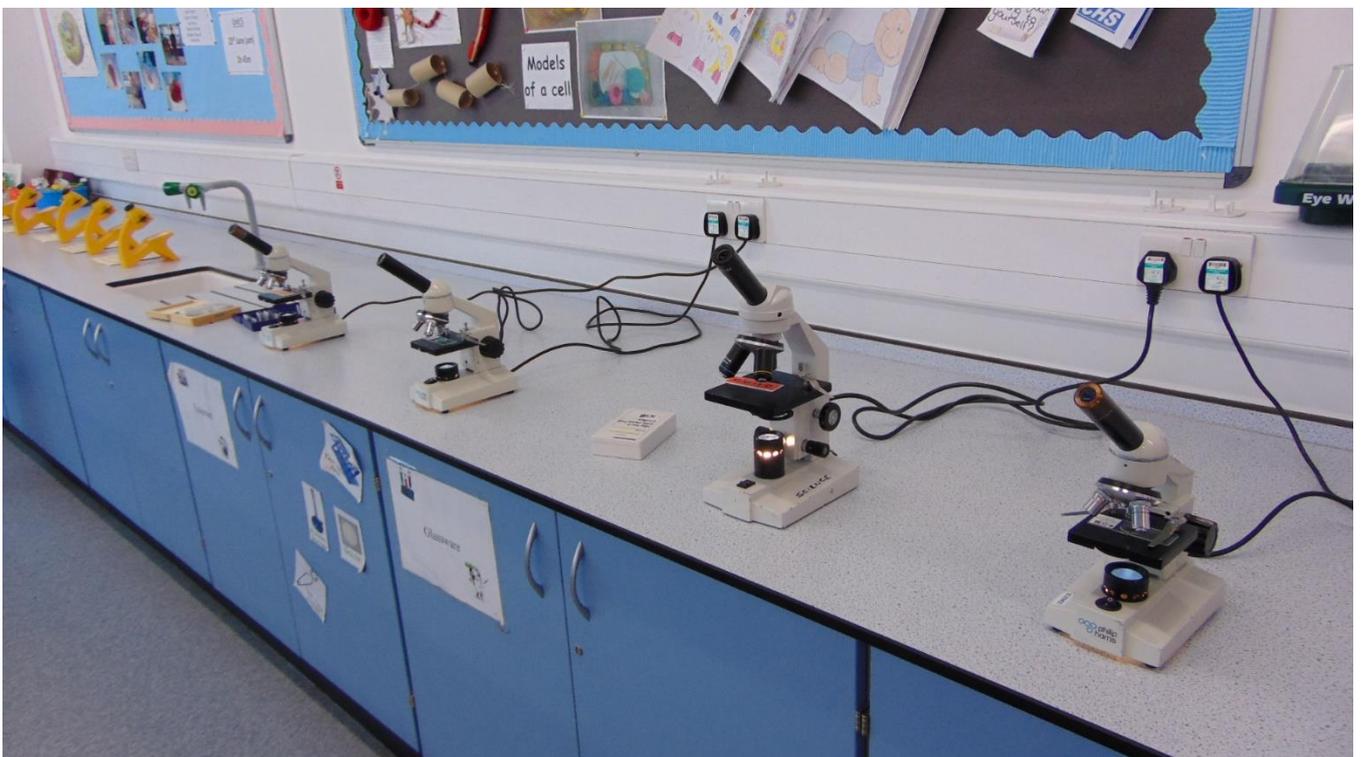
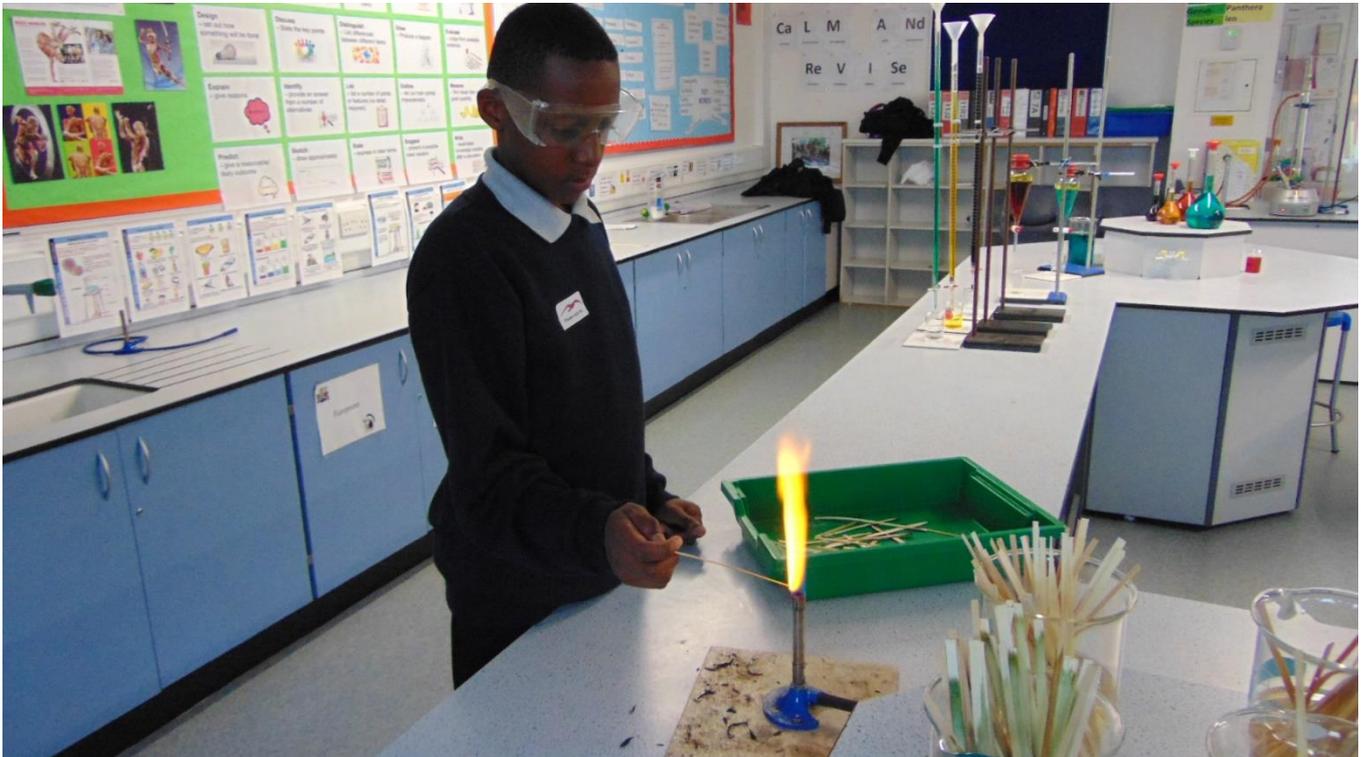


