Broughton Hall Catholic High School — Key Stage 3 Descriptors

Science - Year 7

	Emerging –	Developing -	Secure -	Exceeding -
BIO	Identify an animal and a plant cell.	Recognise and label normal and specialised animal and plant cells; use a microscope to make observations.	Describe the functions of the nucleus, cell membrane, mitochondria, cytoplasm, cell wall, vacuole and chloroplast.	Compare and contrast the similarities and differences between normal and specialised animal and plant cells.
		Describe unicellular organisms – including yeast, bacteria, euglena, paramecium and amoeba – as being either prokaryotes or eukaryotes.	Describe the function of specialised parts of different unicellular organisms.	Explain how different structures help organisms to survive.
	Recognise that substances are able to move in and out of cells.	Recognise the role of diffusion in living organisms.	Describe the process of diffusion, and name the materials needed by and those removed from the cell.	Explain the factors that affect diffusion.
	Name some common organs in the human body.	Put the terms cell, tissue, organ and organ system in order of hierarchy, naming some common tissues, organs and organ systems in humans.	Explain the terms cell, tissue, organ and organ system and the function of all the main organ systems in the body.	Describe some benefits and disadvantages of multicellular organisms, compared to single celled organisms.
	Label some of the parts of a flowering plant.	Describe the role of different parts of the flowering plant in reproduction.	Explain the differences in insect pollinated and insect-pollinated plants.	Discuss the strengths and weaknesses of wind-pollinated and insect-pollinated plants.
	Understand that our bodies are supported by a skeleton.	Identify the main bones of the skeleton.	Describe the functions of the skeleton.	Explain how different parts of the skeleton are adapted to carry out particular functions.
	Recognise that our skeleton is made of many bones joined together.	Describe the role of skeletal joints.	Identify some different joints and explain the role of tendons and ligaments in joints.	Compare the movement allowed at different joints and explain why different types of joints are needed.
	Know that muscles can contract	Recall that muscles contract to move bones at	Identify muscles that contract to cause	Explain how muscles work

	and relax.	joints.	specific movements.	antagonistically to bring about movement and evaluate a model.
	Understand that some muscles are stronger than others.	Investigate the strengths of different muscles and draw a conclusion.	Plan and carry out an investigation to compare strengths of muscles and analyse the results using a graph.	Plan and carry out a fair investigation, analyse the data and evaluate the procedure.
		Describe some medical problems that can arise with the skeletal system.	Describe some treatments for a range of problems with the skeletal system.	Explain how diagnosis and treatment of problems with the skeletal system have changed over time.
CHEM	Identify basic lab equipment.	Name and draw equipment and explain obvious laboratory risks.	Select and draw apparatus accurately; explain safety precautions.	Identify basic lab equipment.
	Use 2D images to draw basic lab equipment.	Use 2D images to represent a range of laboratory equipment.	Use laboratory equipment safely to gather evidence.	Record evidence in an effective way.
	Identify the equipment needed to separate mixtures.	Describe how to separate mixtures.	Select and explain appropriate separation techniques.	Explain the choice and method of separation using correct terms.
	Know that some solids dissolve in liquids and some do not.	Describe the process of dissolving and the effect of temperature.	Describe methods for producing crystals of different sizes.	Use data to draw conclusions about solubility.
		Understand that seawater is a mixture.	Explain why most water is not pure, and why this is not necessarily a problem.	Explain why contaminated water is a problem and identify what can be done about it.
		Identify sources and uses of salt.	Describe how salt is extracted.	Recognise advantages and disadvantages of salt extraction methods.
	Understand the processes of evaporation and condensation.	Describe the process of distillation.	Explain the physical processes involved in distillation.	Identify the uses and advantages of distillation.
	Identify the main gases found in air.	Describe the composition of air.	Identify sources of air pollution and their impact.	Explain how distillation can be used to separate gases in air.
	Know that some solids will dissolve in water and some do not.	Identify mixtures using chromatography.	Explain how to separate a mixture using chromatography and interpret chromatograms.	Use chromatograms to explain the composition of mixtures; compare chromatography and DNA analysis.
	Represent particles as circles	Explain the idea of a solvent.	Explain mass changes during dissolving; select solvents for different uses.	Use a model to explain dissolving and separation; link the uses of solvents to their properties.
		Compare the properties of solids, liquids and gases.	Draw circle diagrams to demonstrate the differences between the arrangement of particles in solids, liquids and gases, and describe their different properties.	Use particle diagrams to explain the differences in energy and forces between the particles in different states of matter, accounting for differences in their properties.

