

# Torch Colour Mixing

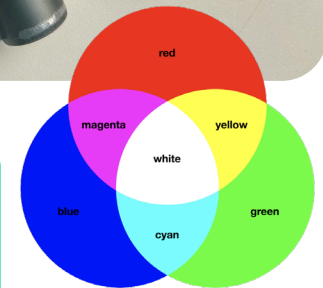
Experiment with mixing colour and discover how our eyes and our brains see colour! In this hands-on science demonstration you can use classroom materials to make coloured torches and show how mixing red, green and blue light creates white light.

## MATERIALS

- |                                  |                  |
|----------------------------------|------------------|
| 3 torches                        | An opaque object |
| Cellophane (red, green and blue) | Scissors         |
| Rubber bands or tape             | A dark room      |
| A3 white paper                   | Stencils         |

## NOTICE

- What colours do you create when you mix two primary colours together?
- How can you make white light?
- What coloured shadows do you create when you move an opaque object in front of the wall? Can you count the colours?



**STEPS****Prepare your tools:**

Cover each torch with a piece of cellophane and use a rubber band or tape to secure it. Make one red, one green, and one blue torch. Layer the cellophane a few times to make the colour more intense.

**Set up:**

Turn off the lights and block out any sunlight.

Set the three torches on the floor or on a table facing a blank white wall. Place the torches so all lights are all hitting the same spot on the wall.

**Things to experiment with:**

- Place an opaque object in front of the white wall. You should see 3 shadows in 3 new colours.
- Move the opaque object around, look at all the different coloured shadows that appear when you move the object!
- Make stencil shadows! This demonstration is best done with friends. Hold a stencil in front of a coloured torch. Can you work with friends to turn your shadow yellow, magenta, cyan or white?

**WHATS HAPPENING**

Red, green and blue are special colours, all the colours you can see on your TV or phone screen are made with just these three colours. When you mix two of these colours together, you create secondary colours. But when you mix all three colours together, we see white light!

So why do we see white light when we put red, blue and green light together? The science is all about our eyes and our brain! Inside our eyes we have light sensitive cells called cones that help us see colour. Most people have three types of cones... red, green and blue! When red light enters our eye, it stimulates the red cone, and our brain sees red. Green light stimulates the green cone, so we see green. And if there's an in-between colour, like yellow, it stimulates both the red and green cones, and our brain understands that colour must be yellow!

With just these three cones, our brain can detect all the millions of colours we can see, from periwinkle, to cobalt to hot pink. Because white light is made out of all the colours of the rainbow, it stimulates all three of our cones, which our brain interprets as white!

**VIC CURRICULUM****Physical Science (5-6)**

light can be produced from many sources; light travels in a straight path, can form shadows, and can be absorbed, transmitted, reflected or refracted by objects VC2S6U08

**Science Inquiry (3-4)**

observations can be used as a basis for posing questions to identify patterns and relationships, and to predict the outcomes of investigations VC2S4I01

**ADDITIONAL INFORMATION**

Video demonstration  
and instructions