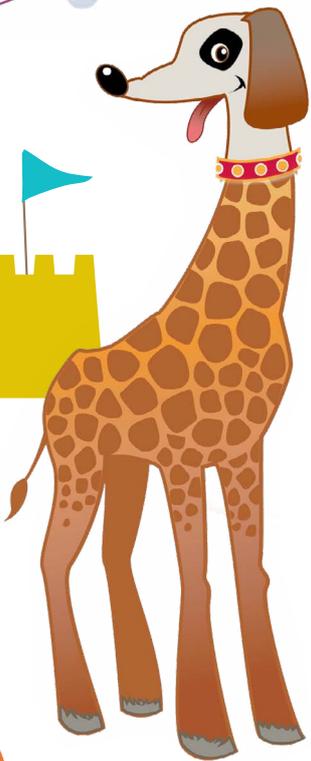
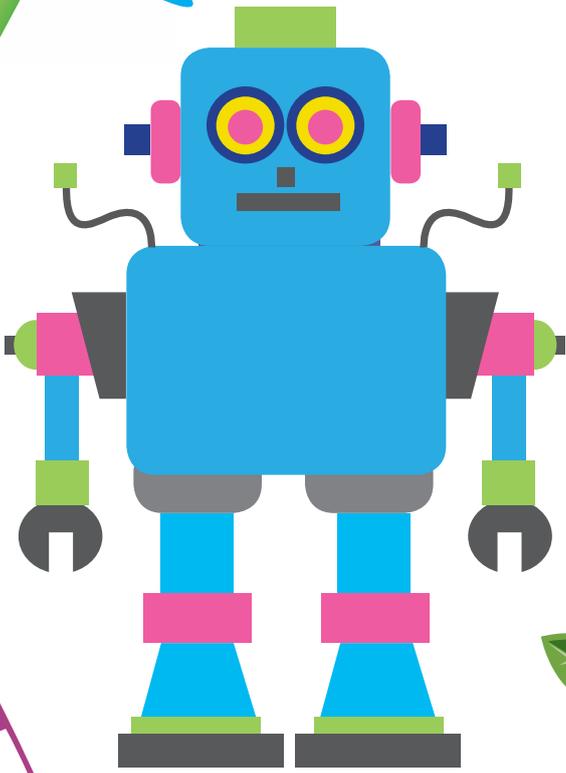


18 7 5 44
4 36 10 9
8 12 20



Summer brain - boosting challenges





Dear Parent,

Your children will learn more from you than any other adult or childhood friend. A school teacher might tell them what fractions are, but they'll learn how to be and who they think they are from you and from your example.

One key approach to life you can pass on to your children is the pleasure of learning and of not being afraid to take a risk learning something new.



The challenges, ideas and activities in this collection are designed to excite interest in the world and enrich learning. They are also designed to **stretch thinking over the holidays**. The new academic year can be a time of success for a prepared mind, a mind that can see connections, ask questions and see solutions.

The most important thing about this collection, however, is that you and your child can enjoy learning and working together.

All the challenges have a central core curriculum focus such as science or English, but they are also cross-curricular in nature and aim to **develop skills through practical and reflective activities**. In addition these activities aim to support independent learning and problem-solving skills and boost the confidence of those taking part as self-directed learners.

Knowledge is seldom a neat experience. True learning runs free and wild! These activities consolidate existing knowledge but also prepare your child's mind to be successful when presented with new information, developing the skill of knowing what questions to ask.

Wherever possible I have tried to present activities that use everyday materials rather than costly equipment or resources. I have also tried to make sure that as a part of any activity there are many opportunities for **children and parents/carers to work together, learn together, be very puzzled together and to have fun solving problems and expanding horizons**. You may need to explain new words and concepts, which is why it would be wise to read through an activity before you start to work on it with your child or children.

At all times safe practices should be followed and care always given to any health and safety considerations that may be a part of a particular activity.

Have a wonderful summer!

John Senior

John Senior,
Education activist



Summer brain-boosting challenges: activities

- | | | |
|----|--|---------------------------------------|
| 1 | Juggly fruit | Physical Education |
| 2 | A little box of tiny books | English |
| 3 | Arty trail | Art & Design |
| 4 | What will happen next? | ICT |
| 5 | Find numbers at home | Maths |
| 6 | Musical beliefs | Religious Education |
| 7 | The Lost City | History |
| 8 | Paint power | Science |
| 9 | Listen for the tree squeaks! | English |
| 10 | Slow down for sheep | Citizenship |
| 11 | Play to learn | Personal, Social and Health Education |
| 12 | What would you like to find? | English |
| 13 | Form a Waste Band | Music |
| 14 | Talking sdrawkcab | Modern Foreign Languages |
| 15 | Compile a travel-diary hoax | English |
| 16 | Queen Victoria eating Victoria Sponge | History |
| 17 | Moody weather | Science |
| 18 | Spoon feeding | Science |
| 19 | Design a home for bumble bees | Design & Technology |
| 20 | Have a fun day out (at home) | Art & Design |
| 21 | Geometrical gourmet | Maths |
| 22 | Safe place, safe box | Religious Education |
| 23 | Weird and wonderful facts | English |
| 24 | It's pizza clock time! | Maths |
| 25 | Outside, inside, today and tomorrow | ICT |
| 26 | What kind of hat would a bird make? | Geography |
| 27 | Spiritual heritage trail | Personal, Social and Health Education |
| 28 | Produce a natural history of your home | Science |
| 29 | Rainy day rambling | Physical Education |
| 30 | Pastry maps | Geography |

1



Juggly fruit



Links to: Physical education (PE)

Activity description

When throwing and catching a ball we practise hand-eye coordination and develop our ability to grasp. The importance of knowing how to catch a ball is not insignificant: research shows that children who can catch well and have learnt the necessary motor skills at an early age are far more likely to participate in sporting activity throughout their childhood and adult lives.

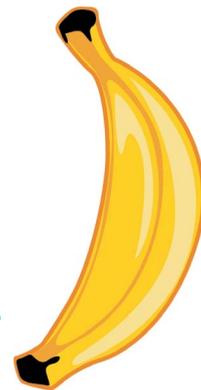
This activity requires an assortment of different types of fruit, for example oranges, apples and bananas.

Juggling is a skill that develops with practice. This activity is about both improving motor skills and research skills. Catching is an essential aspect of most sports. Research is an aspect of all learning!

Choose an assortment of different shapes and sizes of fruit to juggle with. Using the table on the next page, **decide what are good juggly fruits and what fruits are difficult to juggle with**. You can record your views on the sheet by drawing the fruit, writing the fruit's name and explaining why you think the fruit was more or less juggle-worthy. You can also award up to five gold stars for 'juggle quality'.

Now consider...

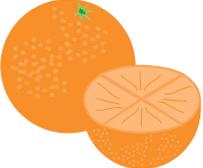
- What games involve catching a ball?
- What makes a good shape for a juggling fruit?
- Why is the best fruit for juggling the shape it is?
- Does the colour of a fruit make it easier to catch or not?



What other questions can you think to ask about juggling and catching?



Fruit and vegetable juggling score charts

Draw the outline of the fruit	Write its name	Is it good to juggle with?	Juggle rating
	Oranges	They can be a little bit big for my hands!	

NEXT! Juggle with vegetables, and repeat the exercise of determining the best vegetables for juggling with. Finally mix the best fruit and vegetables in a mixed fruit/vegetable 'juggling salad' and perform your juggling skills at a suitable occasion such as an event to raise funds for the British Heart Foundation (www.bhf.org.uk).

Draw the outline of the vegetable	Write its name	Is it good to juggle with?	Juggle rating
	Red pepper	Not really - slippery shape!	★ ★

2

A little box of tiny books

Links to: English

Activity description



Daisy Ashford was born on 7 April 1881 in Petersham, Surrey. She dictated her first story, 'The Life of Father McSwiney', to her father when she was four years old. In 1889, in her own hand, Daisy wrote *The Young Visitors*. Although Daisy's stories were written when she was very young they are funny and very readable with detailed descriptions of clothes, food and people. Published in 1919, the book was an immediate success.

Other young authors who have become a little more well-known are the Brontë family. Charlotte Brontë wrote the famous novel *Jane Eyre*, her sister Emily wrote *Wuthering Heights*, and Anne Brontë was the author of *Agnes Grey*.

When the Brontë sisters were very young they wrote stories for twelve wooden soldiers, who they called The Young Men, which belonged to their brother Branwell. One story was about the imaginary African kingdom of Glass Town, another was about the Empire of Angria. Emily and Anne also created Gondal, an imaginary island, ruled by a woman. The stories were written in little books, the size of a matchbox and bound with twine. Handwritten, the books had illustrations, maps and plans of buildings, all written and drawn in a size that could be read by the toy soldiers.



Imagine you have discovered a box containing five small books in old-fashioned handwriting. What are the books about? Are they illustrated? Your task is to take imagination and make it reality!

Write five different small books, perhaps from the perspective of one of your great-grandparents. The stories could be about anything – their toys, the world they lived in or a work of true originality. Find out about your great-grandparents' lives by talking to your parents/other family members and ask adults to help you with the production of the tiny books.

3 Arty trail

Links to: Art & Design

Activity description

When you go on holiday or visit a place that you do not know, often you can find a **map or guide to the area showing the main points of interest** a visitor might enjoy. These guides can be found in libraries and tourist centres.

