



LUMIERE 2025

EDUCATIONAL ACTIVITY PACK



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ABOUT ARTICHOKE

As an outdoor arts organisation, we work with artists to create extraordinary and ambitious public art in cities, the countryside and on coastlines around the UK.

Our aim is to make great art accessible to all, delivering free events in public spaces and engaging with the widest possible audiences.





OUR AIMS FOR THIS PACK

This education and activity pack has been created to support the *Lumiere* 2025 programme and works as a standalone resource. Aimed at primary school-aged children but accessible to all, it explores selected artworks with creative activities designed to inspire learning. The pack highlights the connection between art and science, with themes including environmental protection and climate change. Activities can be linked to the curriculum or used as a fun end-of-term activity.

*Learning and
Participation Team*

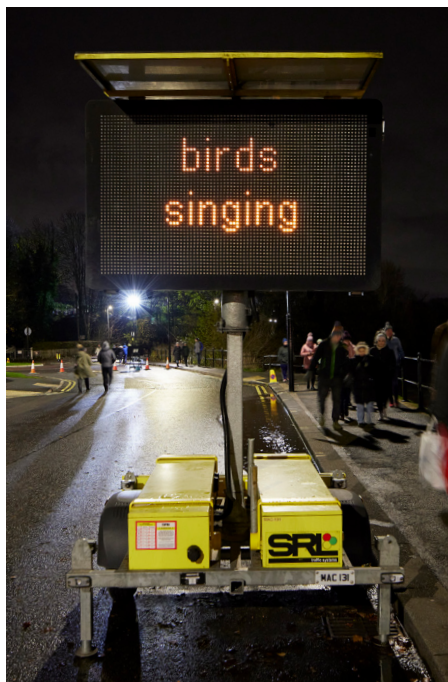
WHAT IS *LUMIERE*?

Lumiere is the UK's light art biennial. It took place in Durham every two years between 2009 - 2025. The free event worked with local, national and international artists to produce dazzling light artworks that transformed spaces around the city. *Lumiere* encourages visitors to think, explore and see their city in a new light. After 16 years and 9 editions, more than 120,000 visitors turned out to see the lights of *Lumiere* 2025 before they went out over Durham one last time. *Lumiere* Durham is produced by Artichoke and commissioned by Durham County Council.

ENTANGLEMENT IS EXISTENTIAL (II) BY JUSTIN BRICE GUARIGLIA

Highway signs are usually made to grab our attention and tell us what to do. They are a kind of visual language that everyone understands on the road.

Entanglement Is Existential (II) includes words from writers, philosophers and scientists. By adding short poems and clever sayings to real highway signs, Guariglia surprises the viewer and makes them pay attention to environmental issues. The artwork isn't just a warning about climate change; it's an invitation to reflect on how we feel about our planet and how we interact with it.



WHAT IS ENERGY?

Energy is how things change and move. It takes energy to go to school, to eat ice cream, to dance around. As humans we use a lot of energy in our day to day lives from helping to help heat our homes, watch TV or drive cars.

Energy comes in many forms, such as from the Earth and the Sun. This type of energy comes in two forms: **RENEWABLE** and **NON-RENEWABLE**.

NON-RENEWABLE ENERGY

Non-renewable energy uses resources that we can't replace, such as: coal, natural gas and nuclear power. This means that these resources will eventually run out

and, when burnt, emit greenhouse gases, such as carbon dioxide which contributes to climate change.

COAL MINING IN DURHAM

The Industrial Revolution spanned from 1760 – 1840 and led to coal mining becoming one of the most important industries in the UK. In North East England, the Great North Coal field thrived, employing nearly 250,000 people and operating around 400 pits. The coal extracted was vital in bringing power to the nation. Although these coal mines no longer exist, the communities that were created around them still exist today.

COAL



NATURAL GAS



NUCLEAR



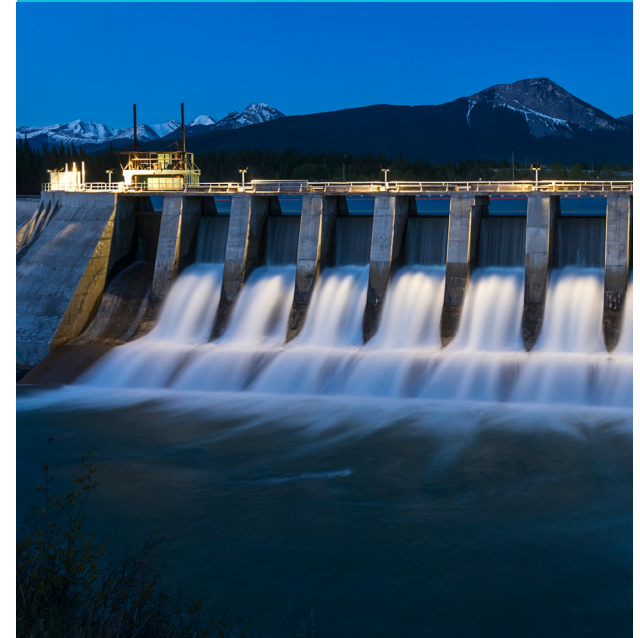
WIND



SOLAR



HYDROELECTRIC



RENEWABLE ENERGY

‘Renewable’ means that the source can be replenished. Examples of renewable energy are wind, solar and hydroelectric. Renewable energy allows us to harness the power of naturally-occurring weather and resources.

SOLAR ENERGY

Solar power uses the energy of the Sun to generate electricity. The light of the Sun travels 147 million kilometres to Earth in just over 8 minutes, so lots of

the Sun’s energy reaches Earth every day. Because solar panels use sunlight, they only generate electricity during the daytime when sunlight is shining on them. They are less effective when it is cloudy and if it is night time, they do not generate any electricity. Sometimes you can use batteries to store the energy received during the daytime and then use this at night.

Solar energy is renewable and a more sustainable way for us to use electricity.

ACTIVITY 1: CLIMATE AWARENESS WORDSEARCH

Look carefully, some words are backwards and / or diagonal!

