

Level 789 Pathway: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 8
11	<p>Biology</p> <ul style="list-style-type: none"> a) Explain in detail the role of the hormone ADH on the nephron b) Explain in detail the process by which root hairs absorb water + mineral ions by active transport, using correct terminology c) Explain fully the role of chloroplasts in photosynthesis and how various factors affect its rate, including limiting factors d) Explain in detail the mechanism of negative feedback in terms of the action of the hormones Thyroxin and adrenalin e) Explain in detail the production of insulin by GM bacteria. Evaluate the use of genetically modified organisms f) Evaluate different scientists' (Darwin, Lamarck, Wallace) theories of evolution <p>Chemistry</p> <ul style="list-style-type: none"> a) Construct Balanced symbol and Ionic Equations independently b) Create Half equations relating to electrolysis including Redox & OIL RIG c) Use Le Chatelier's principle to predict changes to equilibrium d) Use Mass = Mr/Mole to calculate complex Reacting Mass calculations e) Draw & explain the energy profiles for Exo & Endothermic Reactions. f) Draw a tangent to a curve to calculate the initial rate of a reaction g) Describe & compare inter and intramolecular bonding h) Solve concentration calculations (g/dm^3) i) Evaluate the limitations of the particle theory <p>Physics</p> <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 to their design 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 from these using gradients and areas g) Explain 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 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Explain in detail using all technical terms the lock and key theory of enzyme action. b) Explain the term denature, factors causing denaturation and the effect on rates of reactions. c) Evaluate the claims made about sports drinks using knowledge of osmosis and the structure of cell membranes. d) Evaluate the use of stem cells. e) Use data to work out the magnification of a microscope slide. <p>Chemistry</p> <ul style="list-style-type: none"> a) Compose Balanced Symbol Equations b) Solve Conservation of Mass calculations c) Calculate RF values in Chromatography d) Calculate the rate of a reaction using the gradient of a straight line e) Describe melting & boiling points in terms of intermolecular forces f) Describe & explain factors that affect the rate of a reaction. g) Describe & explain intramolecular bonds linking bonding to properties h) Link human activities to the formation of acid rain including the symbol equations <p>Physics</p> <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) Use Conservation of Energy to explain energy transfers + 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 E_k or E_p and to other forms and use the energy to calculate power and wasted energies 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) Explain the roles of the different hormones, in controlling the menstrual cycle. b) Explain how we inherit different characteristics. c) Explain what a genetically modified organism is. d) Describe the aseptic technique for growing microbes. e) Explain how a vaccine works <p>Chemistry</p> <ul style="list-style-type: none"> a) Devise symbol equations for a range of reactions b) Accurately plot graphs independently c) Explain state of matter changes in terms of energy d) Reason that mass is conserved in reactions e) Represent the electronic structure of the first 20 elements. 	

	<p>f) Construct and link the symbol equations for the formation of acid rain</p> <p>Physics</p> <p>a) Recall and use given formula, rearrange and state SI units</p> <p>b) Draw detailed conclusions from experimental data and fully evaluate it</p> <p>c) Take accurate and reliable physical measurements from the world around you and analyse mathematically and graphically</p> <p>d) Describe magnetic fields, its effects and how to alter its strength</p> <p>e) Draw a distance time graph and interpret them</p> <p>f) Draw force diagrams and explain how forces make things move using correct scientific terminology</p> <p>g) State what pressure is and how we can alter this pressure for different purposes</p>
8	<p>Biology</p> <p>a) State the products of digestion of the three main groups of enzymes.</p> <p>b) Explain how we breathe in and out.</p> <p>c) Describe how a gas exchange surface maximise the movement of gases and dissolved substances in and out of cells.</p> <p>d) Relate adaptations of plants and animals to their habitats.</p> <p>e) Explain how you can estimate the number of plants in a given area.</p> <p>Chemistry</p> <p>a) Construct symbol equations for reactions</p> <p>b) Select a scale and draw an axis for a graph unsupported</p> <p>c) Model changes of state using diagrams</p> <p>d) Construct the word equations for the formation of acid rain</p> <p>e) Describe differences between the 3 subatomic particles in atoms linked to an atomic diagram</p> <p>Physics</p> <p>a) Know + use basic formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc.</p> <p>b) Generate and record accurate data and process this.</p> <p>c) Prepare systematic and precise plans for investigations</p> <p>d) Describe how to make an electromagnet and how to alter its strength</p> <p>e) Explain why we have seasons, tides and eclipses using correct scientific terminology</p> <p>f) Independently interpret facts and identify trends about the solar system based on data</p> <p>g) Describe energy transfers in the terms of conduction, convection and radiation</p> <p>h) Describe how global resources are limited and the need to make things efficient, including how you could calculate efficiency</p>
