

# Science Challenge



## Balloon Hovercraft



To make a balloon hover craft you will need an old CD, a balloon, a piece of blue tac and a sports drinks bottle top (like a fruit shoot bottle cap).

There is a link to an instruction video here-<https://www.youtube.com/watch?v=LSBp6T1h598>

First you will need to attach the bottle top to the CD using the blue tac. Try to make sure there is no gaps for air to escape. Make sure the hole in the middle of the CD matches the valve in the bottle top.

Blow up your balloon and fit it over the bottle top. If the valve is closed the balloon should stay blown up. Try sliding the CD about on a smooth surface such as a table or work top. Now release the valve on the bottle top and move the CD about. What happens? The air coming from the balloon creates a cushion and reduces the friction between the CD and the table. The CD moves easily across the surface.



If you are allowed to, try putting some water, cooking oil, flour or other kitchen materials on the bottom of the CD. Does this effect how it moves?

# Technology Challenge



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## Cardboard Slingshot

### Materials

Thin cardboard tube. If you don't have a thin one you can cut a toilet roll in half lengthways and roll it into a smaller tube.

Cardboard tube – Toilet or kitchen roll tube

2 elastic bands

pencil

Scissors

### Instructions

Check one of tubes fits easily inside the other.

Ask an adult to help make two small holes in the thinner tube about 2 cm from the bottom.

Carefully push the pencil through both holes.

Cut two small cuts on each side of one end of the larger tube.

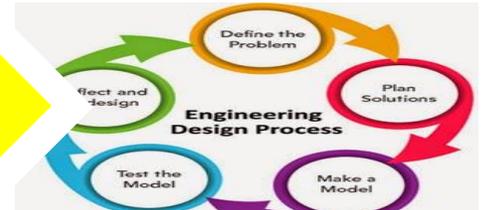
Put the small tube inside the larger tube and fix the elastic bands in place around the pencil and inside the cuts you made in the bigger tube.



Pop some pom poms inside, scrunched up tin foil works well too, pull back the smaller tube and let go!

Experiment firing at different angles to see how the trajectory of the pom poms or scrunched up tin foil changes.

# Engineering Challenge



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## European Landmarks

Your challenge this week is to research famous European landmarks and recreate one using different materials.

### Step 1: Research

Find out about different European landmarks by completing this task:

1. Use [Google Earth](https://www.google.com/earth/) to explore and learn about some of these famous landmarks. The Eiffel tower (France); The Colosseum (Italy); Big Ben (Elizabeth Tower, UK); The Parthenon (Greece); Stonehenge (UK); La Sagrada Familia (Spain); Brandenburg Gate (Germany); the Leaning Tower of Pisa (Italy.) **You could test your knowledge with [this European Landmarks quiz!](#)**
2. Choose one of the landmarks which most interested you and **take a screen shot of it. Insert it into a Microsoft Word document and type up 5 facts** you found out about it.

### Step 2: Plan

Choose **one of the landmarks** you have explored. Think about the **materials** you have at home. They could include; **toys** like LEGO, K'NEX, wooden blocks; **natural materials** like clay, stones, sticks; or **junk modelling materials** like empty cardboard boxes, tubes, plastic bottles or pots. **Draw a plan** of how you will construct your model. Give it a **title** and **label your drawing** to show what you plan to use to create the different features. **Write a sentence** along with each label to **explain why** you think that material will be suitable for that specific feature.



### Step 3: Construct, Test and Improve

Use your plan to get started, but make changes as you test and develop your model. Model aims;

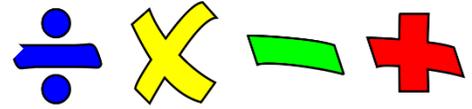
- **Is freestanding (isn't attached to anything)**
- **Is at least 30cm tall**
- **Has recognisable features of the landmark you are recreating**
- **Can withstand high winds (use a hairdryer!)**

### Step 4: Evaluate



Take a photo of your finished model and insert it into a Word document. Underneath it, write a short paragraph evaluating your model. Write about which parts of the model you are pleased with and why? Any changes you'd make. Whether the materials you used were good for constructing the landmark? Why? If you faced any problems and how you overcame them.

# Maths & Numeracy Challenge



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## Number Patterns – Square and Triangular Numbers

You need a large number of coins (preferably as many the same as possible – or as close to the same size) or a large selection of square lego bricks

Your challenge is to explore triangular and square numbers.

Can you make squares using the coins (imagine a rough square outline)? Can you make triangles using the coins (imagine a rough triangular outline)?

How many coins make the square/triangle? Can you make a bigger square/triangle? A smaller square/triangle? How many coins does it take?



Think about/lay out your squares and triangle from smallest to biggest- can you complete the table below? (You might not have enough coins/bricks to make a 10x10 square ~ don't worry.)

