Design and Technology

It is a great opportunity to get creative and practise designing and then creating your designs. DT is also about looking at what you have created and evaluating it. Here are a couple of project ideas for you to have a go at designing and creating using materials you should have around your house. The theme is flying so we will think about birds and kites

Bird feeders Junk Model Project:

In DT, it is important to first of all think about **who** or **what** you are creating your project for. If you are making a bird feeder who are you making it for? You also have to think about why you are making a bird feeder. What is your birdfeeder for?

Who or what are you creating your birdfeeder for?

Have you noticed any birds flying in your garden or windows? What different types of birds have you seen? Below is a list of common birds that you might be able to spot on your daily outdoor walks or in your gardens. These birds are common in the UK.

The Common Blackbird

These birds are all black except for its yellow eye-ring and bill (name for the beak). They have beautiful songs that are most likely the ones you hear in the morning. The males are black and the female are dark brown. They eat insects, worms, berries and fruits.

House sparrow

It is a small bird and common around the world and found in urban (built up places) spaces where lots of humans are. They are brown, grey, white and brown. It eats seeds, grains and weeds as well as insects.

Robin

Is a small and friendly bird and very common in gardens as they are not too afraid of humans. They are drawn to gardeners because they dig up the soil and the robin can easily find worms. They also eat seeds as well as insects and berries.

Great Tit

These are small birds with a black head, neck with white cheeks and olive body. They have adapted well to human activity and can be found in urban areas as well as woodlands and gardens. They eat insects and large seeds.

Common woodpigeon

These are quite big birds and very common in urban areas as well as parks and gardens. They eat nuts, grains and berries as well as worms and ants. They are seen as a pest by farmers.

Jackdaw

A jackdaw is a bird that is part of the crow family. They are black with a grey head. They live in woodlands and urban areas. They are big birds and eat a lot of things and can steal food! They also eat the food waste from the urban areas.

Starling

They are black but when you look closely they have a green shine to the feathers. They are a noisy bird and you often see them fly in the sky in big groups! They eat insects, seeds and fruit and can be useful to farmers. They can also be annoying to farmers because they sometimes eat their crops.

Looking at other birdfeeder designs to inspire you!
Which is your favourite? What do you like about some of them? What do you not like about some of them?









It's now your turn to design! Use this page to put some ideas down then use the next page to create your final design.

Think about: What materials are you going to use? Do you have these at home? How will the birds be able to get the food? Will you make it squirrel proof so that they can't steal the food? Will it be colourful? How will it hang or stand up? Is it for small birds or large birds? How big will it be?

My Final Design

Name: _____

I am going to make: _____

Draw an annotated picture of your design in the space below.

The tools that I need are:

_____
_____
_____
_____
_____
_____
_____

The fabrics and materials that I need are:

_____
_____
_____
_____
_____
_____
_____

It is time to create your bird feeder! If you don't have the right materials or don't know where to start, here is one method for creating a birdfeeder. It is always good to use materials that would be thrown out and recycle them! Please make sure an adult is present to help you with any cutting!

MATERIALS

Plastic bottle
Two wooden spoons
Sharpie marker
Craft knife
Scissors
Floral wire

DIRECTIONS

- With a sharpie marker, draw a small circle on one side of the bottle about 4 inches from the bottom. Cut it out (using a craft knife) and make sure the end of the spoon fits snugly into the hole.
- Directly opposite this hole, cut a slightly larger hole (using a craft knife and scissors). Make sure the big end of the spoon can rest in the hole.

- Repeat this process approximately 2 inches from the bottom of the soda bottle, but use the opposite sides of the bottle so your spoons are at a 90 degree angle to one another.
- Make a hanger out of floral wire and secure to the top of the bottle.
- Screw the top on and hang from your favourite place.

(If you don't have spare spoons, in the past we have used straws or even sticks for the birds to perch on)

Here is another way that you can create your birdfeeder using a plastic bottle:
https://www.youtube.com/watch?v=WnvHRQwoSxQ

Or try this one using a plastic bottle and pencils:
https://www.rspb.org.uk/fun-and-learning/for-kids/games-and-activities/activities/make-a-recycled-bird-feeder/

Bird Feed

Below are some feed recipes for you to put in your feeders to attract lots of beautiful birds!

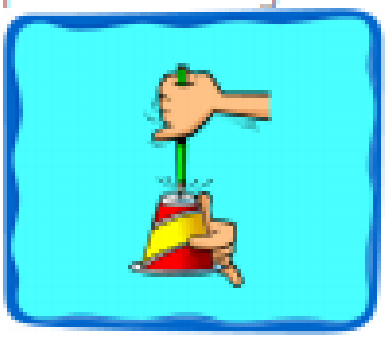
You will need for this recipe:

Good quality bird seed
Raisins
Peanuts
Grated chees
Lard
Yohgurt pots
String
Mixing bowl
Scissors

PLEASE NOTE: This recipe is not suitable for children with nut allergies to create.