7	<p>Biology</p> <p>a) Define osmosis and describe in simple terms how water moves into and out of a cell by osmosis.</p> <p>b) Write out the photosynthesis formula, explain why photosynthesis is important to plants and where it occurs in plant cells.</p> <p>c) Explain how you test a leaf for starch.</p> <p>d) Explain the advantages and disadvantages of sexual and asexual reproduction.</p> <p>e) Name the hormones used to control the menstrual cycle, and describe their main role.</p> <p>f) Label in detail a sperm and egg cell and relate their structures to their functions.</p> <p>Chemistry</p> <p>a) Construct word equations for reactions independently</p> <p>b) Plot a graph independently</p> <p>c) Utilise appropriate terminology for changes of state</p> <p>d) Understand that elements are the building blocks of all matter</p> <p>e) Justify why substances are classified as elements, mixtures or compounds</p> <p>f) Predict the products of the combustion of hydrocarbons</p> <p>Physics</p> <p>a) Know formulas e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, Resistance, Frequency</p> <p>b) Compare the workings of the eye and camera, and the ear and the microphone showing how they are similar</p> <p>c) Design and use parallel and series circuits independently</p> <p>d) Explain how changing variable such as length and thickness of a wire affects resistance</p> <p>e) State the main properties of light and sound including the law of reflection and the 2 types of waves</p> <p>f) Produce reliable data to analyse and present clearly in appropriate graphs with lines of best fit</p>

Level 678 Pathway: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 7
11	<p>Biology</p> <ul style="list-style-type: none"> a) Explain how you inherit genetic disorders b) Describe where photosynthesis takes place inside plant cells and can explain several factors that affect its rate c) Explain in detail the role of the hormone ADH on the nephron d) Explain simply how bacteria can be genetically modified to produce insulin e) Explain in detail the impact of climate change <p>Chemistry</p> <ul style="list-style-type: none"> a) Balance Symbol and Ionic Equations independently b) Create Half equations relating to electrolysis including Redox & OIL RIG c) Use Le Chatelier's principle to describe changes to equilibrium d) Use Mass = Mr/Mole to calculate Reacting Masses e) Draw & explain the energy profiles for Exo & Endothermic Reactions. f) Draw a tangent to a curve to calculate the initial rate of a reaction g) Describe inter and intramolecular bonding h) Solve concentration calculations (g/dm^3) i) Describe the limitations of the particle theory <p>Physics</p> <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 and how a directional force is produced on a current carrying wire 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 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Describe where in the digestive system the 3 groups of enzymes are produced and act and explain the function of bile b) Describe and explain the factors affecting the rate of diffusion across a cell membrane using a particle model c) Explain the difference between a Prokaryotic and Eukaryotic cell d) Use data to identify the concentration of water in cells (osmosis) e) Explain what causes heart disease and how it can be treated <p>Chemistry</p> <ul style="list-style-type: none"> a) Compile Balanced Symbol Equations independently b) Solve Conservation of Mass calculations c) Calculate RF values in Chromatography d) Calculate the rate of a reaction using the gradient of a straight line e) Describe melting & boiling points in terms of intermolecular forces f) Describe & explain factors that affect the rate of a reaction. g) Describe intramolecular bonds linking bonding to properties h) Link human activities to the formation of acid rain including the symbol equations <p>Physics</p> <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 Conservation of Energy to explain energy transfers + 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 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) Explain the 3 optimum conditions for growing microbes. b) Describe 3 ways how pathogens can spread from one person to another. c) Explain how a vaccine works. d) Explain the similarities and differences in animal and plant reproduction. e) Explain how we inherit characteristics. <p>Chemistry</p> <ul style="list-style-type: none"> a) Solve symbol equations for a range of reactions b) Accurately plot graphs independently c) Describe state of matter changes in terms of energy d) Conclude that mass is conserved in reactions e) Recognise the electronic structure of the first 20 elements. 	

