

Science Challenge



All About Plants

Identify parts of a plant and their role

Look at a plant in the house or garden. Can you name any parts of the plant? Do you know what they do to help the plant to grow?

Find out more about the parts of a plant by working through this BBC bitesize page. There is a video to watch, some information to read before you try out the quiz.

<https://www.bbc.co.uk/bitesize/topics/znyycdm/articles/zjchsrđ>

Think about some of the plants we eat. Can you identify the different parts of the plant and particularly which part of the plant we eat?

Identify a selection of different vegetables. Sort them according to which part of the plant we eat- the leaf, stem, root, fruit, seed, tuber.

This fun episode of Let's Go Live explains lots more about different plants and includes instructions for dissecting a daffodil.

<https://www.youtube.com/watch?v=d7EdZa24fMs&list=PLmTANLv-GyXWvll2La-sXEePmN2PC9H3g&index=2>

If you are able, find a flower like a daffodil and have a go at dissecting it. Look carefully at each part and make some careful drawings.

Technology Challenge



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Climate Smarter School

Climate change is something that we see and read about in the news all the time. Scientists and experts tell us that we need to make changes now in order to slow down the effects of climate change. We do lots in school to help in any way we can, such as recycling scrap paper, turning lights off when we leave a room and recycling cans and plastics. But could we do more?

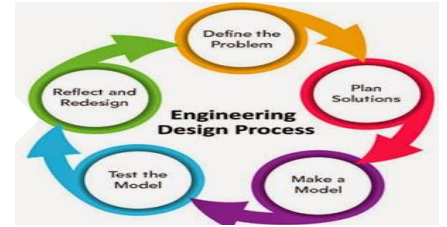
Your Challenge - Design and/or build a model of a future eco-school. You can think about incorporating energy efficiency measures, smart controls, energy generation and responsible water use. You will need to research current ways which are used to make schools and buildings eco-friendly and use your knowledge and imagination to come up with new ideas.

Your design can be recorded electronically, or you may wish to draw and label diagrams of different sections of your school design. Alternatively, you may wish to build your eco-friendly school using recycled resources in and around your home. The model could be accompanied with your findings and recordings from your research to highlight the features of your design.

Good Luck!



Engineering Challenge



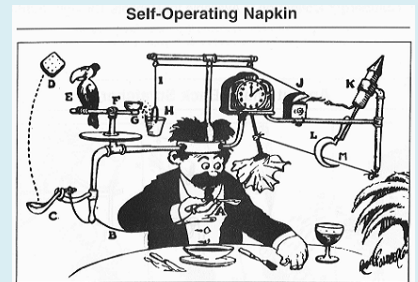
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Cool Contraptions

Have you ever heard of [Rube Goldberg](#)? He was an engineer, and later became a cartoonist who drew imaginative illustrations of contraptions made up of pulleys, cups, birds, balloons, and watering cans that were designed to solve a simple task such as opening a window or setting off an alarm clock. (Think Wallace and Gromit!)

Watch this music video from [Ok Go](#) called 'This too shall pass' where the whole music video is one large Rube Goldberg machine.

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](#) by Joseph Herscher who create a Rube Goldberg machine to turn the pages of a newspaper!



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](#))

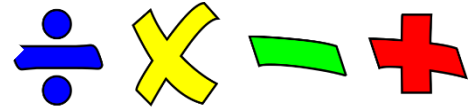
Step 3: Build, test and improve!

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!***'

Extension: Draw an annotated diagram of your finished Rube Goldberg machine and explain how it works to someone else!



Maths & Numeracy Challenge



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Title:

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

Spoiler - The minimum number of steps is 8

Use your problem solving strategies to solve these capacity/volume problems

You have two containers of capacity 12 litres and 5 litres. The 12 litre container is full. The 5 litre container is empty.

Without adding more water or wasting any water - How can you end up with exactly 9 litres of water in the 12 litres container? Try to do it in the minimum number of steps.



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Step	Volume in 12ltr	Volume in 5ltr
start	12	0
A	7	5
B		
C		

Given three bowls: bowl A (8 litres capacity) filled with 5 litres of water; bowl B (5 litres capacity) filled with 3 litres of water; and bowl C (3 litres capacity) filled with 2 litres of water.

