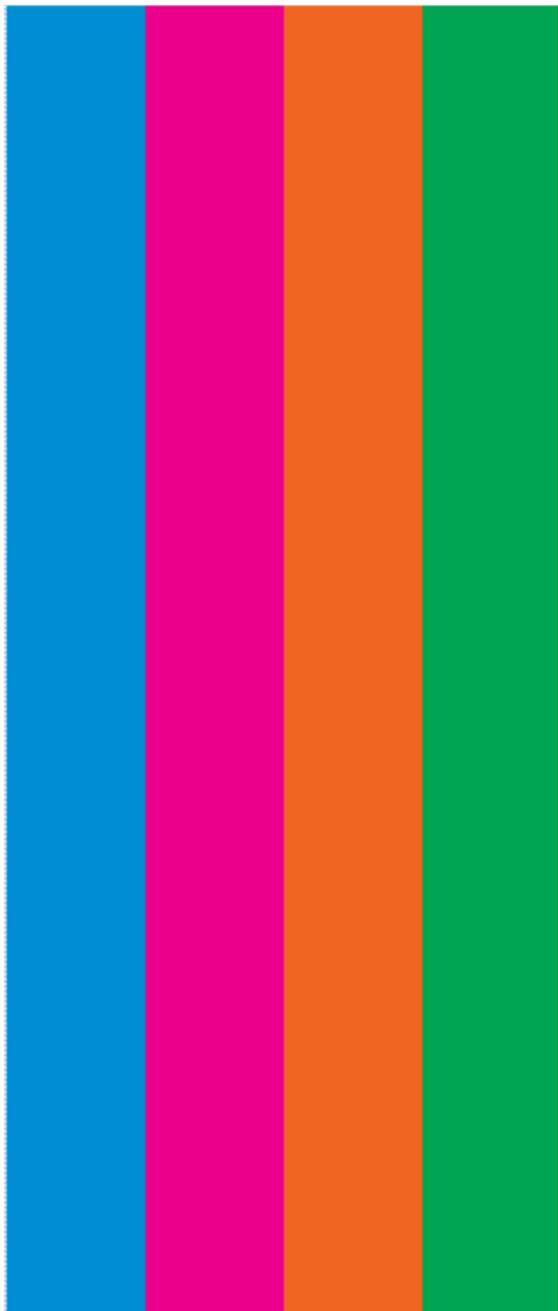
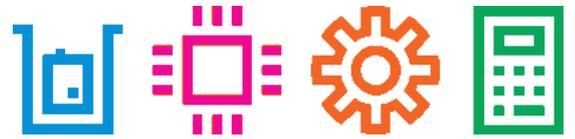


PRIMARY RESOURCE PACK



Glasgow Science Festival
4th-14th June 2020

www.glasgowsciencefestival.org.uk
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Contents

Launched in 2007, Glasgow Science Festival (GSF) has grown to be one of the largest science festivals in the UK. Unfortunately due to COVID-19 this year's festival was cancelled however in this pack you will find some activities that can be carried out at home.

Waters Happening?	3
Muffin Compares to You	4
Fingerprint Detectives	5
Bean Bags	6
Apple of My Eye	7
Sun Safety	8
Butter Late Than Never	9
Flying Zoomer	10
Pocket Money	11
Absorbent Flowers	12
GSF Poster	13



**GLASGOW
SCIENCE
FESTIVAL**

Resources:

- Zip lock food bag
- Permanent marker
- Water
- Sticky tape
- Blue food colouring
- Window in direct sunlight



About:

Water on Earth is constantly moving. It is recycled over and over again. Firstly water **evaporates** into the air and then the sun heats up water on land, in rivers, lakes and seas and turns it into water vapour. The water vapour then rises into the air and **condenses** into clouds. Water vapour in the air cools down and changes back into tiny drops of liquid water, forming clouds this falls as **precipitation** (rain/snow). This falls when the clouds get heavy. Rain water runs over the land and collects in lakes or rivers, which take it back to the sea. Then the water cycle starts all over again.

Waters Happening?

What to do:

1. Draw a sun and clouds near the zipped end of the food bag and a sea at the bottom.
2. On the left hand side of the bag draw arrows going from the sea up to the sun and label with the word '*evaporation*'.
3. On the right hand side draw arrows going down from the clouds to the sea and label with the word '*precipitation*'.
4. Label the middle of the bag with the word '*condensation*'.
5. Mix the water with blue food colouring and pour into the bag until it is a third full.
6. Seal the bag and using the sticky tape to stick to a window in direct sunlight.
7. Leave the bag for a couple of hours and watch the water cycle in action.

Safety First

Be careful of spillages.