	<p>f) Construct the symbol equations for the formation of acid rain Physics a) Recall and use given formula, rearrange and state SI units b) Draw detailed conclusions from experimental data and evaluate it c) Take accurate physical measurements from the world around you and independently analyse graphically d) Draw magnetic fields, and explain its effects and how to alter its strength e) Draw a distance time graphs and use key words to describe them f) Draw force diagrams and describe how forces make things move using correct scientific terminology g) State what pressure is and how we can alter this pressure</p>
8	<p>Biology a) Explain what a balanced diet is. b) Label a diagram of the digestive system. c) Describe how our body uses each of the 5 food groups. d) Explain how I could estimate the number of daisies in a field. e) Explain how an animal is adapted to live in a hot country. Chemistry a) Produce symbol equations for reactions b) Select a scale and draw an axis for a graph c) Explain changes of state using diagrams d) Compile the word equations for the formation of acid rain e) Describe the 3 subatomic particles in atoms and draw a simple diagram Physics a) Know + use basic formulas e.g. Weight, Speed and the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Generate and record reliable data and process this. c) Prepare systematic plans for investigations d) Describe how to make an electromagnet and state how to alter its strength 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</p>
7	<p>Biology a) Explain what plants need to grow. b) Explain how you test a leaf for starch. c) Describe 3 changes that happen to girls and boys at puberty. d) Name and describe 3 different types of cell. e) Label a sperm and egg cell and fully relate structures to function. Chemistry a) Construct word equations for reactions b) Independently plot a graph with given scale c) Employ correct scientific terminology for changes of state d) State that elements are the building blocks of all matter e) Classify substances as elements, mixtures or compounds, explaining the difference f) Determine the products of the combustion of hydrocarbons Physics 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 with little help d) Describe how changing variables e.g. 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</p>

Level 567 Pathway: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 6
11	<p>Biology</p> <ul style="list-style-type: none"> a) Explain how you inherit genetic disorders. b) Explain where photosynthesis takes place inside plant cells and can name the raw ingredients of photosynthesis. c) Explain how bacteria can be genetically modified to produce insulin d) Explain the impact of climate change on several ecosystems. e) Explain the roles of the 3 hormones involved in the control of the menstrual cycle. <p>Chemistry</p> <ul style="list-style-type: none"> a) Balance Symbol and complete Ionic Equations b) Complete Half equations relating to electrolysis including Redox & OIL RIG c) Recognise that Le Chatelier's principle describes changes to equilibrium d) Use Mass = Mr/Mole and recognise this can be used to calculate reacting Masses e) Describe the energy profiles for Exo & Endothermic Reactions. f) Draw a tangent to a curve and recognise its use in calculating the initial rate of a reaction g) Describe inter and intramolecular bonding h) Make progress towards solving concentration calculations (g/dm^3) i) State the limitations of the particle theory <p>Physics</p> <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 and how a directional force is produced on a current carrying wire with some use of $F=BIL$ h) Describe the properties of α, β and γ gamma radiation and use to work out decay chains and half-life for radioactive elements 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Discuss the three groups of digestive enzymes and their substrates. b) Describe diffusion across a cell membrane using a particle model. c) Link ribosomes and mitochondria to their function. d) Define osmosis. e) Identify major causes of heart disease and suggest some treatments. <p>Chemistry</p> <ul style="list-style-type: none"> a) Compile Balanced Symbol Equations b) Solve Conservation of Mass calculations c) Calculate RF values in Chromatography d) Recognise the rate of a reaction can be calculated using the gradient of a straight line e) Describe melting & boiling points in terms of particulate energy f) Describe the range of factors that affect the rate of a reaction. g) Describe intramolecular bonds bonding linking bonding to properties h) Link human activities to the formation of acid rain including the word equations <p>Physics</p> <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 principal of 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 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) Explain the 3 optimum conditions for growing microbes. b) Identify 3 ways that pathogens can spread through a population. c) Explain how a vaccine works. d) Explain some similarities between animal and plant reproduction. e) Explain how we inherit characteristics. <p>Chemistry</p> <ul style="list-style-type: none"> a) Solve symbol equations for reactions b) Accurately plot graphs c) Describe state of matter changes in terms of particles 	