GREEN REDUCE

NATURE REUSE

OCEAN SOLAR

PLANET TREES

PROTECT WATER

RECYCLE WIND

N	E	I	T	T	C	E	T	O	R	P
I	L	T	S	E	Y	A	E	I	W	L
W	C	R	A	W	N	A	T	U	R	E
I	Y	E	E	L	I	A	S	A	E	A
N	C	E	Y	D	U	W	L	P	U	T
D	E	S	A	T	U	O	E	P	S	E
P	R	L	G	O	S	C	Y	C	E	R
S	T	E	R	A	W	E	E	A	O	U
W	A	T	E	R	L	A	N	Y	W	P
P	N	U	E	A	O	N	P	L	I	N
L	I	R	N	E	L	C	Y	C	E	R

Answers on Page 26

FLUTTER BY EMMA ALLEN

Flutter was an artwork that celebrated the beauty of biodiversity. A glowing swarm of butterflies swooped through Crook Hall, encouraging you to step out of the city and reconnect with the natural world. You could study the different species up close or peer through a kaleidoscope to admire their colourful patterns. The artwork was inspired by the National Trust's 'Green Corridor', which starts at Crook Hall. The 'Green Corridor' is a 10.5 km trail that follows the River Wear. It's a place where animals and plants thrive, and where people can take walks, relax, and enjoy the great outdoors.

WHERE ARE ALL THE BUTTERFLIES?

Over half of the butterfly species in the UK are now in decline, which means that they will slowly disappear if we do not help them. Butterflies are finding it harder to survive because the weather is changing and they are losing the special habitats in which they live.

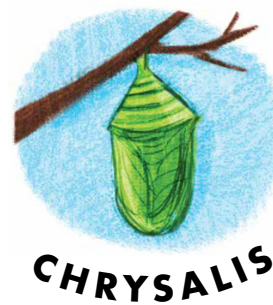
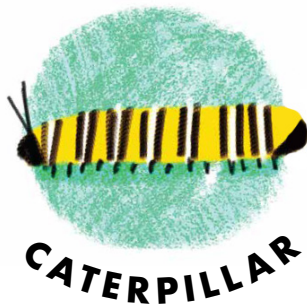
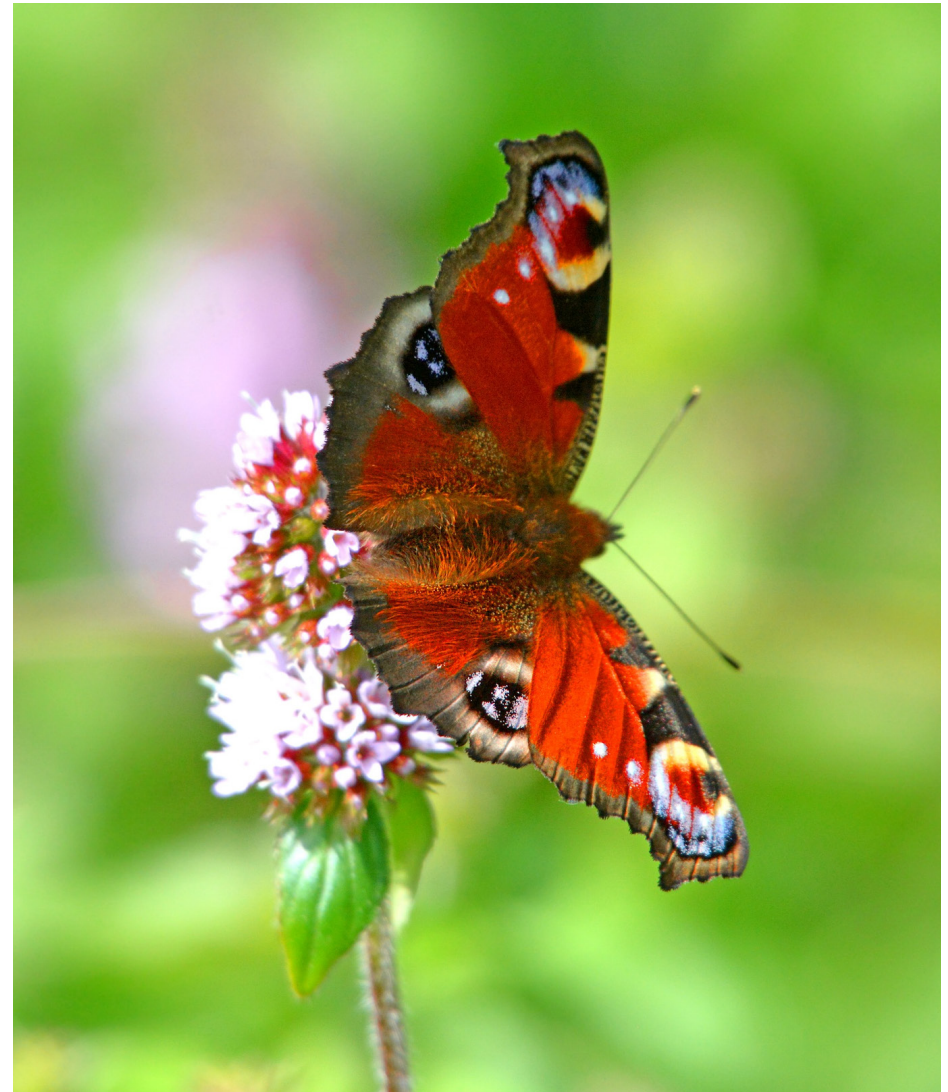


BUTTERFLIES NEED YOUR HELP

Letting your lawn grow between April and September is an easy way to give butterflies a better chance of survival. When grass grows longer, it becomes a safe home where butterflies can rest, find food, and lay their eggs. Longer grass also lets small wildflowers bloom, and these flowers make nectar – a sweet, energy-rich drink that butterflies need to survive.

DID YOU KNOW?

Butterflies begin life as tiny **CATERPILLARS**. After lots of munching on plants and growing, the caterpillar makes a hard shell called a **CHRYSALIS**. Inside the chrysalis, it changes and develops until it's ready to come out as a beautiful **BUTTERFLY!**



LEARNING ABOUT DIFFERENT BUTTERFLY SPECIES

Here are four species you might see out on a walk in the North East of England.

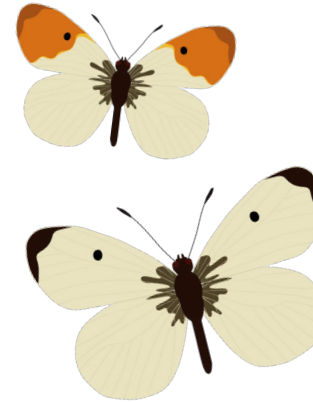
PEACOCK

Best known for its colourful eyespots, which is why it was named after the well-known bird.



