



Year Five / Six

Autumn

Crucial Knowledge (Forces)	Expanded Knowledge	Intent/Prove
<ul style="list-style-type: none"> <li>• Y3R:A force is a push or pull upon an object resulting from the object's interaction with another object.</li> <li>• Y3R:Friction is a force that acts between objects and surfaces.</li> <li>• Y3R:Friction is the force that holds back a moving object.</li> <li>• Forces are measured in Newton (N).</li> <li>• Gravity is a pulling force.</li> <li>• Gravity pulls all things with a mass towards the Earth and it is the Earth's gravity that keeps you on the ground and causes objects to fall.</li> <li>• Mass is the amount of material that is in an object and is usually weighed in Kg and grams.</li> <li>• Air resistance is a type of friction caused by air pushing on an object. E.g. a plane.</li> <li>• Water resistance is a type of friction caused by water pushing on an object.</li> <li>• Water resistance allows objects to move, get faster or slower.</li> </ul>	<ul style="list-style-type: none"> <li>• Sir Isaac Newton was the first person to define the force of gravity.</li> <li>• 1 Newton equals the force required to move 1 Kg over 1 metre in 1 second.</li> <li>• Mass is not the same as weight because weight changes due to gravity.</li> <li>• Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> <li>• Surface tension refers to the force of an object moving across a surface.</li> <li>• The design of an object is specific for its purpose E.g. sports equipment like tennis racquets, cricket bats, football boots and goalie gloves are designed to provide maximum grip, whereas skis, skates and toboggans are designed to slide quickly.</li> <li>• Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.               <ul style="list-style-type: none"> <li>•</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>• Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</li> <li>• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> </ul>

Spring

<p><b>Crucial Knowledge (Animals including humans)</b></p> <p><b>Body systems)</b></p>	<p><b>Expanded Knowledge</b></p>	<p><b>Intent/Prove</b></p>
<ul style="list-style-type: none"> <li>The circulatory system is responsible for the movement of blood around the body.</li> <li>The circulatory system is composed of the heart, veins, arteries and capillaries.</li> <li>The heart (an organ) is a pump.</li> <li>The heart pumps blood around all of the blood vessels.</li> <li>Blood carries oxygen from the lungs around the body.</li> <li>When the oxygen has been used from in the blood, then it known as deoxygenated blood, which is taken to the lungs.</li> <li>Diet, exercise, drugs and lifestyle impact upon the body.</li> <li>Nutrients and water are transported around the body via the circulatory system.</li> </ul>	<ul style="list-style-type: none"> <li>The heart is divided into four chambers; the left and right atrium and the left and right ventricle.</li> <li>Pulse is a wave of blood flow going through the arteries (aorta) causing it to stretch and recoil. Pulse rates can be measured.</li> </ul>	<ul style="list-style-type: none"> <li>Describe the effect of diet, exercise, drugs and lifestyle on animals (humans).</li> <li>To know and describe how to keep our bodies heathy</li> <li>To take pulse measurements (including a control) and repeat readings to find a mean rate for a variety of questions E.g. What happens to my heartbeat when I exercise? What happens to my heartbeat when I lie down?               <ul style="list-style-type: none"> <li>Explain how water and nutrients are transported around the body.</li> </ul> </li> </ul>

<p><b>Crucial Knowledge (Evolution and inheritance)</b></p>	<p><b>Expanded Knowledge</b></p>	<p><b>Intent/Prove</b></p>
<ul style="list-style-type: none"> <li>Evolution is a process of change that takes place over many generations, during which species of animals, plants, or insects slowly change some of their physical characteristics. This is because offspring are not identical to their parents.</li> </ul>	<ul style="list-style-type: none"> <li>Variation in offspring over time can make animals more or less able to survive in particular environments e.g. how giraffes' necks got longer or the evolution of colour change in the peppered moth brought about by the industrial revolution in the Midlands area of the UK.</li> </ul>	<ul style="list-style-type: none"> <li>Name and explain how animals are adapted to their environment; comparing how some are adapted to survive in extreme conditions, e.g cactuses, penguins and camels.               <ul style="list-style-type: none"> <li>To create a family tree showing inherited characteristics (can be self or</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>Natural selection occurs when there is competition to survive.</li> <li>Inheritance is when characteristics are passed on from one generation to the next.</li> <li>Adaptation is when animals and plants have evolved so that they have changed to survive in their environments.</li> </ul>	<ul style="list-style-type: none"> <li>Explain the impact of Mary Anning and Charles Darwin's scientific work.</li> </ul>	<p>fictional/media celebrity based photographs).</p>
--	---	--

**Summer**

<b>Crucial Knowledge (Properties and changes of materials)</b>	<b>Expanded Knowledge</b>	<b>Intent/Prove</b>
<ul style="list-style-type: none"> <li>Everything is made from particles.</li> <li>Properties are the characteristics used to describe a material.</li> <li>Compare and group everyday materials based on a variety of properties.</li> <li>Certain materials are used for specific jobs due to their properties.</li> <li>Identify differences between a solid, a liquid and a gas.</li> <li>Some materials will dissolve in liquid to form a solution.</li> <li>A reversible change is when materials can be recovered from a mixture.</li> <li>An irreversible change is when a mixture cannot be separated back into the original components. Some mixtures can be separated using a variety of methods e.g. filtering, sieving and evaporating.</li> </ul>	<ul style="list-style-type: none"> <li>A particle is the smallest possible unit of matter.</li> <li>Durable means something is hard-wearing/strong.</li> <li>Transparency is where something is transparent (see through).</li> <li>Solids stay in one place and can be held.</li> <li>Liquids can flow or can be poured easily.</li> <li>Gas are often invisible.</li> <li>When a solid mixes with a liquid, then the solid has been dissolved.</li> <li>With irreversible changes, some materials result in the formation of new materials.</li> <li>Burning is an irreversible reaction.</li> </ul>	<ul style="list-style-type: none"> <li>To name a variety of reversible and irreversible changes.</li> <li>To recommend a material for a purpose e.g. slate is used for roofs because it is hard, durable and waterproof.               <ul style="list-style-type: none"> <li>Investigations.</li> </ul> </li> </ul>

Crucial Knowledge (Living things and habitats)	Expanded Knowledge	Intent/Prove
<ul style="list-style-type: none"> <li>Living things can be classified into groups by their characteristics.</li> <li>You can classify living things (plants, animals and micro-organisms) by comparing their similarities and differences.</li> <li>Characteristics are special qualities or appearances that make an individual or group of things different to others.</li> <li>You can classify living things (plants, animals and micro-organisms) by comparing their similarities and differences.</li> <li>A micro-organism is a living thing that is too small to be seen with your eye (e.g. bacteria,</li> <li>viruses, some moulds).</li> </ul>	<ul style="list-style-type: none"> <li>Animals can be classified into vertebrates (animals with a backbone) and invertebrates (animals without a backbone) and give examples from both groups.</li> <li>To know about Carl Linnaeus and his work.</li> <li>A whale is a mammal</li> <li>To know that animals can be divided into broad groups of mammals (animals which give birth to live young), insects, snails, worms, spiders, amphibians, fish, birds and reptiles.</li> <li>Plants can be divided into broad groups of flowering and non-flowering plants.</li> </ul>	<ul style="list-style-type: none"> <li>To use classification keys to identify some plants and animals in the immediate environment.</li> </ul>