Purple - PSHE content

Yellow – key words

KS 3 Science Curriculum 2026-2027 Year 8

Curriculum Intent

The science curriculum will provide all pupils, regardless of starting point with the foundation of knowledge needed to allow them to critically analyse and engage with science, technology and nature in the modern world.

Curriculum Implementation

Year	Start When	No of lessons	Topic	Lesson Objectives	Assessment for learning	Key Practicals
8	Learning Cycle 1	10	Nutrition and Diet	• Define the term "Balanced Diet". • Describe the main components of a balanced diet. • Evaluate different types of diets for different individuals. • To describe how to prepare a food sample. • Explain how to test for lipids and starch • Interpret results to establish whether food samples contain starch and fat. • Recall how to prepare a food sample. • Explain how to test for sugar and protein. • Interpret results to establish whether food samples contain sugar and protein. • Identify why people have different energy requirements. • Plan a diet for a specific individual • To understand how an unbalanced diet can lead to health problems • To identify health conditions associated with an imbalanced diet • To name the organs of the digestive system • Describe the function of the different parts of the digestive system	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20	Basic Food tests Enzyme function practical Testing the effectiveness of washing powders

				• Describe the difference between physical and chemical digestion • To name the organs of the digestive system • Describe the function of the different parts of the digestive system • Describe the difference between physical and chemical digestion • **Required Practical:** Carry out an investigation into the effect of pH on the rate of reaction of amylase. • Calculate the rate of reaction. • Interpret your results. • Recall the digestive enzymes. • Explain how digestive enzymes work. • Evaluate the use of enzymes • Identify which enzymes are used in washing powder • Describe why digestive enzymes are used in washing powder • Evaluate the advantages and disadvantages of using enzymes in washing powder	marks of exam style questions •Exam style questions for homework.	
8	Learning Cycle 1	15	Electricity and Magnetism	• Identify and label the key components of a basic electrical circuit using standard symbols. • Use electrical symbols to draw circuit diagrams • Describe how electrical circuits work • Describe the difference between series and parallel circuits. • Investigate how lamps can be controlled with switches in series and parallel circuits • Apply knowledge of series and parallel circuits to unfamiliar contexts.	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content half way	Investigating series and parallel circuits Investigating resistance Investigating electromagnets Investigating static electricity Magnetic fields

				• Describe that voltage (or potential difference) is a measure of the size of the push that the charges get from the power supply (cell or battery) so that they start flowing and create a current. • Describe how current changes with the voltage as when the voltage is increased, the current also increases. • Describe that the rating of a battery or bulb is a number that refers to the amount of current, voltage or power that the component uses. • Describe that voltage (or potential difference) is a measure of the size of the push that the charges get from the power supply (cell or battery) so that they start flowing and create a current. • Describe how current changes with the voltage as when the voltage is increased, the current also increases. • Describe that the rating of a battery or bulb is a number that refers to the amount of current, voltage or power that the component uses. • To investigate the current and potential difference in a series and parallel circuit through a practical. • Describe the pattern in current and potential difference readings for series and parallel circuits. • Draw conclusions on current & potential difference in series and parallel. • Define resistance in electrical circuits. • Describe how to calculate resistance	through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	

				• Explore how different materials affect resistance. • Apply knowledge of resistance to solve circuit problems. • Describe how to practically measure resistance in a circuit • Describe the role of a resistor • Investigate how thickness and length affect resistance • Differentiate between conductors and insulators based on their properties. • Test materials to classify them as conductors or insulators. • Explain how the structure of atoms affects a material's ability to conduct electricity. • Describe the behaviour of like and unlike charges. • Explain the concept of an electric field and its direction around charged objects. • Predict the motion of a charged object in an electric field. • Explain how objects become charged by friction • Describe the transfer of electrons during charging. • Investigate static electricity effects using simple apparatus. • Identify materials that are magnetic and describe their properties. • Explain the difference between permanent and induced magnets. • Describe the interaction between magnets (attraction and repulsion of poles). • To use a compass to find the direction of a magnetic field around a magnet.		

