

# Science Challenge



## Wildlife Photographer

### Be a Minibeast Wildlife Photographer

If you can access it, find out more about minibeasts using this site-

<https://www.youtube.com/watch?v=IYaWSiSid1o&list=PLmTANLv-GyXWvII2La-sXEePmN2PC9H3g&index=3>

In this episode Maddie and Greg photograph mini beasts in their garden. If you can, go into a garden or safe space to do your own minibeast hunt.

Remember to look in different places such as on a wall, under a stone, the underside of a leaf, in the soil. Take a close-up photo or make a quick sketch of each bug before you put it back. While you are searching take note of the types of places you find the minibeasts. Are they in bright sunny spaces or in damp and dark places?

### Fruit or Veg?

Let's find out about plants. Use this BBC Bitesize unit to learn all about different plants.

<https://www.bbc.co.uk/bitesize/topics/zy6fg8>

If you don't have time to look through the whole unit, look at this page-

<https://www.bbc.co.uk/bitesize/topics/zpxnyrd/articles/zxxsyrd>

Which part of the plant do we eat?

Collect different foods from plants or pictures from a magazine. Sort by different criteria such as- grows in trees, grows on ground, grows below ground.

Identify which part of the plant we eat- seed, flower, stem, fruit, leaf, root...

Which part of these do we eat-

Lettuce, tomato, carrot, cauliflower, celery, strawberry, leek, beans, cabbage... try to think of others.

Are there any plants where you can eat several different parts?

# Technology Challenge

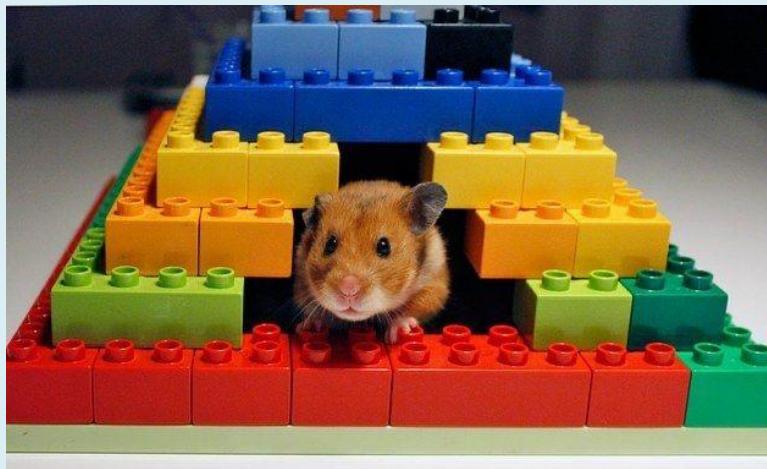


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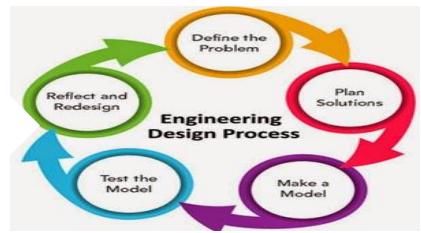
## Shelter Building

Your mission is to build a shelter for two Lego figures (Or similar).

1. It must be able to withstand the weight of a heavy book being placed on the roof. The two figures must remain protected and undamaged.
2. The two figures must remain dry. This will be tested by placing the two figures on a tissue. The tissue must remain dry when 200 ml of water is poured over the top of the shelter.
3. The shelter and the figures inside must be able to withstand a 30 second blast from an electric fan or hairdryer.
4. You can use any resources that you can find in your house, such as food packaging, cereal boxes, Lego, paper. Recycling materials deserves extra credit!



# Engineering Challenge



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## Cool Contraptions

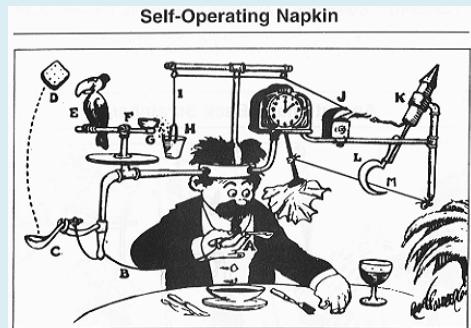
**Have you ever watched a Wallace and Gromit film?** They are always inventing different contraptions to solve everyday problems. [Take a look at this clip from 'The Wrong Trousers.'](#) What does the machine do?