The maps and books usually boast about the famous people and events that happened in the area the guide covers. But what if nobody interesting ever lived in your area? **This is your chance to create a set of famous artists from your imagination!**

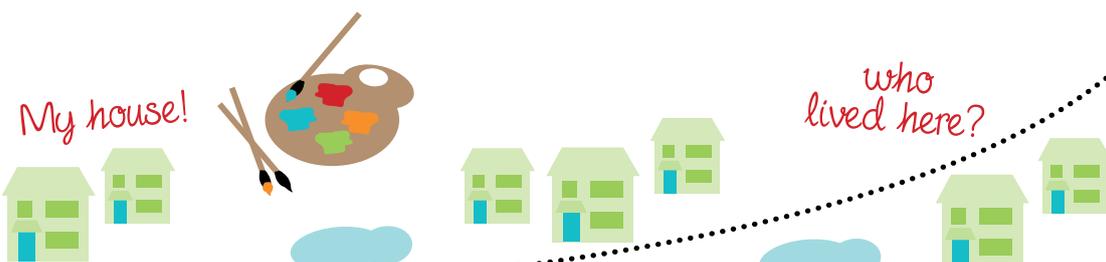
Ask your parents to help you with any resources you need, by arranging accompanied visits to find maps and information and of course by supplying art materials to produce the maps and paintings!

STEP 1. Borrow a map of where you live or visit the library, town centre or tourist information outlet and use a guide map that is issued free to visitors.

STEP 2. Imagine artists who may have lived in your area. Remember, these artists are being invented by you, they don't need to be real people.

STEP 3. Make a copy of the map your trail is going to be based on and produce a walking tour for visitors. You could invent buildings that once stood on a site (explaining that the building has now been demolished, for example). You could also imagine and describe the visit of an imaginary artist to a local hotel or guesthouse.

The challenge is to **invent a historic trail of artists** who lived in your area. Decide how many streets or roads to include; ten invented artists should be sufficient to make a convincing guide. You will need to describe their lives (biography) and their work as painters or sculptors. You will also need to provide an example of each artist's work (their most well known one as you imagine it) – use your art materials to produce it yourself.



4 What will happen next?



Links to: Design & Technology, ICT

Activity description

Since 1900 we have seen huge changes in the way technology has developed. A snapshot of the years 1900 to 1909 shows this very clearly; in that period not only was the teabag invented but Einstein, perhaps the most famous scientist in history, described his famous equation $E=mc^2$.

1900

Charles Seeberger redesigned Jesse Reno's escalator and invented the modern escalator.

1901

Hubert Booth invents a compact and modern vacuum cleaner.

1902

The birth of the teddy bear.

1903

Edward Binney and Harold Smith co-invent crayons.

1904

Teabags invented by Thomas Sullivan.

1905

Albert Einstein published *Relativity: The Special and General Theory* and made famous the equation $E = mc^2$.

1906

William Kellogg invents Corn Flakes.

1907

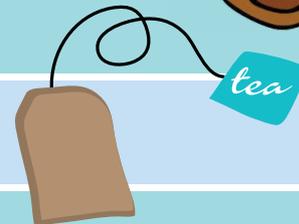
The very first piloted helicopter was invented by Paul Cornu.

1908

Cellophane was invented by Jacques E. Brandenberger.

1909

Instant coffee was invented by G. Washington.



$E=mc^2$



In the twentieth century we saw rapid change in energy production and methods of using natural resources, plus a continuation of the development of communications technology.

1971

First email sent. Ray Tomlinson was the first user of the @ sign, now used as standard in all email addresses.

1988

First computer virus created and sent by Robert Morris. The "Worm" virus caused a lot of trouble for 6000 to 60,000 people linked to the same network.

1990s

The Worldwide Web (WWW) is born when Tim Berners-Lee developed Hypertext Mark-up Language (HTML).

www.worldwideweb.com

In the twenty-first century communications are at the centre of technological development (so far!).

2004

Facebook, the social networking site, is launched in February 2004. Facebook was founded by Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz and Chris Hughes.

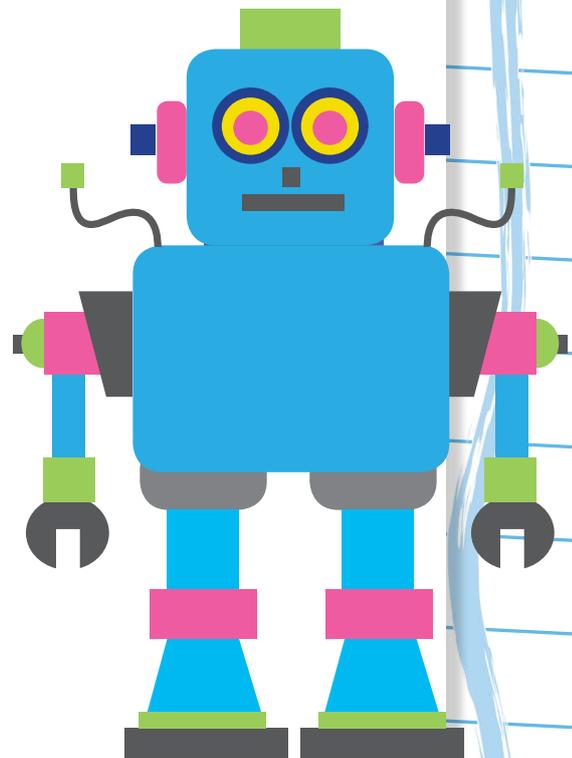


What will happen next?

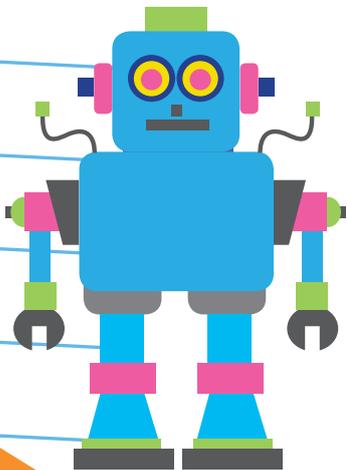
Imagine the control systems, robots and other devices that could be developed to make home life more secure, easier and fun.

Think about how the mobile phone/smartphone will develop (or be replaced!). **List all the inventions you can that are used daily in modern life. Note them all down, then choose the most important. How might they develop in future?**

Using the chart on the next page, **complete a time line showing the developments you think will happen over the next decades.** Write down the name of the development or invention you see being developed or being necessary to develop and next to it a drawing and description of what or how you think the invention will look.



Decade	Development / invention	Drawing / description
2010 - 2020		
2030 - 2040		
2040 - 2050		
2050 - 2060		
2060 - 2070		
2070 - 2080		
2080 - 2090		
2090 - 3000		



PLUS... Over the centuries there have been some wonderful developments made with toys. What toys do you think children will need to help them have fun in the future?

Imagine a toy that will make children feel safe and happy. Design and draw the toy and then make a model of it. Is it brilliant? Copyright your design and approach a toy manufacturer with your idea!



5 Find numbers at home

Links to: Maths

Activity description

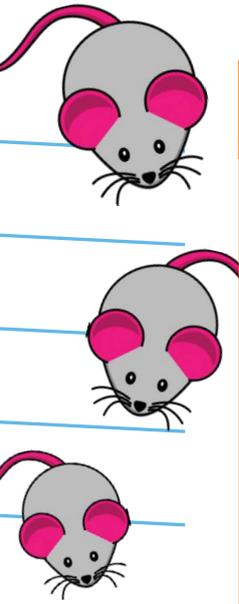
Counting and classifying can be great fun!

How many numbers can you find in your home? Start this activity by counting how many people are in your family. How many females and males are in your family group? If you have pets, how many do you have? Are they all different? How many dogs, cats, birds, mice or fish do you have? How many of everything do you have? Light bulbs, doors, cupboards, televisions, computers, floors, ceilings... numbers are everywhere!

Make a list of twenty things you can think of counting that are in your home.

Number	Type of thing counted	Can you divide these things into sub-sets?
4	People	(For example, 2 males and 2 females)
	Animals	
	Doors	
	Tables	
	Chairs	
	Windows	
	Electric plugs	

7
12
10



Number	Type of thing counted	Can you divide these things into sub-sets?
	Rooms	
	Shoes	
	Penguins	
	Rocket ships	
	Curtains	
	Bags	
	Televisions	
	Computers	
	Mice	
	DVDs	
	Radios	
	Mobile phones	
	Ants	

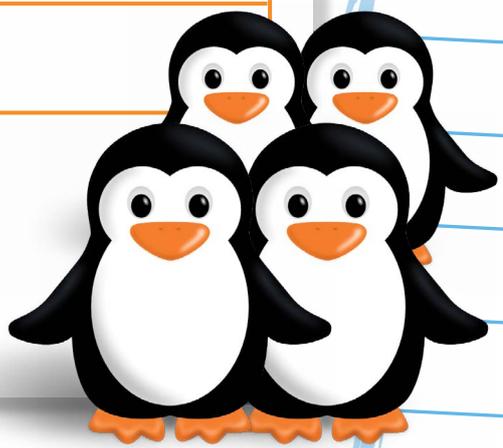
20

9

12

36

10



6 Musical beliefs

Links to: Religious Education

Activity description

Two well-known and successful musicals have been written by Andrew Lloyd Webber, with lyrics by Tim Rice. One is the rock opera **Jesus Christ Superstar** and the other is **Joseph and the Amazing Technicolour Dreamcoat**. Musical and plays about what people believe can be popular and a good way to help ideas be understood and talked about. There is even an opera about a famous composer, Wagner, and his interest in Buddhism. Music and beliefs seem to go hand in hand.

