In this unit we will

- Learn how we see light and how it helps us to see things
- Investigate how light travels in straight lines
- Explore how light reflects off objects
- Learn how to sue diagrams to show how light travels
- Understand how shadows are made and plan investigations with them

Science Skills that we will develop:

Explaining Science

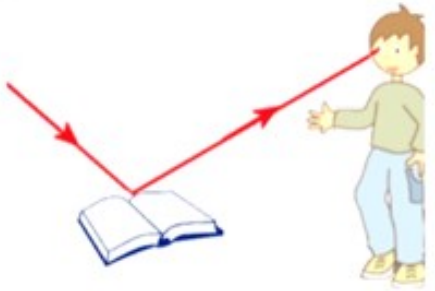
- I use complex science words correctly
- I use a science model to describe and explain
- I draw & annotate diagrams to help describe/explain

Designing Experiments

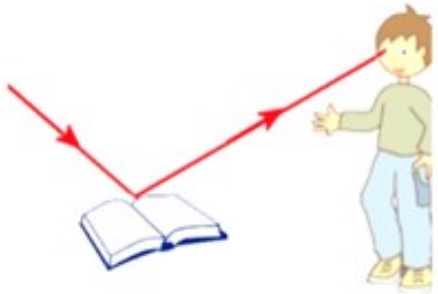
- I plan a fair test & ensure controlled variables stay the same

Describe Patterns and Make Conclusions

- I describe changing patterns, trends and relationships in data
- I use data and a science model to explain and make conclusions





You should have explored light and its properties when you were in Year 3.

Let's start with the basics: how many light sources can you name with your partner in 30 seconds? Note them down on a piece of scrap paper and share.

The_Countdown_Clock

Were all of your ideas actually sources of light?

Were some of them 'secondary sources'? In other words, do some of them only *reflect* light, rather than create it?

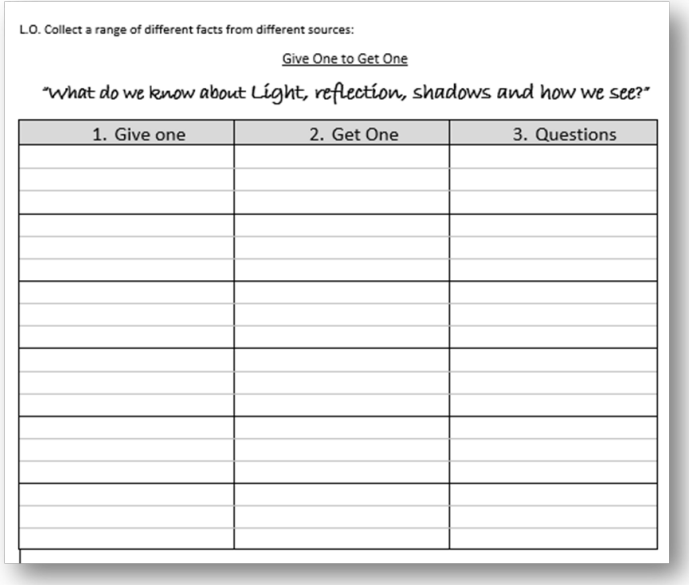
Other than the Moon, can you think of any other secondary sources that might confuse people into thinking that they give off light?

So, what you know about light, reflections, shadows and how we see?

Give One to Get One - an activity to see how much we understand:

First, spend five minutes writing down up to six facts of your own in the Give One column.

Then, visit your classmates to find six more (different facts) - ask them to write them on your sheet in the Get one column.



L.O. Collect a range of different facts from different sources:

Give One to Get One

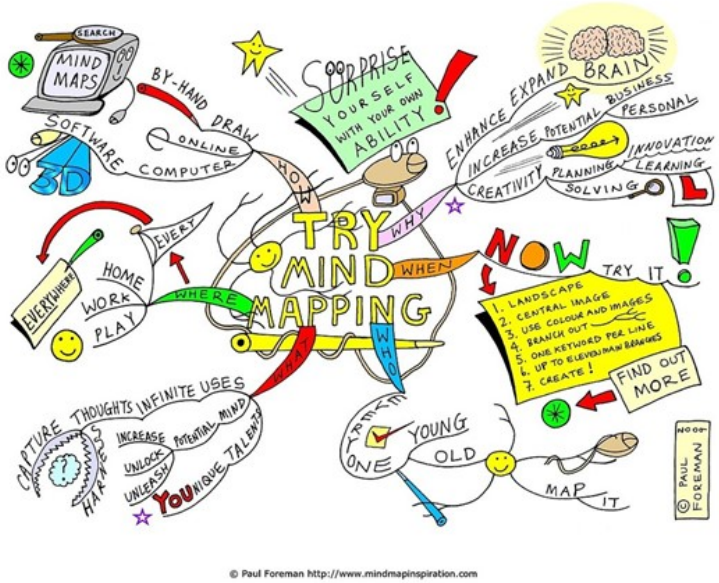
"What do we know about Light, reflection, shadows and how we see?"