**Have you heard of engineers before?** There are lots of different types of engineers, but they all have one thing in common: engineers are **problem solvers**. They look for solutions to everyday problems by using Science, Technology and Maths to help them.

**Rube Goldberg** was an engineer who ended up designing some incredible contraptions to complete simple tasks like the one below. [Watch this clip of an equally interesting contraption designed to turn the page of a newspaper!](#)

Rube Goldberg machines use **chain reactions (a sequence of events where one thing triggers another.)** The **energy is transferred** between different objects and loads of different **mechanical elements** can be included e.g. swinging, pushing, releasing, winding, falling. Objects need to be set up perfectly so the correct force can be applied to continue the energy transfer in the machine. [Watch this video](#) of a Rube Goldberg inspired newspaper page turning machine created by Joseph Herscher.

**Watch this music video from Ok Go called 'This too shall pass'** where the whole music video is one large Rube Goldberg machine. What is your impression of it? Which part do you think would have been trickiest to achieve?



**Challenge: Design and build your own machine that creates a mechanical chain reaction.**

You can use just about **any ordinary, everyday objects** that you choose, e.g. cardboard tubes, boxes, ramps, cups, toys such as marbles, balls, cars, dominoes, balloons, etc. You could make parts from Lego® or K'nex® or use parts of larger toy sets such as marble runs or car tracks. **Be creative!**

**There are only a few rules:**

- You must be able to set up and run your device a number of times;
- There must be at least 4 different parts to the chain reaction;
- Once you set off your device, it should be able to run through to the end unaided.

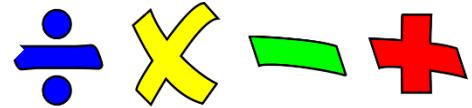
**Step 1:** Think of a simple problem you want to solve e.g. to ring a bell / pop a balloon / shut a door...

**Step 2:** Gather supplies to construct your machine ([see this list to help](#))

**Step 3:** Build, test and improve!

Keep trying if things don't work out or you make a mistake...**Thomas Edison** said '*I have not failed. I have just found 10,000 ways that don't work!*'

# Maths & Numeracy Challenge



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## Capacity Challenge

Capacity is the amount of liquid a container can hold.

Volume is the amount of liquid held by a container.



This milk carton has the capacity of 2.272 Litres (4 pints).

But when you open it and pour some milk into a glass the volume of milk in the container has decreased but the capacity of the container is still the same

In our houses we have lots of containers which would hold liquid – storage tubs, jugs, cups and glasses in the kitchen cupboards, buckets, bottles, pet water bowls..... the list goes on.

- Collect some empty containers – be careful and make sure you ask if it is ok too use the containers.
- Collect a measuring jug from the kitchen.
  - Discuss with an adult the liquid scale on the jug – it will have ml on it.
    - ml means millilitres
    - a tablespoon holds 10ml and a can holds 330ml of juice
- Discuss the different containers and the label on it, if it has one, which will tell you the volume of liquid which was in it when it was full.
  - Which one holds the most? Why?
  - Which one holds the least? Why?
  - Can you order them from smallest capacity to largest capacity?
  - Do any of them will hold the same? Does this surprise you?
- On the draining board of your kitchen sink, outside or in the bath/shower tray – use a measuring jug to find/check the capacity of the containers.
- Make a note of the capacity of each one.
- Pour some of the water out and use your estimating skills to estimate the volume of liquid left in the container
- Check your estimate
  - How close were you? Were you more than 100ml out? Less than 50ml?



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## Literacy Challenge

### Improving Your Memory

#### Coin match

Set up a line of coins. Start with 3 and work up to 10. Place the coins in a random pattern of heads or tails. Child stares at coins for 10 seconds. Parent removes coins and hands to child who attempts to arrange them in the same order. Make this more difficult by using different types of coins.

#### Shopping Game

The first player starts the game by saying, “I went shopping and bought a \_\_\_\_,” identifying an item they would buy.

The second player continues, “I went shopping and bought a (names the first player's item) and a \_\_\_\_ (adding a new item to the list).”

