Purple - PSHE content

Yellow – key words

KS 4 Science Curriculum 2026-2027 Year 10

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	Summary	Big Questions	Assessment for learning	Key Practicals
10	Autumn	9	Energy Changes	This builds on the KS 3 topics of Chemical reactions 1 and 2	Do all chemical reactions give off energy? What do Endothermic and Exothermic mean? How can we calculate the energy changes in a reaction? What is a Bond energy? How do we write a chemical formula? What does diatomic mean? What does polyatomic mean? What is the difference between a molecular formula and a structural formula? How can we work out the structure of a compound based on its formula? How and why do we balance equations? Why do electrons move during reactions?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	Required Practical – investigating temperature changes in reactions

					What is a half equation?		
10	Autumn	11	Electricity	This topic builds on the KS3 topic of electricity and magnetism	identify the symbols and roles of an array of electrical components and use them in constructing electrical circuits. What factors affect the size of the current? How do you calculate current from charge flow and time? What is resistance? What are the current, p.d. and resistance rules for a series circuit? What are the current, p.d. and resistance rules for a parallel circuit? What is Ohms Law? What happens to resistance when the light intensity increases on an LDR? What is the difference between direct and alternating current? What is the National grid? What are transformers? Describe the features of a mains plug. How are energy, Power and time related?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	Required Practical – how does resistance of a wire depend on its length? Required Practical – What happens to current when potential difference across a component changes?

					What is efficiency and how is it calculated for energy and power?		
10	Autumn	18	Infection and Response	This topic builds on the KS 3 topic of systems and health	What are pathogens and how do they spread How can the spread of disease be prevented or reduced What is a virus and how do they affect infected organisms What is a Bacteria and how do they affect infected organisms Which diseases are caused by fungi and protists? What is a non-specific defence response? How does a specific immune response work? What is a Vaccination and how does it work? What is the difference between an Antibiotic and a pain killer? How are new drugs developed?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	
10	Autumn	8	Radioactivity	This builds on atomic structure and the periodic table	Describe the size and structure of an atom Describe the development of the model of the atom	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	

					Explain what a radioactive substance is and the types of radiation given out by a substance Describe the properties of Alpha, Beta and Gamma and explain the dangers Use nuclear equations to represent radioactive decay Describe what is meant by half-life and explain what happens to a count rate when a substance decays (HT) Explain the difference between Contamination and Irradiation and the suitable precautions to take to protect against the hazard		
10	Spring	11	Chemical Changes	This builds on the KS 3 topics of Chemical reactions 1 and 2	What is the reactivity series? How can we use the reactivity series to predict reactions with water, oxygen and acid? What is a displacement reaction? What is a redox reaction? How do we extract metals from the Earth? How can we use an acid to make a salt? What is an acid? What are Alkalis and Bases?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	Demo – Group 1 metals with water RP – neutralisation reaction Acid with carbonates reactions Electrolysis of brine and copper sulphate Titration

					How can you create an insoluble salt? What is Titration? What happens when acids react with carbonates? What is Neutralisation? What is the pH scale? What is the difference between a concentrated and a dilute solution? What is the difference between a strong and weak acid? What is electrolysis? What happens at each electrode during Electrolysis? What is the difference between electrolysis of a molten compound or a solution? How do we extract Aluminium from its ore?		
10	Spring	11	Quantitative Chemistry	This topic builds on K3 the periodic table and chemical reactions 1&2 as well as GCSE topics – structure and bonding, chemical changes	What is relative atomic mass? What is relative Formula mass? How do isotopes affect relative mass of an element? What is a mole?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	Practical – finding the equation for a reaction from reacting masses. TRP - titrations

				and energy changes.	Why do we use it in Chemistry? What is Avagadro's constant? How do you use the mole-mass equation? How is conservation of mass linked to balancing equations? Why will mass change in an open system? How can you use reacting mass ratios to work out the balanced equation? How do we calculate the exact concentration of a solution?		
10	Spring	19	Homeostasis and Response	This topic builds on KS3 systems and Health as well as GCSE topics Cells and Organisation	What is Homeostasis and why is it important? How is the structure of the nervous system adapted to its function? What is a reflex arc and why is it important? What are Endocrine glands and where are they found? How is the correct level of blood glucose maintained? Why is it important to maintain blood glucose levels? What is Negative feedback?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	RP- Reaction time TRP – effect of light position on shoot growth

					How are hormones involved in the human reproductive system? How do Hormones control the menstrual cycle? What are the 4 hormones of the menstrual cycle?		
10	Summer	11	Forces	This topic builds on KS3 topic forces and motion	What is the difference between a scalar and a vector quantity? Give examples of a scalar and vector quantity What is a force? Is force a scalar of vector quantity? What are contact and non-contact forces? How can we use arrows to represent forces? What is weight? What is gravitational field strength? How can you calculate weight? What is centre of mass? How is weight measured? What is resultant force and how is it calculated in a straight line?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	How to find centre of mass RP- investigation the stretching of a spring

					How can a vector diagram be used to resolve forces? What is work done? How is work done calculated? What is Hookes law? What does limit of proportionality mean? What is a directly proportional relationship? How can you calculate elastic potential energy?		
10	summer	14	Reproduction and Variation	This topic builds on KS3 genetics and evolution, GCSE cells.	What are the 2 different types of reproduction? What is Meiosis and why is it important? What is DNA? How does the structure of DNA relate to its function? What is a genome? What is an inherited trait? How can we predict the probability of inheriting certain traits? What do the following key terms mean: -Homozygous	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	

					-Heterozygous -Recessive -Dominant Genotype -Phenotype How can family trees be helpful? What is an inherited disorder? What are the likelihood of Cystic fibrosis or polydactyly being passed on? What is embryo screening? Why is embryo screening a contentious issue? What role does the environment play in our development? What is a mutation? What is Natural selection? What is selective breeding? Describe the impact of selective breeding on food plants and domesticated animals. What is a GM organism? What is genetic engineering and how can it be useful?		

					What are some of the potential benefits and risks of GM in agriculture and medicine?		
10	Summer	7	Observing and recording motion	This topic builds on KS3 topic forces and motion	What is the difference between distance and Displacement? Is speed a scalar or vector quantity? Typical values are: walking- 1.5 m/s running- 3 m/s cycling- 6 m/s. value for the speed of sound in air is 330 m/s. How do you calculate speed of sound? What is Velocity? What is a Distance –time graph and what can it tell us? What is a Velocity-time graph and what can it tell us? How do you calculate acceleration? How can you calculate acceleration from a graph? What equation can you apply to uniform acceleration? What is terminal velocity? What is Newtons First Law?	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test	RP – investigating the effect of force on acceleration for an object of constant mass.

					What is Newtons second Law? What equation do you use to calculate it? What is Inertial Mass? What is Newtons Third Law? What is Stopping Distance made up of? What factors effect stopping distance? How do reaction times effect stopping distances? What is Momentum and how is it calculated? What is the law of Conservation of Momentum?		