Step-by-step guide

1. Carefully make a small hole in the bottom of a yoghurt pot. Thread string through the hole and tie a knot on the inside. Leave enough string so that you can tie the pot to a tree or your bird table.



2. Allow the lard to warm up to room temperature, but don't melt it. Then cut it up into small pieces and put it in the mixing bowl.

3. Add the other ingredients to the bowl and mix them together with your finger-tips. Keep adding the seed/raisin/cheese mixture and squidging it until the fat holds it all together.

4. Fill your yoghurt pots with bird cake mixture and put them in the fridge to set for an hour or so.

5. Hang your speedy bird cakes from trees or your bird table. Watch for beautiful birds to come to your garden. **It does take a little time for birds to realise you have food for them so wait a couple of weeks!**

Evaluation:

Once you have created your beautiful bird feeders you can take a picture of it and think about its creation. Evaluating is all about looking at your work and asking some important questions that means next time you create a birdfeeder it will be even better.

What do you like about your birdfeeder? What do you not like about your birdfeeder? What did you find hard about making your bird feeder? What would you do next time to make it even better? Do the birds like coming to your feeder?

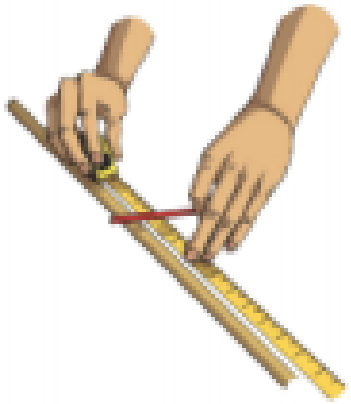
Fill out the sheet on the next page to evaluate your birdfeeder. Take photos of it and send to school as we would love to see them!

Design Technology Project Evaluation Sheet

Aim of the Project:

What Worked Well?

Challenges I Faced



How I Dealt with Any Challenges

What I Would Change Next Time

Kites

A kite is an object that flies by opposing the force of the wind with the tension of a string held by the person holding the string. Those flown by lots of children are often shaped like a diamond. Kite flying is very popular in China, Japan, India and many other countries. In some countries 'kite fights' are held, in which many people gather and fly kites and try to snag each other's kites or cut the other kite down.

Kite flying most likely started in China when paper was developed. They used bamboo, silk and paper for all their kite designs. Their kite designs usually resemble flying insects, birds and other creatures that are either real or mythical. Kites need to be made with lightweight material and over time different materials have been used to create more lavish designs.

Kites were so important for the development of different inventions such as the aeroplane. They are also used in festivals such as the Indian festival of Makar Sankranti, celebrated in spring.

Kites were and are really useful.

Military:

They were first used during war by the Chinese where kites were flown carrying weapons. Some other kites used in war showed troops where to go and also often scared the enemy.

Science:

Kites helped develop the first aircrafts and larger man-lifting kites were created to help develop this further. They are even sent into the sky to help predict different weather all around the world.

Underwater:

Underwater kites are being developed as a way of collecting power from the flow of water. How exciting!

The Kite that Bridged a River

http://www.kitehistory.com/Miscellaneous/Homan_Walsh.htm

You may have heard of the amazing Niagara Falls, a huge waterfall that lies between Canada and America. In the 1800s it became so popular that designers wanted to make it more accessible to everyone by building a bridge.

In November 1947, an engineer called **Charles Ellet Jr** was contracted to build the bridge. He found a good place for the bridge which was the narrowest part of the gorge but above the Whirlpool Rapids.

However there was a problem! Suspension bridges need to begin by stretching a wire across the stream but the rapids made it almost impossible. Rockets and canons were suggested as any small boat would be washed away by the rapids.

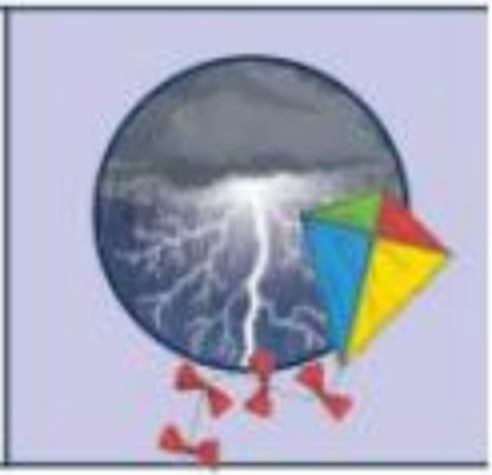
A kite contest was then suggested! A cash prize would be given to the first boy to fly his kite to the opposite bank. In January 1848, there was a huge turnout to the competition and 15 year old Homan Walsh won the competition on January 30th and a stronger line was attached to his kite and began the construction of the first bridge.

