

Science Knowledge Organiser - Year 6

Unit: How do we see the world around us?

Key Vocabulary:

incident ray	An incident ray is a ray of light that hits a
light	Light is a form of energy that travels in a
light source	An object that makes its own light is called a
opaque	Objects that do not let any light pass
prism	A prism is a solid 3D shape with flat sides.
reflected ray	A reflected ray is a ray of light that has
reflection	Reflection is when light bounces off a surface, changing the direction of a ray of light.
refraction	Refraction is when light bends as it passes
shadow	Areas of darkness, where light has been
translucent	Objects that let some light through are described as translucent . They scatter the light so we can't see through them clearly.
transparent	Objects that let light travel through them easily, meaning you can see through the object, are described as transparent .
visible spectrum	The visible spectrum is light that is visible to the human eye. It is made up of a colour spectrum.

Science Skills:

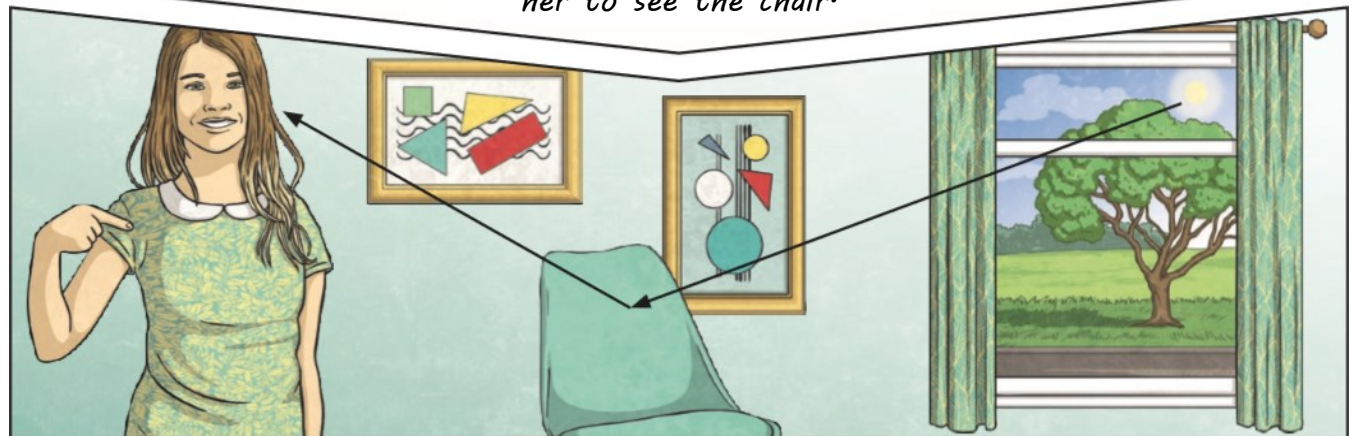
- Recognise that light appears to travel in straight lines.
- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
- Explain that we see things because light travels from light sources to our eyes or from light sources 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.
- Identify scientific evidence that has been used to support or refute ideas or arguments.

Key Facts:

- We need **light** to be able to see things.
- **Light** waves travel in straight lines.
- The **visible spectrum** can be separated into 7 different colours.
- **Shadows** are caused when **opaque** objects block light.
- **Shadows** can be altered depending on the position of the **light source**.

Light travels as a wave. Unlike waves of water or sound, it does not need a medium to travel through. This means that **light** can travel through a vacuum - a completely airless space.

Light from the Sun travels in a straight line and hits the chair. The **light** ray is then **reflected** off the chair and travels in a straight line to the girl's eye, enabling her to see the chair.



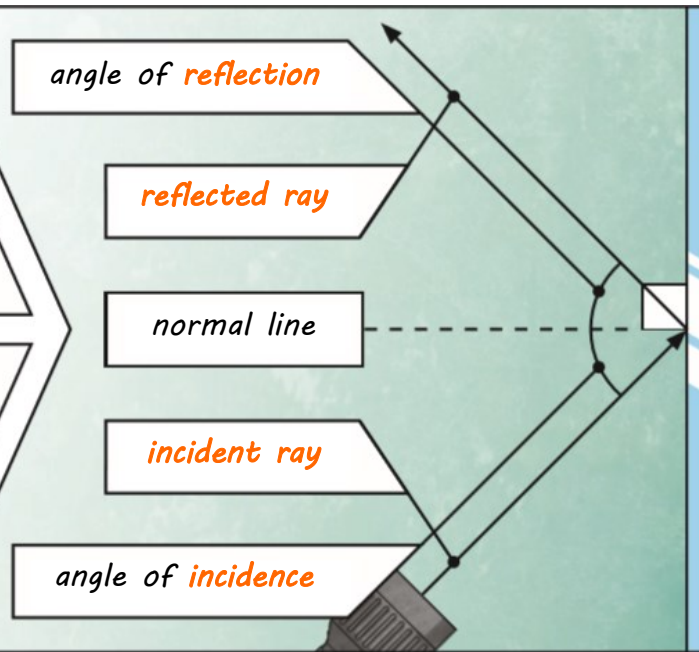
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Unit: How do we see the world around us?

