



Year group / title / term	Physics Sticky Knowledge								Assessment	Vocabulary (most important for K Mat – not limited)
Year Groups	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6				Vocabulary
F1 Ongoing Ongoing Pent 2	Seasonal Changes: <ul style="list-style-type: none"> Talk about what they see and feel: the weather Explore how things work <ul style="list-style-type: none"> - Wind-up toys - Cogs Explore and talk about different forces they can feel Water pushes up when pushing an object down									Vocabulary sun, rain, cloud, wind, snow, turn, wind, twist, turn, water, up, down
F2 Ongoing Advent 2 Lent 2	Seasonal Changes: <ul style="list-style-type: none"> Understand the effect of changing seasons on their natural world Exploring Forces <ul style="list-style-type: none"> Explore the natural world around them: <ul style="list-style-type: none"> - To explore with water and begin to group objects into those that float and those that sink - To investigate simple pushes and pulls - To investigate magnets and how they attract some objects and not others 									Vocabulary weather, hot, cold, warm, hibernate, Autumn, Winter, Spring, Summer, float, sink, wood, paper, plastic, attract, not attract, magnetic, metal, magnet
Y1 Seasonal Changes (All year)	<u>Autumn</u> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. K1 – Leaves change colour and drop from the deciduous trees during Autumn.	<u>Winter</u> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. K2 – The temperature becomes cold in Winter and the days become darker much earlier. K3 – In winter, we often have frost, snow, ice and rain.		<u>Spring</u> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. K4 – In Spring, the leaves and blossom grow on the deciduous trees.		<u>Summer</u> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. K5 – You should never look directly at the sun, even with sunglasses on. K6 – During the			Vocabulary Autumn Winter Spring Summer Temperature Season	

				<p>Summer, we often have lots of sunshine.</p> <p>K7 – In summer, the temperature warms up and the days are lighter for longer.</p>		
	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Ask questions such as: <i>How do we know which season we are in?</i></p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Ask questions such as: <i>How do we know which season we are in?</i></p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Ask questions such as: <i>How do we know which season we are in?</i></p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Ask questions such as: <i>How do we know which season we are in?</i></p> <p>Perform a simple investigation in order to understand that the Earth moves and as a consequence the sun changes position in the sky.</p> <p>Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked.</p> <p>Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken.</p>		

Sticky Knowledge

- K1 – Leaves change colour and drop from the deciduous trees during Autumn.
- K2 – The temperature becomes cold in Winter and the days become darker much earlier.
- K3 – In winter, we often have frost, snow, ice and rain.
- K4 – In Spring, the leaves and blossom grow on the deciduous trees.
- K5 – You should never look directly at the sun, even with sunglasses on.
- K6 – During the Summer, we often have lots of sunshine.
- K7 – In summer, the temperature warms up and the days are lighter for longer.

<p>Y3</p> <p>Forces and magnets (Pentecost 1)</p>	<p>F2 – recap – push and pull – floating and sinking</p> <p>Explore forces around us/</p>	<p>Compare how things move on different surfaces.</p>	<p>Describe magnets as two poles.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing</p>	<p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</p>	<p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p>				<p>Assessment</p> <p>Give children a Selection of magnetic and non-magnetic materials. Children to group accordingly.</p> <p>Diagrams with magnets and their different poles. Children to say whether they attract or repel.</p>	<p>Force</p> <p>Friction</p> <p>Magnet</p> <p>Magnetic force</p> <p>Attract</p> <p>Repel</p> <p>Poles</p> <p>Magnetic fields</p>
	<p>Working Scientifically</p> <p>Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically</p> <p>Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically</p> <p>Keep an on-going record of new scientific words that they have come across</p>	<p>Working Scientifically</p> <p>Keep an on-going record of new scientific words that they have come across</p>	<p>Working Scientifically</p> <p>Keep an on-going record of new scientific words that they have come across for the first time.</p>					