Talk to your mum or dad about what you each believe in and start to collect ideas for a music show that would express these ideas about what it means to be alive and in the world. **You could start by writing a list of your important songs** – listen to music as much as possible to find ‘new to you’ music you could include on your list. Then you could try to **put together a collection of the music you think best expresses what you believe in**.

PLUS... Why not write your own musical about what you believe in? You could use characters from existing stories that you think would tell your story or, of course, invent characters and a whole new story to describe what you believe in and how you think the peoples of the world should behave. **You do not need to be able to write music in the classical way as you could draw your ideas or write what kind of sounds you want played and when you want them played.**

A very large number of famous rock and pop musicians cannot read music and simply write their songs (if they are songwriters as well) by working out the melody on an instrument and memorising it or note down their music on what is called a graphic score in which the music is represented using symbols and illustrations.

Complete your musical and seek out musicians willing to perform it. Why not?



7 The Lost City

Links to: History

Activity description

In the 11th century Dunwich was one of the greatest ports on the East coast of England: a crusader port, a naval base, and a religious centre with many large churches, monasteries, hospitals, grand public buildings and even a mint. Its citizens grew wealthy from trade, shipbuilding and fishing.

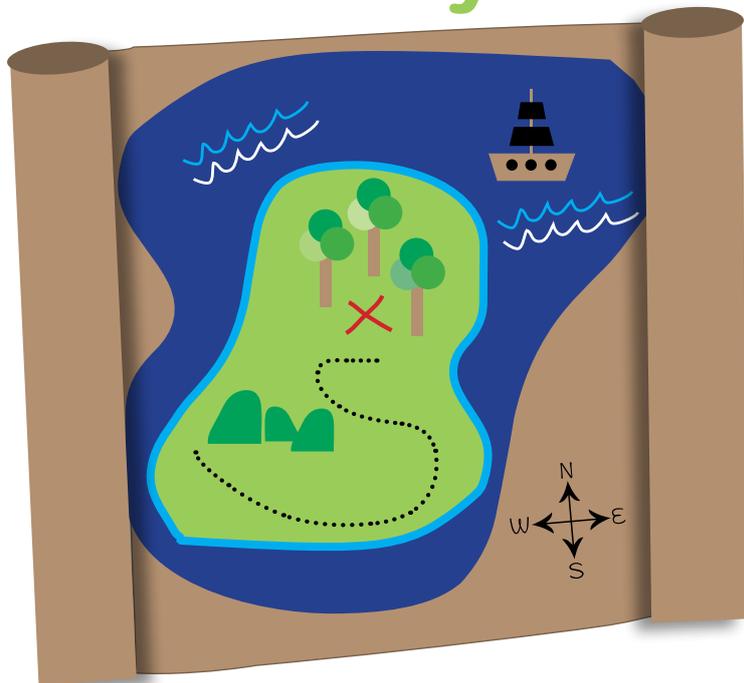
It had half the population of London and two seats in Parliament.

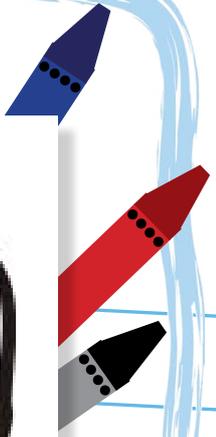
On 1 January 1286 a large storm swept much of the town into the sea, and the River Dunwich was partly silted up. Residents fought to save the harbour but this too was destroyed by an equally fierce storm in 1328, Another large storm in 1347 swept some 400 houses into the sea.

Most of the buildings that were present in the 13th century have disappeared, including all eight churches, and Dunwich is now a small coastal village. A popular local legend says that, at certain tides, church bells can still be heard from beneath the waves.

Using a special technique of acoustic imaging technology, images has shown that medieval buildings from the great storm have survived up to 10 metres below the surface of the sea. The research, funded by English Heritage, has produced the most accurate maps to date of Dunwich's streets, boundaries and major buildings.

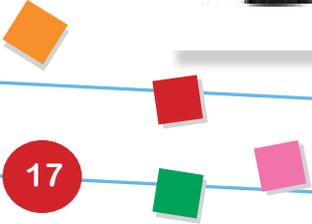
Imagine that underneath your home are the remains of a lost city or ancient port, covered by a great sandstorm thousands of years ago. Everything in the city is perfectly preserved and it is like no other city anywhere in your country. Bring the city to life again by using the scroll on the next page to draw a detailed map of what you imagine is buried beneath the area you live in. On your plan show all the important buildings, roads and waterways. What were the houses like? What were the ships and boats like? You could also make a 3D model of your lost city, or write stories about it.





The lost city of...

A large, hand-drawn scroll with a decorative, irregular border. The scroll is unrolled, showing a blank space for writing. The top and bottom edges of the scroll are rolled up, with the text 'The lost city of...' written in a cursive font on the top edge.

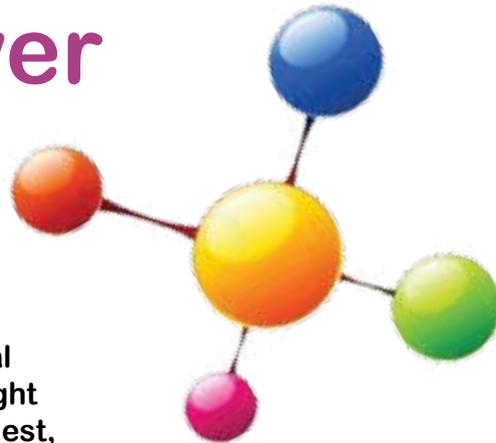


8 Paint power

Links to: Science

Activity description

Graphene paint could power homes of the future. Houses could be painted with a new super-material that generates electricity from sunlight and can even change colour on request, following new research at the University of Manchester. For an introduction to the **amazing qualities of graphene** visit: <http://jasenpages.hubpages.com/hub/What-is-graphene>



What would be the effect on homes and the world if all our energy needs could be met by painting buildings with graphene? In particular, what would it mean for the people of Africa, Alaska, the UK, UAE and other oil producers? What might the consequences be for spaceships, ships, aeroplanes, trains, and cars?

PLUS... Professor Kostya Novoselov, one of the Nobel Laureates who discovered graphene, was reported as saying:

"We have demonstrated that we can produce a very efficient photovoltaic [sun powered] device. The fact it is flexible will hopefully make it easier to use. We are working on paints using this material... but that is further down the line."

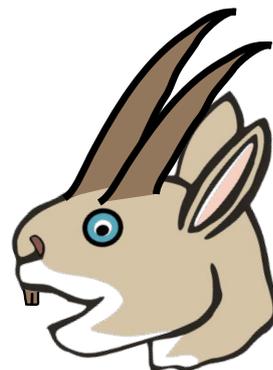
What paints can you imagine that would change our lives completely? A flying paint or a healthy paint, maybe?

Discuss this idea with your family and friends to find out what they think, then **invent your special paint**.

Draw a can for it, making sure you highlight the benefits so people understand how truly innovative and revolutionary it is.



9 Listen for the tree squeaks!

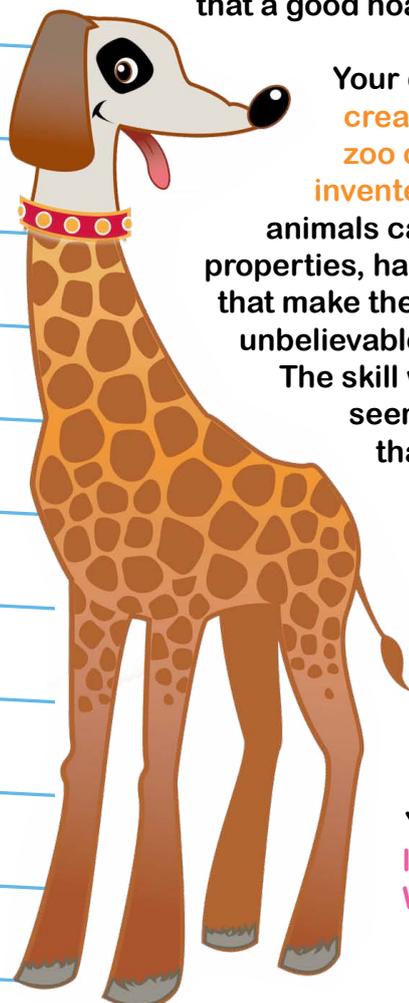


Links to: English

Activity description

In literature there's a strong tradition of nonsense writing. This activity invites thinking about nonsensical but almost believable animals and creating stories about them to tell to your friends and family.

Among the many hoax creatures invented over the years are the upland trout (a tree-living fish), the tree squeak (a mammal that can be heard squeaking when a high wind blows), the snow snake (found only in snow), the squonk (which can literally dissolve into its own tears) and the rubrado, which, if eaten, will cause one to bounce. These wonderful fictitious animals (<http://www.museumofhoaxes.com/tall-tales/jackalope.html>) show that a good hoax is grounded in some truth.



Your challenge is to create an 'A to Z' zoo of completely invented animals. The animals can have abilities, properties, habits or skills that make them believable and unbelievable at the same time. The skill will be in making them seem 'possible' rather than impossible.