The **law of reflection** states that the angle of **incidence** is equal to the angle of **reflection**. Whenever **light** is **reflected** from a surface, it obeys this law.

The angle of **reflection** is the angle between the normal line and the **reflected ray** of **light**.

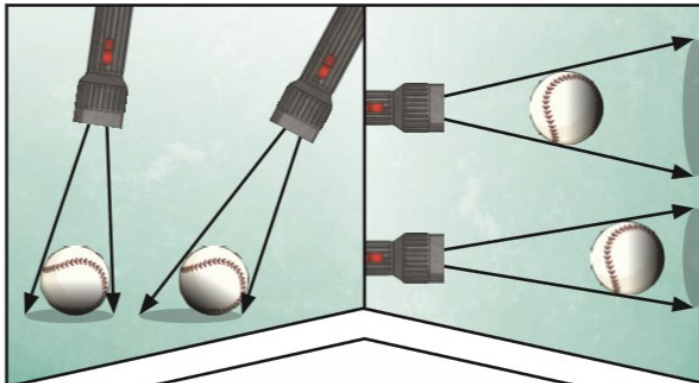
The angle of **incidence** is the angle between the normal line and the **incident ray** of **light**.



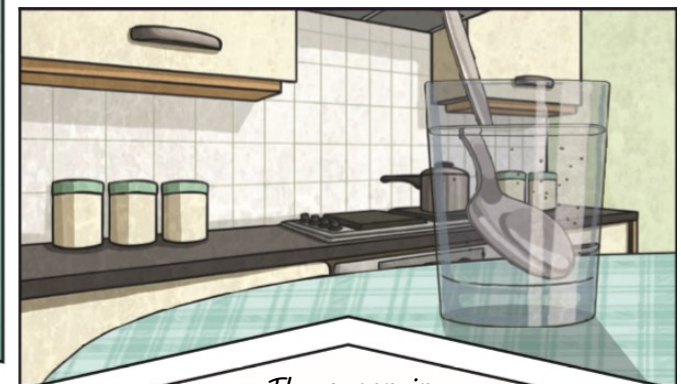
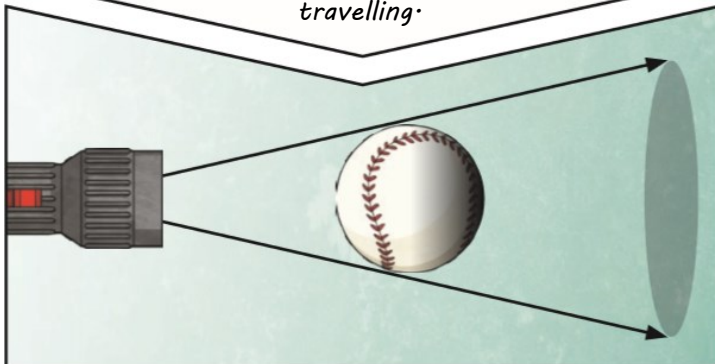
Isaac Newton shone a **light** through a **transparent prism**, separating out **light** into the colours of the rainbow (red, orange, yellow, green, blue, indigo and violet) - the colours of the **spectrum**. All the colours together merge and make visible **light**.



A **shadow** is always the same shape as the object that casts it. This is because when an **opaque** object is in the path of the **light** travelling from a **light source**, it will block the **light** rays that hit it, while the rest of the **light** can continue travelling.



Shadows can also be elongated or shortened depending on the angle of the **light source**. A **shadow** is also larger when the object is closer to the **light source**. This is because it blocks more of the **light**.



The spoon in this water looks as if it is bent. This is because **light** bends when it moves from air to water. When **light** bends in this way, it is called **refraction**.