

Year: 3

Subject: Science

Unit of Study: Light and Shadows

Linked Literature: The Firework-Maker's Daughter by Philip Pullman

Rocks, Soils and Fossils

Food and Our Bodies

Light and Shadow

How does your garden grow?

Forces and Magnets

The Nappy Challenge

Vocabulary

Description	A statement that says what you see.
Dull	A surface that scatters light and does not look shiny.
Explanation	A sentence (or sentences) giving a reason for something happening.
Light source	The place where light originates from.
Mirror	A shiny polished surface.
Observation	What we see happening in a scientific test.
Opaque	Not letting light pass through.
Reflect	To change the direction of light using a shiny surface.
Shadow	Darkness caused by light being blocked.
Shiny	Surfaces that reflect lots of light.
Translucent	Letting some light through.
Transparent	Letting most or all light through.

I need to know :

We need light to see. The Sun, fire, electric light and torches are all sources of light. The Moon is not a source of light because it reflects sunlight. Darkness is the absence of light, but few of us experience 'darkness' because of street lighting, night lights, etc. We see objects that are not the light source because the light source hits them, is reflected off and then travels to our eyes. Often the light has bounced (been reflected) off several objects before it enters our eyes. Different materials reflect light by different amounts. Dull materials scatter light and do not reflect very well. Shiny objects, such as mirrors, reflect light extremely well.

Shadows

Shadows are formed when some rays of light continue to travel in straight lines, while other rays are stopped by an object. Objects that do not let light through them are called opaque: these objects make dark shadows. Objects that let a little light through, such as bathroom windows, are called translucent objects and they form shadows that are not as dark. Objects that let all or nearly all light through, such as water or clear plastic film, are called transparent. They can make a very faint shadow because they might block a little light, or no shadow at all if they let all the light through.

Mirrors

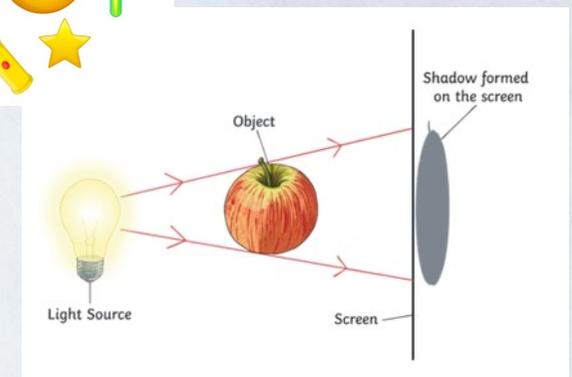
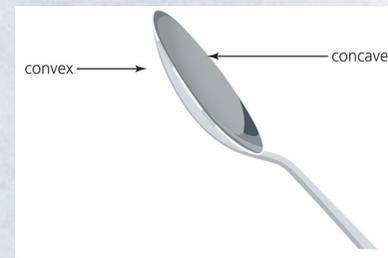
We see objects because light rays enter our eyes after bouncing off the objects. This bouncing of light off objects is known as reflection. Objects that have a rough surface do not reflect light well; they scatter it and we cannot see ourselves in them. Objects that are very smooth and shiny reflect light well and we can see images, reflections. Most mirrors are made from a smooth piece of glass with a silvery coating at the back of it. There are different kinds of mirrors: if you look into a flat mirror the image is the same size as the object and the same way up. A concave mirror has a surface that bulges inwards and the image can make a person look smaller and upside down. A convex mirror has a surface that bulges out and the image is usually the right way up but larger. In 1825, the German chemist Justus Von Liebig made mirrors widely available.

I need to do:

- Set up simple practical enquiries, comparative and fair tests.
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Prior knowledge:

- Personal experiences and ideas to draw upon.
- That shadows are dark and are similar in shape to the object forming them.



Why are light sources important?

Why do some surfaces reflect light better than others?

Why do we see ourselves in mirrors?

How are mirrors used in everyday life?

Which material is best for making shadows?

How do objects make shadows?