PLUS... The hoax animal the jackalope, a rabbit with antlers, has become such a popular concept that there is a large statue of a jackalope in Douglas, Wyoming in the USA. Choose your favourite A-Z hoax animal. How could you make it so famous that a town or a school adopts it as their mascot?

You could also draw your animal hoaxes on one large poster and sell them to raise money for the World Wildlife Fund.

9 Slow down for sheep



Links to: Citizenship

Activity description

Ask an adult to accompany you during the research phase of this activity. (An enthusiastic researcher might forget basic road safety rules!)

A flock of fake green sheep was installed at a roundabout in West Sussex to promote the South Downs National Park. After complaints and concerns from drivers who reported animals roaming loose at the junction, the fake sheep were put behind barriers to reassure motorists. The flock now has a steel shepherd made by a local artist. West Sussex County Council hope that motorists and their passengers will enjoy the collection of statues and that they find time to visit the South Downs National Park.

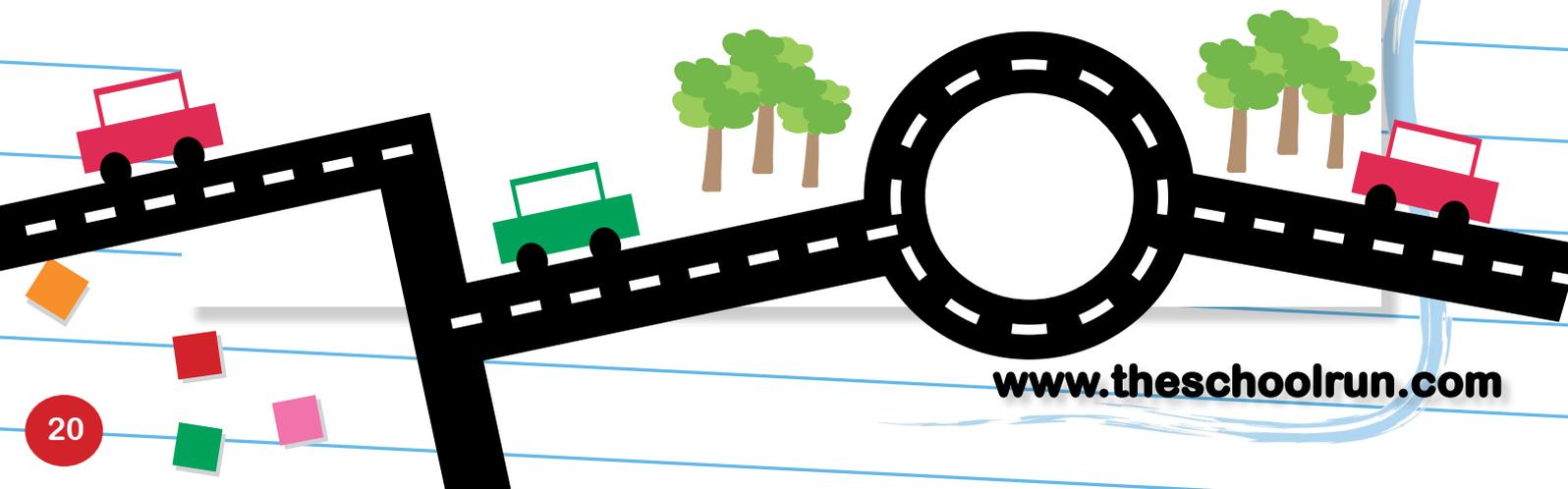
Choose a roundabout or accident hotspot near where you live where you'd like to place a sculpture or collection of art works. Begin this project by deciding exactly what mood you would want the motorists using the roundabout or junction to be in after seeing your sculpture.

Ask yourself some questions, for example, is there a problem at the roundabout? Do people drive too quickly or rush across the junctions without thinking?

What animal sculpture would make people slow down or calm down and concentrate on what they are doing?

Research the issues, decide on your design and make a maquette (a small scale model) of your proposed sculpture/s.

PLUS... Why not make drawings of your designs and take or send them to our local County Council Planning Department? They might be interested in your work and could even have some ideas about sponsorship to help your ideas become real sculptures.



11 Play to learn

Links to: Personal, Social and Health Education

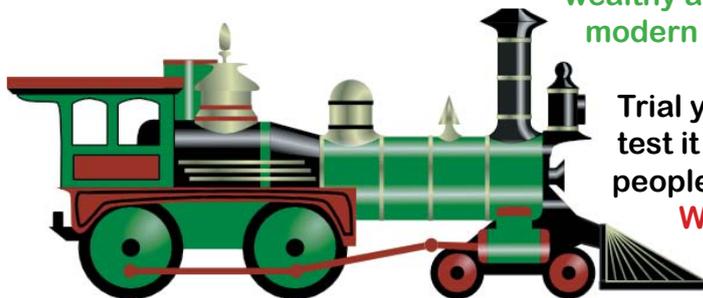


Activity description

What are toys for? Is every toy a learning object? **Frank Hornby (1863-1936) became world famous as the inventor of some wonderful 'educational devices for children and young people', i.e. toys.** He invented and was responsible for the production of three of the most popular lines of toys of the twentieth century: Meccano, Hornby Model Railways and Dinky Toys.

The toys produced by Frank Hornby were designed to improve the skills of young people and to further interest them in manufacturing. **What skills and abilities do you think young people need to have today?** Discuss with your family what they think young people should know to be successful. Compare their ideas with those of your friends.

Produce a board game/playground game for four or more players where the winner gathers together everything they need to know to be a healthy, wealthy and popular person in modern society.



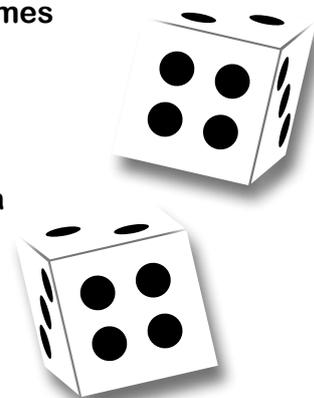
Trial your game with friends and test it with as many different people as possible to improve it.

What will you call your new game? Will your game be a game of chance or skill or both? What are the rules?

What questions do you need to ask before you start making the game?

PLUS... Not every game is an application for a computer or smartphone. Board games remain popular and games producers are always interested in new ideas.

Ask your parents or carer to help you research game makers so that you can present your prototype game to them for consideration. Remember to send a full description of your game to someone you trust, either by email or letter, to protect your copyright. When you have done these things wait to hear from the manufacturer!



12 What would you like to find?

Links to: English

Activity description

Imagine you have been given a box. On the outside of the box there are no drawings or words, in fact there is no outward clue as to what is inside the box. **What would you like there to be in the box?** If you are with a friend you could ask them what they would like to find in the box, too.

With you friends or family, sit down with a selection of containers you have chosen and play a game of each person saying what they would like to find in the containers and why.

PLUS... A variation of this idea would be to imagine different places to find something. For example, what would you like to find in a forest or a swimming pool or an abandoned house? Discuss your ideas with whoever is doing the activity with you and each draw your own version of what you would like to find.



13 Form a Waste Band

Links to: Music

Activity description

Found objects can be transformed, very simply into music making instruments. Reusing kitchen (clean and safe) items is a fun way to make musical instruments and recycle materials. Using kitchen equipment to make sounds is a traditional activity performed by children all around the world.

A yogurt pot covered with taped-down clear plastic is a drum, blowing across the open top of a half-filled bottle makes a strange eerie noise which can be tuned by altering the amount of water in the bottle, a strong box can be strung so as to produce a instrument that can be played. Larger containers can be used to make drums and metal lids can be used as cymbals.

What music can be made with items saved from the rubbish pile? Paper can be wrinkled to a beat, bottles can be tapped, tins with a few dried beans can be shaken – what will you create?

Now move to the next stage: invite a group of friends and family to create a strings, bottles and pans band. What will you all play as your first piece? Will you have a performance set of clothes as brass bands and classical orchestras do? Will your formal clothing be made completely from recycled items and garments? You are going to be busy!

NEXT! Music notation (See activity 6, Musical beliefs) uses traditional symbols and layout to record music, but there is no reason why you and your child shouldn't develop a new notation for recording musical scores. Instead of quavers and crochets you could use drawing or descriptions of the noise you want a player, band or orchestra to make (for example: 'make the noise of an oven door opened when bread has just been baked').



15 Compile a travel-diary hoax

Links to: English

Activity description

The stories described by Sir John Mandeville were fantastic. His travels took him to Egypt, Ethiopia, India and Persia (the modern-day Middle East), around the year 1322. He described creatures who had the bodies of humans but the heads of dogs, a tribe of people who fed on the smell of apples, small people who only ate soup through straws, one-eyed giants, wild men with hooves, people with eyes in their shoulders, vegetable lambs growing on trees and people with only one foot (monopedes). All his descriptions were woven together with geographical and travel information that was perfectly accurate. **The only problem with the writings of Sir John Mandeville is that he never existed as a person;** an unknown English or French writer produced what proved to be one of the most popular books of the late Middle Ages (hundreds of medieval manuscript copies of it still survive). The whole book was a hoax, a work of fiction based in fact.

