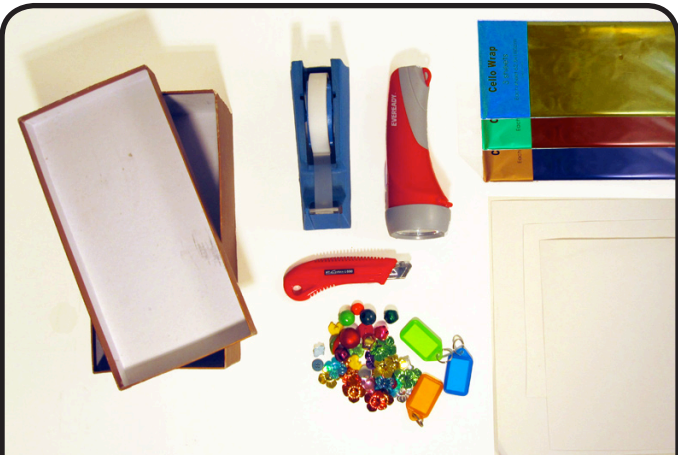
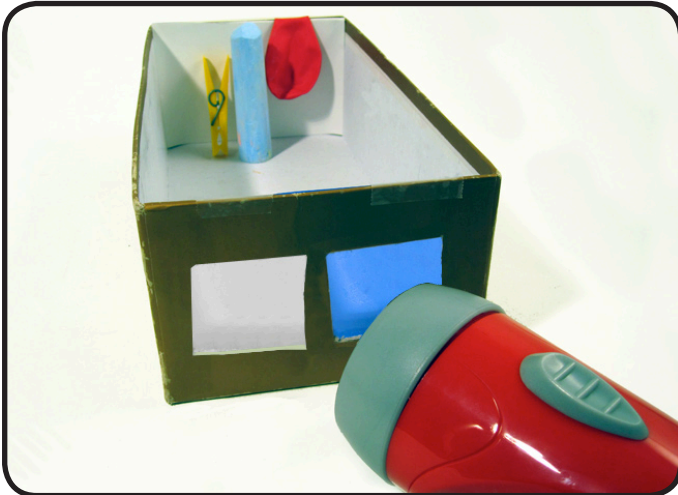


Play at Powerhouse make & do activity kit

Science with Zoe & Cogs - Experiment 7

Spaced Out Colours

Why does the sky appear blue from the earth? And how do different lightwaves create different colours?



Things you need:

- A shoebox with a lid
- A torch
- Coloured cellophane (red, green, blue and yellow)
- Sticky tape
- A sharp knife
- White paper
- Coloured objects (eg crayons, coloured lollies, pieces of coloured paper)

What to do:

- 1 Draw a 4 cm diameter hole on one short side of the shoebox. This is the eyehole through which you can look down at the other end of the shoebox.
- 2 Cut out a hole carefully with a sharp knife. Cut another circle the same size beside the first circle. This is for the torch to shine through.
- 3 If the inside of your shoebox isn't white, tape some white paper on the bottom of the shoebox and at the opposite end to your viewing.
- 4 Now cut a square of cellophane about 10 cm by 5 cm. Double it over and tape it to the inside of the eyehole so that you are looking through a double layer of coloured cellophane.
- 5 Ask a friend to place a coloured object such as a crayon, some lollies (of the same colour) or a piece of coloured paper inside the shoebox and cover the shoebox with the lid.
- 6 Shine the torch through one hole and look at the object through the eyepiece. Can you tell what colour it is? Try this again with different coloured cellophane taped on the inside. Now what colour do you see? Try a combination of different coloured objects and cellophane.

Science with Zoe & Cogs - Experiment 7

Spaced Out Colours



What's going on?

Coloured cellophane creates a colour filter that absorbs some wavelengths of light.

As anyone who's seen a rainbow knows, white light can be split into seven colours. When we look at an object, we are seeing light scattered at certain wavelengths. Red objects scatter red light more than other colours. The sky is blue because it scatters blue light most effectively.

When you look through a colour filter, some of these wavelengths are absorbed by the filter. Red cellophane lets through red light, but blocks blue, green and yellow light. If you look at a blue object through a red filter it looks dark.

Astronomers use colour filters to create all of the coloured astronomical images you see in posters and magazines. They also use filters distinguish between astronomical details that can't be picked out in white light. For example, looking at Jupiter through a yellow filter can enhance the detail of Jupiter's red and orange stripes.

Astronomers can also create false colour images. Humans can't see ultraviolet light. By using a UV filter, astronomers can see jets of gas that shoot out of the Sun's corona which are invisible in white light.

What else do you see?

Use this space to write about, and draw anything else you noticed while doing this experiment.