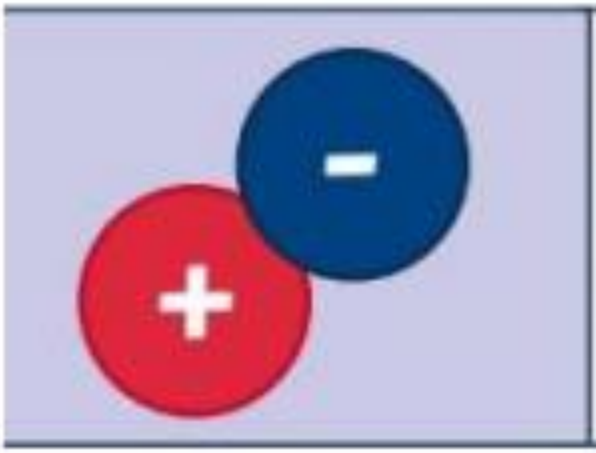
Niagara Falls Suspension Bridge, 1848, the first bridge across the Niagara Gorge

Benjamin Franklin

Benjamin Franklin was the first person to study electricity in depth. One of his most important findings showed that lightning was indeed electrical.

Up until his discovery, lightning had been thought of as something different. In order to prove the theory that lightning was electrical, he flew a kite during a storm, to which he had attached a key. When the kite was struck by lightning, he felt electric sparks from the key. This experiment proved that lightning was electrical. Although the experiment was a success and proved what Franklin was thinking, he was very fortunate to not get electrocuted. This is not an experiment that should ever be repeated or tried by anyone.





Benjamin Franklin was also the first to store electricity and knew electricity consisted of two types of electrical charge. These two types are referred to as positive and negative charges. Franklin explained that whenever a certain amount of charge is produced on the body in a process, an equal amount of the opposite type of charge is produced on another body. The positive and the negative are to be treated equally.

Benjamin Franklin used kites to help him make discoveries. Can you research(safely with an adult any more of his inventions and write about him on the next page?

Name

Just the FACTS about...

Benjamin Franklin

Year he was born:

Where was he born?

He invented...

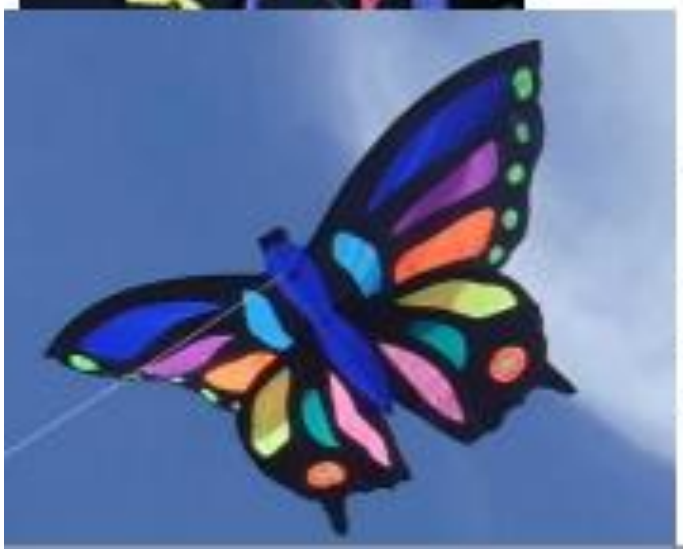
Draw a picture of his invention.

Why was his invention important?

Kite creating project:

Have you ever played with a kite before? What do you like about them? You are going to design, create and evaluate a kite. You are going to think about the same questions as you did for the bird feeder. **Who is the kits for?** Is it going to be for adults or is it going to be for children?

Here are some kite designs to get you thinking about yours! Which one do you like best? Why? Which one will fly the best? Do they all have tails?



Materials:

Materials are really important to think about when you're making a kite. This is because kites need to.. **FLY**! Will heavy materials fly easily or light materials? Why? Here are some materials for you to look at and think about for your designs. Will they work to help your kite fly?