Imagine you have written a book about a hidden world you have travelled to and that you are the only person who has so far visited this world. How would you convince readers of the truth of your hoax? What would the people you meet in this undiscovered country be like? Would the world you talk about be hidden in everyday life (as in *The Borrowers*) or through a secret entrance (like Narnia)? **Would you write an 'old book' 'discovered' in the loft or a cupboard of your home? When you have decided, write and illustrate your hoax book. Don't forget to invent a pseudonym for your writer-adventurer!**

PLUS... When you have finished your book **ask someone you trust to read the book and tell you what they think of it,** the good as well as the bad, so that you can improve it before 'hiding' handwritten copies of your book in places people might find it by accident...

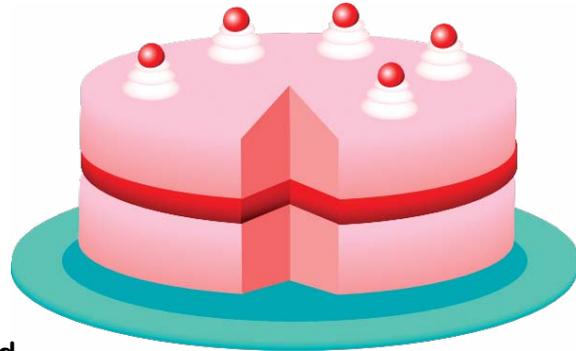


15 Queen Victoria eating Victoria sponge

Links to: History

Activity description

Choose a special person from history that you have studied and found interesting and **plan a special celebration party to remember them**. What foods and drinks would be appropriate? Should there be games and dressing up?



Historical figures to consider:

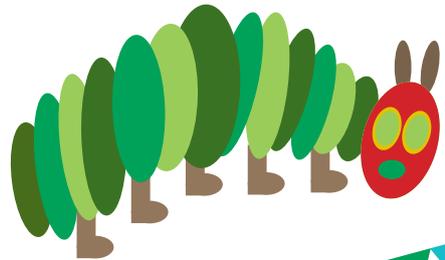
Queen Victoria
Galileo
Roald Dahl
Leonardo da Vinci
William Shakespeare
John Lennon

When you have designed the menu for the party (making the food will be a challenge but with the help of a suitable adult all things will be possible!), why not see if your family are willing to **dress up as the historic character that you have chosen to celebrate**? A room full of Queen Victorias eating Victoria sponge would be mind-boggling!

PLUS... Choose a fictional character and **design the perfect snack for them to eat on their adventures**. You could organise a giant snack event where everyone has to come dressed as a character from the book, film or cartoon your character is chosen from.

Harry Potter
Tracy Beaker
Peter Pan
Matilda

Horrid Henry
Doctor Who
The Hungry Caterpillar
Winnie the Pooh



17 Moody weather

Links to: Science

Activity description

Is your classroom calm on a rainy, windy day? Is your home happier on a sunny day? **This activity is about researching how people feel in different weather conditions.**

Your first task is to make a weather station. You will need a rain gauge, a wind vane, a thermometer and a box for your thermometer. All the instructions you need to make your own can be found at the Met Office Education website:

<http://www.metoffice.gov.uk/education/kids/things-to-do/weather-station>

You need a weather diary (you'll find one on the next page) to **record the measurements from your weather station on a regular basis.** You should take measurements at the same times each day.

As you start keeping records of the weather you should also **keep records of people who live in your home (or who you meet on a regular basis) and their moods.** For example, on a rainy day are people happy?

There are three very important things to consider if you choose to do this activity.

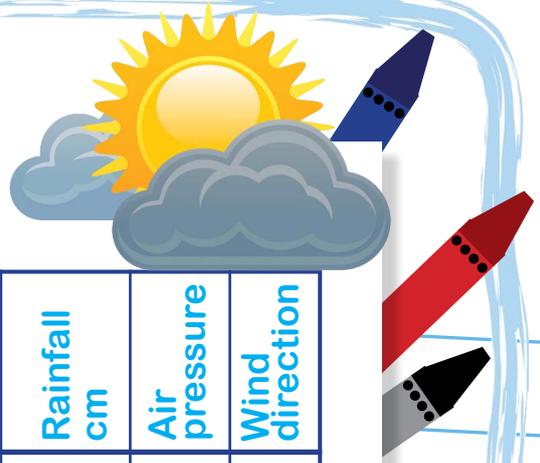
- 1 Tell an adult you are doing it; if you are lucky they will help you construct the instruments you need for your weather station.
- 2 Tell the people you are going to observe and write about all about your experiment so they can agree to you doing so!
- 3 Stick to documenting the weather and reading people's moods every day as accurately as you can.

By following these three important guidelines you will create an original piece of scientific research of interest to psychologists as well as meteorologists.

What uses can you think of for the information you collect? How could it be used to make people's lives better?



Weather diary



	Date	Time	Weather	Temperature °C	Rainfall cm	Air pressure	Wind direction
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							
Sunday							



18 Spoon feeding

Links to: Science

Activity description

This activity is about lateral and creative thinking. Not everyone has a garden or a lot of space to grow food. Most people, however, have some space they could use for growing something, whether it's a pot or a window ledge.

What could you grow in:

A spoon?

A shoe?

A dark cupboard?

A glass bottle?

A fridge?

A coat pocket?

A bucket?

A Wellington boot?

Your bedroom?

Your school?

Your road?

Your village, town or city?



Which one of the above (or another growing area not mentioned) do you have available? If you and your friends all have old Wellington boots you could buy a packet of carrots together, fill the old boots with soil/compost and plant a few seeds in each boot. When it comes to harvest time, see how many carrots you grew together. (As a bonus, if carrots are grown in a high boot you should not have a problem with carrot flies.)

A garden does not have to be one place!

PLUS... Think about spaces that get a lot of sunshine and rain but are not used for growing anything. What, for example, could grow in a garden on the roof of a bus?

"Maybe a person's time would be as well spent raising food as raising money to buy food." Frank A. Clark

19 Design a home for bumble bees



Links to: Design & Technology

Activity description

Bumble bees' existence is now challenged by pesticides, changes in climate, temperature changes, changes in seasonal behaviour, parasites, and diseases. Given the dangers they face, it would seem sensible to **design future-proof houses for bumble bees to live and be secure in**, houses that not only shelter them but keep them healthy as well.

Your task is to find out all you can about bumble bees, then design a house for them. Send a copy of your design and thoughts about how it would help bumble bees prosper in the future to the Bumblebee Conservation Trust (<http://bumblebeeconservation.org/>).

PLUS... 'Bumble bee' – doesn't that have a lovely ring? But why 'bumble'?

bum•ble

v. bum•bled, bum•bling, bum•bles

v.intr.

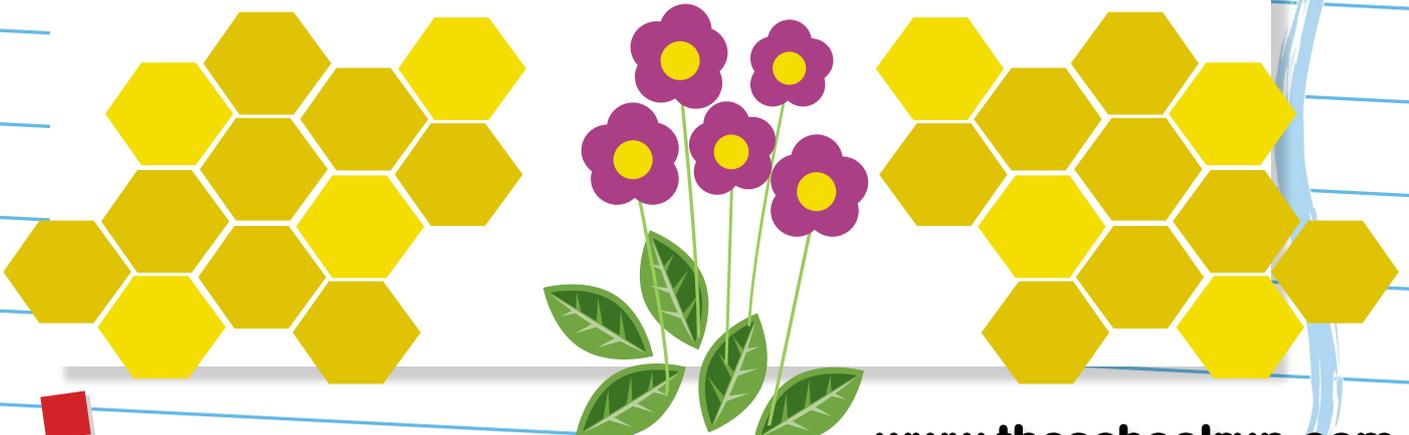
1. To speak in a faltering manner.

2. To move, act, or proceed clumsily.

v.tr.

To bungle; botch.

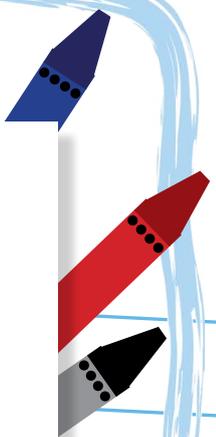
It is clear that **bumble bees (once named 'humble bees) are extraordinary creatures** – they fly, produce honey and have been alive as a species for a very long time (bee fossils date from the early Cretaceous). Yet we think of them as clumsy creatures!



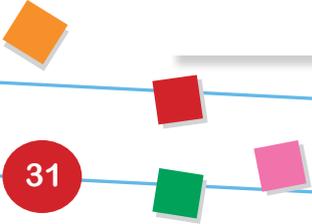


Make a list of animals and birds and note down in the first column what each animal's characteristics are.