The science department at Jo Richardson Community school are very much looking forward to welcoming year 7 students to science lessons in September 2020.

We will start off your secondary school science education with an introduction to the laboratories and how to use equipment for science practical work.

After your introduction and practice using the laboratory equipment you will begin learning new science ideas and concepts, the first term of which you can see below.



B1 Living Systems Milestone Checklist		😊	😐	😞
<i>Italic statements are more challenging</i>				
Definitions to learn	Diffusion – The movement of particles from an area of high concentration to low concentration, down a concentration gradient			
	<i>Osmosis – The overall movement of solvent molecules in a solution across a partially permeable membrane, from a dilute solution to a more concentrated one.</i>			
	Tissues – a group of the same specialised cells.			
	Organs – a group of cells with similar functions.			
Equations	Total Magnification = eye piece lens x objective lens			
	$magnification = \frac{image\ size}{actual\ size}$			
Knowledge	Identify and label parts of the light microscope			
	Calculate simple magnification calculations			
	Recall what an electron microscope is			
	Compare the difference between a light microscope and an electron microscope			
	<i>Analyse how advances in microscopes have allowed scientists to discover more about cells</i>			
	Identify and label an animal cell			
	Observe cheek cells under a light microscope			
	Explain the functions of the parts of the animal cell			
	Identify and label a plant cell			
	Compare a plant cell against an animal cell			
	Observe an onion cell under a light microscope			
	Explain the functions of the parts of the plant cell			
	Describe how sperm cells, red blood cells and root hair cells are adapted to their function			
	Describe how egg cells and ciliated epithelial cells are adapted to their function			
	<i>Make conclusions about a cell's functions from its adaptations</i>			
	Identify and label the common parts of a bacterial cell			
	Describe the functions of the parts of the bacterial cell			
	Compare bacterial cell with animal and plant cells			
	Define diffusion			
	Describe the process of diffusion			
	Explain and illustrate how substances are transported by diffusion			
	<i>Investigate the link between surface area and rate of diffusion</i>			
	<i>Define and describe the process of osmosis</i>			
	<i>Compare the process of osmosis to diffusion</i>			
<i>Explain the effects of osmosis on cells and tissues</i>				
State what a unicellular organism is and some structural adaptations of organisms				
Link cell structure to their functions in life processes				
<i>Apply knowledge to explore how some unicellular organisms can live in extreme environments</i>				
Identify structures as cells, tissues, organs and systems.				
Order structures in a hierarchy to show how living organisms are organised				
Maths Skills	<i>Rearrange equations to change the subject</i>			
	<i>Convert units in magnification calculations</i>			
Practical Skills	Examine plant and animal cells using a microscope			
	Prepare a microscope slide			

