

# Learn to Light:

**Colour** White light is actually made up of lots of different colours. The 3 primary colours are red, green and blue. When light hits an object, some of it is absorbed and some of it is reflected. The light that is reflected is the colour of the object in that light. For example, a green object absorbs all the colours of the spectrum (white light) except green. The green light is reflected back and that is what we see.



## Experiment

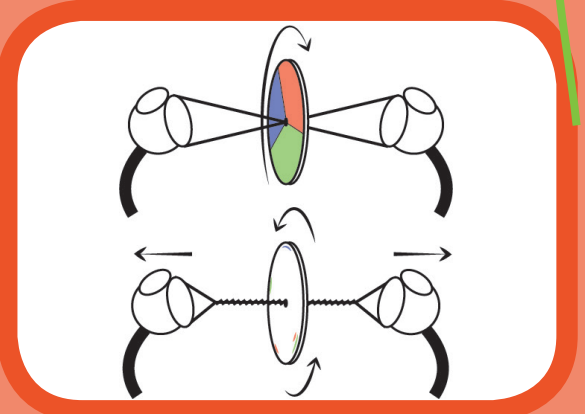
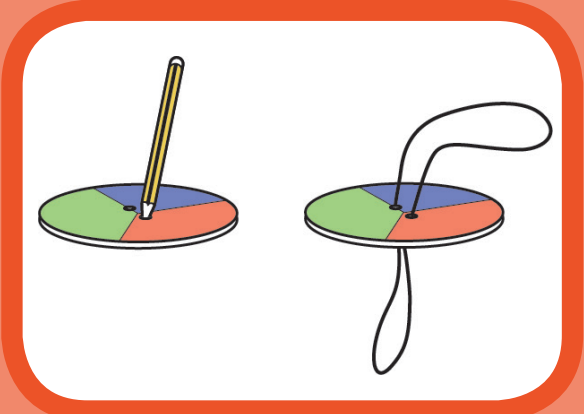
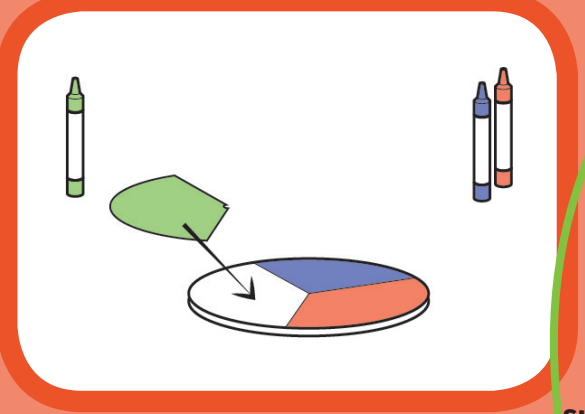
Make a Newton wheel

You will need:

A circle of card, coloured paper/pencil red, green and blue, a sharp pencil, scissors, some string

1. Divide the circle into 3 sections and colour one green, one blue and one red. \*
2. Using the pencil make two holes either side of the centre. Thread the string through the holes and tie the ends together with a knot.
3. Twist up really tight, then pull the string outward and as it spins watch all the colours mix together to make white.

\*You can also try colouring in the other side with each of the 7 colours in a rainbow.



## FUN FACTS

When you mix coloured light this is called additive mixing. The colours add together to make white light. When you mix paint it is called subtractive mixing. The colours are absorbed leaving you with black.

Objects that appear black in white light do so because they absorb all colours and reflect none.



Humans can see about 16 million different colours.

Black objects tend to get hotter in the sun than white objects because they absorb all the light. They then change the light energy into thermal (heat) energy.

## Findings

What are the primary light colours ?

What colour do you get when you mix them ?

Do you get the same colour mixing paint ?

