

	Year 7	Year 8	Year 9 – GCSE
Beginning	<p>I can describe a force as a push or pull. I can only associate waves with water. I can name some planets, but not their order. I can name a phase of the moon. I can compare familiar objects, materials and living things and predict what might happen.</p> <p>I can only name one or two common forces. I can state that a wave carries energy. I can simply state how the ear works. I can name objects in the solar system. I can describe the phases of the moon. I can suggest how ideas I can be investigated and make predictions about what might happen.</p>	<p>I can talk about some appliances in the classroom and at home which use electricity, such as a television or a kettle. I can describe what happens when objects are pushed and pulled, using terms such as 'speeds up' or 'stops'. I can observe familiar objects, materials and living things, and say what they are going to do or have done. I can compare familiar objects, materials and living things and predict what might happen.</p> <p>I can recall that there are different sources of energy, <i>such as oil, gas or coal</i>. I can outline the dangers of misuse of mains electricity and know how to use electrical appliances safely. I can explain that sounds are produced by vibrations. I can suggest how ideas can be investigated and make predictions about what might happen. I can use appropriate instruments to make measurements and know when a test is fair.</p>	<p>I can name appliances in the classroom and at home which use electricity I can describe what happens when objects are pushed and pulled. I know some colours are more easily seen in the dark. I can observe and compare familiar objects, materials and living things. I can make a simple record of my observations and conclusions.</p> <p>I know that there are different sources of energy. I can outline the dangers of misuse of mains electricity and know how to use electrical appliances safely. I can explain that sounds are produced by vibrations. I know that light does not pass through all materials and when this happens shadows are formed. I can suggest how ideas can be investigated and make predictions about what might happen. I can use appropriate instruments to make measurements and know when a test is fair.</p>
Developing	<p>I can describe what forces do and name some common forces. I can name the two main types of waves. I can describe how sound waves travel. I can name the parts of the ear. I can describe the structure of the universe. I can describe eclipses. I can carry out a fair test and say which factors need to be kept constant. I can draw conclusions and relate it to my knowledge and understanding.</p>	<p>I can describe how forces can affect the movement and shape of objects. I can identify a range of energy sources, such as a battery for a torch. I can describe how heat transfers from different places. I can describe how to construct simple circuits using terms, such as switches, bulbs or batteries, and identify materials as insulators or conductors. I can carry out a fair test and say which factors need to be kept constant. I can draw conclusions and relate it to my knowledge and understanding.</p>	<p>I can describe how forces can affect the movement and shape of objects. I can identify a range of energy sources. I can describe how to construct simple circuits. I can identify materials as insulators or conductors. I know how shadows are formed. I can carry out a fair test and say which factors need to be kept constant. I can draw conclusions and relate it to my knowledge and understanding.</p>

Secure	<p>I can describe the most commonly used forces. I can draw and label a force diagram. I can describe the effects of drag and friction. I can describe transverse and longitudinal waves. I can explain why speed of sound changes in different materials. I can describe link between loudness and amplitude. I can describe the functions of the parts of the ear. I can describe what an echo is. I can describe the parts of the eye. I can compare planets in the solar system. I can design a fair test to answer questions that arise from their work in science. I can interpret my data and begin to explain these using my scientific knowledge.</p>	<p>I understand the meaning of temperature. I can identify a variety of energy sources and know the difference between renewable and non-renewable sources. I can describe the effect of friction on moving objects. I can recall the properties of magnets and the magnetic field pattern produced by a bar magnet. I can describe the effect of changing current in an electric circuit and explain what happens in series and parallel circuits. I can use a range of apparatus with appropriate precision and safety. I can interpret my data and begin to explain these using my scientific knowledge and understanding.</p>	<p>I understand the meaning of temperature. I can identify a variety of energy sources and know the difference between renewable and non-renewable sources I can describe the effect of friction on moving objects I know the properties of magnets and the magnetic field pattern produced by a bar magnet I can explain the relationship between loudness and amplitude, and pitch and frequency of a sound. I can describe the effect of changing current in an electric circuit and explain what happens in series and parallel circuits. I can describe how day, night and year length are caused by the movement of the Earth. I can use my knowledge to make predictions about what they think will happen. I can interpret my data and begin to explain these using my scientific knowledge and understanding. I can draw conclusions based on the available evidence.</p>
Confident	<p>I can explain what forces do. I can describe how forces deform objects. I can evaluate how to reduce drag and friction. I can compare the speed of sound with speed of light. I can describe the link between frequency & pitch. I can analyse ways hearing I can be damaged. I can describe what ultrasound is. I can explain how images are formed in a mirror. I can explain what refraction is. I can explain how the eye works. I can describe how primary colours of light combine to make secondary colours. I can analyse data about planets in the solar system. To explain day and night and why we have seasons. I can apply my scientific knowledge from other investigations to plan an investigation. I can explain my conclusions using the evidence collected and my knowledge and understanding of science.</p>	<p>I understand the relationship between applied force, the area over which it acts and the resulting pressure. I can calculate the average speed from measurements made of distance and time. I can distinguish between temperature and thermal energy. I can describe energy conversions in terms of the principle of the conservation of energy. I can recall that energy sources are ultimately dependent on the Sun's energy. I can recall the properties of electromagnets. I can explain how objects can become charged by friction in terms of transfer of electrons. I can apply my scientific knowledge from other investigations to plan an investigation. I can explain my conclusions using the evidence collected and my knowledge and understanding of Science</p>	<p>I understand the relationship between applied force, the area over which it acts and the resulting pressure. I can calculate mean speed from measurements made of distance and time. I can describe energy conversions in terms of the principle of the conservation of energy I understand how light is reflected from plane surfaces and that white light can be dispersed to give a range of colours. I can describe the properties of electromagnets. I can explain changes in day length, seasonal changes and changes in the elevation of the Sun. I can apply my scientific knowledge from other investigations to plan an investigation. I can explain my conclusions using the evidence collected and my knowledge and understanding of science.</p>