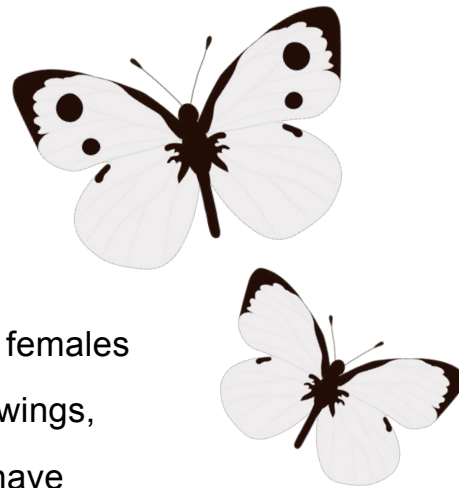
ORANGE TIP

A medium-sized butterfly, the male has beautiful bright orange wingtips, while the female has black wingtips.



LARGE WHITE

A large butterfly with brilliant white wings, the females have two spots on their wings, unlike the males which have no spots.



RED ADMIRAL

A larger butterfly which can be found in lots of different places, from gardens to town centres and even on the top of mountains.



DID YOU KNOW?

A group of butterflies is called a **KALEIDOSCOPE**

WHAT IS A KALEIDOSCOPE?

Emma Allen's artwork featured a giant **KALEIDOSCOPE**. Visitors took turns looking at the artwork through it to make the colours and patterns of the butterflies dance. This optical instrument uses angled mirrors to reflect objects into symmetrical, repeating patterns. Some kaleidoscopes contain beads or coloured paper which increases the variety of patterns they can produce.

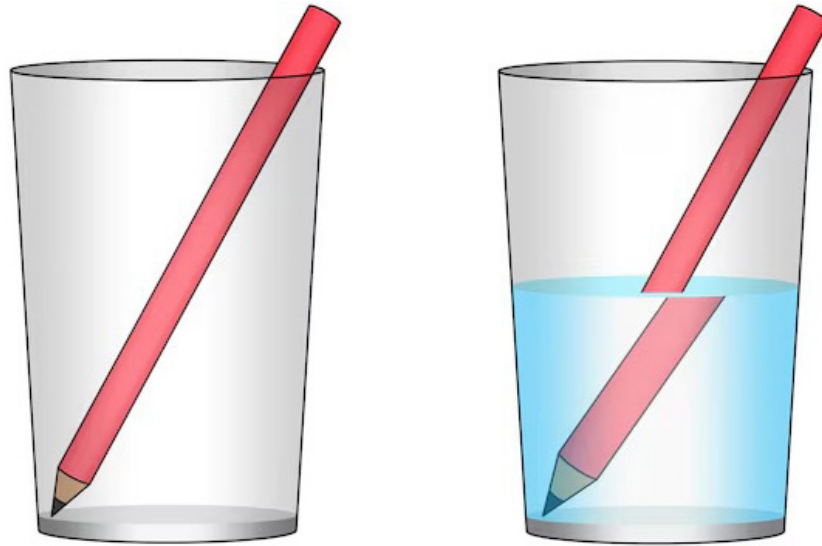
HOW DO REFLECTIONS WORK?

Light reflects off of all surfaces. **REFLECTIONS** happen when light hits an object and bounces back at the same angle. Shiny surfaces like mirrors reflect light very well, while dark or dull objects like fabrics, reflect very little light.



DID YOU KNOW?

Some objects appear to produce light, but it's just a reflection e.g. the Moon reflects the light of the Sun.



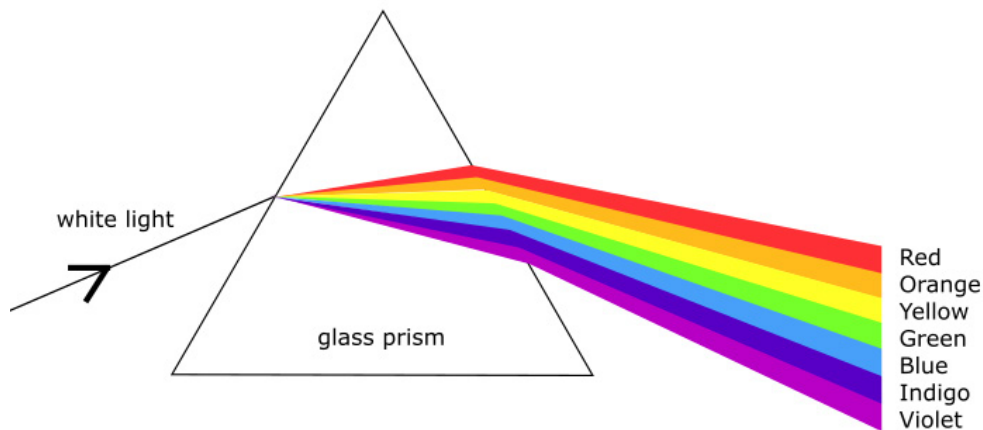
REFLECTION VS REFRACTION

Unlike reflection, **REFRACTION** is how a light wave behaves when it passes through a denser material. When light moves from one material to another, it changes speed and bends, causing the direction of the light wave to change. For example, this is why objects under water appear distorted.

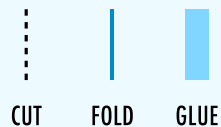
REFRACTION GIVES US RAINBOWS

When a light wave passes through a glass prism, it refracts (changes direction) and separates into the seven different colours that make up white light. This occurs because each colour has a different wavelength, so they travel through the prism at different speeds and bend by different amounts.

In nature, a rainbow is created when sunlight passes through raindrops. The light is both refracted and reflected inside the water droplets and then separates from white light into its individual colours.



R O Y G B I V

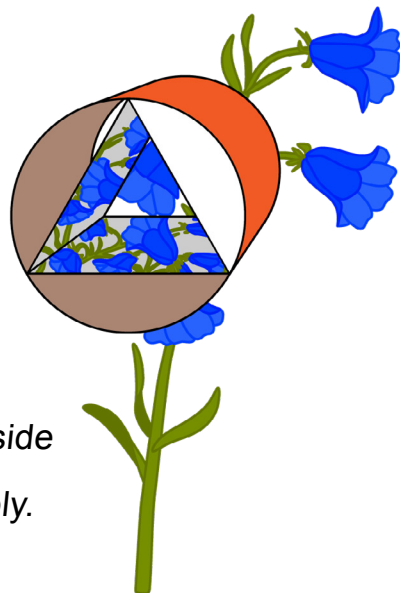


ACTIVITY 2: DIY KALEIDOSCOPE

SUPPLIES:

- 1x cardboard tube (inner tube from any loo / kitchen roll)
- 1x sheet of mirrored paper / tin foil
- 1x sheet of card
- 1x glue stick
- 1x pair of scissors
- 1x ruler
- 1x pencil

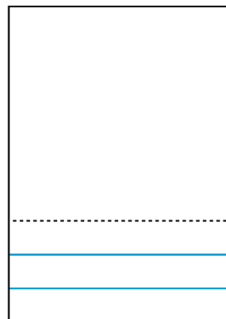
You may want to decorate the outside of your kaleidoscope after assembly.



