

### Prior Learning to Reactive

#### Year 4

- Dark is the word used for the absence of light.
- Light is reflected off surfaces.
- Light from the sun can be dangerous and how they can protect their eyes.
- Shadows are formed when light is blocked by an opaque object. Shadows can change shape and size.

### Scientific Skills

Plan and carry out scientific enquiries to answer different questions.

Use test results to make predictions to set up further tests.

Investigate how materials can reflect and refract light as well as the opacity of materials.

Use a range of scientific equipment to carry out investigations and take measurements.

Record results using a variety of methods.

Investigate moving a light source and how this affects the direction., size and position of shadows.

Extend experience of light, through investigating a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water, different shaped prisms and coloured filters.

Identify scientific evidence which has been used to support or refute ideas (in the past and now)

### Key vocabulary

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|---------------------|--|
| <b>Light</b>        | The natural agent that stimulates sight and makes things visible.  |
| <b>Light source</b> | Something that provides light (natural or artificial).   |
| <b>Filter</b>       | To pass through a device to remove unwanted material (liquid, gas, light or sound)   |
| <b>Periscope</b>    | A tube attached to a set of mirrors or prisms through which you are able to see things that are otherwise out of sight.                  |
| <b>Rainbow</b>      | An arch of colours in the sky caused by refractions and dispersion of the sun's light by rain or water droplets in the atmosphere.       |
| <b>Reflection</b>   | The throwing back by a body or surface of light without absorbing it.  |
| <b>Refraction</b>   | The bending of light as it passes from one substance to another with the bending caused by the different density between two substances. |
| <b>Shadow</b>       | A dark area of shape produced by a body coming between rays of light and a surface.  |
| <b>Spectrum</b>     | A band of colours, as seen in rainbows, produced by separation of components of light by their different degrees at refraction           |

### Key learning

Light comes from a light source. Light sources can be natural (e.g. the Sun, stars) or man-made (e.g. street lamp, Christmas tree lights, glow sticks). The moon does not emit its own light—it reflects the sun.

Light travels in a straight line from a light source. We see because light reflects into our eyes in straight lines.

Light enters the eye through the pupil. When it gets dark the pupil becomes larger to allow more light into the eye. In bright lights, the pupil is smaller.

At the back of the eye is the retina (a sensitive sheet of nerves). They can detect light when it comes through the pupil and sends messages to the brain about what can be seen.

Shadows have the same shape as the objects that cast them because light travels in straight lines.

Opaque objects let no light pass through (creating the darkest shadows) translucent objects allow some light through and transparent objects allow all light through (no shadow).

When an object passes in front of a ray of light, the light can be blocked, creating a shadow. The position of a shadow is determined by the position of a light source. The closer an object is to a light source, the larger the shadow.