When you have finished your list and thought about how the name of each creature influences the way we think about them, invent a new name that will influence us to think of the animal in a positive way.



Animal	Character	New name
Bumble bees		
Hyenas		
Vultures		
Sharks		



20 Have a fun day out (at home)

Links to: Art and Design

Activity description



'Days out' can be very expensive but why travel away from home?

What 'days out' can be created using your family home?

1 Produce a Guide to Days out at (Your Address). List all the rooms, outside spaces or any large cupboards, cellars or loft space that you and your friends or family could visit.

2 Make a 3D model plan of your home as a collection of adventure rooms. What would be possible? Is there room for an activity playground?

NEXT! People often like to send friends and family postcards from places they have visited. Use the template below to design a postcard about your day out at home. For example, on one side you could produce a drawing of the kitchen; on the other a message and the recipient's address.

POSTCARD

A template for a postcard. The word "POSTCARD" is written in large, grey, sans-serif capital letters at the top left. To the right of this is a rectangular area with a scalloped border, intended for a postage stamp. Below the stamp area are five horizontal lines for writing a message. On the left side of the postcard, there is a vertical line indicating where to fold. To the left of the postcard, there are illustrations of a green bag, a red shovel, and a pair of scissors. To the right, there are illustrations of yellow castles with red and blue flags.

21 Geometrical gourmet



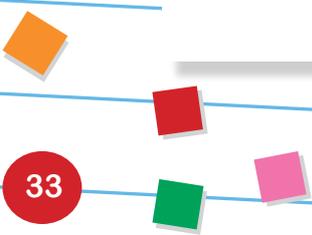
Links to: Mathematics

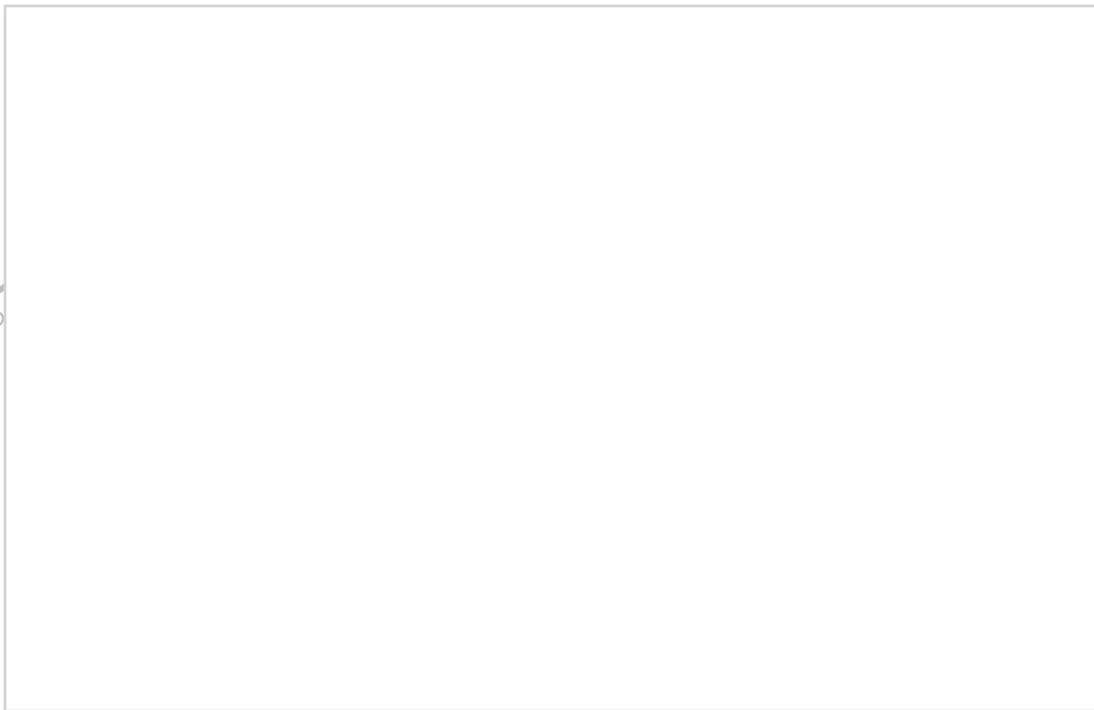
Activity description

Can you see or think of food that is geometric?

Sandwiches, cut diagonally, make triangles, flapjacks are square and an apple is a sphere. **Which foods are served in the 2D and 3D shapes in the table below?** List foods in the left-hand column and write/draw foods in the right-hand space.

Shape	Food
Triangle	
Rectangle	
Circle	
Cuboid	
Hexagon	
Pentagon	
Cylinder	
Pyramid	
Cone	
Sphere	





What foods would you need for a geometric picnic? Draw them in the box above (shaped correctly!).

Would people at the picnic drink 'flat' lemonade? Would you have a checked tablecloth to spread on the ground?

PLUS... Having planned the picnic, why not see if you can get everything you have identified and plan and put together a geometric picnic for your friends and family?

You could also work on other kinds of picnics for the summer. How about a science or a musical picnic?



22 Safe place, safe box

shhhhhh...



shhhhhh...

Links to: Religious Education

Activity description

This activity recognises that everyone at some time needs a space that is just for them. Some people are lucky and have a room to themselves but this is not always the case and even then homes can be noisy or just busy!

What would be your perfect personal place to retreat from the world?

Working with an adult, discuss what you like to think about and do to help you relax. Design a room that would be a perfect place for you to think about things that are important, a place where you could relax without any pressure or worry. When you have finished, if possible, **arrange a space somewhere that offers the surroundings you need.**

If there is no appropriate space anywhere either inside or outside your home, find a very big cardboard box and decorate the inside of it with pictures and words that calm you and bring you peace. **Draw or write on the outside that when you are sitting in the box you are not being rude but you are thinking and would like to be left alone in your own safe place.**

PLUS... If you like to retreat in silence into your own thoughts and do not want to sit in a room, garden space or box, you could design and make a privacy badge or hat. Wearing it will indicate to the world that you are thinking your own thoughts and enjoying time for yourself.



shhhhhh...

shhhhhh...

23 Weird and wonderful facts

Links to: English

Activity description

John Timbs (1801-1875) wrote lots of books about lots of different things. One book in particular, published in 1859, has rather an interesting title: *Things not generally known, familiarly explained. A book for old and young.*

Why not make a modern version of John Timbs' book and carry out some research at the same time? Ask 10 people you know well to complete the sentence: 'It is not generally known that...' Record their completed statements and collect them together in a notebook.

For example, my sentence would be... 'It is not generally known that when a crab loses a leg it can grow a new one.'

If the people you ask produce interesting answers, why not ask more people? You could email or write to family members to ask them to complete the sentence for your collection, too (if you are writing a letter, remember to include a stamped addressed envelope for the reply!).

As you build up a collection of answers you will need to decide how to publish and share your collection. Why not make sets of handwritten and illustrated postcards?

PLUS... After you have built your collection of things generally not known, read extracts from *Things not generally known, familiarly explained. A book for old and young* online at: <http://tinyurl.com/ncujhsf>

“It is not generally known that bananas grow pointing upwards!”

24 It's pizza clock time!

Links to: Maths

Activity description

With help from a responsible person, follow this recipe (or your family recipe, if you have one) and produce enough pizza dough for several pizza bases. When you have your bases ready you can put the topping on.

What are your favourite numbers? You could arrange vegetables of the right size into the shape of one big number like a 5; alternatively, if you used pieces of cheese you could make an analogue clock face (numbers 1 – 12) or a 24-hour clock with numbers to 24. **Spread tomato sauce over the pizza base before adding your topping; the cheese digits (or letters) will cook to a golden brown and your clock will be delicious to eat and share.**

Simple pizza dough

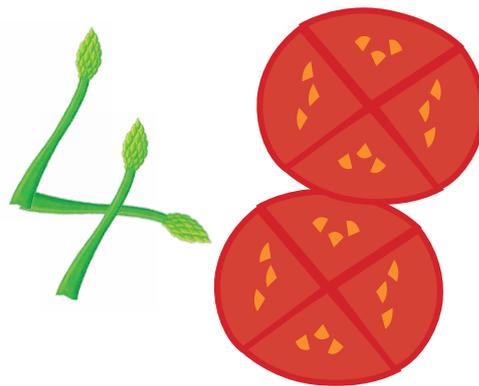
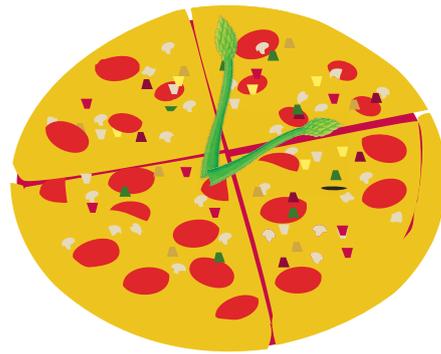
375g (13oz) plain flour
1 teaspoon salt
1 tablespoon caster sugar
7g ($\frac{1}{4}$ oz) dried active baking yeast
2 tablespoons olive oil
225ml (8fl oz) warm water

Preparation method

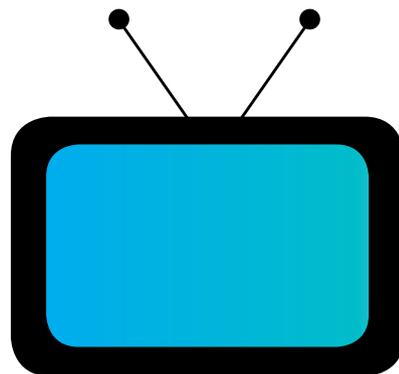
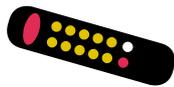
Prep: 10 mins | Cook: 25 mins

- 1 Combine flour, salt, sugar, and yeast in a large bowl. Mix in oil and warm water. Cover the bowl with a clean tea towel and leave the dough to rise in a warm place for at least an hour.
- 2 When the dough has risen, poke it with your fingers until it goes back to its former size, then spread out on a large pizza pan. Top as desired, then bake at 220°C / Gas mark 7 for 10 minutes.