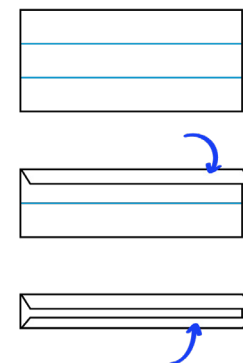
METHOD:

MAKING YOUR TRIANGULAR PRISM

1. Measure 3.5cm up from the bottom of your card and draw a straight line across. Repeat this at 7cm and 10.5cm. Cut along the 10.5cm line so that you have a strip of card divided into three sections.



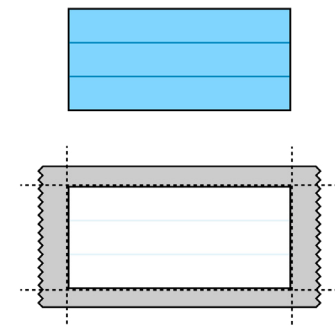
2. Fold the card in on itself along the lines you drew - you may find it easier to fold the card over your ruler. Unfold your card for the next step.



MAKING YOUR PRISM REFLECT

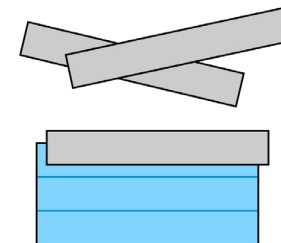
3. USING TIN FOIL:

Cut a portion of foil larger than your card. Coat your card in a thin layer of glue and stick it to your foil. Smooth out the wrinkles, then trim the excess foil.



USING MIRRORED PAPER:

Cut 3 strips of mirrored paper measuring 3.5cm by 21cm. Coat your card in a thin layer of glue and stick a mirrored strip onto each panel.





CUT



FOLD



GLUE

ACTIVITY 2: DIY KALEIDOSCOPE

4. Let your glue dry! If you are using tin foil, you may want to place a heavy book on top to help smooth out the foil.

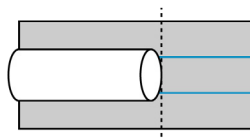
5. USING A KITCHEN ROLL TUBE:

Skip ahead to Step 6, the length of your card should fit perfectly.



USING A LOO ROLL TUBE:

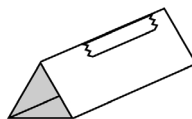
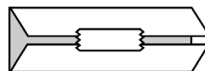
Line up your cardboard tube with the end of your unfolded prism.



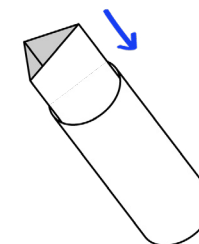
Mark the length of your tube, draw a line and cut off the excess card.

ASSEMBLE YOUR KALEIDOSCOPE

6. Fold the card back into a prism with the reflective side facing in. Use tape to secure it in place.

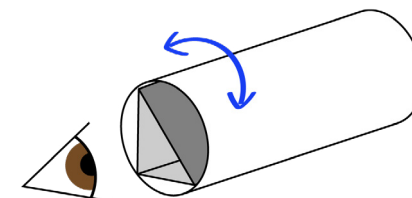


7. Carefully slide your prism into your cardboard tube. It should fit snugly and not slip out.



EXPLORE THE WORLD

8. Pick something colourful and look at it through your new instrument. Twist it back and forth to watch the reflections dance. Have fun exploring the world through your homemade kaleidoscope!



OPTIONAL STEP:

Get creative with decorating your kaleidoscope. Wrap it with wrapping paper, paint it or even cover it in glitter!

ELYSIUM GARDEN BY JIGANTICS

Elysium Garden filled Palace Green with giant illuminated flowers. It was a glowing, dream-like space that made visitors feel like tiny insects in a magical forest. Each year, the team at Jigantics pick a new flower to join their glowing garden. For the past 20 years, this artwork has toured the world as a cheerful reminder that spring will come again.



LEARNING ABOUT FLOWER VARIETIES

Here are four species you might see out on a walk in the North East of England.

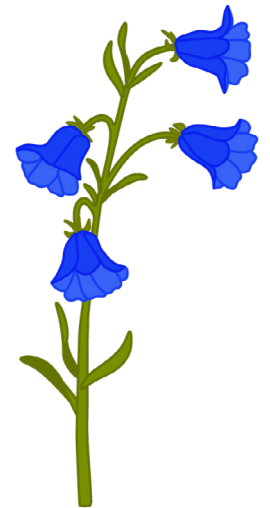
SNOWDROPS

Snowdrops are among the first flowers of the year, emerging through frosty ground in early January. Snowdrops get their name from the white colour of their petals and because they bloom when it's still cold enough to snow.



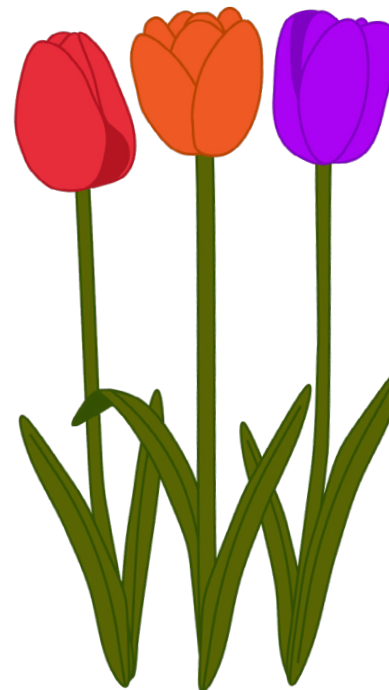
BLUEBELLS

During April and May some woodlands have magical carpets of beautiful blue bell-shaped flowers called Bluebells. Often found in large patches, they are a special sight to see.