	<ul style="list-style-type: none"> d) Recognise that mass is conserved in reactions e) Recognise the electronic structure of the first 10 elements. f) Identify the word equations for the formation of acid rain <p>Physics</p> <ul style="list-style-type: none"> a) Recall and use given formula, rearrange and state SI units b) Draw conclusions from experimental data and evaluate it c) Take reproducible physical measurements from the world around you and attempt to analyse graphically d) Draw magnetic fields, and state its effects and suggest some ways of how to alter its strength e) Draw a distance time graphs and use key words to describe them f) Draw force diagrams and state how forces make things move using correct scientific terminology g) State what pressure is and suggest some ways of how we can alter this pressure
8	<p>Biology</p> <ul style="list-style-type: none"> a) Explain what a balanced diet is. b) Label a diagram of the digestive system. c) Explain why the body needs each of the 5 food groups. d) Describe a method used to estimate the number of daisies in a field. e) Explain how an animal is adapted to live in a hot country. <p>Chemistry</p> <ul style="list-style-type: none"> a) Produce symbol equations for reactions with support b) Select a scale and draw an axis for a graph c) Describe changes of state using diagrams d) Recognise the word equations for the formation of acid rain e) Identify the 3 subatomic particles in atoms and draw a simple diagram <p>Physics</p> <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) Generate and record data and process this. c) Prepare logical plans for investigations d) Describe how to make an electromagnet and state a way alter its strength 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
7	<p>Biology</p> <ul style="list-style-type: none"> a) Explain what plants need to grow. b) Describe how you test a leaf for starch. c) Describe 3 changes that happen to girls and boys at puberty. d) Describe 3 different types of cell. e) Label a sperm and egg cell and relate structure to function. <p>Chemistry</p> <ul style="list-style-type: none"> a) Develop word equations for reactions b) Plot a graph with given scale and axis c) Employ scientific terminology for changes of state d) State that elements are the building blocks of all matter e) Classify substances as elements, mixtures or compounds f) Identify the products of the combustion of hydrocarbons <p>Physics</p> <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 some help d) Suggest how changing variables 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: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 5
11	<p>Biology</p> <ul style="list-style-type: none"> a) Explain the roles of the different hormones, in controlling the menstrual cycle. b) Explain how we inherit different characteristics. c) Explain what a genetically modified organism is. d) Name the hormone involved in the control of water and which organ it affects. e) Write a balanced symbol equation for photosynthesis. <p>Chemistry</p> <ul style="list-style-type: none"> a) Balance Symbol Equations b) Recognise Half equations relating to electrolysis c) Recall that Le Chatelier's principle is involved in reversible reactions d) Calculate relative formula mass and percentage composition calculations e) Draw the energy profiles for Exo & Endothermic Reactions. f) Recognise the rate of a reaction can be calculated using the gradient of a straight line g) Describe intramolecular bonding linking bonding to properties h) Recognise concentration can be expressed as g/dm^3 or mol/dm^3 i) Utilise particle theory in explanations where appropriate <p>Physics</p> <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 and how a directional force is produced on a current carrying wire 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 how this leads to a half-life for radioactive elements 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Describe the different groups of pathogens and give a structural feature for each. b) State 2 diseases that we have vaccines for. c) Explain the lock and key theory of enzyme action. d) Define osmosis e) Describe a use of stem cells. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete Balanced Symbol Equations b) Understand the principle of the Conservation of Mass c) Utilise Chromatograms to analyse substances d) Describe melting & boiling points in terms of particles e) Describe some factors that affect the rate of a reaction. f) Describe the main types intramolecular bonding g) Identify human activities which lead to the formation of acid rain including the word equations <p>Physics</p> <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 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 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) State the 3 optimum conditions for growing microbes. b) Identify 3 ways that pathogens can spread through a population. c) Explain simply how a vaccine works. d) Explain 2 ways of plant reproduction. e) Explain why there can be similarities between offspring and parents. <p>Chemistry</p> <ul style="list-style-type: none"> a) Devise symbol equations for reactions b) Accurately plot graphs c) Describe state of matter changes in terms of particles d) Recognise that mass is conserved in reactions 	

