

Science Progression of Knowledge**Year 1****Topic: Seasonal Changes**

<u>National Curriculum Objectives:</u>	<u>Essential Vocabulary:</u>	<u>Substantive Knowledge:</u> - children MUST know this by the end of the unit	<u>Working Scientifically Objectives:</u>
<ul style="list-style-type: none">observe changes across the 4 seasonsobserve and describe weather associated with the seasons and how day length varies	<ul style="list-style-type: none"><u>Seasons:</u> spring, summer, autumn, winter, seasonal change.<u>Weather:</u> e.g. sun, rain, snow, sleet, frost, ice, fog, cloud, hot/warm, cold, storm, wind, thunder, weather forecast.<u>Measuring weather:</u> temperature, rainfall, wind direction, thermometer, rain gauge.<u>Day length:</u> night, day, daylight.	<ul style="list-style-type: none">Know that the weather is always changing and that we have many different types of weather.Know that there are four seasons in the UK.Name the months each season occurs in.Identify the main features of each of the different seasons.Describe different clothing that is appropriate to wear during each season.Identify differences between each of the four seasons.Describe how animals are affected by each of the four seasons, and how their behaviour changes during each one.Describe some of the ways humans adapt to the different seasons, e.g. by what we wear, eat and do.Know that some foods are seasonal.Know that the number of hours of daylight changes throughout each of the four seasons.Know that there are more hours of sunlight during the summer than during the winter.	<ul style="list-style-type: none">Transfer data from a tally chart into a pictogram to show what seasonal clothing was worn.Use collected data to answer questions.
<u>Prior Knowledge:</u>	<u>Future Knowledge:</u>	<u>Working at Greater depth:</u>	<u>Science Enquiry/Key Questions:</u>
In Early Years children should: <ul style="list-style-type: none">Developing an understanding of change.Observe and explain why certain things may occur (e.g. leaves falling off trees, weather changes).Look closely at similarities, differences, patterns and change.<ul style="list-style-type: none">Comments and questions about the place they live or the natural world.	In Year 3 children will: <ul style="list-style-type: none">Recognise that they need light in order to see things and that dark is the absence of light.Notice that light is reflected from surfaces.Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.Recognise that shadows are formed when the light from a light source is blocked by a solid object.Find patterns in the way that the sizes of shadows change		<ul style="list-style-type: none">In which season does it rain the most?Does the wind always blow the same way? How long does it take for the ground to dry after it has been raining?Does more rain take longer to dry?Do countries with higher temperatures have less rain?Which leaf is the strongest/best shade cover/best at directing water?What purpose do leaves serve for a tree?Why do you think leaves turn brown in Winter?What colours can we find outside? Does this change across the seasons?What effect does rain have on the environment?What would happen if there was too much rain?What would happen if there wasn't enough rain?

Science Progression of Knowledge

Year 5

Topic: Earth and Space

<u>National Curriculum Objectives:</u>	<u>Essential Vocabulary:</u>	<u>Substantive Knowledge:</u> - children MUST know this by the end of the unit	<u>Working Scientifically Objectives:</u>
<ul style="list-style-type: none"> describe the movement of the Earth and other planets relative to the sun in the solar system describe the movement of the moon relative to the Earth describe the sun, Earth and moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky 	<ul style="list-style-type: none"> <u>Solar system:</u> star, planet. <u>Names of planets:</u> Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. <u>Shape:</u> spherical bodies, sphere. <u>Movement:</u> rotate, axis, orbit, satellite. <u>Theories:</u> geocentric model, heliocentric model, astronomer. <u>Day length:</u> sunrise, sunset, midday, time zone. <p>Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.</p>	<ul style="list-style-type: none"> Stars, planets and moons have so much mass they attract other things, including each other due to a force called gravity. Gravity works over a distance. Stars produce vast amounts of heat and light. All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars. Objects with larger masses exert bigger gravitational forces Objects like planets, moons and stars spin Smaller mass objects like planets orbit large mass objects like stars 	<ul style="list-style-type: none"> Draw a labelled diagram of the Sun, Earth and Moon to show how they are related to one another. Create a moving model of the Sun, Earth and Moon, and write a description to describe what is happening. Make a simple sundial and set it up to observe how shadows change throughout the day. Record my observations and use these to draw conclusions. Use the internet to research which time zones different cities around the world are in. Label diagrams to show which season both the Northern and Southern Hemispheres will be experiencing depending on the Earth's position and tilt. Create a graph to show the average day length by month, and use the data to answer questions. Create a labelled diagram of the phases of the moon. Sort fact cards to show which apply to the geocentric and which apply to the heliocentric explanations of the solar system. Use the internet to explore the night sky, stating which planets and constellations will be visible on a given day. Carry out my own research to find out key facts about each planet in the solar system.
<u>Prior Knowledge:</u>	<u>Future Knowledge:</u>	<u>Working at Greater depth:</u>	<u>Science Enquiry/Key Questions:</u>
<p>In Key Stage 1 and in Year 3 children should:</p> <ul style="list-style-type: none"> Understand changes in weather patterns and seasons. Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>In Year 6 children will learn:</p> <ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. 	<ul style="list-style-type: none"> Can they compare the time of day at different places on the earth? Can they create shadow clocks? Can they begin to understand how older civilizations used the sun to create astronomical clocks, e.g. Stonehenge? Can they explore the work of some scientists? (Ptolemy, Alhazen, Copernicus) 	<ul style="list-style-type: none"> Can you observe and identify all the phases in the cycle of the Moon? Why do we have day/night/months/years/season? Why does day length change? Is there a pattern between the size of a planet and the time it takes to travel around the Sun? How do astronomers know what stars are made of? How have our ideas about the solar system changed over time? Sun, Earth & Moon: What is moving and how do we know?