		<p>Explain to a partner why a test is a fair one.</p> <p>Measure carefully (taking account of mathematical knowledge up to Year 3) and add to scientific learning.</p> <p>Gather and record information using a chart, matrix or tally chart, depending on what is most sensible.</p> <p>Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings.</p> <p>Make sense of findings and draw conclusions which help them to understand more about scientific information.</p> <p>Amend predictions according to findings.</p>	<p>for the first time.</p> <p>Gather and record information using a chart, matrix or tally chart, depending on what is most sensible.</p> <p>Present findings using written explanations & include diagrams.</p> <p>Make sense of findings and draw conclusions which help them to understand more about scientific information.</p> <p>Amend predictions according to findings.</p>	<p>for the first time.</p> <p>Be prepared to change ideas as a result of what has been found out during a scientific enquiry.</p> <p>Be confident to stand in front of others and explain what has been found out.</p>	<p>Be prepared to change ideas as a result of what has been found out during a scientific enquiry.</p> <p>Be confident to stand in front of others and explain what has been found out.</p>						
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Sticky Knowledge

- K1 – A force is a push or pull that can make things change direction/speed.
- K2 – Friction is a stopping force.
- K3 – Magnets have two poles (north and south) and can attract or repel.
- K4 – Not all metals are magnetic.
- K5 - The stronger the magnetic force the larger the magnetic field.

<p>Y3</p> <p>Light (Pentecost 2)</p>	<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Identify light sources</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p>	<p>Notice that light is reflected from surfaces.</p>	<p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p>	<p>Find patterns in the way that the size of shadows change.</p> <p>How does the length of a shadow change during a day?</p>				<p>Assessment Quiz</p> <ol style="list-style-type: none"> 1. Why is it important not to look at the sun? 2. How are shadows formed? 3. Name 3 surfaces that light can be reflected from. 4. Explain how the length of a shadow changes in relation to the height of the sun. 	<p>Shadows Light source Reflection Opaque Block</p>
	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Use research to find out how reflection can help us see things that are around the corner.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Ask questions such as: <i>Does the sun</i></p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Observe at what time of day a shadow</p>					

			<p><i>move? Why do shadows change during the day?</i></p> <p>Amend predictions according to findings.</p>	<p>is likely to be at its longest and shortest.</p> <p>To explain what has been found out, for example about how the shadow changes over the course of the day.</p> <p>Amend predictions according to findings.</p>							
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Sticky Knowledge

- K1 – Light from the sun can be dangerous and you should not look directly at it.
- K2 – When a light source is blocked it forms a shadow.
- K3 – Light is reflected from some surfaces.
- K4 – When the sun is high in the sky, the shadows are short. When the sun is low in the sky, shadows are long.

Y4 Electricity (Lent 1)	<p>Recap – Y3 Light sources – some need electricity</p> <p>Identify common appliances that run on electricity.</p>	<p>Construct a simple series circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p>	<p>Identify whether or not a lamp will light in a series circuit, based on whether or not the lamp is part of a complete loop with a battery.</p>	<p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>Recognise some common conductors and insulators, and associate</p>					<p>Assessment</p> <p>Name five household appliances that run on electricity.</p> <p>Draw an accurate simple series circuit and label the components.</p> <p>From a given set of diagrams – establish whether the</p>	<p>Series circuit</p> <p>Cell</p> <p>Wire</p> <p>Bulb</p> <p>Appliance</p> <p>Buzzer</p> <p>Switch</p> <p>Conductor</p> <p>Insulator</p>
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				<p>this with whether or not a lamp lights in a simple series circuit.</p>				<p>series will work or not.</p> <p>From a given set of images – determine whether they are insulators or conductors and they will affect the circuit.</p>	
	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Present findings using written explanations and include diagrams, when needed.</p> <p>Make sense of findings and draw conclusions which help them understand more about the scientific</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Group information according to common factors e.g. materials that make good conductors or insulators.</p> <p>Use research to find out which materials make effective conductors and insulators</p>					

			<p>information that has been learned.</p> <p>When making predictions there are plausible reasons as to why they have done so.</p> <p>Able to amend predictions according to findings.</p> <p>Prepared to change ideas as a result of what has been found out during a scientific enquiry.</p>	of electricity.						
<p>Sticky Knowledge</p> <ul style="list-style-type: none"> • K1 – Most household appliances run on electricity or batteries. Some can even be both, for example an alarm clock. • K2 – A simple series circuit needs a cell, two wires and a component, for example a bulb, in order to work. • K3 – A bulb will only light up if the series circuit creates a complete loop. • K4 – A switch will control whether a simple circuit is complete. • K5 – Insulators do not allow electricity to pass through them. Conductors allow electricity to pass through them. 										
Y4	Identify how sounds are made, associating some of them with something vibrating.	Recognise that vibrations from sound travel through a medium to the ear.	Find patterns between the pitch of a sound and features of the object that produced it.	Find patterns between the volume of a sound and the strength of the vibrations that produced it.	Recognise that sounds get fainter as the distance from the sound source increases.				Assessment	Pitch Volume Vibrations Ear drum Cochlea Auditory
Sound (Pentecost 2)								Describe how sounds are made and how the ear can hear them.		
								From a given		