	<p>e) Recognise the electronic structure of the first 10 elements. f) Identify the word equations for the formation of acid rain</p> <p>Physics</p> <p>a) Recall and use some given formula and state SI units b) Draw conclusions from experimental data and start to evaluate it c) Take reliable physical measurements from the world around you and start to analyse graphically with guidance d) Draw magnetic fields, and suggest some ways of how to alter its strength e) Use key words to describe distance time graphs f) Draw force diagrams and state how forces make things move using appropriate scientific terminology g) Describe where high and low pressure can be found and why this might be useful</p>
8	<p>Biology</p> <p>a) Explain the role of carbohydrates in the body. b) Label a diagram of the lungs. c) Describe which cells carry oxygen. d) Describe 2 different habitats. e) Write a simple food chain and identify the producer and consumer.</p> <p>Chemistry</p> <p>a) Arrange word equations for reactions b) Select a scale and draw an axis for a graph with guidance c) Describe changes of state using diagrams d) Recognise the word equations for the formation of acid rain e) Identify the 3 subatomic particles in atoms and draw a simple diagram</p> <p>Physics</p> <p>a) Know + use basic formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Generate and record data and process this with guidance. c) Prepare plans for investigations d) State how to make an electromagnet and state a way alter its strength 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</p>
7	<p>Biology</p> <p>a) Draw and label a plant cell. b) Describe that iodine tests for starch. c) Describe the 2 different types of reproduction. d) Describe 2 changes that take place in boys and girls at puberty. e) Label a sperm and egg cell and describe their adaptations.</p> <p>Chemistry</p> <p>a) Describe reactions in terms of Reactants → Products b) Plot a graph with given scale and axis c) Understand the scientific terminology for changes of state d) State that elements are the building blocks of all matter e) Identify substances as elements, mixtures or compounds f) Identify the products of the combustion of hydrocarbons</p> <p>Physics</p> <p>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 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</p>

Level 345 Pathway: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 4
11	<p>Biology</p> <ul style="list-style-type: none"> a) Explain the roles of the different hormones, in controlling the menstrual cycle. b) Explain how we inherit different characteristics. c) Give an example of a genetically modified organism is. d) Name the hormone involved in controlling blood sugar levels. e) Write a word equation for photosynthesis. <p>Chemistry</p> <ul style="list-style-type: none"> a) Identify Balanced Symbol Equations b) Identify the products of electrolysis at each electrode c) Describe what equilibrium means for a reversible reaction d) Calculate relative formula mass e) Recognise the energy profiles for Exo & Endothermic Reactions. f) Infer rate of a reaction from steepness of a line of best fit g) Identify types of intramolecular bonding in given substances h) Use particle theory in descriptions where appropriate <p>Physics</p> <ul style="list-style-type: none"> a) Recall, and use relevant formulas with correct SI units b) Draw conclusions from data and begin to evaluate c) Apply Ohm's law to series and parallel circuits that you draw to calculate voltage. d) Draw some examples of the I-V graphs for components e) State Newton's 3 laws including $F=ma$ and use it for calculations including motion f) Describe displacement, and velocity time graphs and do calculations from these to work out speed and distance covered g) State some of the properties of α, β and γ radiation, how radioactive elements decay, and describe what half-life is 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Draw and label a bacteria cell. b) Explain simply how a vaccine works. c) Name 3 groups of enzymes. d) Know the name for the movement of water into and out of cells. e) Give a use of stem cells. