

# Science

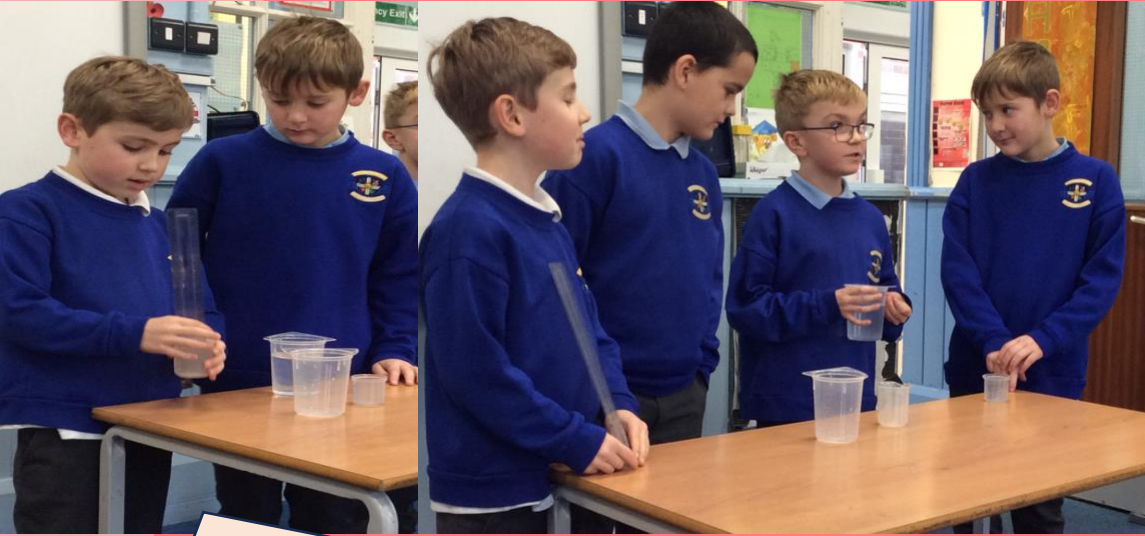
## STATES OF MATTER

**Class Tamar**

**Autumn 2 2023**

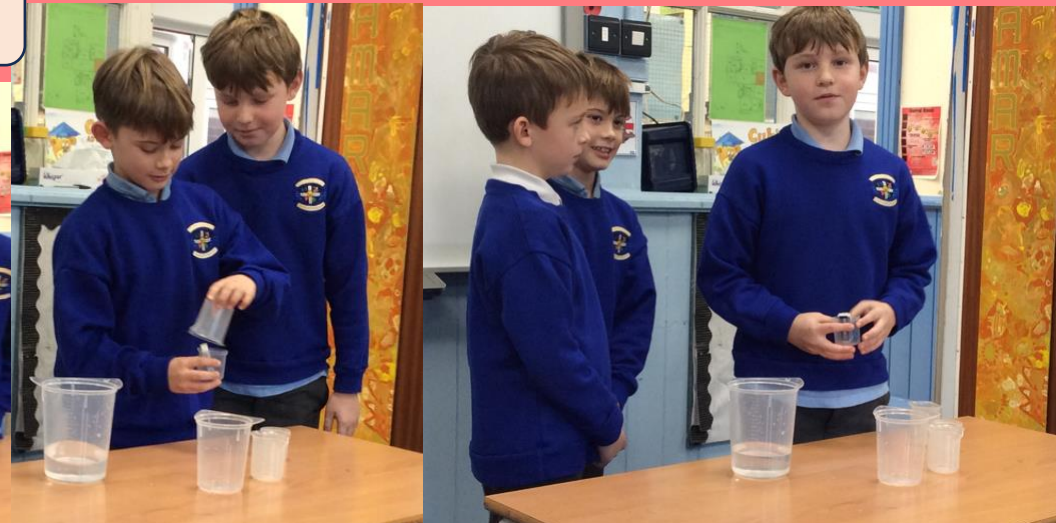
We began our lesson sorting solid, liquid and gases into their correct group. We then learnt about the properties of each. We presented our learning to the class using resources to help us explain each state of matter in detail.

When you pour a liquid to another container it fills the bottom of it.



A solid has a fixed shape and volume. When I move it to a new container it stays exactly the same.

A liquid doesn't have a fixed shape but has a fixed volume.



A gas fills the space of a container, it doesn't have a fixed shape or volume.