DAFFODILS

Daffodils are bright yellow flowers that bloom in March and April. You might see them along roadsides, in parks, or in gardens. There's even a wild kind that grows in woodlands and wet meadows.



TULIPS

Tulips are very colourful, with petals of various shapes and sizes. They originally grew in Asia but are very popular in the Netherlands today. They can often be found in gardens and parks around the UK too.

ACTIVITY 3: THE GREAT GARDEN HUNT

1. How many butterflies are in this scene?
2. How many of each butterfly species?
3. Looking only at the Orange Tip and Large White butterflies, how many males and how many females can you find?
4. What types of flowers can you see?
5. One particular flower comes in lots of different colours, which flower is it and how many colour variants are shown?

Refer to the butterfly guide on Page 10 and the flower guide on Page 16 to help you identify the different species.



Answers on Page 26



CUT



FOLD



GLUE

ACTIVITY 4: PAPER TULIP CRAFT

SUPPLIES:

- 1 x A4 sheet of bright coloured paper (for the flower)
- 1 x A4 sheet of green paper (for the stem and leaves)
- 1 x pair of scissors
- 1 x ruler
- 1 x pencil
- 1 x glue stick

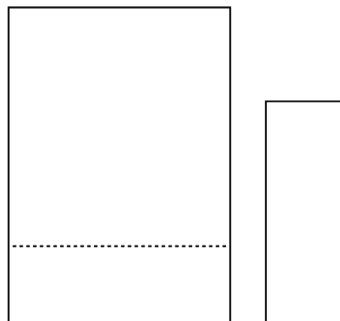
No coloured paper? Don't worry, you can colour in your tulip after making it.



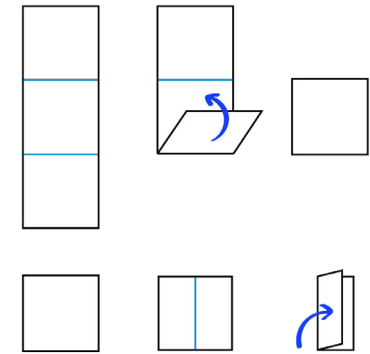
METHOD:

MAKING YOUR FLOWER

1. Measure 7cm up from the bottom of your sheet of 'flower' paper and draw a straight line across with a ruler. Cut along that line and keep hold of the smaller strip of paper.



2. Fold your strip of paper into thirds to make a square. Fold your square in half to make a rectangle.



3. Now draw a teardrop shape from one folded edge to the other and cut along the line to create your petals.



4. Unfold one of your petals and lay it flat. Glue your other two folded petals to the base, on a slight angle as shown in the diagram.





CUT



FOLD

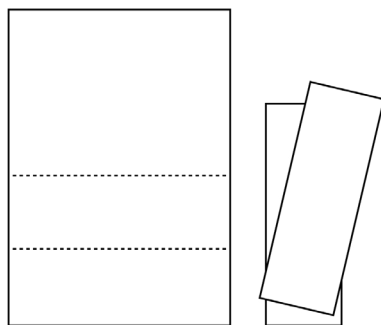


GLUE

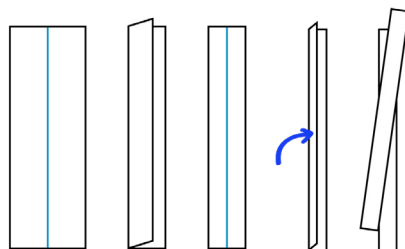
ACTIVITY 4: PAPER TULIP CRAFT

MAKING THE STEM AND LEAVES

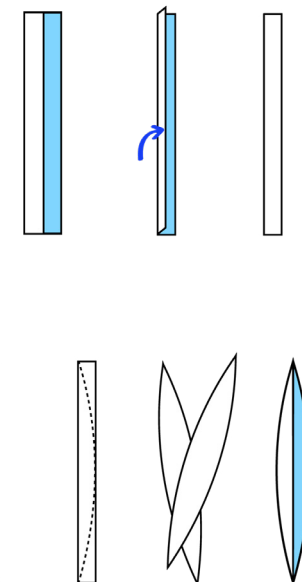
5. Take your green piece of paper and repeat Step 1, this time cutting out two strips of paper that are 7cm wide.



6. Take one of the strips of paper and fold it in half lengthways, and then again so it's 1/4 the original width. Repeat this with your second strip of paper so that you have two thin strips of folded paper; one for the leaves, and one for the stem.

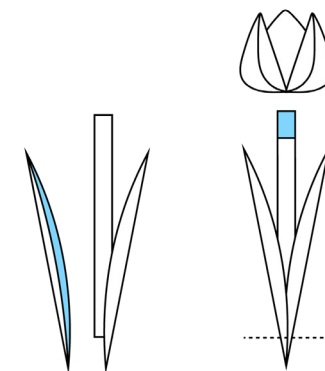


7. To make the stem, simply glue down the folds on one of the strips of paper so it lays flat. To make the leaves, take the second strip of paper and draw a curved line from one folded edge to the other. Cut along the line to make two leaves.



ASSEMBLING YOUR TULIP

8. Glue both leaves to either side of the stem and the flower head to the top. Trim the excess paper from the bottom of your stem and then admire your finished tulip!



OPTIONAL STEP:

Create more tulips in lots of different colours so that you have your very own paper bouquet. Gift them to friends and family.