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete Balanced Symbol Equations with guidance b) State the principle of the Conservation of Mass c) Use Chromatograms to identify pure substances and mixtures d) Describe melting & boiling points in terms of the changes of state e) Appreciate that factors can affect the rate of a reaction. f) Recognise the key types of intramolecular bonds g) Identify human activities which lead to the formation of acid rain <p>Physics</p> <ul style="list-style-type: none"> a) Recall and use relevant formulas with correct SI units b) Draw conclusions from data and begin to evaluate c) Use the principal of Conservation of Energy to describe energy transfers and draw Sankey diagrams d) Use specific heat capacity, specific latent heat and the gas laws to explain the 3 states of matter e) State the EM spectrum in order with some examples of uses f) Describe transfer from Work to PE to KE 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) State the 3 conditions for growing microbes. b) Name 3 pathogens. c) State 2 diseases that we have vaccines for. d) Explain 2 methods of plant reproduction. e) Explain why there can be similarities between offspring and parents. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete symbol equations for reactions b) Accurately plot graphs with guidance c) Describe changes of state using key words d) Recall that mass is conserved in reactions e) State the 3 subatomic particles in atoms and recall that electrons are arranged in orbitals f) Identify the word equation for the formation of acid rain <p>Physics</p> <ul style="list-style-type: none"> a) Recall and use some given formula and state some SI units 	

	<ul style="list-style-type: none"> b) Draw conclusions from experimental data and start to evaluate it with guidance c) Take physical measurements from the world around you and start to analyse graphically with guidance d) Draw magnetic fields, and suggest two ways of how to alter its strength e) Describe distance time graphs f) Draw force diagrams and state how forces make things move g) Describe where high and low pressure can be found
8	<p>Biology</p> <ul style="list-style-type: none"> a) Label a diagram of the digestive system when provided with the key words eg: stomach. b) Name the 3 major food groups and explain why proteins are an important part of a balanced diet. c) Label a diagram of the lungs using key words. d) Name an adaptation of a plant to a hot habitat. I can name an adaptation of an animal to a cold habitat. e) Name 2 harmful substances in cigarettes. <p>Chemistry</p> <ul style="list-style-type: none"> a) Arrange word equations for reactions b) Select a scale and draw an axis for a graph with guidance c) Describe the 3 states of matter in terms of particles d) State how acid rain may be formed e) Draw a simple diagram of the atom <p>Physics</p> <ul style="list-style-type: none"> a) Know + use some formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Generate and record data with guidance. c) Prepare plans for investigations d) State how to make an electromagnet and state a way alter its strength e) Describe why we have either seasons or eclipses f) Interpret facts about the solar system g) Describe three ways heat can travel h) Describe how global resources are limited
7	<p>Biology</p> <ul style="list-style-type: none"> a) Label a plant cell. b) Describe where photosynthesis happens. c) Describe 3 parts of a cell that both animals and plant cells have. d) Describe 2 changes that take place in boys and girls at puberty. e) Name the 2 sex cells in human reproduction. <p>Chemistry</p> <ul style="list-style-type: none"> a) Describe reactions in terms of Reactants → Products b) Plot a graph with given scale and axis with guidance c) Recall terminology for changes of state d) State that elements are the building blocks of all matter e) Identify substances as elements, mixtures or compounds f) Recall the products of the combustion of hydrocarbons <p>Physics</p> <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 or ear work c) Draw and use parallel and series circuits d) Carry out an experiment to investigate resistance e) State some similarities and differences between light and sound f) Generate data, with means and present clearly in graphs with help

Level 234 Pathway: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 3
