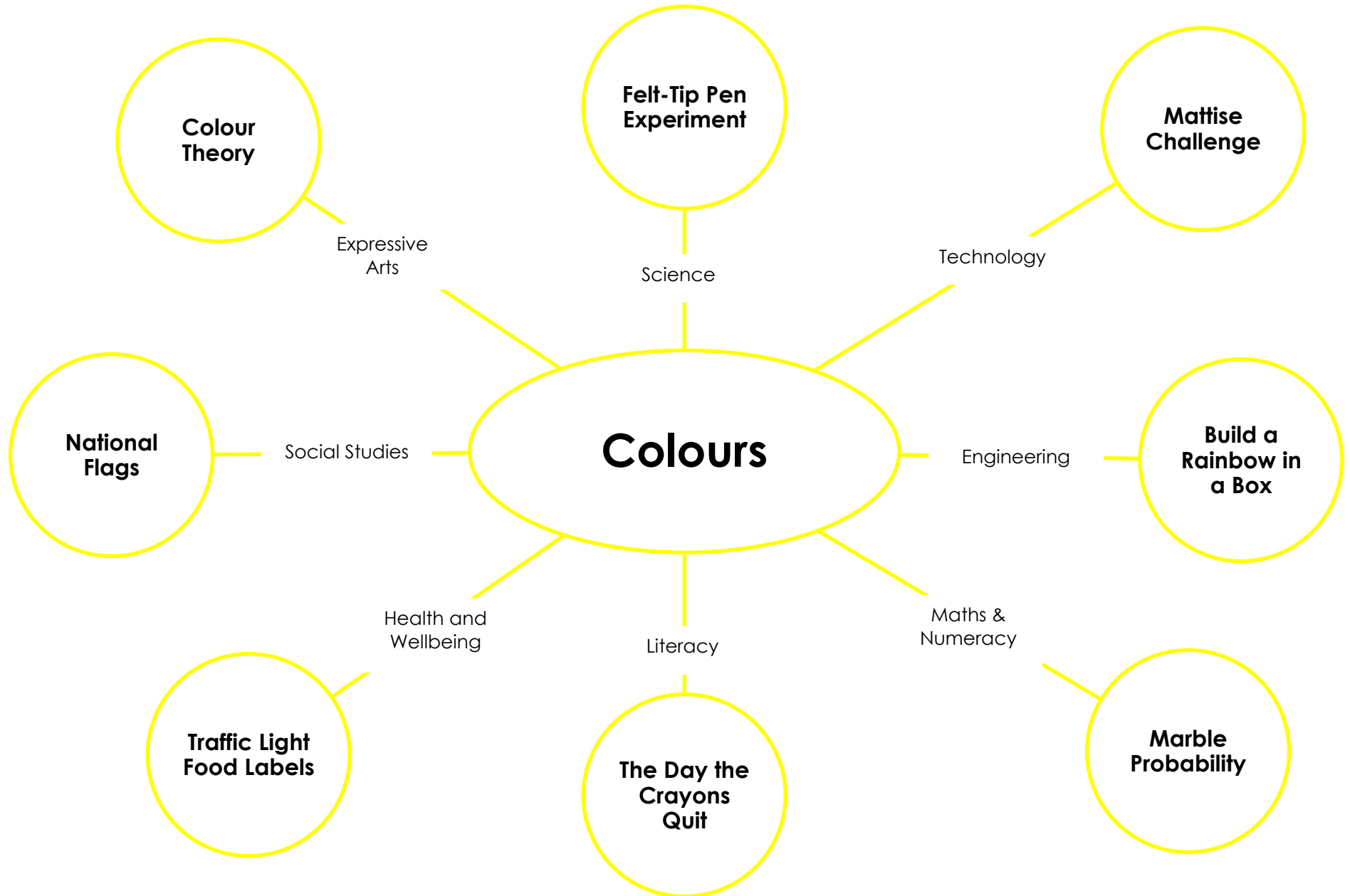


Learning from Home



Science Challenge

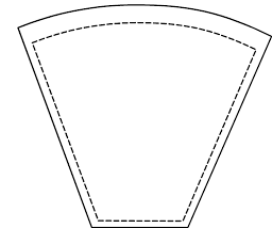


Felt-Tip Pen Experiment

In this experiment you will be drawing ink dots onto filter paper using differently coloured felt-tip pens. The filter paper will then be dipped into water. Can you make a prediction about what you think will happen? Try to explain to an adult at home why you think this might be the case.