In this lesson we answered two questions: Why do we need light? and; Why is it dangerous to look at the sun?

We reflected on the different ways we use artificial and natural light and what life might be like if we didn't have this. We then learnt that our eyes are very sensitive and too much light can cause damage to the retina. It is dangerous to look directly at the sun due to its harsh UV rays. We talked about the different ways that we can protect our eyes from the sun and designed a sun hat and sunglasses to promote eye safety.

## 'Seeing' UV Light



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.

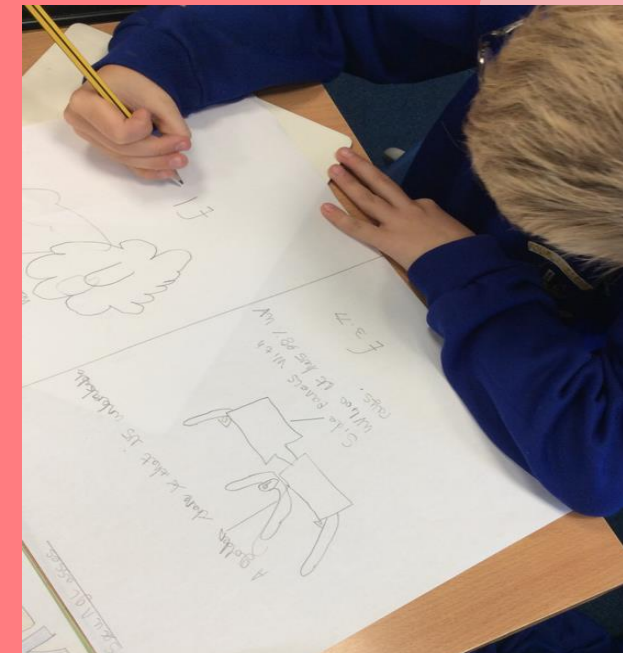
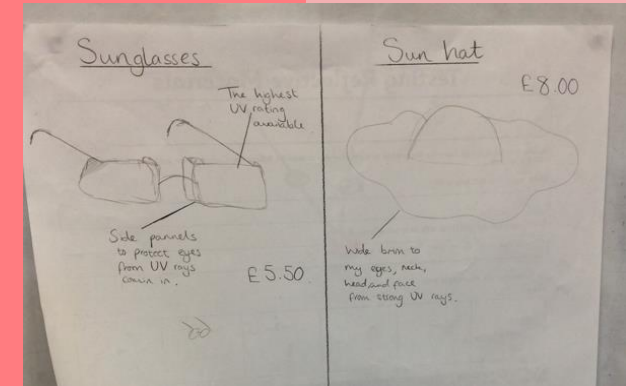
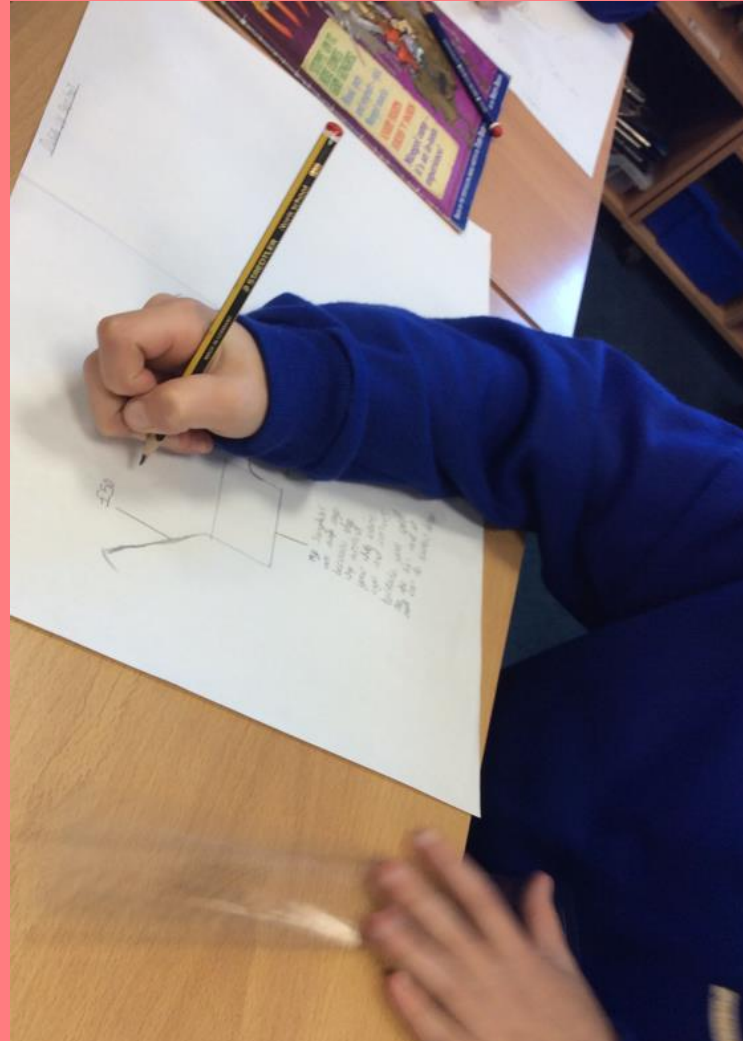
Look closely at your pupil in the mirror. Close your eyes for 30 seconds, then open them and look at your pupil. What do you notice?

