

# Light energy

1. Read and find.

- a. Three natural sources of light
- b. Three artificial sources of light
- c. Two types of light energy we can't see

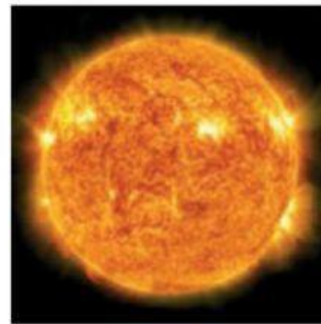
We need light to see everything around us. Some sources of light are **natural** and some are **artificial**. Visible light is only one form of **electromagnetic radiation**. Light can pass through some materials.

## Sources of light

### Natural sources

The Sun is a huge nuclear reaction that creates electromagnetic radiation in the form of visible light energy. Other natural sources of light include **fire** and the **stars**.

Some plants, fungi and animals can also create light. This is called **bioluminescence**.



### Artificial sources

The earliest forms of artificial light were candles or oil lamps. Today, most artificial light sources use electricity. Light bulbs, light emitting diodes (LEDs), fluorescent tubes, neon lights and lasers are all artificial light sources. LEDs are in mobile phones screens.

## Invisible light

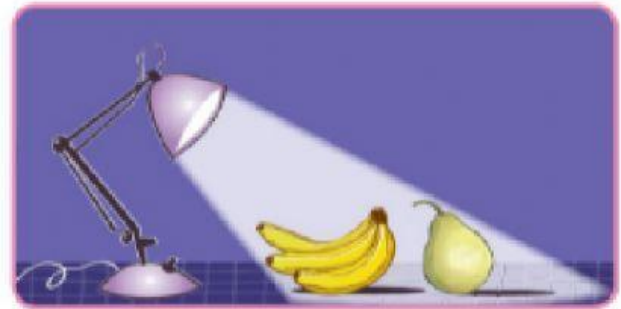
Light usually refers to electromagnetic radiation which can be seen by the human eye. Infrared and ultraviolet light are non-visible forms of light which are both emitted by the Sun.

## Properties of light

Light travels in a **straight line** from its source towards other objects. It can travel in any direction. Light can pass through some materials:

Light passes directly through **transparent** materials, such as air or clear glass.

**Translucent** materials allow some light to pass through, but we can't see very clearly through them. Examples are tracing paper and thin curtains.



When light hits **opaque** materials it's blocked completely and forms a **shadow**. As light waves travel in straight lines, shadows always have the same shape as the object that made them.

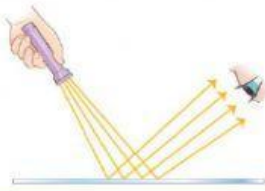
## Light reflection

Some objects reflect light. When light hits these objects, it bounces off them and changes direction.

### Specular reflection

When light shines on a **smooth surface**, all the rays are reflected in the same direction. This produces a **specular reflection** that we see as a **mirror image**.

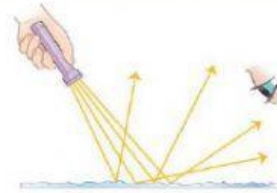
We can see specular reflections in mirrors, shiny metal objects, and the surface of calm water.



### Diffuse reflection

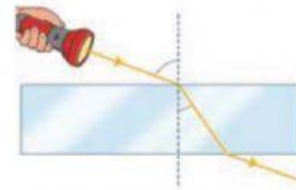
When light shines on a **rough or irregular surface**, all the rays are reflected in different directions. This produces a **diffuse reflection**, so we don't see a mirror image.

Most of the opaque objects around us reflect light this way.



### Refraction

When light passes from one **transparent substance** to another, such as air, glass or water, its **speed** and **direction** change.



## Complete these sentences

1. Light is \_\_\_\_\_
2. The sun is \_\_\_\_\_ that produces \_\_\_\_\_
3. Translucent objects \_\_\_\_\_
4. Opaque objects \_\_\_\_\_