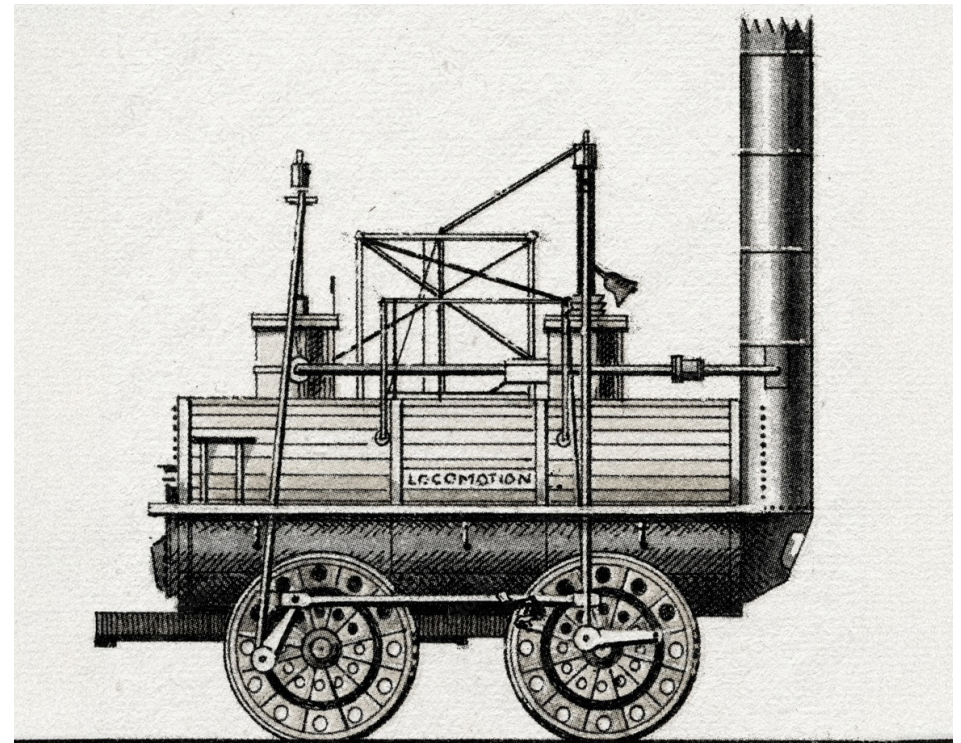
LOCOMOTION, THE NATIONAL RAILWAY MUSEUM

Lumiere 2025 featured a Spotlight on Shildon, hosted at Locomotion for the S&DR200. Celebrating 200 years of the modern railway, the installations in Shildon were inspired by the rich history of the area.

Railways have been used in Europe since the 16th century and early trains were pulled along the tracks by horses. Britain was the first to introduce steam-powered trains which connected people, places, communities and industries in a much quicker and more efficient way. This was considered the birth of the 'modern railway'. The S&DR200 in 2025 marked 200 years since this innovation changed the world!

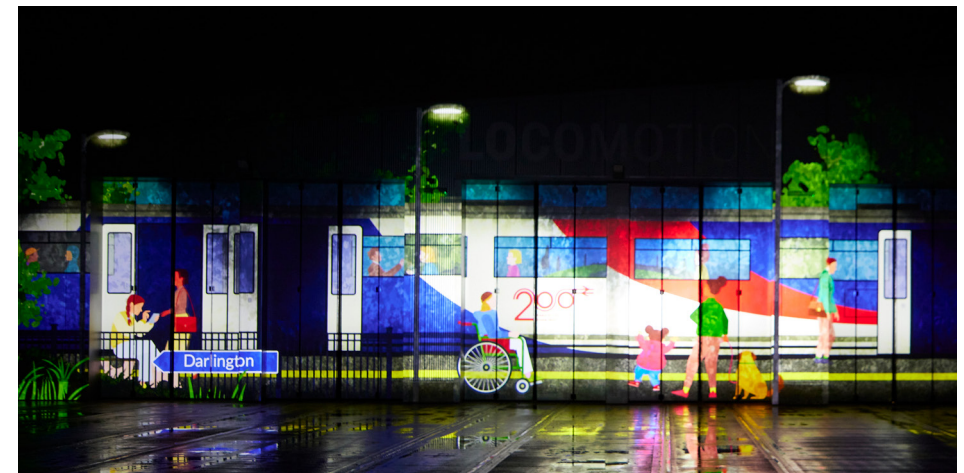
DID YOU KNOW?

In 1825, the world's first steam-powered passenger train started its journey in Shildon, it was called the **LOCOMOTION 1**.



IRON HORSE JUNCTION BY HANNAH FOX

This artwork was an immersive experience which combined shadows and historic machinery from Locomotion to reimagine old signal boxes. The audience was invited to experience the sounds, sights, memories and dreams of those who lived alongside, worked and travelled the rail lines.



ALIGHT BY NOVAK

Alight was an animation that was projected onto the outside of Locomotion. The work was inspired by how those early railway lines carried more than trains – they carried people, cultures, and ideas across vast distances.

WHAT DO ENGINEERS DO?

Engineers are the master builders of our world, creating structures that help people live safely and travel easily. Around 200 years ago, civil engineers designed and built the railways that transformed society by creating bridges and tunnels, planning routes, and choosing the best land for trains to cross. Below are two examples of UK bridges designed by civil engineers; one for trains and one for vehicles.

The Durham Viaduct was designed by engineer Thomas Elliot Harrison. This structure has been a staple part of the urban landscape for 170 years.



Sarah Guppy was a pioneering female engineer famous for inventing the design for a suspension bridge. Her ideas helped create the Clifton Suspension Bridge, in Bristol.