1. Give one	2. Get One	3. Questions

Finally, write some questions about the topic that you would like to find the answers to.

Today's Big Question: How do we see?

On your next page, write the question *How do we see?* in the centre and create a mind map to show what you know. Use notes, drawings and diagrams, joining ideas that connect with arrows. Don't worry about filling the page, as you will be coming back to your mind map later in the lesson.



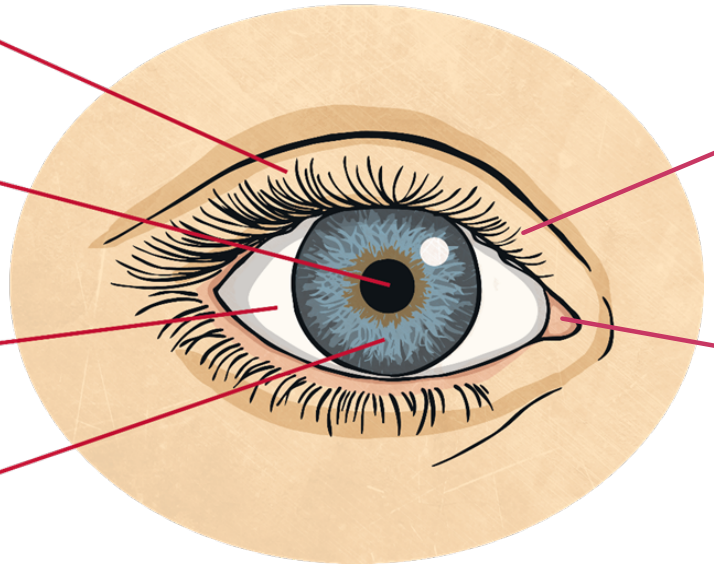
Most living things on the planet are able to detect light, or at least respond to it; even simple organisms without eyes can sense sunlight - those that prefer dark places will move away from the light, while those that need light actively move towards it.

More complex organisms have evolved organs that do more than just sense light. Let's take a closer look at our eyes, or rather, at your partner's eyes.

Use a hand lens to look very closely at each part of the eye - can you find and name these parts? Do you know what they do? Answers on the next page.

eyelid pupil sclera eyelash iris tear (lacrimal) duct

Do you know what each of these part does?