You will need:

- 5 different coloured felt-tip pens
- Glass jar
- Coffee filter paper



Clipart from <http://clipart-library.com/>

Instructions:

1. Cut out 5 strips of coffee filter paper.
2. Put a dot of felt-tip pen, about 4cm up from the bottom of the filter paper. (Use a new strip of filter paper for each of the colours)
3. Pour a small amount of water into the jar (approximately 3cm deep).
4. Place the end with the dot on it into the jar so that it is just touching the water. Do not let the coloured dot touch the water.
5. Leave for a couple of minutes and then check. You should see colour starting to spread up the filter paper.
6. After 10 minutes, the water will have moved up the filter papers and left areas of different colours along the paper.



The Science: This experiment demonstrates the process of **chromatography**, which involves using filter paper to separate different dissolved substances. The different parts of the mixture will move different distances up the paper.

The felt-tip pens contain different coloured **pigments**. Some pigments are more **soluble** in water than others. The pigments that are more soluble, move further up the paper than the less soluble pigments. Each coloured dot will be made up of a different combination of pigments.

There are many uses for chromatography in Science and Medicine. It can even be used to analyse blood samples to help identify criminals.

Lesson idea adapted from Twinkl

Technology Challenge



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Matisse Challenge



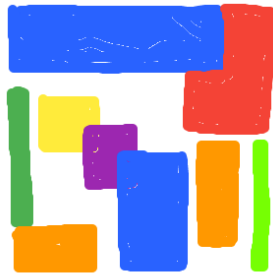
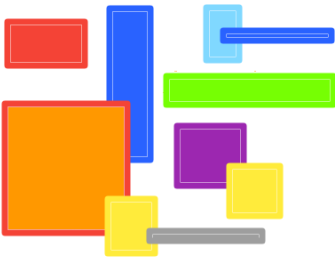
Henri Émile Benoît Matisse (31 December 1869 – 3 November 1954) was a French artist, known for his use of colour.

Matisse made shapes from ripped up paper.

Your challenge is to make a Matisse style painting of your own using the different paint tools on a computer.

Go to <https://paintz.app/> and have a go. Don't worry if you don't know what all the tools are for – this is a chance to explore and see the different effects you can create.

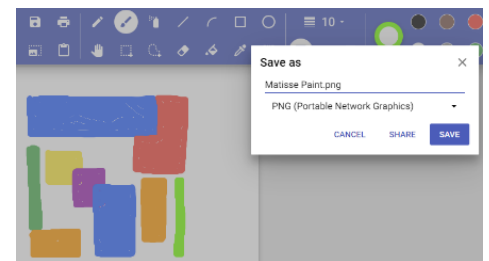
The 2 pictures below were created using different tools on the app. Which do you prefer?



To save your work click on the disk image as shown here.

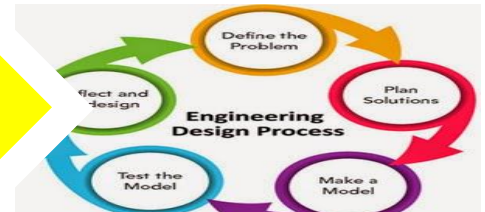


Then give your work a name and save as shown here. You should be able to find your work in **Downloads**.



Activity and top image from <https://teachcomputing.org/>

Engineering Challenge



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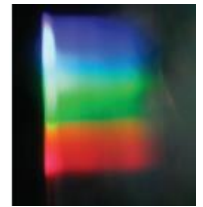
Build a Rainbow in a Box

Adult Supervision Required...Never look directly at the sun as this can seriously damage your eyesight!

Would you like to hold a rainbow in your hand? With a **spectroscope**, you can! You can make this device from simple materials you have at home. Then you can use it to learn more about the light around you.

You will need:

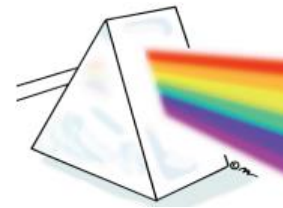
- *Spectroscope downloadable template and instructions sheet
(Click here: <https://edu.rsc.org/download?ac=13826>)
- *A4 sheet of card - could use a cereal box but the darker the better.
- *Scissors
- *Glue
- *Sellotape
- *Old CD



Instructions:

1. Print out the template and follow the instructions on it.

Light prism →



Using your spectroscope:

When you've made your spectroscope, hold it under a light (so the light shines through hole b) and put your eye up to the circular hole. You should be able to see a **spectrum** (rainbow) of colours.

