



Year 3 - Light Reading Booklet

1. Light and Dark
2. Transparent and Opaque Surfaces
3. Mirrors and Reflection
4. Part 1—Shadows
5. Part 2—Finding Patterns in Changing Shadows
6. Assessment

Name: _____

Class: _____

Lesson 1 - Light and Dark

We can only see something if light from that object is reflected back into our eyes. The light always comes either straight from a source of light, or bounces off an object that isn't a light source. The Moon is NOT a light source.



The speed of light is unbelievably fast, 300 million metres a second. It is believed by scientists that nothing in the universe can travel faster than light. Darkness is the absence of light.

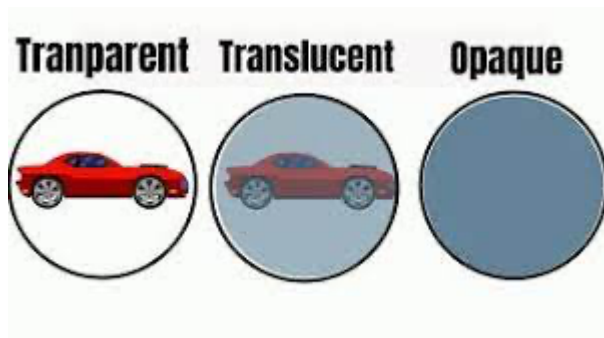
The sun is the most important source of light for life on earth. It provides light and warmth. Plants, animals and people need light to grow and stay healthy. Sunlight can be dangerous for our eyes if we are exposed to it directly, that is why we must never look directly at the sun, we also must wear sun cream to protect ourselves from harm. However, sunlight is also good for us in the right quantities and helps our bodies to create vitamin D which is useful for growth.



Lesson 2 - Transparent and Opaque

Light acts differently on different materials: some materials are clear, allowing ALL light to pass through them. These materials are transparent. Other materials all BLOCK ALL light passing through – these materials are opaque, or there are materials which allow SOME light through - these are translucent. Light that passes through an object is being transmitted, light that does not pass through is absorbed and light that is reflected bounces off the object.

Light travels in straight lines and does not bend. If an object blocks light, a shadow is made on the opposite side to the light.

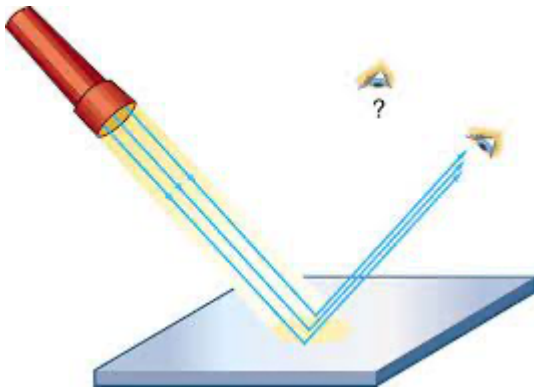


Lesson 3 - Mirrors

Many surfaces reflect light, meaning the light bounces back off them. The light that bounces back off a smooth surface is called a reflection. Reflected light does not bend as light travels in straight lines.

A mirror is very smooth, so it reflects light really well. The light passes through the transparent glass part of a mirror. The back of the glass is coated with a special silver paint.

When the light hits the silver surface, it bounces back through the glass. Shine a light at a mirror and you can almost see how the light is reflected. A flat mirror is called a plane mirror. If you curve a mirror it will still reflect light, but the image will look strange. If you curve the mirror inwards (concave) the image appears larger than it is. If you curve the mirror outwards (convex) the image appears smaller, although you can see a larger area.



Lesson 4 & 5 - Investigating Shadows

At different times of the day, the sun is in different positions in the sky. (Remember back to the Science unit on why we have seasons). At sunrise, the sun appears to move from the horizon up into the sky, at midday the sun is high above us and at sunset the sun appears to move below the horizon. Explain to children that it appears to us on earth as if the sun is moving across the sky. In fact, the earth is turning on its axis whilst orbiting the sun.

Shadows change through the day getting longer at the start and end, and shorter during the middle of the day.



KEY VOCABULARY

Light

A type of **energy that makes it possible for us to see** and helps to support life on earth

Dark

The **absence of light**. It is hard for us to see in the dark

Light Source

Something that makes light; these can be natural or artificial (made by people)

Transparent

A property of a material that **allows light to travel through it**. We can see through transparent things

Opaque

A property of a material that **does not allow light through it**. We cannot see through opaque things

Reflect

When **light bounces back** from a surface

Shadow

A **dark area** created by an object blocking a light source

Light Source



Short Shadow

Source of light (the Sun) is nearly overhead

Light Source

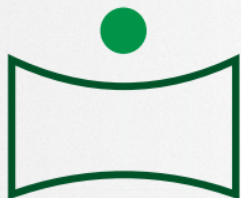


Long Shadow

Source of light (the Sun) is at large angle

Our shadows change as the sun moves across the sky. When the sun is high in the sky our shadows are short. When the sun is lower in the sky our shadows are longer

CONCAVE



When a mirror is bent inwards, creating a hollow – the image looks bigger

CONVEX



When a mirror is bent outwards, creating an arch – the image looks smaller



The sun is a natural light source. It is essential for life on earth

Transparent



Light can travel through an object or material

Opaque



Light cannot travel through an object or material

Reflect



Light bounces back from an object or material