11	<p>Biology</p> <ul style="list-style-type: none"> a) Explain how a sperm cell is adapted to carry out its job. b) Describe 2 things that a plant needs to photosynthesise. c) Describe 3 hormones involved in controlling the menstrual cycle. d) Explain 3 ways that an animal is adapted to live in cold climates. e) State 2 things that cells need for respiration. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete Balanced Symbol Equations with guidance b) Know electrolysis can be used to split substances c) Describe what a reversible reaction is d) Calculate relative formula masses for simple molecules e) Recognise that reactions can be Exo or Endothermic. f) Infer rate of a reaction from data gathered g) Recognise the key types of intramolecular bonds <p>Physics</p> <ul style="list-style-type: none"> a) Recall, and use most relevant formulas with correct SI units b) Draw conclusions from data and begin to evaluate with help c) Draw series and parallel circuits with ammeters, voltmeters and components d) Draw I-V graphs for a filament bulb and fixed resistor e) State Newton's 3 laws f) Describe displacement, and velocity time graphs g) State some of the properties of alpha, beta and gamma radiation 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Name the 5 food groups b) Describe 2 differences between arteries and veins c) Name 3 parts of an animal and plant cell that are the same. d) Explain why vaccinations are important. e) Give an example of a pathogen. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete word equations for reactions b) Know that mass is not lost during reactions c) State that chromatography is a way of separating mixtures d) Describe changes of state using key words e) Appreciate that factors can affect the rate of a reaction. f) Identify substances as metallic or non-metallic g) Identify human activities which lead to the formation of acid rain <p>Physics</p> <ul style="list-style-type: none"> a) Recall and use most relevant formulas with correct SI units b) Draw conclusions from data and begin to evaluate with help c) Use the principal of Conservation of Energy to describe energy transfers and interpret Sankey diagrams d) Describe how changes between the 3 states of matter happen when energy is added e) State several examples of uses of EM waves f) Describe transfer from PE to KE 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) Describe the 3 conditions for growing microbes. b) Explain how a disease can be spread. c) Explain what a vaccine is. d) Describe why plants have flowers. e) Explain why children look similar to their parents. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete word equations for reactions with guidance b) Plot graphs with guidance c) Recall terminology for changes of state d) State the 3 subatomic particles in atoms e) Recall that electrons are arranged in orbitals f) Recognise the word equation for the formation of acid rain <p>Physics</p> <ul style="list-style-type: none"> a) Use some given formula and state some SI units b) Draw conclusions from experimental data with guidance 	

	<ul style="list-style-type: none"> c) Take physical measurements from the world around you and start to draw graphs with guidance d) Suggest two ways of how to alter its strength of an electro magnet e) Describe distance time graphs with help f) Draw force diagrams g) Give examples of high and low pressure
8	<p>Biology</p> <ul style="list-style-type: none"> a) Name a food that contains carbohydrates. b) Label a diagram of the digestive system given labels. c) Explain why we need proteins. d) Draw a simple food chain. e) Describe how an animal is adapted to live in the cold. <p>Chemistry</p> <ul style="list-style-type: none"> a) Arrange word equations for reactions b) Select a scale and draw an axis for a graph with guidance c) Recognise the 3 states of matter from particle diagrams d) State how acid rain may be formed e) Draw a simple diagram of the atom <p>Physics</p> <ul style="list-style-type: none"> a) Use some formulas e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Follow instructions to generate and record data with guidance. c) Prepare simple plans for investigations d) State how to make an electromagnet e) Draw a diagram to show how we have eclipses f) Know the relationship between distance from sun and length of year for a planet g) Know some examples of how heat travels h) Know that global resources are limited
7	<p>Biology</p> <ul style="list-style-type: none"> a) Explain what plants need to grow. b) State what colour iodine changes with starch. c) Describe a change that happens to girls and boys at puberty. d) Name 3 different types of cell. e) Label an animal cell. <p>Chemistry</p> <ul style="list-style-type: none"> a) Describe reactions in terms of Reactants → Products b) Plot a graph with given scale and axis with guidance c) State that elements are the building blocks of all matter d) Know that substances can exist as elements, mixtures or compounds e) List the products of the combustion of hydrocarbons <p>Physics</p> <ul style="list-style-type: none"> a) Use some basic formulas e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, Resistance, Frequency, b) Label a diagram of the eye and ear c) Draw and use parallel and series circuits, and carry out an experiment with circuits d) State some differences between light and sound e) Generate data, and present clearly in graphs with help

Level 123 Pathway: Combined Science Double Award

Yr	Combined Science Targets:	Pathway 2
