves in solids and liquids d) Independently draw and explain ray diagrams for simple refraction, lenses and total internal reflection, and absorption e) Fully explain the life cycle of a star from formation to death, including how planets are formed f) Explain fission and fusion and how we use them to generate electricity. Critically evaluate issues with this g) Explain electrical induction and uses of it in transformer, speakers and microphones h) Explain the relationship between height and pressure in liquids and air i) Apply the conservation of momentum, with little help, to calculate the outcome of a closed system collision
10	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Critically evaluate experimental data/ procedures, draw relevant conclusions c) Understand the behaviour of electricity in series and parallel circuits and apply Ohm's law to the circuit. d) Draw and explain the 5 I-V graphs for components e) Use Newton's 3 laws including $F=ma$ and how this relates to momentum and motion f) Interpret displacement, velocity and acceleration time graphs and do calculations from these using gradients and areas g) Explain how a motor works with the use of $F=BIL$ h) Calculate decay chains and half-life for radioactive elements and explain the properties of α, β and γ radiation
9	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Critically evaluate experimental data /procedures, draw relevant conclusions c) Use the Conservation of Energy to explain energy transfers and calculate efficiency through formula and Sankey diagrams d) Use kinetic theory to explain specific heat capacity, specific latent heat and the gas laws e) Describe the EM spectrum in order with some examples of uses, and use with wave theory f) Explain transfer from Work to PE to KE and to other forms and use the energy to calculate power
8	<ul style="list-style-type: none"> a) Know + use basic formulas e.g. Weight, Speed and the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc b) Prepare systematic and detailed plans for investigations to generate and record accurate and reliable data c) Process results and draw detailed conclusions from experimental data and evaluate it d) Draw magnetic fields, explain its effects and how to alter its strength including an electromagnet e) Explain why we have seasons, tides and eclipses f) Independently interpret facts and identify trends about the solar system based on data g) Describe energy transfers in the terms of conduction, convection and radiation h) Describe how global resources are limited and the need to make things efficient, including improving efficiency i) Draw a distance time graphs and use key words to describe them j) Draw force diagrams and describe how forces make things move using correct scientific terminology k) State what pressure is and how we can alter this pressure
7	<ul style="list-style-type: none"> a) Know formulas e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, Resistance, Frequency, b) Compare the workings of the eye and camera, and the ear and the microphone c) Design and use parallel and series circuits d) Describe how changing variable such as length and thickness of a wire affects resistance e) State some properties of light and sound including the law of reflection and the 2 types of waves f) Produce reliable data to analyse and present clearly in appropriate graphs with lines of best fit

Level 567 Pathway: Physics GCSE Award

Yr	Physics GCSE Targets
11	<ul style="list-style-type: none"> a) Recall, rearrange and use all relevant formulas with correct SI units b) Evaluate experimental data/procedures, draw relevant and detailed conclusions c) Explain how the differences in velocity, absorption and reflection between types of waves in solids and liquids d) Draw and explain ray diagrams for simple refraction, lenses and total internal reflection, and absorption e) Explain the life cycle of a star from formation to death, including how planets are formed f) Explain fission and fusion, and how we use them to generate electricity. Evaluate issues with this. g) Describe electrical induction and its use in transformer, speakers and microphones h) Describe the relationship between height and pressure in liquids and air a) Apply the conservation of momentum to calculate the outcome of a closed system collision
10	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Evaluate experimental data/ procedures, draw reasoned conclusions c) Apply Ohm's law to series and parallel circuits that you draw to calculate current and voltage. d) Draw and explain the 5 I-V graphs for components e) State Newton's 3 laws including $F=ma$ and use it for calculations including, momentum and motion f) Interpret displacement, and velocity time graphs and do calculations from these using gradients and areas g) Describe how a motor works with some use of $F=BIL$ h) Describe the properties of α, β and γ radiation and use to work out decay chains and half-life
9	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Evaluate experimental data /procedures, draw reasoned conclusions c) Use the Conservation of Energy to describe energy transfers and calculate efficiency through formula and Sankey diagrams d) Describe kinetic theory to explain specific heat capacity, specific latent heat and the gas laws e) Describe the EM spectrum in order with some examples of uses, and use with wave theory f) Calculate transfer from Work to PE to KE and to other forms and use the energy to calculate power
8	<ul style="list-style-type: none"> a) Know + use basic formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Prepare logical plans for investigations and generate and record accurate and reliable data c) Process results to draw conclusions from experimental data and evaluate it d) Draw magnetic fields, and state its effects and suggest some ways of how to alter its strength including an electromagnet e) Describe why we have seasons, tides and eclipses f) Interpret facts and identify trends about the solar system based on data g) Describe energy transfers in the terms of conduction, convection and radiation h) Describe how global resources are limited and the need to make things efficient, including examples of this need i) Draw a distance time graphs and use key words to describe them j) Draw force diagrams and state how forces make things move using correct scientific terminology k) State what pressure is and suggest some ways of how we can alter this pressure
7	<ul style="list-style-type: none"> a) Know basic formulas e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, Resistance, Frequency, b) Compare the workings of the eye and camera, and the ear and the microphone c) Design and use parallel and series circuits, with little help d) Suggest how changing variable such as length and thickness of a wire affects resistance e) State some properties of light and sound including the law of reflection and the 2 types of waves f) Produce reliable data to analyse and present clearly in appropriate graphs with lines of best fit

