Hurst Hill Primary School Knowledge Organiser

Hurst Hill Primary School
Learning Together

Science	Electricity and Light	Year6	Spring	Physics

Knowledge	
How are shadows formed and how can we change them?	**Pattern Seeking** Revisit knowledge about how shadows are formed and the objects which create them. Focus on the shapes of the shadows and why shadows are the shape of the object which creates them. Conduct an investigation into how we can change and manipulate shadows shape, length, intensity and size. Conduct and experiment identifying the key variables and observe the results. Draw conclusions from the results.
How do our eyes allow us to see and why can we see objects?	**Identifying and classifying** Look closely at the anatomy of our eyes and how different parts allow us to see. Complete diagrams to explain and identify the different parts of the eye. Discuss that without light we can not see. All objects reflect and absorb different amounts of light. Discover that it is these reflections that allow us to see objects. Complete diagrams of how we can see different objects and write explanations of the process.
What is reflection?	**Pattern Seeking** Learn about the law of reflection and use their knowledge and understanding of identifying and measuring angles to predict reflected light rays. Identify the angle of incidence and reflection and use these to complete a light maze. Noticing what happens when the angle changes.
What is refraction and how is it useful?	**Comparative Testing** Learn about how refraction can bend and change the direction of light rays. They will need to differentiate between whether or not an object will reflect or refract light. Give examples of objects which use refraction in a useful way by comparing the objects.
Why can we see a rainbow of colour?	**Research** Investigate how white light can be split into the seven colours of the rainbow. Find out about Isaac Newton's experiments with prisms and discuss how we see colours.
What do we already know about electricity and circuits?	**Identifying and classifying/ Comparative Testing** Recap prior knowledge regarding electricity and circuits, then identify, discuss or test to find differences between series and parallel circuits.
In what ways does the brightness of a bulb or speed of a motor change?	**Pattern Seeking/ Comparative Testing** Children to suggest ways in which changing circuits could affect the brightness of a bulb or the speed of a motor. They may then either give reasons for differences between drawings of circuits or investigate their ideas by making circuits.
Why do we need to use conventional symbols for circuits?	**Identifying and Classifying** Learn about a variety of symbols used in circuit diagrams. They may then either match and draw circuits and symbols according to given instructions or create circuits according to given diagrams. Discuss why the symbols are important and how they have help to build the circuits.
Does changing the wire affect the bulb and how?	**Comparative Testing** Children need to suggest ways in which wires of different lengths, thickness and materials may be tested to determine how they affect the brightness of a bulb. They may then conduct an experiment or interpret a given set of data.

Vocabulary

Transparent	If an object is transparent, you can see through it
Translucent	A material that allows light to pass through it
Opaque	An object that you cannot see through
Shadow	A dark shape on a surface that is made when something stands between a light and surface
Reflect	When light bounces off a surface, changing the direction of a ray of light
Circuit	A complete route which an electrical current can flow around
Wire	A long, thin piece of metal that carries electrical current
Motor	A device that makes movement
Bulb	A light source
Current	The flow of electricity though a wire
Electrons	Carry energy around the circuit
Voltage	An electrical force that makes electricity move through a wire, measured in volts (V)

Hurst Hill Primary School
Learning Together

Hurst Hill Primary School Knowledge Organiser

Science	Electricity and Light	Year6	Spring	Physics

Physics is the science that understands the nature and properties of energy and matter.

Light

Pupils should be taught to:

- 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

Electricity

Pupils should be taught to:

- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- use recognised symbols when representing a simple circuit in a diagram