	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>		9 <sup>th</sup>	10 <sup>th</sup>
Square	1 coin		9 coins					
Triangular	1 coin			10 coins				





# Health & Wellbeing Challenge

## Eatwell Plate

The eatwell plate shows us what we need to eat to be 'well' and healthy over a day. It helps us remember that we need different foods and drinks to be healthy.



Have a go at [this online game](#) and see if you can correctly **sort the foods into the correct food groups**. Sometimes we eat foods by themselves but other foods, we would normally eat as part of a combination of foods in a meal. [Using the eatwell plate](#) to help you, **list foods** which you might eat on their own and list foods which you would normally eat as part of a meal. Draw a table like the one below and then look at the pictures of the different meals. Complete the table by recording the ingredients and ticking the sections of the eatwell plate they're from.

Dish	Fruit and Veg	Carbohydrates	Protein	Dairy & alternatives	Oil & spreads
Shepherd's pie					
Pizza					
Fish fillet and wedges					
Roast dinner					



Think about your favourite meals. Add them to the table and record which sections of the eatwell plate they include. Which meal do you think is the best balanced? Why? Create your own healthy, balanced meal. Draw a picture of it and label the different foods which have been combined to create it. Or [choose a healthy meal](#) to make for your family. You might like to [download this workbook](#) which has different activities to complete about having a healthy, balanced diet.

Photos from Food a fact of life resources

# Social Studies Challenge



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## Different Types of Clouds

How many different types of clouds are there?

There are three main types of cloud.

- **Stratus clouds** - Like flat sheets - can occur at any altitude.
- **Cirrus clouds** - High altitude, thin, wispy clouds. More ice than water, due to high altitudes.
- **Cumulus clouds** - Big, lumpy, fluffy clouds. Can occur at any altitude.



**Stratus.**



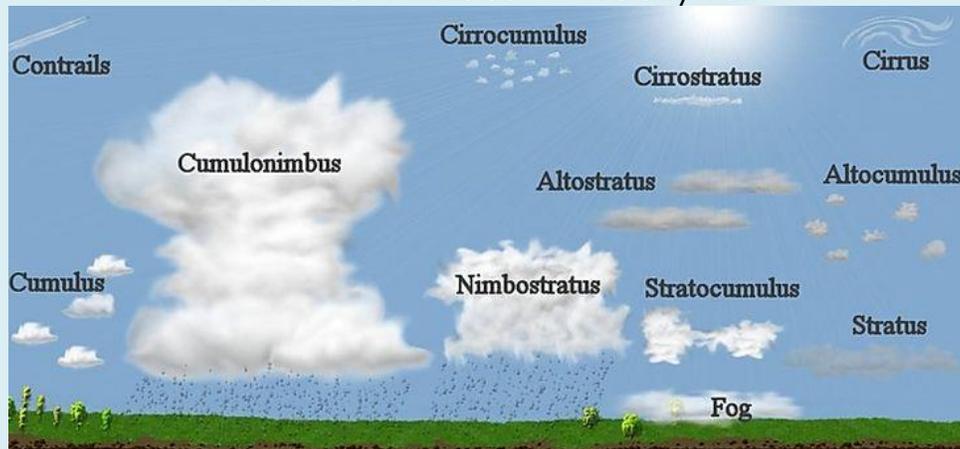
**Cirrus.**



**Cumulus.**

If you add one of these prefixes to your cloud name, it tells you more about that cloud. For example:

- Add 'Cirro' = high altitude clouds
- Add 'Alto' = mid level clouds
- Add 'Strato' = low level clouds
- And add 'Nimbus' = really tall.



Use the cloud identification diagram and record what types of cloud you see each day. You might see more than one type.



# Expressive Arts Challenge



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## Bird Line Drawings

I am sure during your daily exercise or out of your windows you are getting to see lots of garden birds flying about. These birds are getting ready to lay eggs or are already raising their young in nests. Birds are fascinating creatures. Look really closely at them – some have amazing colours that you only see a flash of.



[www.wildlifewatch.org.uk](http://www.wildlifewatch.org.uk) Pictures: Chaffinch and Greenfinch (c) Gillian Day / House sparrow (c) Stewart McDonald / Blackbird (c) Neil Aldridge / Blue tit Goldfinch and Great tit (c) Amy Lewis / Collared dove (c) Ian Kose / Starling (c) Joan Burkmar / Wood pigeon (c) Steve Waterhouse

Download this image here:-

<https://www.wildlifewatch.org.uk/images/Downloads/potters/garden%20bird%20detective.pdf>

Can you draw one of the garden birds?

A great step by step guide is available to download

<https://johnmurlaws.com/wp-content/uploads/2011/06/How-to-draw-birds.pdf>

### CREATING FOUNDATION LINES

Do not start your drawing by putting in details. Your initial strokes create the structure on which you can add detail later. Start lightly and loosely. Block in the posture, proportions and angles. Then you can add eyes back and feathers.

