Science – light and colour

Today's lesson is all about how we see colour. We know already that we see objects when light reflects off them and into our eyes. Today we are going to explore some more about how and why we see different colours.

I would like you to watch the episode of Bill Nye the Science Guy which is all about this. You'll find the episode here on Youtube: https://www.youtube.com/watch?v=g5BHxozBPuA

The 'prism of science' that he talks about near the beginning is just like the experiment you did before Easter to make a rainbow from a glass of water on the edge of a table.

There are **four key learning points** in the video, and I've written them below. When you hear each one, tick it off, and write down where in the video you spotted it. If you can't print this page, copy the sentences into your book.

Key learning:	Tick	Which part of the video?
White light is a mixture of all the colours of the rainbow.		
We don't see things, we see light bouncing off things.		
The colour of an object is the colour of the light it reflects.		
White objects reflect all colours, black objects absorb all colours.		

Activities to try and questions to think about (you don't have to do them all!):

- Leave a black sock and a white sock outside in the sunshine for an hour or two. Then pick them up and hold one to each cheek. What do you notice about the temperature of each sock? Why would this be? Can you explain, using what you learned from the video?
- Experiment with colour mixing – you could use coloured pencils, crayons, pens, food colouring, paint… get creative! What is happening to the light as you mix colours together?
- If you have a torch and some thin transparent coloured plastic or sweet wrappers, try making different coloured lights. What happens to the colour of objects you are looking at when you shine a different coloured torch on them? Why would this be?
- Try making a rainbow with your garden hose – the fine water droplets act like tiny prisms, splitting the light into the separate colours of the spectrum.
- Blow some bubbles (or make bubbles with soap or shampoo) and look for the rainbows. Can you explain why we see rainbow colours in the surface?
- Look at the sky at different times of day. How many different colours is it? Does it look a different colour towards the horizon compared to straight above you? (Take care not to look directly at the sun). Why is the sky blue? Why do we see different colours at sunrise and sunset? See if you can find out.
- Have a listen to this song by They Might Be Giants: https://www.youtube.com/watch?v=Gf33ueRXMzQ It's to help you remember the order of the colours of the spectrum. Have a go at singing along, or make up your own song to remember the order.
- Have you ever noticed that things look darker when they are wet? Have a go at making your hair or a piece of fabric or your driveway wet – what is happening to the light when it hits a wet surface? Can you draw a diagram to explain?