Resources:

- See muffin recipe
- Muffin cases
- 4 bowls
- Muffin tin
- Pencil
- Oven



About:

By missing out one ingredient at a time you can see what their purpose is in the recipe for example eggs provide structure and colour. This activity can be used for developing prediction skills and exploring a fair test.

Muffin Compares to You

What to do:

1. Write on the bottom of 4 different muffin cases:
 - Regular
 - No eggs
 - No flour
 - No baking powder
2. Mix 4 different muffin recipes removing one of the ingredients listed above from 3 of them.
3. Pour a different mix into each of the 4 cases.
4. Place all muffins in oven and bake.
5. As they are cooking predict the outcome of each muffin with the missing ingredient.
6. Once cooled remove from oven to see outcome.
7. What purpose does each ingredient serve?

Safety First

Mix ingredients and use oven with adult supervision. Ensure oven gloves are used when removing muffins from oven.



Muffin Recipe

Resources:

- 2 eggs
- 125ml vegetable oil
- 250ml milk
- 250g golden caster sugar
- 400g self raising flour
- 1 teaspoon salt



About:

You may wish to alter the measurements of this recipe so as only to produce 1 or 2 muffins that are missing an ingredient.

What to do:

1. Preheat oven to 180°C.
2. Line muffin tray with paper muffin cases.
3. In a large bowl beat 2 eggs.
4. Add 125ml vegetable oil and 250ml milk and beat until combined.
5. Add 250ml golden caster sugar and whisk until the batter is smooth.
6. Sift in 400g self-raising flour and 1 tsp salt and mix until smooth.
7. Fill muffin cases 2/3 full and bake for 20-25 mins until risen and cooked inside.
8. Remove muffins and leave in the tin to cool for a few minutes before transferring to a wire rack.

Safety First

Ensure there is adult supervision when baking.



Resources:

- Chalk
- Sticky tape
- Small dry brush
- Plate
- Scissors
- Coloured paper



About:

Oil from your skin will stay on a surface when you lift your finger off. Dry chalk will stick to the oil leaving a visible fingerprint. Every fingerprint is unique.

Forensic scientists lift finger prints from crime scenes and check against a database of finger prints from previous criminal cases to try and solve the case.

Fingerprint Detective

What to do:

1. Press your finger to your forehead first. This will make sure there is some oil on your finger.
2. Press a finger onto a clean mirror, or other glass surface.
3. Holding a piece of chalk and scissors over a plate, use blade to scrape the chalk. Catch chalk dust on a plate.
4. Dip a small dry brush into the chalk powder. Carefully dust the chalk powder onto the fingerprint that was placed on glass surface.
5. Gently blow off any excess powder.
6. To lift the fingerprint off the mirror, lay a piece of sticky tape onto the print. Press the tape flat, then peel off. Stick this to a piece of coloured paper.
7. Repeat with members of your household. Match fingerprints to members of your household.

Safety First

Be careful when using scissors to scrape the chalk.



Resources:

- Zip lock food bag
- Stapler
- Water
- Glass
- Scissors
- Sponge cloth
- Dried black eyed beans



About:

Beans are seeds and are filled with the food that a plant needs to grow.

When beans are given water, air and warmth, they start to germinate or grow. They sprout white roots and green stems, then grow leaves. Once the beans have leaves, they also need light. The leaves then absorb energy from the light in a process called photosynthesis.

Bean Bags

What to do:

1. Fill a glass with 150ml cold water and put 3 or 4 black-eyed beans into the glass and leave for 24 hours then remove from glass.
2. Using scissors cut a sponge cloth to size of the zip lock bag and place inside.
3. The sponge should rests at the bottom of the bag.
4. Next, staple a line of 5 staples along the bag 2cm from bottom.
5. Wet the sponge by adding 4 tablespoons of water to the bag.
6. Place beans in bag so that they rest along line of the staples.
7. Seal bag so that some air is kept inside. Store in a warm dry place.
8. What happens to the beans over time?

Safety First

Be careful when cutting the kitchen sponge and stapling the zip lock bag.

Ensure safe disposal of the bag after experiment. Do not eat the beans.



Resources:

- Apple
- Knife
- 6 dishes
- Lemon juice/ orange juice
- Milk
- Vinegar
- Oil
- Water



About:

This experiment explores what substances stop an apple from going brown.

This reaction is called oxidation and occurs when enzymes in the apple react with the air.

An acid like lemon juice stops the apple browning at first, as the acid reacts with the oxygen in the air.

Once all the acid has reacted and is used up, the apple will turn brown.

Apple of My Eye

What to do:

1. Slice an apple into 6 equal pieces.
2. Pour vinegar, milk, water, lemon juice and oil into 5 different dishes. Leave a 6th dish empty.
3. Label each dish.
4. Place a piece of the apple into each of the 6 dishes.
5. Predict what will happen to the apple in each dish.
6. Leave for an hour then check to see what has happened to each piece of apple.
7. What do you notice? Compare to predictions.