				• To draw the shape and pattern of magnetic field lines around a bar magnet. • To describe how the strength of a magnetic field changes with distance. • Explain how an electromagnet is made using wire and current. • Identify factors that affect the strength of an electromagnet. • Compare the properties of electromagnets with permanent magnets. • Design a fair test to investigate how changing one variable affects electromagnet strength. • Collect and record data on electromagnet performance using appropriate instruments. • Analyse results to draw conclusions and suggest improvements. • Describe real-world applications of electromagnets • Explain why electromagnets are used instead of permanent magnets in certain devices. • Evaluate the advantages and limitations of electromagnets in practical use.		
8	Learning Cycle 1	14	Fundamentals of Reactions	• Describe evidence or recall ways to tell a chemical reaction is happening. • Define and describe chemical reactions and physical changes. • Explain the difference between chemical and physical reactions • State the conservation of mass theory. • Explain why mass appears to increase or decrease in some reactions. • Link conservation of mass to balanced symbol equations • Recall what chemical reactions are	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key	

				• State what reactants and products are in a chemical reaction • Construct word equations to represent chemical reactions • Describe an endothermic change and an exothermic change • Give examples of an exothermic change and endothermic change • Represent these reactions using a reaction profile diagram • Be able to give examples of acids and give features of them • Describe terms concentrated and dilute in relation to acids • Give the formula for some common acids. • Be able to give examples of alkalis and give features of them • Describe terms base and alkali • Give the formula for some common alkalis • Describe what a salt is • Predict the salts that form when acids react with metals • Predict the salts that form when acids react with bases • Describe a neutralisation reaction. • Carry out a neutralisation reaction to make a salt. • Explain how to make salts using neutralisation reactions. • Describe how metals react with acids. • Predict the salts that form when acids react with metals. • State the test and result for hydrogen gas. • State how metals react with oxygen • State ways to minimise this reaction	content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	

				• Compare the reactions of different metals and oxygen • Describe how metals react with water • Predict the products that form when metals react with water • To be able to write word equations for reactions between metals and water • Describe how metal carbonates react with acids. • Predict the salts that form when acids react with metal carbonates. • State the test and result for carbon dioxide gas • Recall what happens in a decomposition reaction • Describe thermal decomposition using equations • Explain how to test the presence of carbon dioxide gas and how it can be used to measure rate of reaction • Describe ways to measure rate of reaction • Describe the effect on temperature, surface area and concentration on rate of reaction exaction • Recall what are catalysts • State how catalysts work • Describe how catalysts, including enzymes, speed up chemical reactions. • Draw reaction profiles with a catalyst		
Learning Cycle 1 Trust Wide Assessment						
8	Learning Cycle 2	10	Space	• Describe forces of attraction between the Earth and moon and the Earth and the sun • Describe the properties that affect the sizes of gravitational forces between different objects in the Solar system	•Core questions as the plenary of	21. RP - Investigating refraction Select variables for an investigation

				• Measure and record the weight of known masses • Plot an accurate graph with a line of best fit (weight against mass) • Describe the relationship between mass and weight • Use an equation to calculate weight • Explain why weight changes on different planets • Our Neighbours in Space • Describe our position in the solar system • Phases of the moon, and eclipses • Describe what else is out there in space- galaxies, asteroids, comets etc. Use the AMNH 'The known Universe) The Known Universe by AMNH #datavisualization , universe size comparisons Universe Size Comparison | 3d Animation Comparison | Stars Real Scale Comparison • Describe a light year and explain why they are used in astronomy • Describe what a star is and why it emits light • Life on Earth • Describe the definitions of a day and a year and how these are different for other planets • Describe and explain differences in day length, position of the sun and temperatures in different seasons • Explain why Earth experiences seasons but not every planet in the solar system does • Describe The Big Bang Theory (BASIC!!!) • Extend- Describe the Life Cycle of stars? • Evaluate Conspiracy Theories- did man land on the moon, Flat-Earth	every lesson. •10 low stakes multiple choice Questions on key content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	•Plan to safely collect valid and accurate data •22. RPi Investigating refraction Present data appropriately •Evaluate data •Analyse scientific text and diagrams