									set of images of instruments – order them according to pitch – low to high. Explain what the relationship is between volume and the strength of the vibration.	
	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>What do we mean by 'pitch' when it comes to sound?</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Carry out tests to see, for example, which of two instruments make the highest or lowest sounds.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Set up a fair test with more than one variable e.g. using different materials to cut out sound.</p> <p>Use bar charts and other statistical tables.</p> <p>Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning.</p> <p>Gather and record information using a chart, matrix or tally chart, depending on what is most sensible.</p>						

Sticky Knowledge

- K1 – Sound is made from vibrations.
- K2 – Vibrations create sound waves which travel through mediums (air, water) before reaching our ears.
- K3 – The ear drums vibrate in a similar way to the original source of the vibration, allowing us to hear many different sounds.
- K4 – The longer the object creating the sound, the higher the pitch.
- K5 – The stronger the vibration, the louder the volume of the sound.

<p>Y5 Forces (Advent 1)</p>	<p>Recap Y3 Forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p>	<p>Identify the effects of air resistance that acts between moving surfaces.</p>	<p>Identify the effects of water resistance that acts between moving surfaces.</p>	<p>Identify the effects of friction that act between moving surfaces.</p>	<p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>				<p>Assessment Label the forces acting on an aeroplane. Explain how air resistance affects the speed and direction of a moving object. Explain how streamlining affects water resistance.</p>	<p>Frictional force Gravity Air resistance Water resistance Levers Pulleys Gears Newton Streamline</p>
	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Use diagrams, as and when necessary, to support writing. Use all measurements as set out in Year 5 mathematics (measurement), including capacity and mass.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Create new investigations which take account of what has been learned previously. Is evaluative when explaining findings from</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Set up a fair test when needed e.g. which materials create most friction? Know what the variables are in a given enquiry and</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Able to give an example of something focused on when supporting a scientific theory e.g. how much easier it is to lift a heavy object using pulleys.</p>					

	<p>Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons).</p> <p>Create new investigations which take account of what has been learned previously.</p>		<p>scientific enquiry.</p> <p>Clear about what has been found out from recent enquiry and can relate this to other enquiries, where appropriate.</p> <p>Their explanations set out clearly why something has happened and its possible impact on other things.</p>	<p>can isolate each one when investigating e.g. finding out how effective brakes are when made with different materials. Make predictions based on information gleaned from investigations.</p> <p>Their explanations set out clearly why something has happened and its possible impact on other things.</p>						
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Sticky Knowledge

- K1 - Frictional force is any force that is caused due to friction e.g when you put on the brakes on your bike.
- K2 - Gravity is the pulling force acting between the Earth and a falling object, for example when you drop something. Gravity pulls objects to the ground.
- K3 - Air resistance is the force on an object moving through air e.g. a plane moving through the sky. Air resistance affects how fast or slowly objects move through the air.
- K4 - Water resistance is the force on objects floating on or moving in water.
- K5 - Levers, pulleys and gears allow a smaller force to have a greater effect.

<p>Y5</p> <p>Earth and Space (Pentecost 2)</p>	<p>Teach the following mnemonic for learning the order of the planets... <i>My Very Excellent Mum Just Served Us</i></p>	<p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p>	<p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p>	<p>Describe the movement of the Moon relative to the Earth.</p>	<p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</p>			<p>Using a given diagram, children to label the movements of the Earth and moon relative to the sun.</p>	<p>Planet Orbit Rotation Spherical Gibbous moon Crescent moon Waxing Waning Axis</p>
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	<i>Noodles.</i>								Explain how day and night occur and why it looks like the sun moves even though it is stationary.	
	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Frequently carry out research when investigating a scientific principle or theory.	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time. Able to present information related to scientific enquiries in a range of ways including using IT such as power-point and iMovie.	Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.					