The pupil grows bigger in the dark to allow more light to enter the eye, and gets smaller in bright light.



When the lights turn off our pupils get bigger so that we can take in more light.

When the lights turn on our pupils get smaller so that we can take in less light and protect our eyes.





In this lesson we answered the question: What happens to light when it hits a shiny object?

We learnt that light travels in straight lines and that reflection is when light bounces off an object. We tested different materials to find out which ones were the most reflected. We discussed that reflective materials are smooth, bright and shiny.



Cork isn't reflective at all because it isn't shiny or smooth.



I thought that the sandpaper was going to be more reflective because it has tiny shiny bits but it definitely doesn't make a good reflective material!





In this lesson we explored the question: How is a shadow formed and why does it change shape?

We started off our lesson learning the difference between opaque, translucent and transparent. We learnt that a shadow is formed when an *opaque* object blocks light. We carried out an investigation on how to change the shape and size of a shadow. We found out that shadows change size depending on how far away the light source is – the closer the light sources to an object, the bigger the shadow will be. Some of us learnt that we can make a shadow shorter or taller by changing the angle that the light source is directed at the object.

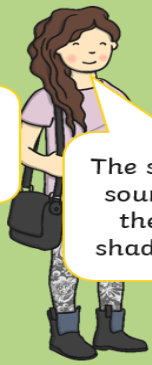
## Shadows and Reflections



These children are talking about shadows and reflections.  
Talk to your partner about the children's ideas.  
Do you agree or disagree with any of their thoughts?



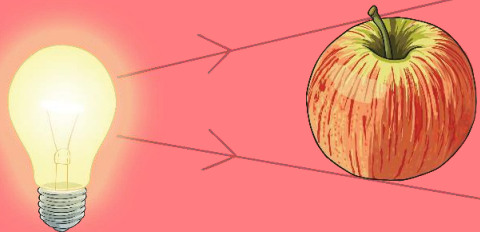
Our shadows are reflections from the sun.



The stronger the source of light the bigger a shadow will be.