PLUS... Writing on the pizza with suitable toppings means that you will literally be eating your words (and numbers). Puns and phrases could be the hallmark of a new pizza product range! Try the idea. Make a modest fortune from the 'wordy pizza' home delivery service.



25 Outside, inside, today and tomorrow



Links to: ICT

Activity description

Start by sitting in front of the television. Look around the room and **note down everything you can see that is an example of ICT in your home** (for example, a remote control, a mobile phone or a temperature thermostat). Now move around your home, again noting down anything and everything you would consider to be an application of ICT. Now it is time to go for a walk with a responsible person. You are both going to **go looking for things around where you live that are applications of ICT** (for example you might see traffic lights or satellite dishes; you will certainly see cars, packed with ICT functions and equipment from braking systems to satellite navigation systems). Your list of things and applications is going to be a big one and you will need a reasonably big notebook! As well as writing down what you see you could also sketch it.

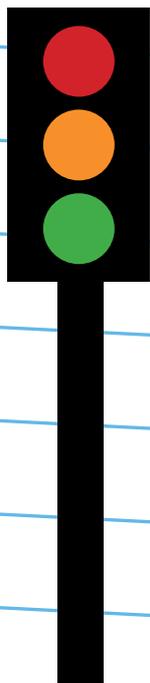
How would you classify all the different things you have seen? Would you group some things together because of where they are located? You might decide to group things that control objects together and things that provide information or entertainment together. Importantly, what does all your research information tell you about people's future needs?



It is now time to think about what ICT inventions or developments need to be made in the next ten years.

What ten new ICT machines or services do you think would improve your life and the lives of the people who live in your area? Write and draw your ideas and make a display to present to friends or family members.

PLUS... If you had a brilliant idea for a new ICT invention, why not prepare a design of it? Trust yourself to ask for help when you need it, use libraries and the internet to help you work out how your idea would work and put everything together to **make a model of your invention**. For example, you could focus on inventing a learning space. What ICT gadgets do you imagine would be needed for such a room?



26 What kind of hat would a bird make?

Links to: Geography

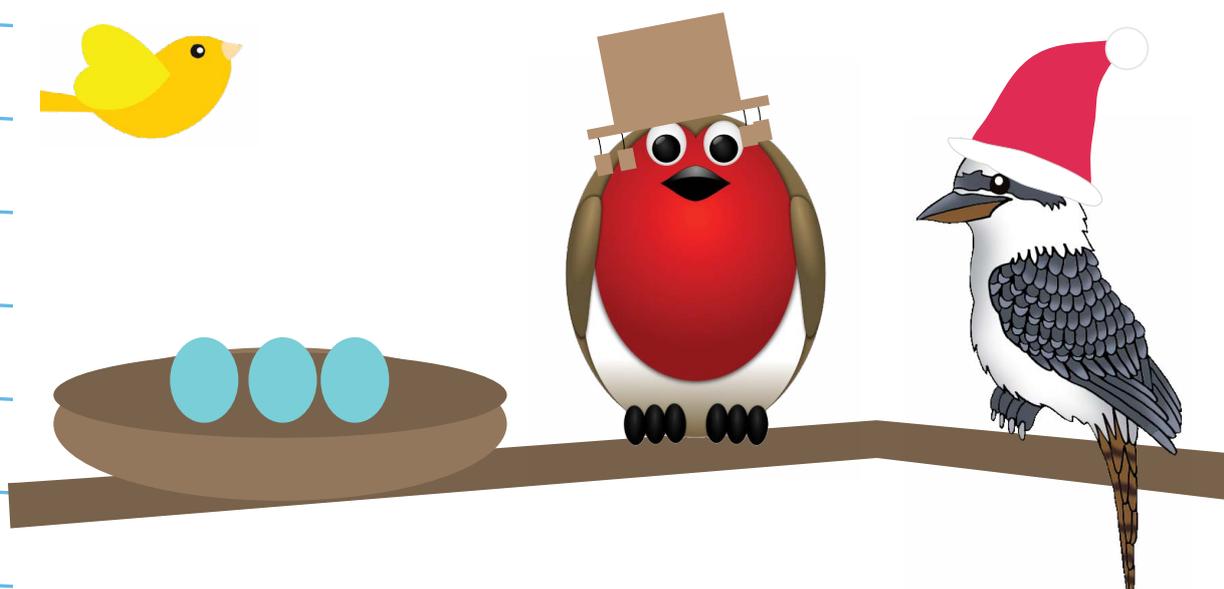
Activity description

Collect all the hats you have in the house together. What are their different uses? How are they made and what do they really say about a person?

What kind of hats would birds make? They can make nests, some by weaving and some by assembling bits and pieces. Some birds don't bother with a nest and just lay their eggs in a hole in the ground... they might not bother to make a hat but just wait to find one!

Sketch the different birds you see near where you live. Design a series of hats for the bird to wear during different kinds of weather and for different occasions (for example, a robin visiting a friend in Australia).

PLUS... Bring your drawings to life by making the hats you have designed! The one rule is that you can only use materials you find as this is how a bird makes a nest. If you need help with glueing or sewing, ask a responsible adult for assistance.



27 Spiritual heritage trail

Links to: Personal, Social and Health Education

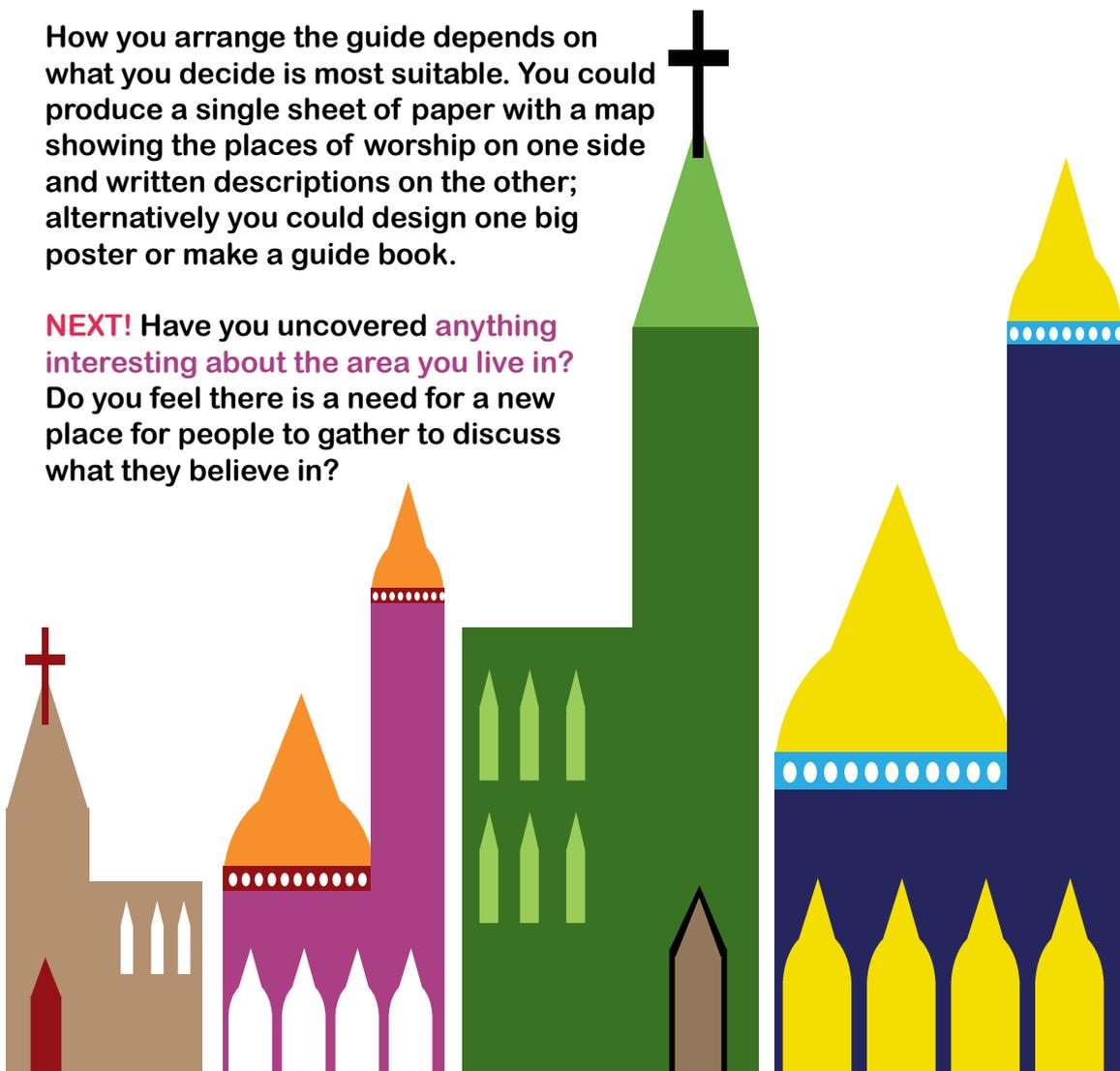
Activity description

Go for a family walk around where you live. When you return, talk about the things you have seen and in particular the places where people meet to worship, think, reflect and explore their spiritual beliefs alone or with others. Be prepared to walk a lot to complete this activity!