11	<p>Biology</p> <ul style="list-style-type: none"> a) Describe how a sperm cell moves. b) Explain what a plant needs to photosynthesise. c) Name the hormones involved in the menstrual cycle. d) Describe how a polar bear is adapted to live in cold climates. e) Name 2 things that a cell needs. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete Symbol Equations with guidance b) Know electrolysis involves the use of electricity c) Identify the reversible reaction symbol d) Identify the atoms in simple molecules e) Recognise that some reactions give out heat (Exothermic) f) Know that reactions can go at different rates g) State the 3 types of intramolecular bonds <p>Physics</p> <ul style="list-style-type: none"> a) Recall, and use some relevant formulas with correct SI units b) Draw conclusions from data with help c) Draw series and parallel circuits with ammeters, voltmeters and some components d) Recognise the I-V graphs for a filament bulb and fixed resistor e) State Newton's 2nd law $F=ma$ f) Recognise displacement, and velocity time graphs g) State the 3 type of radiation 	
10	<p>Biology</p> <ul style="list-style-type: none"> a) Name 3 food groups b) Know what the heart does. c) Name 3 parts of an animal and plant cell. d) Explain why vaccinations are important. e) Name a pathogen. <p>Chemistry</p> <ul style="list-style-type: none"> a) Complete word equations for reactions with guidance b) State that mass is not lost during reactions c) Know that chromatography is a chemical technique d) Recall terminology for changes of state e) Know that temperature can affect the rate of a reaction. f) Identify substances as metallic or non-metallic g) Identify human activities which lead to the formation of acid rain <p>Physics</p> <ul style="list-style-type: none"> a) Recall and use some relevant formulas with correct SI units b) Draw conclusions from data with help c) Describe energy transfers and interpret Sankey diagrams d) Describe how changes between the 3 states of matter e) State some examples of uses of EM waves f) Know some examples of transfer from PE to KE 	
9	<p>Biology</p> <ul style="list-style-type: none"> a) Describe conditions for growing microbes. b) Explain how a disease can be spread. c) Name a disease that we are given a vaccine for. d) Explain why plants have flowers. e) Explain why children look similar to their parents. <p>Chemistry</p> <ul style="list-style-type: none"> a) Arrange word equations for reactions with guidance b) Plot graphs with guidance c) List the 3 subatomic particles in atoms d) Recall that electrons are not in the nucleus e) State how acid rain may be formed <p>Physics</p> <ul style="list-style-type: none"> a) Use some given formula b) Draw simple conclusions from experimental data with guidance c) Take a series of measurements and start to draw graphs with guidance 	

	<ul style="list-style-type: none"> d) State an advantage of an electro magnet e) Describe distance time graphs with help f) Draw simple force diagrams g) Give an example of high and low pressure
8	<p>Biology</p> <ul style="list-style-type: none"> a) Name a food that contains carbohydrates. b) Label a diagram of the digestive system given labels. c) Explain why we need proteins. d) State what a food chain starts with. e) Explain why a polar bear is white. <p>Chemistry</p> <ul style="list-style-type: none"> a) Recognise word equations for reactions b) Select a scale and draw an axis for a graph with guidance c) Recognise the 3 states of matter from particle diagrams d) Draw a simple diagram of the atom with a template <p>Physics</p> <ul style="list-style-type: none"> a) Use some formulas with help e.g. Weight, Speed and know the S.I. units for Energy, Power, Speed, Weight, Mass, Pressure, etc. b) Follow simple instructions to generate and record data with guidance. c) Prepare simple plans for investigations with help d) Make an electromagnet e) Draw a diagram to show how we have a solar eclipse f) State what a year is g) Know 2 examples of how heat travels h) State some global resources that will run out
7	<p>Biology</p> <ul style="list-style-type: none"> a) State what plants need to grow. b) State what colour iodine changes with starch. c) Describe a change that happens to girls and boys at puberty. d) Name 2 different types of cell. e) Label an animal cell. <p>Chemistry</p> <ul style="list-style-type: none"> a) Describe reactions in terms of Reactants → Products b) Plot a graph with given scale and axis with guidance c) State that elements are the building blocks of all matter d) Know that substances can exist as elements or compounds e) List the products of the combustion of hydrocarbons <p>Physics</p> <ul style="list-style-type: none"> a) Use some basic formulas with help e.g. Ohm's Law, Hooke's Law, and the S.I. units e.g. Voltage, Current, Force, etc b) Label a diagram of the eye or ear c) Make parallel and series circuits d) State a differences between light and sound e) Generate data, and present clearly with help