Safety First

Keep the knife in a safe place and make sure that there is adult supervising during use.



Resources:

- Dark coloured card
- Sun cream
- Sunlit area
- White pencil



About:

UV rays from the sun bleach the card causing the colour to fade. Sun cream works by filtering out the sun's harmful UV rays and providing a barrier to the skin. A sun cream with SPF 30 will block 97% UVB rays when applied liberally. To protect skin it is important to wear sun cream as over time harmful rays from the sun can cause health problems.

Sun Safety

What to do:

1. Fold the piece of card in half and open back up.
2. On one half put a pea sized amount of sun cream and spread to cover full half.
3. Leave other half of card clean.
4. Label sun cream at the top of one half and no sun cream on the other half.
5. Leave the card in direct sunlight for 2 days.
6. Predict what will happen.
7. Check card after 2 days for results.
8. What do you notice?

Safety First

Always wear sun cream if spending time in the sun.



Resources:

- Jar with lid
- Double cream
- Salt
- Paper towel
- Knife
- Cracker



About:

When the double cream is shaken or churned, the liquid separates into a solid and liquid. The solid is made from fat molecules and join together to make butter. The liquid that is formed consists mostly of water but is known as buttermilk.

Butter Late Than Never

What to do:

1. Half fill the jar with double cream and make sure the lid is secure.
2. Once the lid is secure shake the jar vigorously for 5 minutes.
3. Once separated pour the liquid out the jar and pat the solid substance dry with a paper towel.
4. Add a little salt, to taste, to the solid and spread on bread or a cracker.

Safety First

Ensure that the jar lid is sealed tightly before shaking. Store in a fridge and consume on the day the butter is made.



Resources:

- Paper/cardboard
- Art Straws/straws
- Scissors
- Sticky tape
- Ruler



About:

The Zoomer flies because it is light and cuts through the air. The smooth and aerodynamic shapes allow air to flow around them and carry the Zoomer over a great distance. Planes and cars are designed in the same way because the more streamlined the shape the faster it can go.

Flying Zoomer

What to do:

1. Cut paper or cardboard strip 2.5cm x 24cm.
2. Cut a second strip the same width (2.5cm) and 12cm long.
3. Bend the strips into round loops.
4. Overlap the ends and use sticky tape to secure ends. There should now be 2 loops, one large and one small.
5. Cut 4 straws to the same length.
6. Evenly spread the 4 straws around the inside of the larger loop and secure with sticky tape.
7. Tape the smaller loop to the other end of the straws. Ensure straws are evenly spaced.
8. Pick up the Zoomer with the smaller loop facing forward and throw into an open space.
9. Experiment with different lengths of straws and paper loops.

Safety First

Ensure safe use of the scissors.

Throw Zoomer in large empty space.



Resources:

- Selection of dull copper coins
- Selection of shiny copper coins
- Vinegar
- Salt
- Water
- 2 plastic tubs
- Spoon



About:

The copper in the coins, reacts over time with the oxygen in the air, dulling the coins. This chemical reaction is called oxidisation. The salt solution increases the speed of the reaction and the copper oxide is formed, dulling the pennies. The vinegar and salt solution dissolves the copper oxide on the surface of dull coins making them appear shiny again.

Pocket Money

What to do:

1. Pour vinegar and salt into one plastic tub and stir until mixture dissolves.
2. Add dull pennies to the mixture and leave for a few hours.
3. Predict what will happen to the coins.
4. What do you notice?
5. In the other plastic tub pour water and salt. Stir until the salt dissolves.
6. Add the shiny pennies to the mixture and leave for a couple of days.
7. Again predict what will happen to the coins.
8. What do you notice? What has happened?

Safety First

Place plastic tubs on newspaper when conducting experiment to protect table.



Resources:

- White carnations flowers
- Clean clear vase
- Food colouring
- Scissors
- Water



About:

Inside a flower's stem there are thin tubes that help it to suck up water. When you put a flower in water, the liquid is drawn up the inside of these tubes. As the water is drawn up it pulls up more from below. The veins in the flower's petals start to change colour as the dyed water reaches them. The petals become darker and darker as more water is drawn up.

Absorbent Flowers

What to do:

1. Take the leaves off the stem of a carnation and leave out of water for an hour.
2. Pour 150ml of water into a vase or glass (the flower must be able to stand upright in the glass or vase).
3. Mix one teaspoon of food colouring into the water.
4. Carefully cut the end of the flower stem, then place in water. Leave for a few hours.
5. Watch as the petals of the flowers begin to turn into the colour colouring.
6. What has happened?

Safety First

Keep the knife in a safe place and make sure that an adult supervises the use of the knife at all times.



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