

<u>St James' Church of England Primary School</u> <u>Key Learning in Science – Light and Astronomy</u>



Key Learning: Light And Astronomy			
Key Learning	Notes and guidance	Working Scientifically	
	(Non-statutory)	(Featured skills)	
 Pupils should be taught to: KS1: Year 1 – Seasonal Changes Observe changes across the four seasons . Observe and describe weather associated with the seasons and how day length varies. 	KS1: Year 1 – Seasonal Changes Pupils should observe and talk about changes in the weather and the seasons. Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.	 Pupils might work scientifically by: KS1: Year 1 – Seasonal Changes Making tables and charts about the weather. Making displays of what happens in the world around them, including day length, as the seasons change. Additional suggestion from Lancashire for working scientifically opportunities which enhance learning and support using ICT across the curriculum This unit provides an ideal opportunity for using 	
 LKS2: Year 3 – Light Pupils should be taught to: Recognise that they need light in order to see things and that dark is the absence of light. 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 size of shadows change. 	LKS2: Year 3 – Light Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure shadows and find out how they are formed and what might cause shadows to change. Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.	LKS2: Year 3 – Light looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes	
UKS2: Year 5 – Earth and Space	UKS2: Year 5 – Earth and Space	UKS2: Year 5 – Earth and Space	
 Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. 	Pupils should be introduced to a model of the Sun and Earth that enables them to		

 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. The Earth spins once around its own axis in 24 hours, giving day and night. The Earth orbits the Sun in one year. We can see the Moon because the Sun's light reflects off it. The Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are evidence of this. The Sun <i>appears</i> to move across the sky from East to West and this causes shadows to change during the day. Changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth. (See UKS2 'Forces' for Key Learning on gravity). 	explain day and night. Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones). Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses. Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.	 Comparing the time of day at different places on the Earth through internet links and direct communication. Creating simple models of the solar system. Constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day. Finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks. [research]
Key Learning (continued)	Notes and guidance (continued)	Working Scientifically (continued)
	(Non-statutory)	(Featured skills)
UKS2: Year 6 – Light	UKS2: Year 6 – Light	UKS2: Year 6 – Light
 Recognise that light appears to travel in straight lines 	exploring the way that light behaves	 Deciding [observe/explore] where to place rear- view mirrors on cars
 Use the idea that light travels in straight lines to 	including light sources, reflection and	 Designing and making a periscope and using the
explain that objects are seen because they give	shadows. They should talk about what	idea that light appears to travel in straight lines
out or reflect light into the eye.	happens and make predictions.	to explain how it works.
Explain that we see things because the light that travels from light courses to our even or from		Investigating the relationship between light
light sources to objects and then to our eyes.		sources, objects and shadows by using shadow
 Use the idea that light travels in straight lines to 		observel light by looking at a range of
explain why shadows have the same shape as		phenomena including rainbows, colours on soap
the objects that cast them.		bubbles, objects looking bent in water