	Understand that a theory starts as an idea.	Recognise how theories are developed.	Use observations to develop hypotheses.	Change hypotheses in the light of new evidence and use this evidence to develop theories.
	Label a diagram with correct changes of state.	Use correct terminology and the particle model to describe changes of state, including evaporation.	Interpret and explain data relating to melting and boiling points.	Use the particle model to explain latent heat and how impurities affect melting and boiling points.
PHY	List types of force.	List types of force and represent forces using force diagrams; use newton meters.	Describe the size and direction of forces using force diagrams.	Explain the how the size and direction of forces determines their effects.
	Know that some forces push and some pull.	Identify gravity as a pulling force and distinguish between mass and weight.	Describe what is meant by mass, explain how gravity forces affect weight, explain why weight varies from planet to planet and explain the term 'weightless'.	Explain weight as a gravitational attraction between masses which decreases with distance; use scientific concepts to explain the difference between mass and weight.
	Know that forces can lead to changes in shape.	Know that forces can lead to changes in shape and investigate the change of shape of a spring.	Explain the relationship between the amount of change in shape and the size of the force, and use data to state Hooke's Law.	Collect accurate data about forces changing the shape of an object, recognise when shape changes regularly with force size, and explain behaviour when the elastic limit is exceeded.
	Know that forces can be balanced or unbalanced.	Identify some situations where forces are balanced and recognise that unbalanced forces are needed for a change to take place.	Identify forces acting in pairs, and apply an understanding of forces to explain how a force can cause a change in speed and direction.	Identify different examples of forces and reaction forces, and predict the changes of speed and direction that different forces can cause.
	Know that friction is a force.	Recognise that friction is a force that slows objects down or stops them from moving.	Explain that friction is a contact force opposing the direction of movement.	Provide a detailed explanation of friction between surfaces.
	Recognise that streamlining helps objects move through air or water.	List examples where friction is useful and when it is unwanted, recognise that drag forces slow things down, and recognise that streamlining helps objects move through air or water.	Compare contrasting situations involving friction, explain how friction can be increased or reduced, explain air and water resistance, and explain how streamlining reduces such resistance.	Explain air and water resistance in terms of frictional drag, explain the forces on flying or falling objects, and explain streamlining using scientific vocabulary.
	Know the units that speed can be measured in.	Explain how to find the speed of an object.	Explain the concept of speed and use understanding of speed to explain how the equation for speed is derived.	Independently derive the equation for speed and use understanding of the speed equation to explain how speed cameras work.
	Identify which objects are moving faster or slower.	Describe a situation where objects are travelling at different speeds.	Apply the idea of relative speed to two objects moving in situations involving overtaking and collisions.	Apply the concept of relative motion to several moving objects in a variety of situations.

	Identify the forces acting on an object	Identify the forces acting on an object and explain how they can cancel each other out so that a stationary object does not move.	Explain how opposing forces may or may not be in equilibrium and the effect that this has on a stationary object.	Explain how multiple forces may or may not be in equilibrium and identify the effect this has on an object.
	Collect data about time taken on a journey.	Collect data about distance travelled and time taken for types of movement or journeys.	Present data you have collected or data you have been given as distance–time graphs.	Construct distance–time graphs for complex journeys.
		Describe some features of distance– time graphs.	Analyse distance–time graphs to describe an object's movement at different stages in a journey.	Explain distance–time graphs for complex journeys, including where an object travels at different speeds and accelerates at different rates.
	Use an ammeter and a voltmeter.	Make measurements of current and voltage in series and in parallel circuits.	Use models and simple calculations to explain and compare what happens to the current and voltage in series and parallel circuits.	Use calculations to make predictions about current and voltage in series and parallel circuits.
	Know that house lighting is on a parallel circuit.	Describe different domestic uses of series and parallel circuits.	Make comparisons between components in series and parallel circuits.	Explain the advantages of using series or parallel circuits, including the domestic ring main as an example.
	Be able to use a permanent magnet	Describe differences between permanent and temporary magnets.	Describe and compare different methods to make permanent magnets.	Use the domain theory to explain how materials become magnetised and demagnetised.
	Understand that a stronger magnet can pick up more paper clips.	Describe how to test the strength of a magnet and an electromagnet.	Design investigations to compare different methods of making magnets and testing the strength of electromagnets.	Use models and analogies to explain the factors affecting the strengths of magnets and electromagnets.
	State a use for a magnet.	Describe different applications of magnets and electromagnets.	Explain the advantages of using electromagnets.	Compare and contrast the use of magnets and electromagnets in different applications, such as a circuit breaker.
	Understand that there are different ways of measuring electricity.	Describe what is meant by current, voltage and resistance.	Apply a range of models and analogies to describe current, voltage and resistance.	Evaluate different models and analogies for explaining current, voltage and resistance.
		Describe the relationship between current, voltage and resistance in a qualitative way.	Use data to identify a pattern between current, voltage and resistance.	Use data and a mathematical relationship between current, voltage and resistance, to carry out calculations.