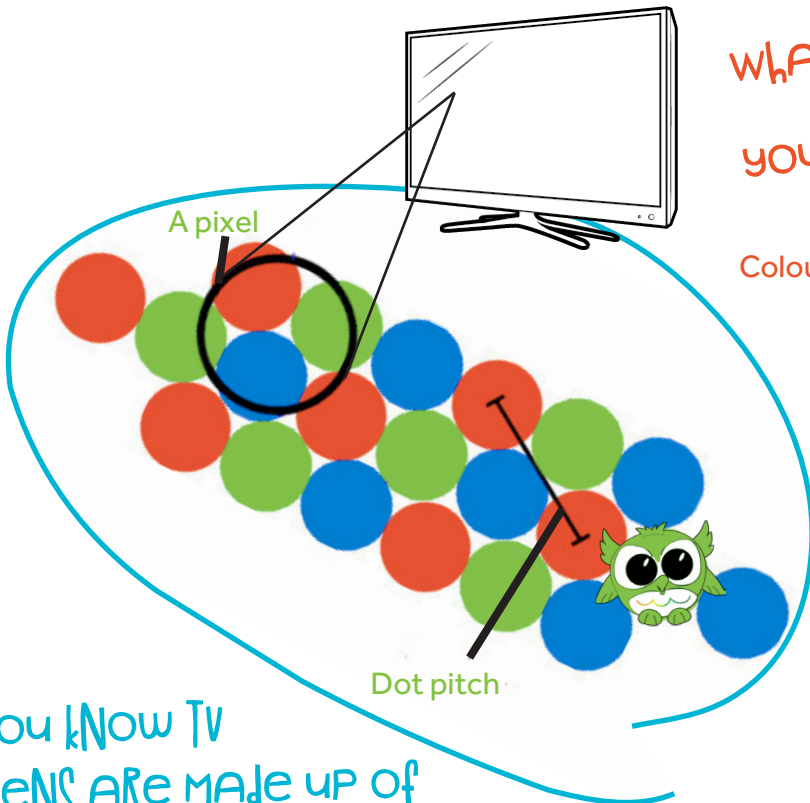
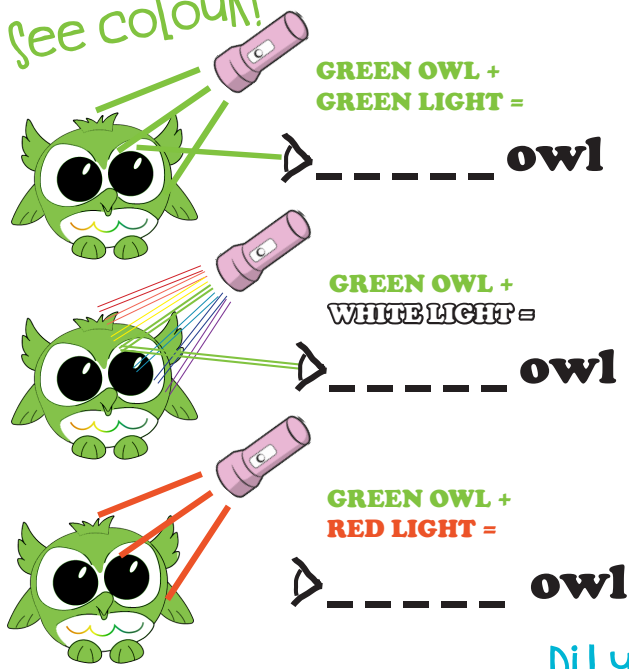
**RED + GREEN + BLUE =** \_ \_ \_ \_ \_



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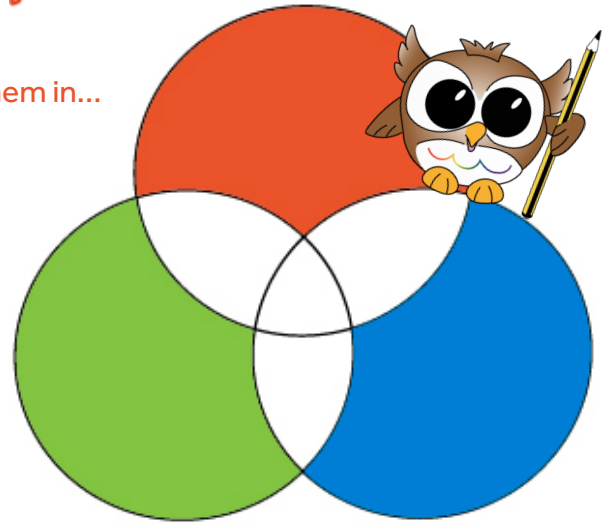
**Conclusion** The way coloured light mixes is very different from the way that paint does. We see light colours by the process of emission from the source (seeing the light given out from a light source) ADDITION. We see paint colours by the process of reflection (seeing the light reflected off an object) SUBTRACTION.

How do we see colour?



WHAT SECONDARY COLOURS DO YOU GET WHEN MIXING LIGHT?

Colour them in...



Did you know TV SCREENS ARE MADE UP OF Red, Green AND blue DOTS OF LIGHT?

Grown-ups: Adult supervision is highly recommended for this extra task - carefully put a droplet of water or a magnifying glass on a white screen (mobile phone, tablet etc) and you will be able to see the red, green and blue lights in it. The lower resolution the screen, the clearer it will be.

Answers: FINDINGS - red green blue, white, no you get black, white SEEING COLOUR - green, green, black MIXING LIGHT - red + green = yellow red + blue = magenta green + blue = cyan all = white