

# LIGHT

We can see because of light. Light waves bounce off objects and travel to our eyes. Our eyes and brains work together to translate that light into what we see. Light travels in waves much like water moves in waves. The amount of energy that a wave carries determines the colour of the light. These waves differ from one another in length, rate and size.

*What happens when a light wave hits an object?*

Several things might happen:

- The light can be absorbed into the material.
- The light can change direction, or refract.
- Some of the light rays can reflect off the surface.

### Absorption

Suppose a ray of light falls onto a piece of black cloth. The black cloth absorbs, or soaks up, almost all of the light rays. Such absorption means that almost no light is reflected from the cloth. If the surface upon which the light falls is perfectly black, there is no reflection at all. This means that the ray of light is completely absorbed. No matter what kind of surface light rays fall upon, some of the light gets absorbed. The darker the surface the more light and heat the surface absorbs.

### Refraction

Light rays bend as they travel through the surface of transparent material such as the glass in a window. Transparent means that light can be seen through it and move through it. This bend in the light is called refraction. It occurs when light travels through different materials at different speeds.

### Reflection

The return of a wave of energy after it strikes a surface is called reflection. Smooth and polished surfaces, such as mirrors and lakes, reflect more light than surfaces that are rough or bumpy. When light reflects from a smooth surface, all of the light rays reflect in the same direction. A mirror is smooth, so you can see your image in it. When light reflects off a rough surface, the rays reflect in many directions. It is impossible to see your reflection in sandpaper because the surface is rough.



### Literal Questions

- 1 How does light travel to our eyes? \_\_\_\_\_
- 2 What two body parts work together to translate light into what we see?  
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- 3 What determines the colour of the light? \_\_\_\_\_
- 4 How do waves differ from one another?  
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- 5 Explain why is it impossible to see your reflection in sandpaper?  
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### Focus: Summarising - Reviewing Meaning

When you summarise, look for the main idea in the text. Identify the most important facts or events and put it in your own words.

Absorption      Refraction      Reflection

- 6 Read the summaries below. Match the correct heading from the orange box with its corresponding summary.

a	Light reflects off surfaces differently depending on the qualities of the differing surfaces.
b	Light can be absorbed in varying amounts depending on the surface's qualities and colour.
c	Light rays bend as they travel through different materials at different speeds.

- 7 Write a paragraph summarising the main idea of the whole text.  
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\_\_\_\_\_  
\_\_\_\_\_

### Inference Questions

- 8 The graphic of the hikers on the opposite page is an example of  
 refraction     reflection     absorption
- 9 Look at picture a. The distorted look of the pencil in the glass of water is an example of  
 refraction     reflection     absorption
- 10 Look at picture b. Why is this person wearing white in the desert?  
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\_\_\_\_\_