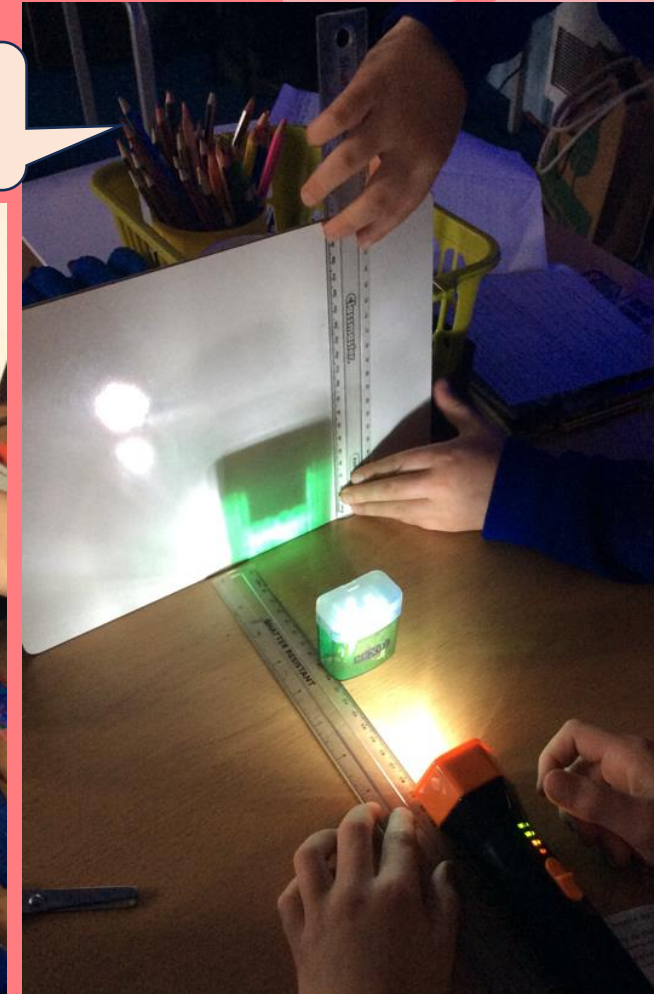


I think shadows are made by something blocking the light.

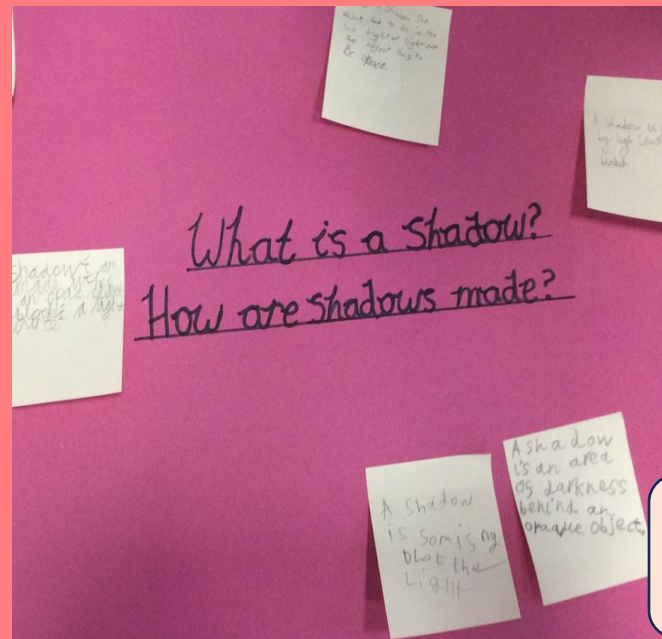
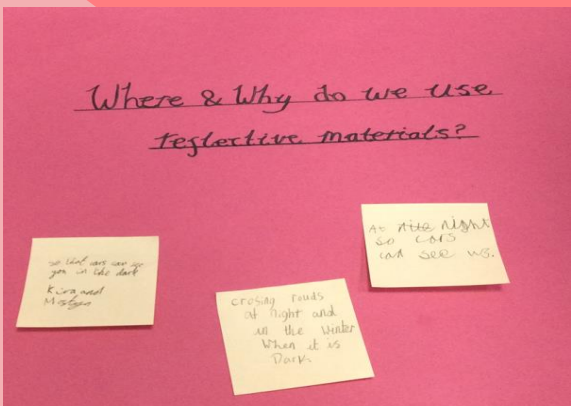
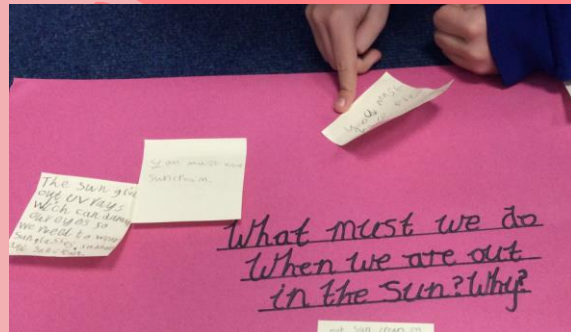
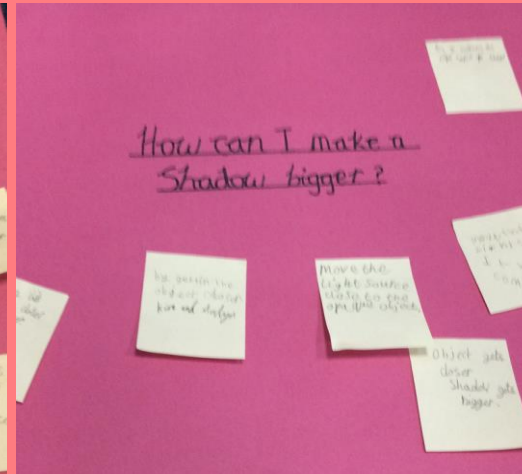
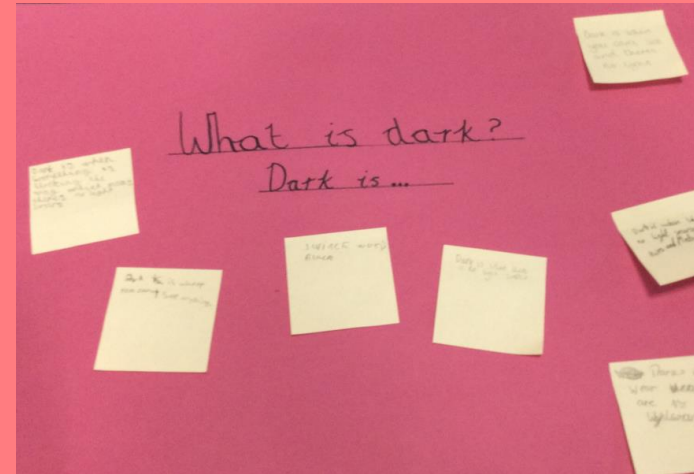
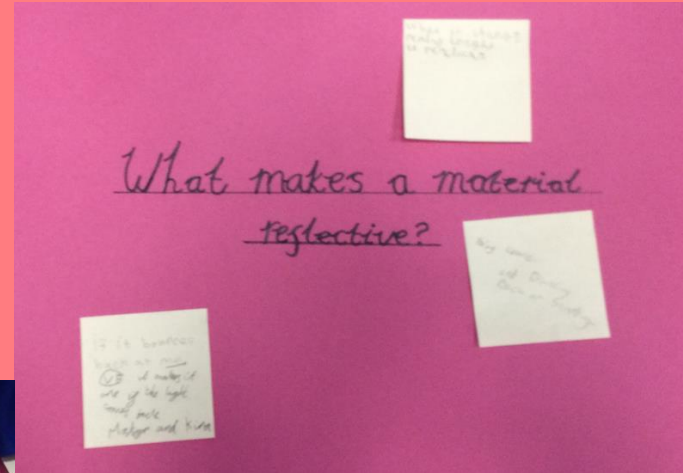
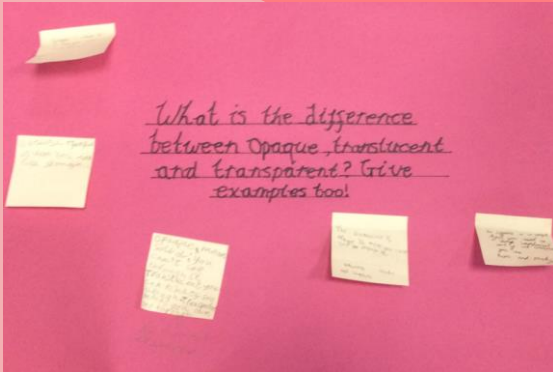