Can you measure exactly 1 litre, by transferring the water only two times.



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Step	Volume in A (8ltr)	Volume in B (5ltr)	Volume in C (3ltr)
start	5	3	2
1			
2			

Hint – Fill bowl C

Literacy Challenge



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Improving Your Memory

Draw/write on my back

One player uses their finger to 'write' a word on the back of the second player. The second player tries to identify the word. Players switch positions and take turns being the 'writer' and guesser. To vary this you could try drawing a 2d shape or simple picture to identify.

Number String

The first person says a one-digit number. The next player repeats the first number and adds another one-digit number. The third person says the first and the second numbers and then adds a third number. The game continues until someone forgets a number.

Vary the game by using words or letters instead of numbers.

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. Challenge yourself by including lots of information. Try to recall the details of the chapter or article accurately. Retell the information to someone else.



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**
9. **Strength** (able to support and control your body weight e.g. hold a plank)

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 record your result in a table. Repeat the course three times **trying to improve your time**. **Calculate your average time** to complete the course by adding up your three times and dividing the total by three.

Then **challenge someone** in your home to beat your average!

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*.



Social Studies Challenge



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Exploring Other Countries

Task: You are going to explore and research a country of your choice from out with the British Isles. It may be a country you have visited already or somewhere you have always dreamed of going. Understanding and appreciating what other countries are like and comparing them to our own, helps us to become better global citizens.

Your project should have an **INTRODUCTION** which includes:

- The name of the country
- The major language(s) spoken
- The capital of the country
- The location (which continent is it on?)

Your project should have at least one paragraph discussing the **HISTORY** of your country which includes:

- The Date the country came into existence.
- Major events in the country's history.
- Famous people/rulers/kings/ presidents/etc. from the country's history.

Your project should have at least one paragraph discussing the **GEOGRAPHY** of your country. It should include:

- Major landforms.
- Major bodies of water.
- Major landmarks.
- Major cities

Your project should have at least one paragraph discussing the **CULTURE** of your country. It should include:

Clothing/Music/Holidays/Religions/Food

Your project should have at least one paragraph discussing the **CLIMATE** of your country. It should include:

- General weather conditions
- Average yearly temperature
- Average yearly rainfall
- What effects the climate has on the country

Your project should have at least one paragraph discussing any **INTERESTING** facts about the country.

Your project should have a **CONCLUSION** paragraph which includes: A nice wrap-up of your research.

Expressive Arts Challenge



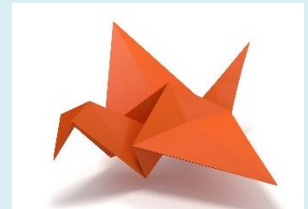
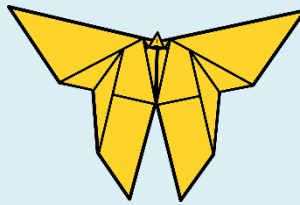
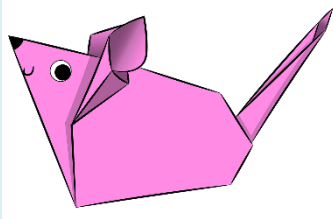
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Beautiful Blooms

Origami (折り紙, Japanese pronunciation: [\[origami\]](https://en.wikipedia.org/wiki/Origami) or [\[ori+gami\]](https://en.wikipedia.org/wiki/Origami), from ori meaning "folding", and kami meaning "paper" is the [art](https://en.wikipedia.org/wiki/Origami) of paper folding, which is often associated with Japanese culture. In modern usage, the word "origami" is used as an inclusive term for all folding practices, regardless of their culture of origin. The goal is to transform a flat square sheet of paper into a finished sculpture through folding and sculpting techniques.

<https://en.wikipedia.org/wiki/Origami>

Through folding paper you can make a multitude of different sculptures – a mouse, butterfly and bird to name a couple.



Flowers are a favourite too.



Your challenge this week is to make a few of these flowers from squares of paper, following the instructions on the video available here:

<https://youtu.be/Wk83169RuQU>

Extra Challenge: How can you add stems? How can you make them into a bouquet?

Perhaps you could leave them on a neighbour's doorstep with a note, to cheer them up? Or simply display them in your window or on a table in your house.