Players continue taking turns to remember the items purchased in order as the list gets longer and longer.

To add more challenge to the game you must add an adjective to the object bought. This could use alliteration (begin with the same sound as the object) such as “I went shopping and bought an ugly umbrella”, “I went shopping and I bought a colourful camera”

#### Photo fit

Cut out pictures of people from magazines

Each person needs a picture. Study the picture then swap pictures. Take turns to ask questions about the person. Try to remember as many details as you can.

#### Retell information from a book or news article

Find a news article or a chapter of a book. Read it carefully and pick out 5-10 details to remember. Try to retell the details of the chapter or article accurately.



# Health & Wellbeing Challenge

## Obstacle Course

**Obstacle courses** are a great way to get active, practice skills and have fun!

**Challenge:** Design and set up challenges to create an obstacle course which will test the following skills;

1. **Speed** (how fast you can move)
2. **Balance** (being able to keep a controlled body position during a task)
3. **Co-ordination** (able to control both sides of the body at the same time)
4. **Jumping** (tests your timing, rhythm and coordination)
5. **Aiming** (the ability to hit a target)
6. **Catching** (needs good hand-eye coordination and concentration)
7. **Agility** (being able to complete movements/actions quickly and easily)
8. **Knowledge of left and right**

Think about what would make a **good challenge** to **test each skill** and then set it up **using different materials and objects** in your home. **Time yourself** completing the course with a stopwatch and then **try to improve your time** or **challenge someone** in your home to beat it!

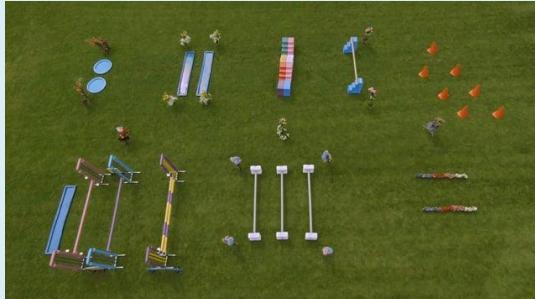
It would be best to do this outdoors, however you could do it indoors, as long as you make sure the challenges you choose are safe to complete inside.

### Examples of obstacle course challenges:

**Balance:** Lay a skipping rope out flat along the ground. Walk along it on your tip-toes. If you fall off or stumble, restart the challenge.

**Co-ordination:** jumping jacks, hopping from one foot to another on stepping stones/spots

**Knowledge of left and right:** Have a basket with red and yellow pom poms in the centre. Race to put the pom poms in two hoops 3 metres to the side (red on the right and yellow on the left)



# Social Studies Challenge



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## Businesses In Our Local Communities

There are a wide range of businesses throughout Dumfries and Galloway who provide different services and products to the public. Some are part of well-known national companies and others are owned and run by local people and families. You are going to explore some of these businesses in more detail to discover how they work and how they help our local communities in different ways. You may wish to choose a business that is owned or run by someone in your family or a family friend. Alternatively, it could be a business that you use products and services from.

Task – Research two local businesses/employers and present this information in a suitable way.

Suggested information:

- Name of business
- Owner
- Number of employees
- Date/Year business started
- Products/Services provided
- Where this business is situated
- Other relevant information

# Expressive Arts Challenge



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## Beautiful Blooms

Spring is a Season on the Year. Lots of flowers begin to bloom in Spring. Seeing flowers in your house can make people smile.  
Can you make some of these beautiful hyacinth flowers?



You will need

- Assorted colours of cardstock/paper
- Green construction paper (It needs to be thin)
- Scissors
- Ruler
- Pencil
- Glue Stick
- Spent Match/Wooden Skewer/Knitting Needle

Instructions and Video can be found here –

<https://onelittleproject.com/paper-hyacinth-flowers/>

### Hyacinth Facts:

With their distinctive scent, hyacinths are among the most popular spring bulbs. Specially prepared bulbs can flower around the turn of the year.

Suitable for borders, rock gardens and containers. They can also be grown in pots of bulb fibre indoors or can be grown in special vases that hold the bulb at the top and allow their roots to grow down into the water below.

Wear gloves when handling the bulbs as they may aggravate skin allergies and all parts of hyacinths can cause stomach upset if eaten.