C1 Particulate Nature of Matter Milestone Checklist		😊	😐	☹️
<i>Italic statements are more challenging</i>				
Definitions to learn	Evaporate is when liquid turns into gas.			
	Condense is when a gas turns into a liquid.			
	Sublimation is when solid changes directly to gas without becoming a liquid first.			
	Deposition is when a gas changes directly to a solid without becoming a liquid first.			
	Diffusion is the movement of particles from a high concentration to a low concentration.			
	A pure substance is a single substance with a fixed composition that does not have anything else mixed in it.			
	A mixture is a substance that has 2 or more substances that are not joined.			
Equations	$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$			
	$\text{Rf value} = \frac{\text{Distance moved by the spot}}{\text{distance moved by the solvent}}$			
Knowledge	To identify solids, liquids and gases based on physical properties			
	Deduce and explain whether a given substance is a solid, liquid or gas based on their physical properties			
	To draw diagrams representing the three states of matter			
	To describe the arrangement of particles in a solid, a liquid and a gas			
	To use the particle model to explain the physical properties of a solid, liquid and gas			
	To state that substances expand when heated and contract when cooled			
	To explain observations of ball and hoop demo using correct key words			
	To explain expansion and contraction using the particle model			
	To explain how the motion of the particles changes as a substance changes state			
	To label and determine the melting/boiling point from a cooling curve.			
	To use the particle model to describe what gas pressure is and how diffusion takes place.			
	To apply Particle Theory to suggest methods of increasing gas pressure e.g. use of piston			
	To state that solids are more dense than liquids/gases			
	To explain why substances in the solid state are more dense than when in the liquid state			
	To draw and label diagrams of mixtures and pure substances			
	To apply the particle model to explain how solutes dissolve			
	To explain why filtration and evaporation can be used to separate a mixture of rock salt			
	To evaluate the practical in terms of strengths and weaknesses			
To deduce how many substances are present in a mixture from a simple chromatogram.				
To explain which substances can be separated using a chromatogram.				
To explain distillation using boiling points.				
To explain distillation using boiling points.				
Maths Skills	To calculate the density of different liquids			
	To calculate Rf values.			
Practical Skills	To describe and carry out a filtration and evaporation practical.			
	To describe and carry out a simple distillation			
	Name practical equipment.			

P1 Movement and Speed Milestone Checklist		😊	😐	☹️
<i>Italic statements are more challenging</i>				
Definitions to learn	Friction is a force that acts against movement			
	<i>State that if object A applies a force to object B, object B applies an equal and opposite force to object A.</i>			
	Mass is the amount of “stuff” an object has in it, measured in kg			
	Acceleration is the rate of change in speed (<i>or direction</i>)			
Equations	<ul style="list-style-type: none"> • $speed = \frac{distance}{time}$ 			
	<ul style="list-style-type: none"> • $weight = mass \times 10$ 			
	<ul style="list-style-type: none"> • $weight = mass \times \text{gravitational field strength}$ 			
	<ul style="list-style-type: none"> • $force = mass \times \text{acceleration}$ 			
	<ul style="list-style-type: none"> • $force = \text{spring constant} \times \text{extension}$ 			
	<ul style="list-style-type: none"> • $force = mass \times \text{acceleration}$ 			
Knowledge	Describe a method to determine the speed of an object.			
	State whether an object is travelling at constant speed or is not moving from a section of a distance–time graph.			
	Describe changes in motion of objects by looking at different sections of a distance-time graph.			
	Compare the motions of two different objects shown on the same distance-time graph.			
	Identify forces acting on objects in different situations.			
	Show forces acting on objects using simple force diagrams.			
	Identify which forces are contact forces and which forces act at a distance.			
	Identify force action – reaction pairs in a range of situations.			
	State that mass is the amount of “stuff” an object has in it, measured in kg.			
	State that weight is a force caused by gravity and varies from planet to planet.			
	Describe the forces between the sun and planets as action-reaction pairs.			
	Describe how lubricants reduce friction.			
	Describe how the force on a spring changes the length of a spring.			
	Recall and use the equation $force = \text{spring constant} \times \text{extension}$			
	Describe the relationship between the force on a spring and the extension in terms of proportionality			
	State that water and air resistance are frictional forces that act against movement			
	Describe factors that will change resistance, such as speed, thickness of fluid and surface area			
	Explain the process of an object reaching terminal velocity			
State that if an object experiences a resultant force it speeds up, slows down or changes direction.				
Draw arrows of different sizes to show the size of different forces.				
State the direction the resultant force acts in.				
Calculate resultant force acting on an object.				
Compare the acceleration of different masses with same force acting				
Maths Skills	<i>Rearrange equations to change the subject</i>			
	<i>Substitute correct values into equations</i>			
	Calculate speeds using a range of units.			
	<i>Convert km to m and hours to seconds to calculate speed in m/s</i>			
	Describe changes in motion of objects by looking at different sections of a distance-time graph			
	Calculate speed of an object using the gradient of a distance-time graph			
	<i>Use the gradient of the force – extension graph to calculate the spring constant</i>			
Draw scale diagrams to calculate the resultant force of two forces acting at right angles				
Practical Skills	Identify appropriate equipment to measure frictional force.			
	Describe a method to measure frictional force.			
	Identify appropriate equipment to measure distance and time.			