Sticky Knowledge

- K1 – The Sun, Earth and Moon are spherical bodies.
- K2 – The Sun is stationary.
- K3 – The Earth rotates on its axis and takes 24 hours to complete one full rotation.
- K4 – The Earth orbits the Sun and takes 365 days to complete one full orbit.
- K5 – There are eight main phases of the moon.
- K6 – Day occurs when the countries on earth are facing the sun. Night occurs when the countries on Earth are facing away from the sun.

<p>Y6 Electricity (Advent 1)</p>	<p>Recap – Y4 simple circuits and component symbols.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>Compare and give reasons for variations in how components function, including the brightness of bulbs and the on/off position of switches.</p> <p>Associate the brightness of a lamp with the number and voltage of cells used in the circuit.</p>	<p>Compare and give reasons for variations in how components function, including the loudness of buzzers and the on/off position of switches.</p> <p>Associate the volume of a buzzer with the number and voltage of cells used in the circuit.</p>	<p>Compare and give reasons for variations in how components function, including the power of motors and the on/off position of switches.</p>				<p>Assessment</p> <p>Draw the component symbols from a given list: Cell, bulb, wires, buzzer, motor, switch...</p> <p>How does the amount of components added to a simple circuit affect it working?</p> <p>How does the amount of cells added to a simple circuit affect it?</p>	<p>Volts Filament Short circuit Decibels Correlation</p>
	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p>	<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Know what the variables are in a given enquiry and can isolate each one when investigating.</p> <p>Justify which variable has been isolated in scientific investigation.</p> <p>Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs.</p> <p>Make accurate predictions based on information gleaned from their investigations and create new investigations as a result.</p>							

		<p>Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion.</p> <p>Able to present information related to scientific enquiries in a range of ways including using IT such as power-point, animoto and iMovie.</p> <p>Use a range of written methods to report findings, including focusing on the planning, doing and evaluating phases.</p> <p>Clear about what has been found out from their enquiry and can relate this to others in class.</p> <p>Explanations set out clearly why something has happened and its possible impact on other things.</p> <p>Aware of the need to support conclusions with evidence.</p> <p>Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class.</p> <p>Frequently carry out research when investigating a scientific principle or theory.</p>						
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Sticky Knowledge

- K1 – Recognised symbols are used to represent components in a circuit.
- K2 – The more components that are added to a simple series circuit, the weaker the components will be.
- K3 – The more cells that are added to a simple series circuit, the stronger the components will be.

Y6 Light (Advent 2)	Recap from Y3 Light Recognise that light appears to travel in straight lines.	Water (pencil) and refraction.	Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then our eyes. Periscope.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.				Assessment Label the key parts of the eye. Explain how we light travels	Periscope refraction Pupil Lens Cornea Retina Optic nerve cast
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	Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.			e.g. a sharper light gives a sharper shadow. A dim light gives a blurred shape etc.				and how we see things. What shape do shadows cast?	
<p>Working Scientifically Keep an on-going record of new scientific words that they have come across for the first time.</p> <p>Set up a fair test when needed e.g. <i>does light travel in straight lines?</i></p> <p>Know what the variables are in a given enquiry and can isolate each one when investigating.</p> <p>Justify which variable has been isolated in scientific investigation.</p> <p>Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs.</p> <p>Make accurate predictions based on information gleaned from their investigations and create new investigations as a result.</p> <p>Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion.</p> <p>Able to present information related to scientific enquiries in a range of ways including using IT such as power-point, animoto and iMovie.</p> <p>Use a range of written methods to report findings, including focusing on the planning, doing and evaluating phases.</p> <p>Clear about what has been found out from their enquiry and can relate this to others in class.</p> <p>Explanations set out clearly why something has happened and its possible impact on other things.</p>									

	<p>Aware of the need to support conclusions with evidence.</p> <p>Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class.</p> <p>Frequently carry out research when investigating a scientific principle or theory.</p>					
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Sticky Knowledge

- K1 – Light travels in straight lines.
- K2 – Objects are seen because they give out or reflect light into our eyes.
- K3 – Shadows have the same shape as the objects that cast them.
- K4 – The closer an object is to the light source, the larger the shadow it casts because it will block a larger area of the light, increasing its shadow size.