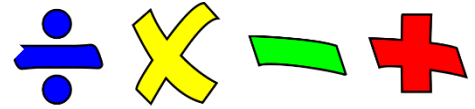
The CD acts as a **diffraction** device - splitting the light into the colours of the rainbow. (Red, Orange, Yellow, Green, Blue, Indigo and Violet)

The sun and many torches emit all the colours of the rainbow and a continuous spectrum of all the colours can be seen.

Visible Light Visible light can be split up into all the colours of the rainbow. When you see a rainbow in the sky, the visible light from the sun is split up by the raindrops in the air. We can also use prisms or things called diffraction gratings to split the light up too.

Activity and Images from <https://edu.rsc.org/>

Maths & Numeracy Challenge

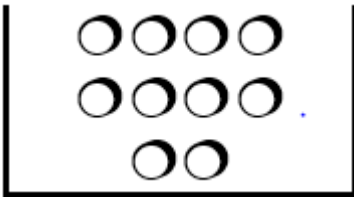


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Marble Probability

Probability is about estimating or calculating how likely or 'probable' something is to happen. If something has a high probability, then it is likely to happen. If something has a low probability, then it is unlikely to happen. Probability can be written as fraction, decimal or a percentage and ...

$$\text{Probability} = \frac{\text{Number of successful outcomes}}{\text{Total Possible number of outcomes}}$$



A box contains 2 red marbles, 3 yellow marbles, 4 green marbles and 1 blue marble.

Task: Colour in the marbles then have a go at completing the table below.

How many marbles?

Chance of getting a ...	How many?	Probability (written as a fraction)	Probability (written as a decimal)
Red	2	$\frac{2}{10} = \frac{1}{5}$	0.2
Blue			
Green			
Yellow			
Red or blue			
Not yellow			
Not blue			
Red, yellow or blue			
Not red			
Orange			

Activity from TES

Challenge: Why not have a go at working out probability using your own marbles or different colours of lego or cubes etc. Can you still work out the answers as easily if you don't have 10 items altogether?

Literacy Challenge



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The Day the Crayons Quit

Watch **The Day the Crayons Quit** by Drew Daywalt @ <https://www.youtube.com/watch?v=489micE6eHU>



The story is all about colours. Duncan just wants to colour in but when he opens his box of crayons, he only finds letters, all saying the same thing: We quit!

Beige is tired of playing second fiddle to Brown, Blue needs a break from colouring in all that water, while Pink just wants to be used. Green has no complaints, but Orange and Yellow are no longer speaking to each other.

Your task today is to write your own short story. This could be a new story about what happens when everyday household objects start to quit like your TV, cooker, kettle, toaster, fridge, boiler etc., or you could write about what happens when someone gets a new magical multi-coloured crayon.

This is a chance to use your imagination so you can make the story as silly or as dramatic as you like.

Try to think about the **5 Ws (who, what, when, where and why)**. You may also want to start off by writing a plan which you can use to guide your story.

Story planning	Title <hr/>
Character (who)	Beginning <hr/>
Setting (when and where)	Middle <hr/>
	Ending <hr/>

When your story is finished share it with someone at home.

Did they enjoy it? What was their favourite / least favourite part?

Images from <http://clipart-library.com/>
 Idea adapted from www.theotttoolbox.com



Health & Wellbeing Challenge

Traffic Light Food Labels

Just like traffic lights use different colours to keep road users safe, food packaging is now also labelled with a traffic light system to help people make more informed choices about the food they eat.

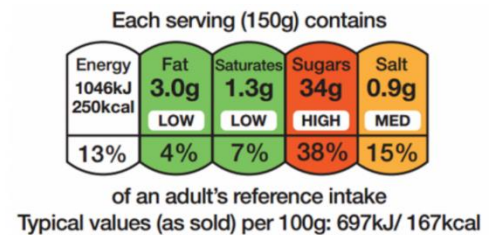
Click here for a video from the Food Standards Agency (FSA):

https://www.youtube.com/watch?time_continue=57&v=tL8SeX-euko&feature=emb_logo

Traffic light labels are very helpful when you want to compare the calorie, fat, sugar and salt content of different food products at a glance and this can help you make a more informed choice.

The traffic light labelling system will tell you whether a food has high, medium or low amounts of fat, saturated fat, sugars and salt. It will also tell you the number of calories and kilojoules in that particular product.

energy (kilojoules (kj) and calories (kcal))	fat	saturates	sugar	salt



***Red** means the product is high in a nutrient and you should try to cut down, eat less often or eat smaller amounts.

***Amber** means medium. If a food contains mostly amber, you can eat it most of the time.

***Green** means low. The more green lights a label has, the healthier the food choice is.

Food Packaging Traffic Lights – What Do They Mean?

