Science Knowledge Organiser –
Question - **How does light behave?**
Year 6 - Term 1

Nursteed Community Primary School

Prior knowledge	**Key knowledge**	Subsequent knowledge
• Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light) • Notice that light is reflected from surfaces. (Y3 - Light) • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light) • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light) • Find patterns in the way that the size of shadows change. (Y3 - Light) • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)	• Recognise that light appears to travel in straight lines. • 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. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	• The similarities and differences between light waves and waves in matter. (KS3) • Light waves travelling through a vacuum; speed of light. (KS3) • The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. (KS3) • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye. (KS3) • Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. (KS3) • Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection. (KS3)

Working Scientifically Skills

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
- Using test results to make predictions to set up further comparative and fair tests.

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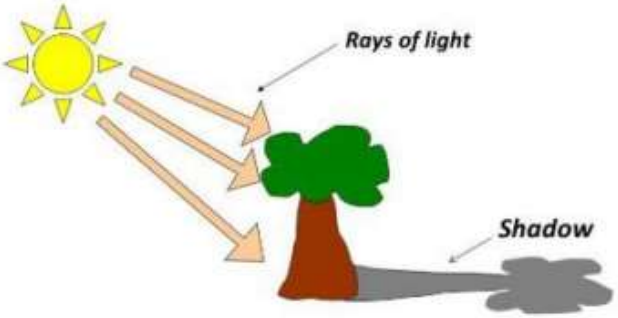
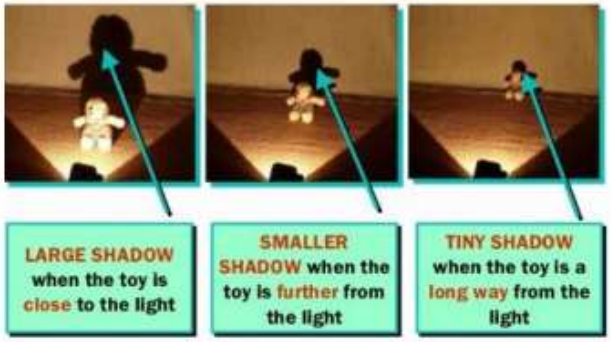
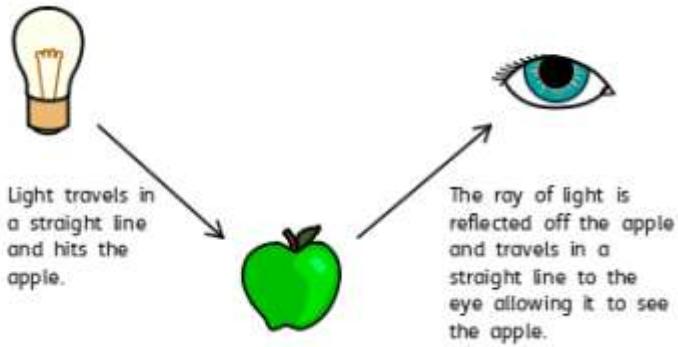
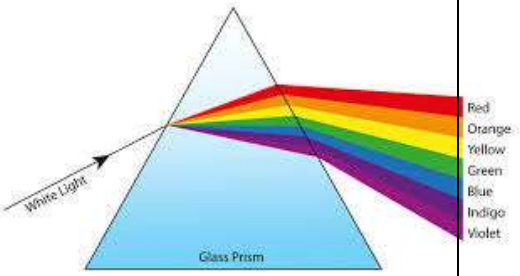
Year 6 Term 1 - Light

How does **light** travel?	• **Light** travels in a straight line. • When you place a torch on a table in a **dark** room, the beam travels in a straight line. • **Reflection** is when **light** bounces off a surface - this changes the direction in which the **light** travels.

What is the relationship between **light sources** and **shadows?**	• Because **light** travels in straight lines, when there is an **opaque** object blocking the **light**, a **shadow** is formed. • These **shadows** have the same shape as the objects that cast them.  • The size of a **shadow** changes as the **light source** moves. 

How do we see?	

Vocabulary	
angle	the direction from which you look at something
dark	the absence of **light**
dim	**light** that is not **bright**
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines
emits	to **emit** a sound or **light** means to produce it
light	a **brightness** that lets you see things.
mirror	a flat piece of glass which **reflects light**, so that when you lookat it you can see yourself **reflected** in it
opaque	if an object or substance is **opaque**, you cannot see through it
reflects	sent back from the **surface** and not pass through it
shadows	a dark shape on a **surface** that is made when something stands between a **light** and the **surface**
source	where something comes from
surface	the flat top part of something or the outside of it
torches	a small **electric light** which is powered by batteries and which you can carry
translucent	if a material is **translucent**, some **light** can pass through it
transparent	If an object or substance is **transparent**, you can see through it



The light emitted from a light source is called "White Light".

This makes us believe it is one colour.

When the ray of white light is refracted through a prism, we see that it is actually made up of a spectrum of colours.

Our human eye can only see 7 of these colours but some animals can see more.