WHY NOT

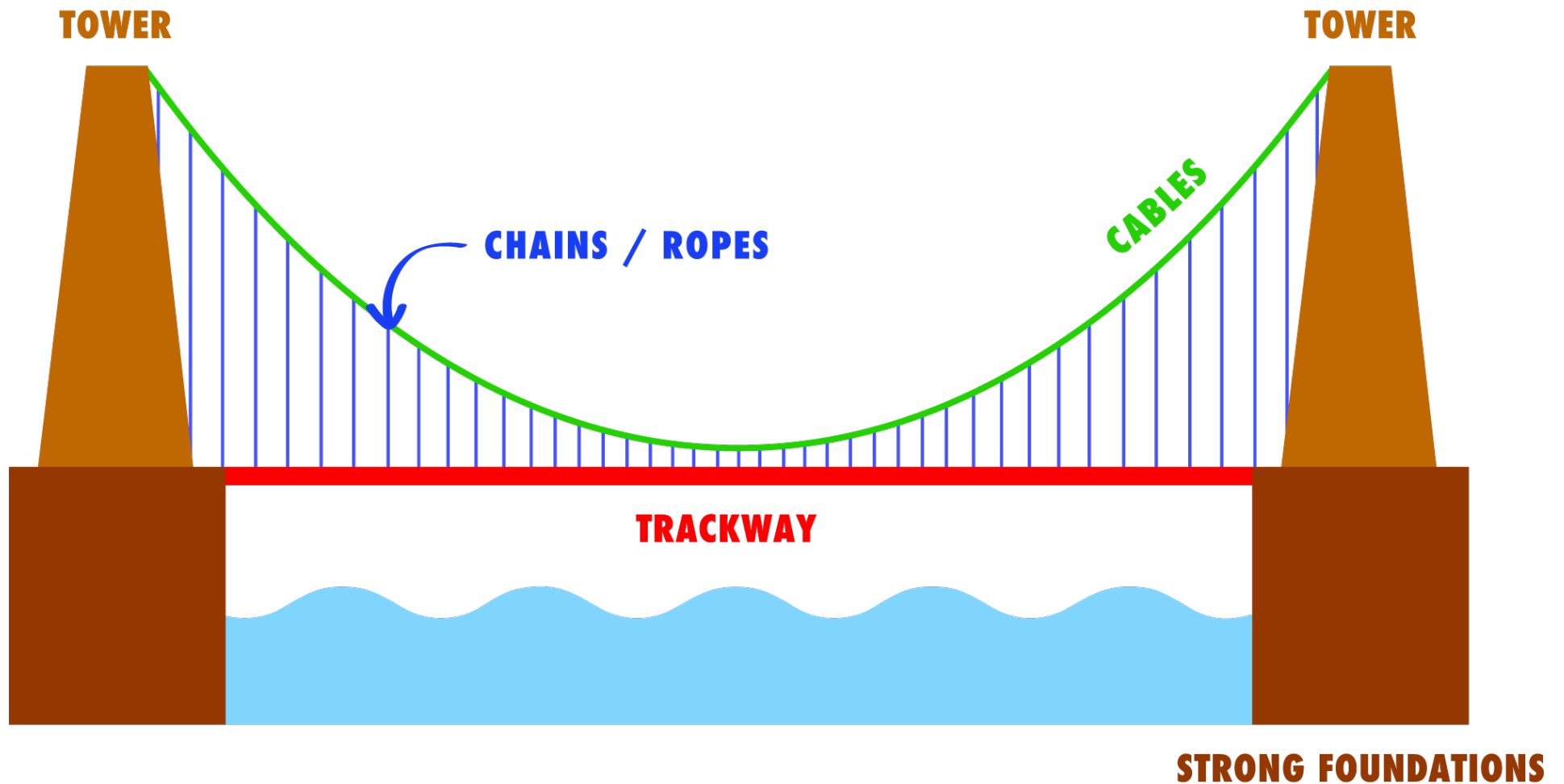
OR

TO

LEARN MORE ABOUT THE DIFFERENT THINGS THAT ENGINEERS DO

A suspension bridge, like the one in Bristol, is made with a **TRACK** (such as road or a railway) and two **TOWERS**. The **CABLES** are stretched between the towers and anchored to the ground. A **TRACKWAY** is then hung from the cables by **CHAINS / ROPES**. The bridge pulls on the supporting towers, which is why they must have **STRONG FOUNDATIONS**.

In the following activity, we encourage you to explore how changes to the structure can strengthen or weaken the bridge.





CUT



FOLD



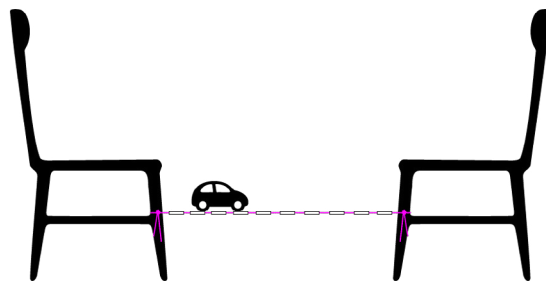
GLUE

ACTIVITY 5: BUILDING A SUSPENSION BRIDGE

SUPPLIES:

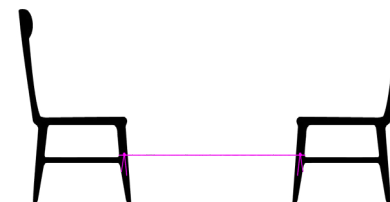
- 1 x toy car or train
- 2 x chairs
- 2 x A4 sheets of paper
- 1 x roll of string
- 1 x glue stick
- 1 x pair of scissors

No chairs? You can use sticky tape to secure your string to any two weighted surfaces of the same height e.g. tables.



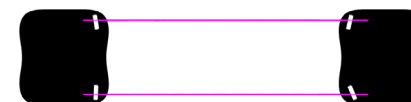
2. USING CHAIRS

Tie one end of string to a leg on Chair 1. Tie the other end to a leg on Chair 2. Repeat this so you have two parallel strings of the same length. Pull the chairs apart to make the strings taut.



USING OTHER SURFACES

Stick the ends of both strings to one flat surface. Repeat this with the other ends, making sure that the strings are taut.



METHOD:

MAKING SUSPENSION CABLES

1. Cut two lengths of string, roughly 90cm long.



CUT



FOLD

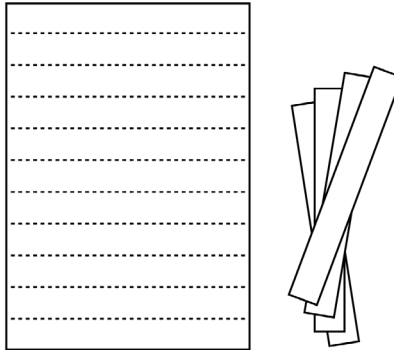


GLUE

ACTIVITY 5: BUILDING A SUSPENSION BRIDGE

MAKING YOUR TRACKWAY

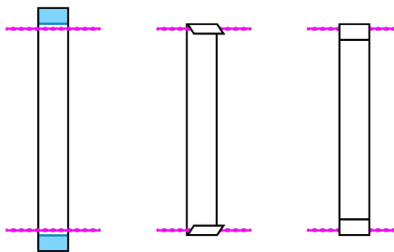
3. Cut your paper into even strips.
The width of your strips is up to you, just make sure that they are all the same.



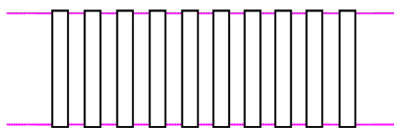
Should they be long or short?

Which would be stronger?

4. Glue the ends of a paper strip and fold them over the string to secure it. Repeat this with the other strips to form your track.



Should your strips be close together or far apart? What would provide more stability?



5. Test your bridge by running a toy car along your trackway.

OPTIONAL STEP:

Experiment with the different aspects to find out what makes the best bridge.