1. Name of the product _____

a. Colour in the traffic lights.



b. Highlight appropriate option – Choose often / Good choice / Eat on occasion

c. Look at the ingredients on the package, explain why you think it has this traffic light label.

2. Name of the product _____

a. Colour in the traffic lights.



b. Highlight appropriate option – Choose often / Good choice / Eat on occasion

c. Look at the ingredients on the package, explain why you think it has this traffic light label.

Task 1: Find 2 food items in your home which have traffic light labels then complete the activity.

Task 2: How does traffic light labelling help with choosing healthy ingredients? Write a few sentences about how it helps.

Info and image from <https://www.food.gov.uk/>

Social Studies Challenge



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National Flags

Flags are national symbols, and every country has their own specific flag. Flags represent the people in those countries and the communities that they belong to.

For more information about flags and how they are designed click here:

<https://www.bbc.co.uk/newsround/26530974>

National Flags of 20 Largest Countries by Population



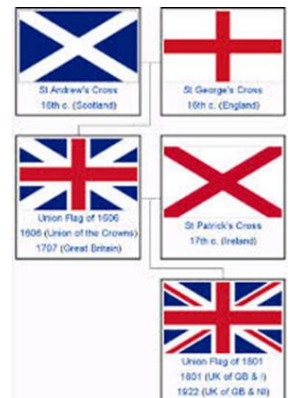
© playworksheets.com

Clipart image from <http://clipart-library.com/>

Your task: Design a flag for the town or village you live in. Think about the colours you would like to use. If you live in the countryside you might want to include green. If you often see black and white cows in surrounding fields, then you might want to use black and white. You might just have a favourite colour and maybe you would like to have this as a background with other important symbols and objects on top.

Look at the flags on the left – they use a variety of colours, lines and shapes to split the flags up into sections.

If we think about the Union Jack, which is the flag of the UK, it is a mixture of the flags of Scotland, England and Ireland.



Note: According to Malcolm Farrow, President of the Flag Institute, "A great flag has a bold, simple design to grab people's attention. It should have no words and a maximum of four strong contrasting colours. It shouldn't be fashionable, and it must be distinctive from other flags."

Expressive Arts Challenge



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Colour Theory

Artists use different kinds of colours including **primary**, **secondary**, and **tertiary** colours.

Primary Colours: The primary colours are red, blue and yellow. We can mix all other colours from these three.

Secondary Colours: The secondary colours are orange, green and purple. We make orange by mixing red + yellow, green by mixing blue + yellow and purple by mixing red + blue.

Tertiary Colours: are made by mixing together primary and secondary colours.

1. red + orange to make **vermillion**
2. orange + yellow to make **amber**
3. yellow + green to make **chartreuse**
4. green + blue to make **teal**
5. blue + purple to make **violet**
6. purple + red to make **magenta**



Image from <http://clipart-library.com/>

Complementary colours: Have you ever noticed that colours can look different depending on which colours they are placed next to? For example, red can look different if it's used with orange, or if it's used with green. This is very useful to know if you are an artist. You can create artworks with very different effects and feelings depending on the colours you use and which ones you place near each other.

Henri Matisse was an expert at using colours in this way and he used complementary colours in many of his paintings.

Complementary colours are special pairs of colours that have an outstanding effect on each other. When complementary colours are placed together they have the strongest contrast with each other. They are sometimes referred to as opposite colours, because of the striking colour clash they create. Do you know which pairs of colours are complementary pairs? Complementary colours are found opposite each other on a colour wheel. **Red – green** **yellow – purple** **blue – orange**

Art Scavenger Hunt

Let's go on an art scavenger hunt and see how Matisse used complementary colours in his art. Take a look at these paintings see how many times you can see Matisse pairing complementary colours together.

Interior with a Young Girl (Girl Reading), 1905-06 (https://www.moma.org/learn/moma_learning/henri-matisse-interior-with-a-young-girl-girl-reading-1905-06/)

Plum Blossoms, Ochre Background, 1948 (<https://www.moma.org/collection/works/99673>)

The Snail, 1953 (<https://www.tate.org.uk/art/artworks/matisse-the-snail-t00540>)

André Derain, 1905 (<https://www.tate.org.uk/art/artworks/derain-henri-matisse-t00165>)

Which colour is your favourite? Can you explain why?

Activity adapted from <https://nurtureshape.co.uk/>