				• Explain how Models changed over time- the solar system and the Earth		
8	Learning Cycle 2	10	Metals and Materials	• Describe when a reaction has taken place • Explain what the reactivity series is • Apply knowledge of the reactivity series identify unknown metals • Describe what is meant by a displacement reaction • Investigate the displacement of iron using carbon • Apply knowledge of the reactivity series to predict when a displacement reaction will occur • Describe what is meant by an ore • Explain how metals are extracted from their ores • Use the reactivity series to predict which elements can be extracted using carbon • State what thermal decomposition is • Write word and symbol equations for decomposition reactions • Explain how to investigate a thermal decomposition reaction • State the components of a fire triangle and what happens when one is removed. • Describe the reactants and products made in complete and incomplete combustion using word equations. • Apply your understanding of complete combustion to complete an exam question. • State what an oxidation reaction is. • Complete word equation for oxidation reactions • Apply your understanding to an example of oxidation	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	

				• Define ceramics and identify their properties • Explain the process of making ceramics • Describe the uses of ceramics in everyday life and examples of ceramics used in science • Define and identify polymers and their basic properties. • Explain the process of polymerisation and its importance. • Discuss the applications and environmental impact of polymers • Define what alloys are and identify common examples • Describe the properties of alloys compared to pure metals • Explain the uses of alloys in everyday applications • Describe composites and how they are formed • Identify and describe the properties of various materials • Explain the applications of composites in everyday life		
8	Learning Cycle 2	13	Biological Reactions	• Describe the hierarchy of organisation in a plant. • Recall the macrostructure and function of a plant cell. • Name and describe the functions of tissues and organs in a plant including roots, leaves, stem and flowers. • Describe the process of photosynthesis. • State the word equation for photosynthesis. • Explain the importance of photosynthesis in the food chain/for the planet.	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content	

				• Carry out and record observations for an experiment to test for the presence of starch in a leaf, explaining results obtained • Describe how scientific theories are formed, checked and why they change over time • List and define key terms linked to scientific theories • Describe how ideas about photosynthesis have changed over time • Describe the structure and function of the main components of a leaf. • Explain the distribution of the chloroplasts in a leaf. • Explain how the structure of the leaf is adapted for photosynthesis. • Recall the structure of the leaf • Describe how plants are adapted to take in and release gases to support photosynthesis • Describe the process of gas exchange in plants • Describe the process of transpiration in plants • Investigate the role of stomata in water loss • Explain plant adaptations that reduce water loss in extreme environments • Describe transpiration • Investigate the setup for measuring transpiration • Explain the factors affecting transpiration rate • Evaluate the results of the transpiration experiment • Describe transpiration • Investigate the setup for measuring transpiration	half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	

				• Explain the factors affecting transpiration rate • Evaluate the results of the transpiration experiment • Explain how plants absorb minerals from the soil • Describe the transport process of nutrients in plants • Identify the role of specific minerals in plant growth • Describe the function of a greenhouse in farming. • List factors that affect photosynthesis • Explain how greenhouses control environmental factors to enhance plant growth linked to photosynthesis rate • Analyse the benefits and limitations of using greenhouses in agriculture • Identify where aerobic respiration occurs in cells. • Describe the process of aerobic respiration including reactants and products. • Explain the importance of aerobic respiration in providing energy. • Describe anaerobic respiration and its process. • Compare anaerobic and aerobic respiration. • Describe responses of the body to exercise and link this to aerobic and anaerobic respiration. • Identify and describe the reactants and products of anaerobic respiration in microorganisms • Explain similarities and differences between anaerobic respiration in microorganisms and humans		