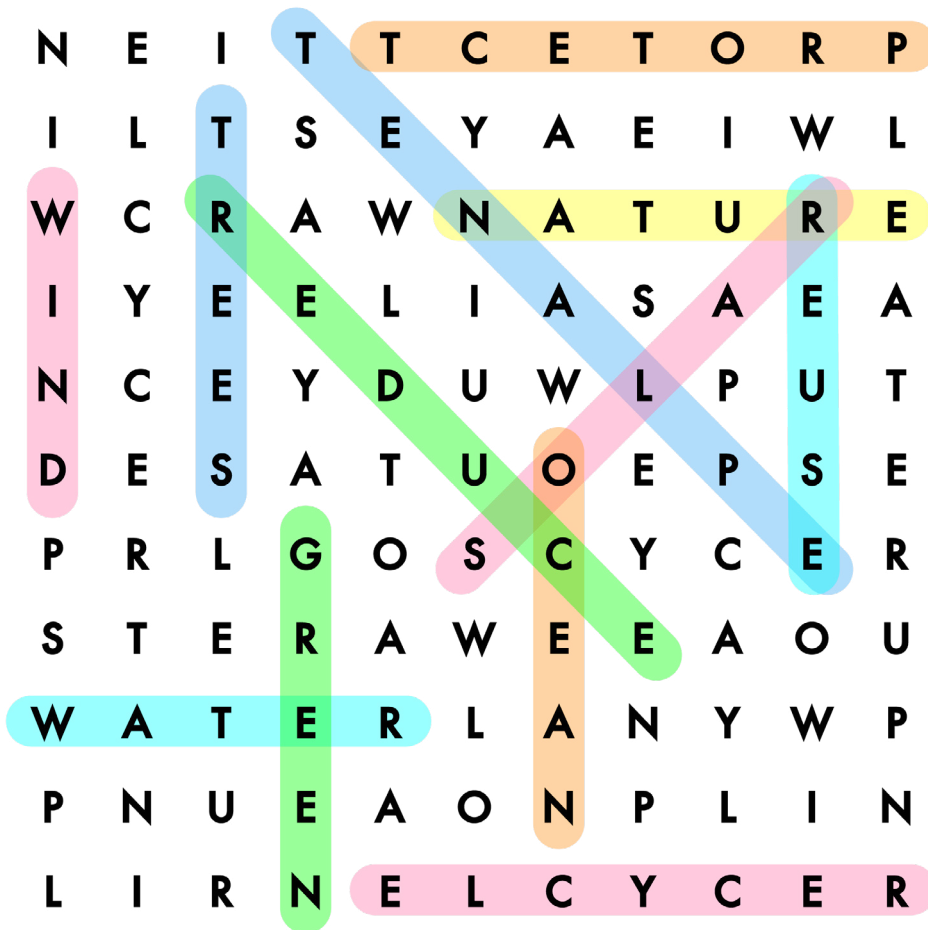
CONSIDER:

What happens if you change the width of your tracks or the length of your string?

What could you change about your trackway to make the bridge stronger?

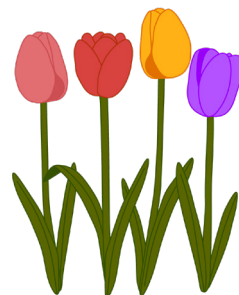
How much weight can it hold before collapsing?

CLIMATE AWARENESS WORDSEARCH



THE GREAT GARDEN HUNT - TULIPS

Pink, Red, Yellow and Purple



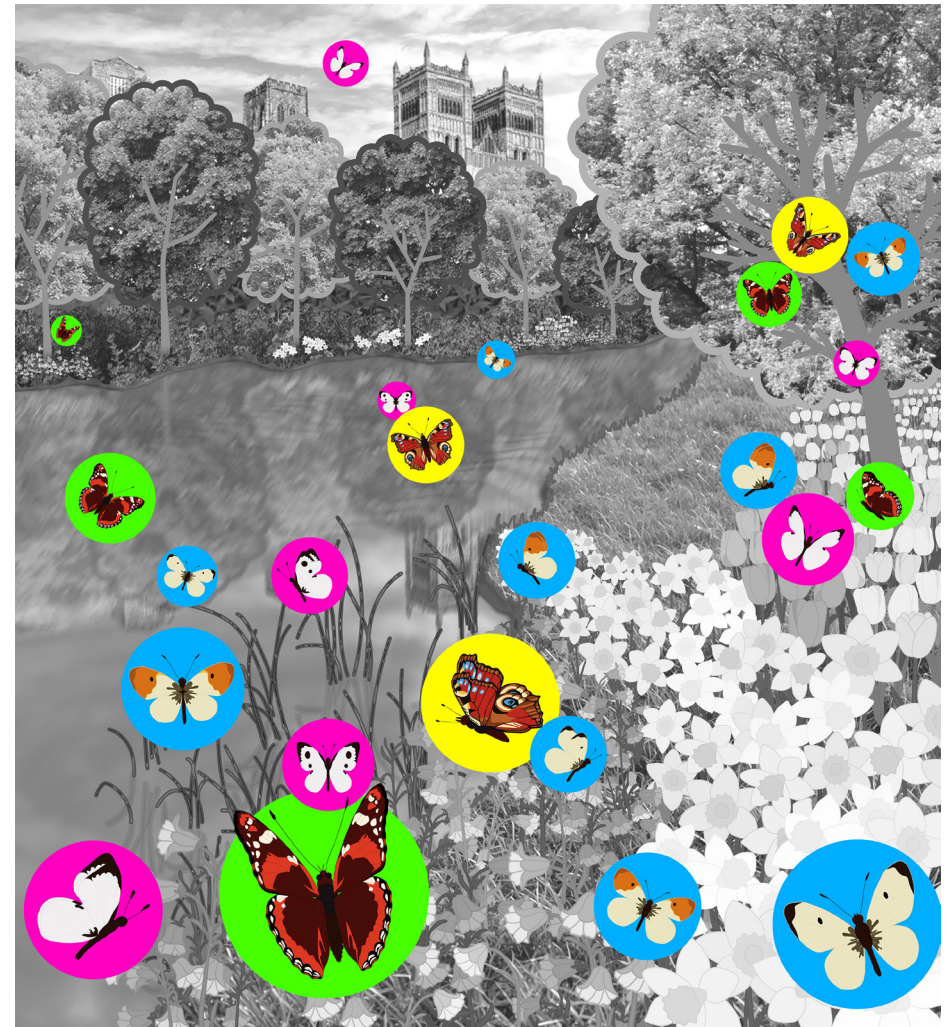
THE GREAT GARDEN HUNT - BUTTERFLIES

Red Admiral: 5

Orange Tip: 9 3 x female, 6 x male

Peacock: 3

Large White: 7 3 x female, 4 x male



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