

# STEM from Home

## See the World In a Different Colour!

If you have ever worn colour-tinted sunglasses, you would have noticed how the colours of objects around you look different after you wear the glasses. This is because the coloured glass works as a filter, which absorbs some colours and lets other colours pass through to your eye.

Remember the dramatic entrance of the chief performer on stage? How the colourful stage lights kept on changing and mixing, illuminating the stage with magical colours? So, was he wearing a black cloak? No wait it looks purple now! Oh! it's actually red! The multi-coloured lights mixing made it difficult to decipher.

Light is made up of different wavelengths, and each wavelength is a particular colour. The colours we see are a result of which wavelengths are reflected back to our eyes.

In this STEM Pack, your challenges include exploring the behaviour of light when it passes through filters of different colours, investigating which colours are formed by mixing combinations of 3 primary colours of light – red, green and blue and designing a spectroscope to investigate which colours of the spectrum different light sources emit.

## Main Activity: Light & Colour Filters

### Introduction

In this activity, you will use a simulation program to understand the behaviour of light when it passes through a coloured medium.

### What you will learn

- The effect of colour filters on light.

### What you will learn

#### Hardware

- A computer connected to the internet.

#### Software

- A modern web browser like Microsoft Edge, Chrome, or Firefox.

### Pre-Work Reading

Explore the following links to revisit the concepts prior to starting the activities in this Stem Pack

[Colours of light](#)

[Colours separation with light filters](#)



### Getting Started

You can access [guidelines for the activity](#) here.

# Bonus Activities:

## Mixing Lights of Different Colours

### Introduction

In this activity, you will use a simulation program to understand how new colours are generated by mixing lights of three basic colours

### What You Will Learn

- The effect of colour filters on light.

You can access [guidelines for the activity](#) here.

### What You Will Learn

#### Hardware

A computer connected to the internet.

#### Software

A modern web browser like Microsoft Edge, Chrome, or Firefox.



# Challenge Activity:

A spectroscope is an instrument that splits light into its different wavelengths, which we see as different colours. Violet has the shortest wavelength that people can see and red the longest.

**Your Challenge** – To Design and Build a DIY Spectroscope. Research and find the most suitable and effective design. You can keep tweaking the design till you finally arrive at a good working model. Remember to use recycled material to construct your spectroscope.

**Your Task:** Explore the different colours you can see in different light sources. For example

1. Natural Light
2. Fluorescent Light
3. Torchlight

**Important: Please remember to follow safety rules. Always conduct any experiment under adult supervision.**

Share your findings and the design of your spectroscope by uploading a presentation. Your project needs to be hand-made, but your final submission can be presented digitally using [Docs](#) or [Presentation](#) software

