

UNDERSTAND, DESCRIBE AND EXPLAIN:

| | | | | | | |
|------------------------|----------------|---------------|--------------------|--------------------|-------------------|--|
| To | <i>light</i> | <i>mirror</i> | <i>travel</i> | <i>shadow</i> | <i>illuminate</i> | |
| Learning links: | <i>source</i> | <i>ray</i> | <i>straight</i> | <i>material</i> | | |
| <i>Year 6 light</i> | <i>dark</i> | <i>beam</i> | <i>block</i> | <i>surface</i> | | |
| | <i>smooth</i> | <i>pupil</i> | <i>opaque</i> | <i>translucent</i> | | |
| | <i>visible</i> | <i>retina</i> | <i>transparent</i> | <i>reflect</i> | | |
| | <i>bounce</i> | <i>shiny</i> | <i>glare</i> | <i>sun</i> | | |

Pupils should be taught to:

Notice that light is reflected from surfaces

Recognise that light from the sun can be dangerous and that there are ways to protect their eyes

Recognise that they need light in order to see things and that dark is the absence of light

Recognise that shadows are formed when the light from a light source is blocked by a solid object

Find patterns that determine the size of shadows.

The sun emits (gives out) rays of light.
We can't see all the types of light that come from the sun.
The visible spectrum is the name for the light that we can see, and is made up of the colours of the rainbow:



The eye is made to let light in; this is how we see.
Look in the mirror. Can you identify your pupil? It looks like a black circle.

Light enters the eye through the pupil.
Look closely at your pupil in the mirror. Close your eyes for 30 seconds, then open them and look at your pupil. **What do you notice?**
The pupil grows bigger in the dark to allow more light to enter the eye, and gets smaller in bright light.



THINKING POINT:
WHY DO YOU THINK THAT THE PUPIL GROWS BIGGER IN THE DARK?

If too much light comes through the pupil, it can damage the retina.
It causes pain, so that you instantly close your eyes, or turn away from a bright light.
It is very important that you never look directly at the sun, as the light can damage your eyes very quickly.
Bright lights indoors can also damage your eyes, so you should never look at them, or shine lights into anyone's eyes.



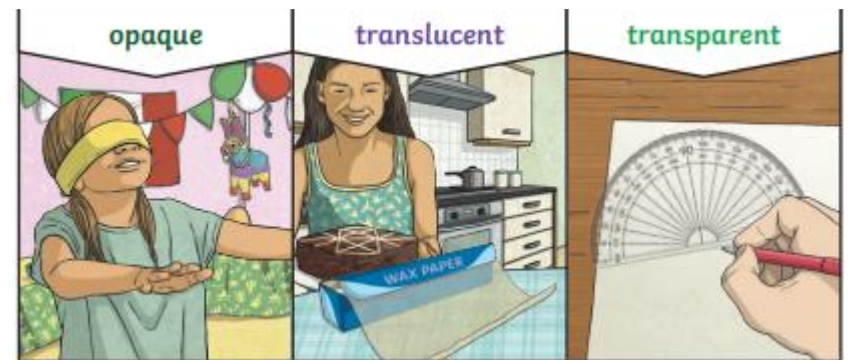
THINKING POINT:
HOW DO YOU THINK WE CAN PROTECT OUR EYES FROM THE SUN'S RAYS?

When light from an object is reflected by a surface, it changes direction. It bounces off the surface at the same angle as it hits it.

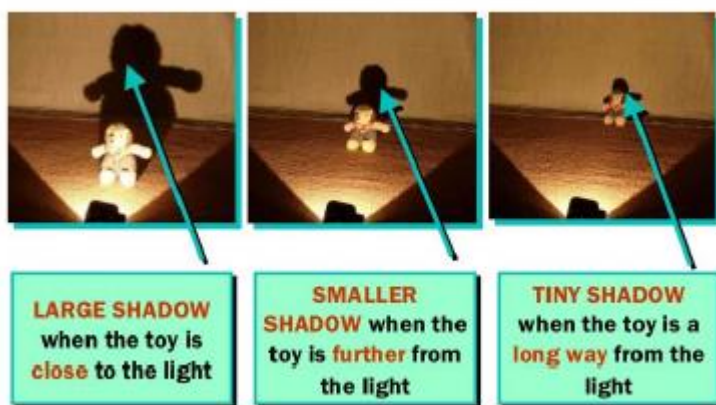
Smooth, shiny surfaces such as mirrors and polished metals reflect light well. Dull and dark surfaces such as dark fabrics do not reflect light well.

WHAT HAPPENS WHEN YOU LOOK IN A MIRROR?

At first sight, your image is identical to you. However, a closer look shows that as you lift your right hand, your image raises its left. Reflection always flips an image from left to right. If you hold up a sheet of paper with writing on it, the image in the mirror shows the writing in reverse



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|--------------------|---|
| opaque | Describes objects that do not let any light pass through them. |
| translucent | Describes objects that let some light through, but scatter the light so we can't see through them properly. |
| transparent | Describes objects that let light travel through them easily, meaning that you can see through the object. |



When do you notice your shadow? Have you seen it outside on a sunny day or inside when you stand in the light from a lamp? All sorts of solid objects can make shadows. Trees, swings, animals, buildings, cars and many other things can all make shadows.

Shadows happen because light moves in straight lines called rays. Rays of light from a light source keep travelling in a straight line until they hit something else. When light hits a solid object like a tree, the tree absorbs a lot of the light. Because of this, the area behind the tree where the light would have gone appears dark.

Shadows come in many different sizes. A small object usually makes a small shadow and a large object usually makes a large shadow. Shadows can get bigger or smaller depending on how far away they are from a light source; it casts a shadow that is about the same size as the object. When you move an object closer to a light source, the shadow looks bigger than the object itself.

What Is Dark?

Dark is the absence of light.
If there is no light from a light source, it will be dark.

Think about times when it is dark, or places where it is dark. Which sources of light are absent, or switched off?

Can we see in the dark?

Look around the room you are in. What can you see? Imagine that you are looking at the same room when it is completely dark. What would you see then?

The room would stay the same and everything would stay where it is- but you would not be able to see in the dark. You can only see the objects in the room when there is light. Darkness is what you get when there is no light.



THINKING POINT:

HOW WOULD YOU FIND YOUR WAY AROUND IN THE DARK IF THERE WAS NO LIGHT?

KEY ASSESSMENT AND APPLICATION OPPORTUNITIES:

EXS:

1. What could you do to change the size of a shadow?

GDS:

1. What would have to change if shadows were going to be the same length during the day? During the year? What effect would this change have on our world/life?