Level 456 Pathway: Physics GCSE Award

Yr	Physics GCSE Targets
11	<ul style="list-style-type: none"> a) Recall, rearrange and use all relevant formulas with correct SI units b) Evaluate experimental data/procedures, draw relevant conclusions c) Explain how different types of waves in solids and liquids can be used to detect and explore structures d) Draw ray diagrams for simple refraction, lenses and total internal reflection, and absorption e) Describe the life cycle of a star from formation to death, including how planets are formed f) Describe the differences between fission and fusion and how we use them to generate electricity g) Describe electrical induction and some of its uses h) Describe the relationship between height and pressure in liquids and air i) Describe how safety features use the principal of conservation of momentum
10	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Evaluate experimental data/ procedures, draw conclusions c) Apply Ohm's law to series and parallel circuits that you draw to calculate current and voltage. d) Draw the 5 I-V graphs for components e) State Newton's 3 laws including $F=ma$ and use it for calculations including, momentum (HT only) and motion f) Interpret displacement, and velocity time graphs and do calculations from these to work out speed and distance covered g) State how a motor works with some use of $F=BIL$ (HT Only) h) State the properties of α, β and γ radiation and use to state how radioactive elements decay and explain half-life
9	<ul style="list-style-type: none"> a) Recall, rearrange and use relevant formulas with correct SI units b) Evaluate experimental data /procedures, draw conclusions c) Use the Conservation of Energy to describe energy transfers and calculate efficiency through formula and Sankey diagrams d) Describe kinetic theory through the use of specific heat capacity, specific latent heat and the gas laws e) State the EM spectrum in order with some examples of uses, and use with wave theory f) Describe transfer from Work to PE to KE and to other forms and use the energy to calculate power
8	<ul style="list-style-type: none"> a) Know + use basic formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Prepare plans for investigations to generate and record accurate and data c) Process results with guidance and draw conclusions from experimental data and start to evaluate it d) Draw magnetic fields, and suggest ways to alter its strength and state how to make an electromagnet e) Describe why we have seasons and eclipses f) Interpret facts about the solar system based on data g) Define conduction, convection and radiation h) Describe how global resources are limited and the need to make things efficient i) Use key words to describe distance time graphs j) Draw force diagrams and state how forces make things move using appropriate scientific terminology k) Describe where high and low pressure can be found and why this might be useful
7	<ul style="list-style-type: none"> a) Know basic formulas e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, Resistance, Frequency b) Describe how the eye and ear work c) Draw and use parallel and series circuits with help d) Suggest how changing variable such as length of a wire affects resistance e) State some properties of light and sound f) Generate data to analyse and present clearly in graphs with help