Eyelid

Pupil

Sclera

Iris

eyelash

lacrimal duct

Protects and cleans the eye, keeping it moist

Eyelid

A hole that lets in light

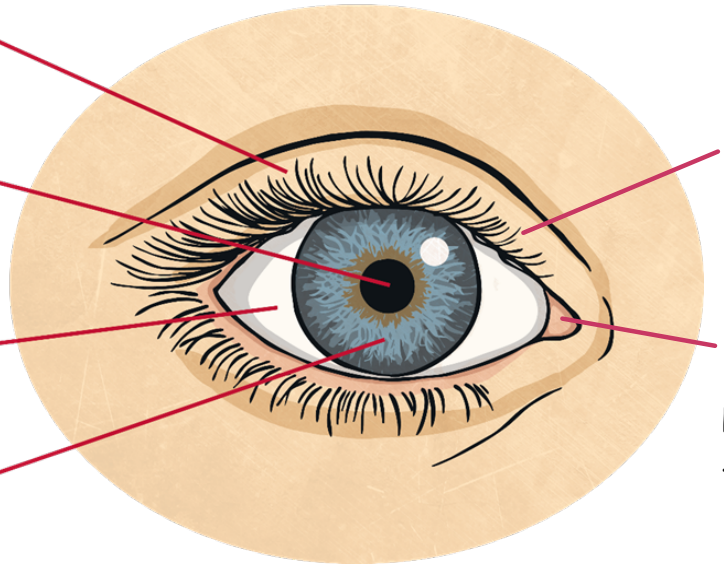
Pupil

White protective coating

Sclera

Coloured ring that can change size to open or close the pupil

Iris



eyelash

protects the eye from dust

lacrimal duct

Produces tears to wash the eye

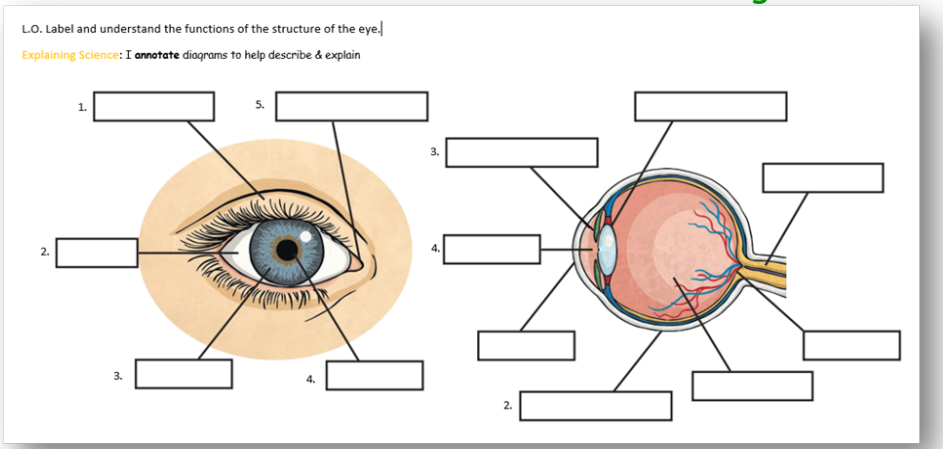
Use what we have just learnt to label as much of these diagrams as you can. Why are some numbers repeated?

eyelid pupil sclera

iris lacrimal duct

Picture of the eye, viewed from the front

Diagram of the eye, as a cut-through section



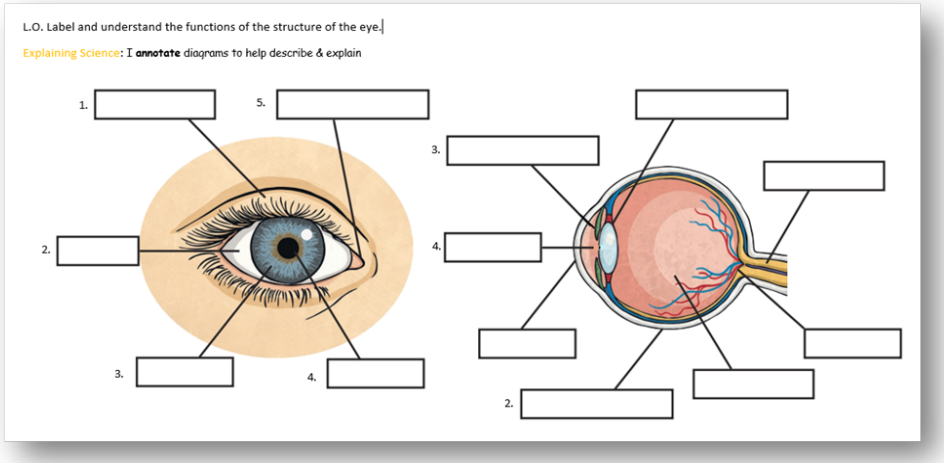
Underneath the diagrams, write each number and a short description of the function of that part of the eye.

But what about the inside of the eye? What goes on there?

This short video contains a lot of information, so once the introduction is over, pay attention, as you'll need it to finish your labelled diagram! Use the link on the website timetable to see the video.

Now return to your worksheet, and label the rest of the diagram. Watch the video again, if you need to.

Make sure you continue the numbered descriptions of the functions.



cornea optic nerve lens retina blood vessels

Now you should be able to add to your mind-map; is there anything that you need to change?

Today's question was 'How do we see things?'. So far, we have discovered how our eyes gather light to create an image, but that doesn't quite explain how we actually see things around us.

We will be learning about how light behaves in our next lesson. For now, can you tell someone everything you've learnt about the eyes and how they work?