				• Explain the process of fermentation and its importance in food and drinks		
Learning Cycle 2 Trust Wide Assessment						
8	Learning Cycle 3	13	Earth	• Know the structure of the Earth. • Describe the properties of the layers of the Earth. • State what minerals are found in the crust. • State some features of igneous rocks. • Describe how igneous rocks are formed. • Understand the difference between intrusive and extrusive igneous rocks. • Understand what sedimentary rocks are and how they form • Identify key characteristics of sedimentary rocks • Recognise examples of common sedimentary rocks • State some features of metamorphic rocks, • Describe how metamorphic rocks are formed. • Understand the processes involved in the rock cycle. • Understand how rocks transform from one type to another through various processes. • Understand the processes involved in the rock cycle. • Understand how rocks transform from one type to another through various processes. • Describe the composition of crude oil using keywords • Draw molecular diagrams of the first 5 alkanes	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	

				• Evaluate the extraction and use of crude oil • Recall the main gases found in the Earth's atmosphere. • State the amount of each gas found in the atmosphere. • Describe some uses for each gas. • Describe the main processes involved in the cycling of carbon. • Recall that methane and carbon dioxide are greenhouse gases. • Recall that greenhouse gases reduce the amount of energy lost from the Earth through radiation and therefore the temperature has been rising as the concentration of those gases has been rising. • Compare the relative effects of human-produced and natural global warming. • Describe human activities that have increased the concentration of carbon dioxide in the atmosphere. • Describe the how global warming an impact upon our climate. • State some of the evidence that scientists use to support the view that human activities have led to climate change. • Recall that there is only a certain quantity of any resource on Earth, so the faster it is extracted, the sooner it will run out Recycling reduces the need to extract resources. • Evaluate the advantages and disadvantages of recycling.		

				• Analyse data related to recycling. • Recall different ways we extract materials from the Earth • Describe the advantages and disadvantages of extracting materials • Evaluate ways to extract materials.		
8	Learning Cycle 3	10	Health and Lifestyle	• To be able to describe the effects of alcohol on the body to include short and long-term effects • To know the effects of alcohol on behaviour to include reaction times and decision making. • To be able to describe the effects of alcohol on health of the developing foetus. • Recall what a drug is • Distinguish between stimulants and depressants • Discuss the consequences of taking illegal drugs on health and wellbeing • Describe the effects of cigarettes on the tissues of the lungs and on gas exchange; including the build up of tar, irritation to the lungs and the build up of mucus. • Describe the impact on the health of smokers and their unborn babies including low birth mass. • What are Vapes? • What is Vaping? • What are health effects of Vaping? • What are the benefits, if any, of Vaping? • Why are Vapes sold in colourful packages and why do they have trendy flavours?	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions	

				• Describe and explain the impact of exercise on heart rate • Describe and explain the impact of exercise on breathing rate • Describe and explain the impact of exercise on aerobic and anaerobic respiration • Effects of exercise on health to include the benefits to organ systems such as to bones, muscles and the heart and lungs. • Effects of exercise on mental health • What are the 3 types of microbes? • What are the key features of the 3 types? • What are the diseases caused by these microbes? • Identify a range of diseases caused by pathogens • Describe the symptoms of each disease • Explain how each disease can be treated. • Describe how Agar plates can be used to grow bacteria in the lab. •Explain why Aseptic technique needs to be used when growing bacteria in the lab • Explain why we have vaccines • Describe different ways that vaccines can be administered • Recall some facts about Edward Jenner; an English doctor who helped to develop the smallpox vaccine	for homework.	

8	Learning Cycle 3	9	Hidden Forces	• What is a resultant force? • What is streamlining? • What is a moment? • What is a simple machine? • How does pressure in a liquid work? • What is air pressure? • Why do things float and sink?	Cold calling •Core questions as the plenary of every lesson. •10 low stakes multiple choice Questions on key content half way through topic. •20 low stakes multiple choice questions at the end of the topic with 20 marks of exam style questions •Exam style questions for homework.	
Learning Cycle 3 Trust Wide Assessment						