When an opaque object blocks the light source it makes a shadow.

When I move the torch away the shadow gets smaller each time.



To finish off our unit we reflected on how light and dark impact our everyday lives. We recalled everything we could remember from the unit and recorded this around the classroom.



Without light it would be really dark, especially in the winter when it's dark very early.

If we didn't have natural light we wouldn't be able to grow food to eat.

If we didn't have the sun we wouldn't have any trees, and we need the oxygen they provide us to breathe!

If we didn't have any light we wouldn't be able to see anything!

Without any light sources it would be dark – we wouldn't be able to do anything fun!



# Science Year 3 Knowledge Organiser

Why do we have light and dark and what is its impact on our everyday life?

Key knowledge
Know why we have light and dark and its impact on our everyday life
Know what dark is (in relation to absence of light)
Know that we need light so we can see things
Know that light can be reflected
Know how a shadow is formed and why they change shape
Know the dangers of looking directly at the Sun

Vocabulary	
reflection	Occurs when a ray of light hits a surface and bounces off
shadows	Is formed when an object blocks out the light. The object must be opaque or translucent to make a shadow
opaque	Opaque objects do not allow light to pass through them, in most cases creating a shadow
refraction	It is the change of direction of a light ray as it passes through different surfaces, for example, from air to water
convex	These are lenses, also called positive lenses. Are lenses that curve outward from the edges to the centre
concave	This is a lens where the centre of the lens is thinner than the edges

**Personal development:** Develop an awareness of the world around them. Jobs you could do: working within science, education, theatre/arts.



## Our Endpoint

I can explain how light and dark impact on our everyday lives.



### Prior Knowledge–

Within the same subject

Within another subject

From personal experience