Produce a walking tour of the area you live in which explores your town's spiritual history. **Draw or photograph every church or place of worship.** Draw a map of where you live and show where each church or religious meeting center is located. Write a little bit about each place, its history and what happens or happened there.

How you arrange the guide depends on what you decide is most suitable. You could produce a single sheet of paper with a map showing the places of worship on one side and written descriptions on the other; alternatively you could design one big poster or make a guide book.

NEXT! Have you uncovered anything interesting about the area you live in? Do you feel there is a need for a new place for people to gather to discuss what they believe in?



28 Produce a natural history of your home

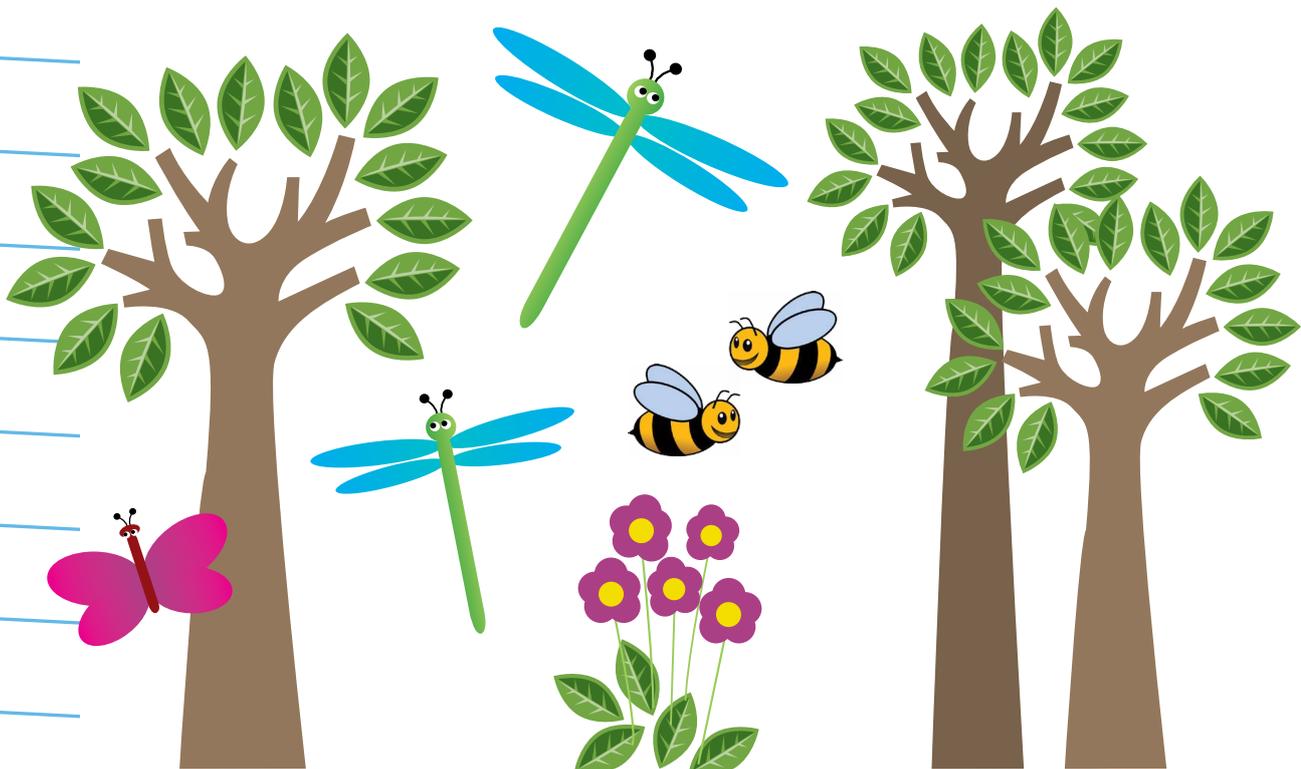
Links to: Science

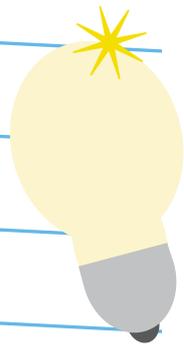
Activity description

When Gilbert White was a little boy (he was born in 1720) he was fascinated by the natural world around him and made detailed records of everything he observed that involved **plants, insects and animals**. When he grew up his collected notes about the place he lived were published in a book, *The Natural History of Selbourne* (a place in Hampshire). White's book made a valuable addition to the understanding of natural history at the time and included several very important discoveries.

Why not follow in the steps of this remarkable, modest but very knowledgeable man? **Instead of examining a village or town begin by looking at the 'nature' of your home.**

Walk around your home and make a list of ten items that are all very different from each other (you could use the table on the next page). **Ask yourself what each object is really made of.** Is an object such as a light bulb made up of different things? This activity is a challenge and it could be fun



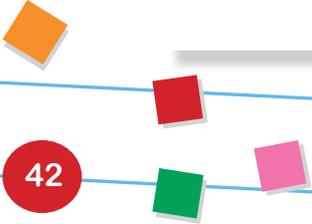
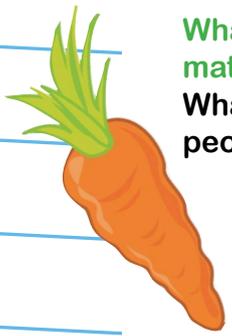


to work with at least one adult to **decide whether or not the things you have chosen to list are made from material that once lived.** (For example, it would be easy to think that plastic objects are not made from natural resources that never lived – but plastic is, of course, made from oil, derived from the deposits of animals that lived millions and millions of years ago.)

Object	Lived	Did not live	Don't know
Floor covering			
Cupboard door			
Book /magazine			
Light bulb			
Breakfast cereal			
A jacket			
A saucepan			
A carrot			
A television			
Curtains			

What problems can you envisage if there were a shortage of any of the materials you have surveyed (for example, no plastic or leather or cotton)? What could people do to make sure things were still available? Should people change the way they use things made from natural products?

PLUS... Looking at your data, **what percentage of the things you have surveyed were made from materials that were once alive? What does this tell you about the world we live in? What should our priorities for care of the living world be, do you think?**



29 Rainy day rambling

Links to: Physical Education and maths

Activity description

Summer does not always offer us sunny gentle days; sometimes it pours with rain! Choose a rainy day to work out how far you can walk **INSIDE** your home. (Remember to ask permission before going into other people's private spaces!) **Walk around all the rooms and measure how far you have walked.** Could you make the walk longer? How could you increase the distance without repeating any part of your walk? Perhaps you could walk, very carefully, around the very edges of each room?

When you think you have maximized the walking you can do in your home, time yourself. Which member of your family can produce the best walking-around-the-house time? (Don't run, that might result in an accident.)

PLUS... How many times would you need to walk around your home to walk a half marathon? (One half marathon = 21.097494 kilometres)

How many times would you have to walk around your home to travel the equivalent of walking from your home to Carlisle or Venice or Cape Town or Anchorage in Alaska?

What rule would you apply as to how to measure the walking distance when crossing water or mountains?



30 Pastry maps

Links to: [Geography](#)

Activity description

'Good food is a global thing and I find that there is always something new and amazing to learn - I love it!' **Jamie Oliver**

Use the recipe below to make pastry to roll out (cool hands and a cool rolling-out surface will help you achieve a flat and even piece of pastry to work with) and cut it into the shape of a country or a county. Experiment with different shapes to see how the pastry cooks.

With practice you'll develop some expertise in preparing and cooking pastry shapes. **Why not attempt a pastry map of Europe or a full county pastry map of England or Scotland, Wales, and Northern Ireland?** The shapes of each country could be cut out of pastry, baked and assembled before eating.

Making a map with pastry will give you bumpy bits, hills and valleys – topography. **Do any of your pastry bumps match real topography?** You could also decorate your pastry with icing rivers, silver-ball lakes, gummy-sweet mountains and more.

Quick and easy shortcrust pastry

115g (4oz) plain flour

A pinch of salt

55g (2oz) fat (butter or margarine)

4 teaspoons water (approximately)

This recipe will make about 4oz shortcrust pastry which can be used for sweet or savoury dishes.

Preparation method

Prep: 25 mins | Cook: 15 mins

- 1 Mix the flour and salt in a mixing bowl. Cut the fat into small pieces; rub it in with your finger tips until the mixture looks like fine breadcrumbs.
- 2 Add the water a little at a time, mixing with a knife until the ingredients stick together. Using one hand, collect the dough together and knead lightly to make it smooth and firm. Flatten the dough into a disk, wrap it in clingfilm and chill in the fridge for 15 minutes.
- 3 Bake the shaped dough in an oven preheated to 190°C (Gas Mark 5) for around 15 minutes or until the pastry looks pale gold.