<p>Exceptional</p>	<p>I can use Hooke's Law. I can compare weight and mass. I can compare balanced and unbalanced forces. I can explain why the speed or direction of motion of objects I can change. I can compare human hearing range with other animals. I can explain uses of ultrasound. I can compare specular reflection and diffuse scattering. I can explain how surfaces appear coloured. I can plan (with guidance) investigations. Identifying key factors that need to be considered. I can make predictions using my scientific knowledge.</p>	<p>I can use the principle of moments in practical situations. I can explain the process of energy transfer by conduction, convection and radiation. I understand that global resources are limited and explain why energy should be used efficiently. I can describe common electrostatic phenomena and understand that electric current is a flow of charge. I can describe simple applications of electromagnets. I can plan (with guidance) investigations. Identifying key factors that need to be considered. I can present my data clearly and concisely using graphs with lines of best fit.</p>	<p>I can use the principle of moments in practical situations. I can explain the process of energy transfer by conduction, convection and radiation. I can describe, in simple terms, the relationship between the angle of incidence and the angle of reflection. I can describe common electrostatic phenomena and understand that electric current is a flow of charge. I can describe the relative movement of the Sun and planets within the solar system including the retrograde motion of Mars. I can plan (with guidance) investigations. Identifying key factors that need to be considered. I can present my data clearly and concisely using graphs with lines of best fit.</p>
<p>Beyond</p>	<p>I can interpret a graph showing Hooke's Law in extension of a spring. I can calculate weight using the correct equation. I can describe situations that are in equilibrium. I can describe what happens when waves superpose. I can compare the ear with a microphone. I can compare the eye with a camera. I can apply my knowledge and understanding to a range of contexts including unfamiliar situations. I can produce (unaided) precise plans for my investigations. I can evaluate my investigations and produce structured reports.</p>	<p>I can relate the term 'energy' to work. I understand a p.d. across a circuit component represents a transfer of energy through that component. I can find speed and acceleration from graphs. I can use the relationship: charge = current x time I can use models to describe and explain phenomena, such as the flow of charge in parallel circuits. I can give detailed interpretations of graphs, such as speed/time graphs. I can demonstrate an understanding of the principle of moments. I can apply my knowledge and understanding to a range of contexts including unfamiliar situations. I can produce (unaided) precise plans for my investigations. I can evaluate my investigations and produce structured reports.</p>	<p>I can explain the heating effect of a current in terms of vibration of particles. I can give detailed interpretations of graphs, such as speed/time graphs. I can use models to describe and explain phenomena, such as the flow of charge in parallel circuits. I can evaluate physical phenomena from different perspectives, such as relating the dissipation of energy during energy transfer to the need to conserve limited energy resources. Unaided, I can prepare systematic and precise plans for their investigations, including a strategy for dealing with results. I can decide on the observations and measurements that need to be taken and the degree of accuracy that is required. I can set up and use a range of scientific apparatus with precision and skill.</p>