Wood

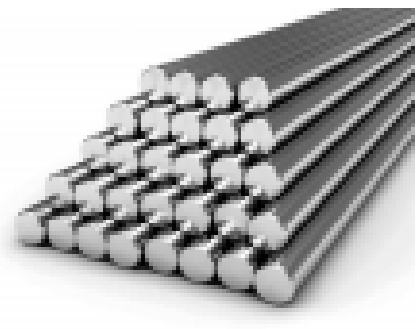
Wood is a material that comes from trees. It is very strong and can be heavy. It is hard to break.

Brown/wrapping paper

Wrapping paper is colourful and it is light. It can be cut into different shapes easily. However, if it gets wet it does not last very long and starts to tear.

Thin plastic sheets:

It is strong and light. Once it has a tear, it can rip quickly after. It can be easily decorated with tissue paper and things.



Metal

Metal is strong and heavy. It can be shiny but it is stiff and hard to break so cannot bend (unless you use a lot of dangerous heat). Bicycles and cars are made of metal. Will metal be good for a kite?

It's now your turn to design!

Think about: What materials are you going to use? How will it be able to fly? What shape will it be? Will it have a tail? Will it be colourful? Who is it for? Use this page to draft a design then use the next page to create a final one!

My Final Design

Name: _____

I am going to make: _____

Draw an annotated picture of your design in the space below.

The tools that I need are:

_____

_____

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The fabrics and materials that I need are:

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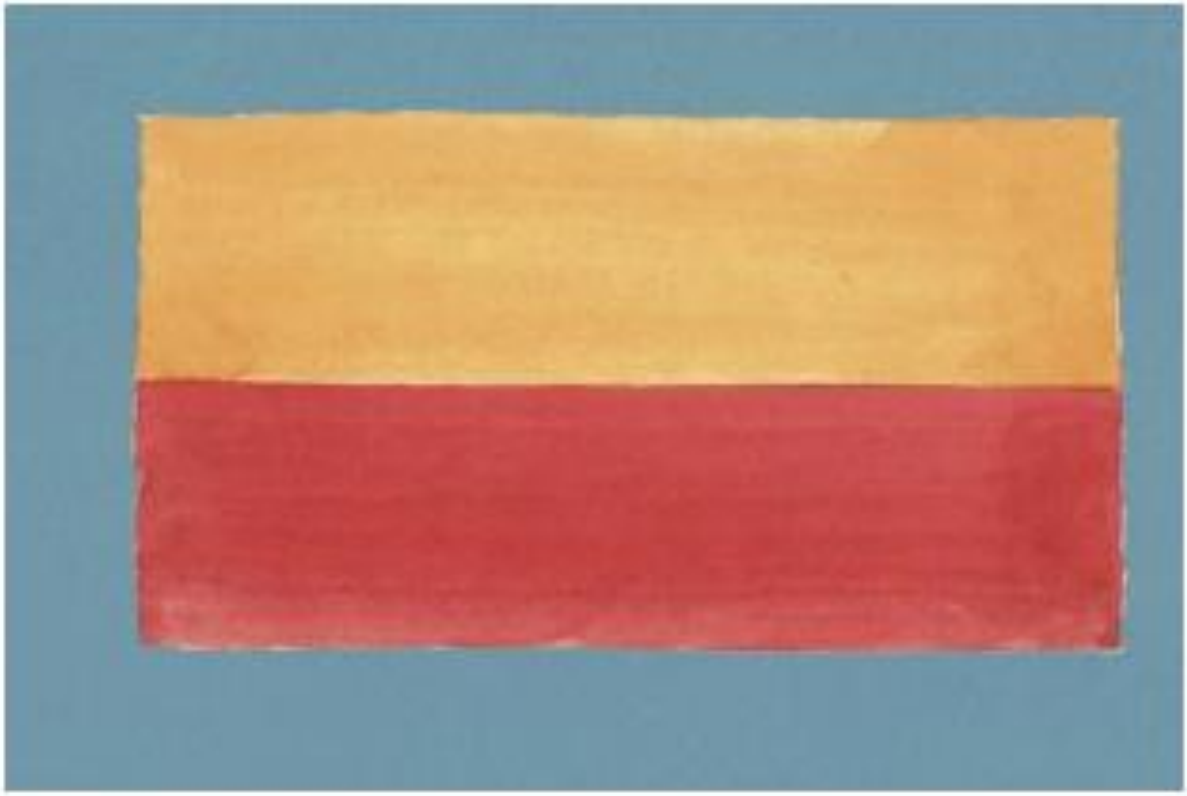
_____

How to make a kite: Please ask an adult to help you!

You Will Need

- Large sheet of paper (60cm long by 45cm wide) or material of choice
- Bamboo plant support (Thin 60cm) (straws are a good substitute)
- String
- Ribbon, Optional
- Ruler

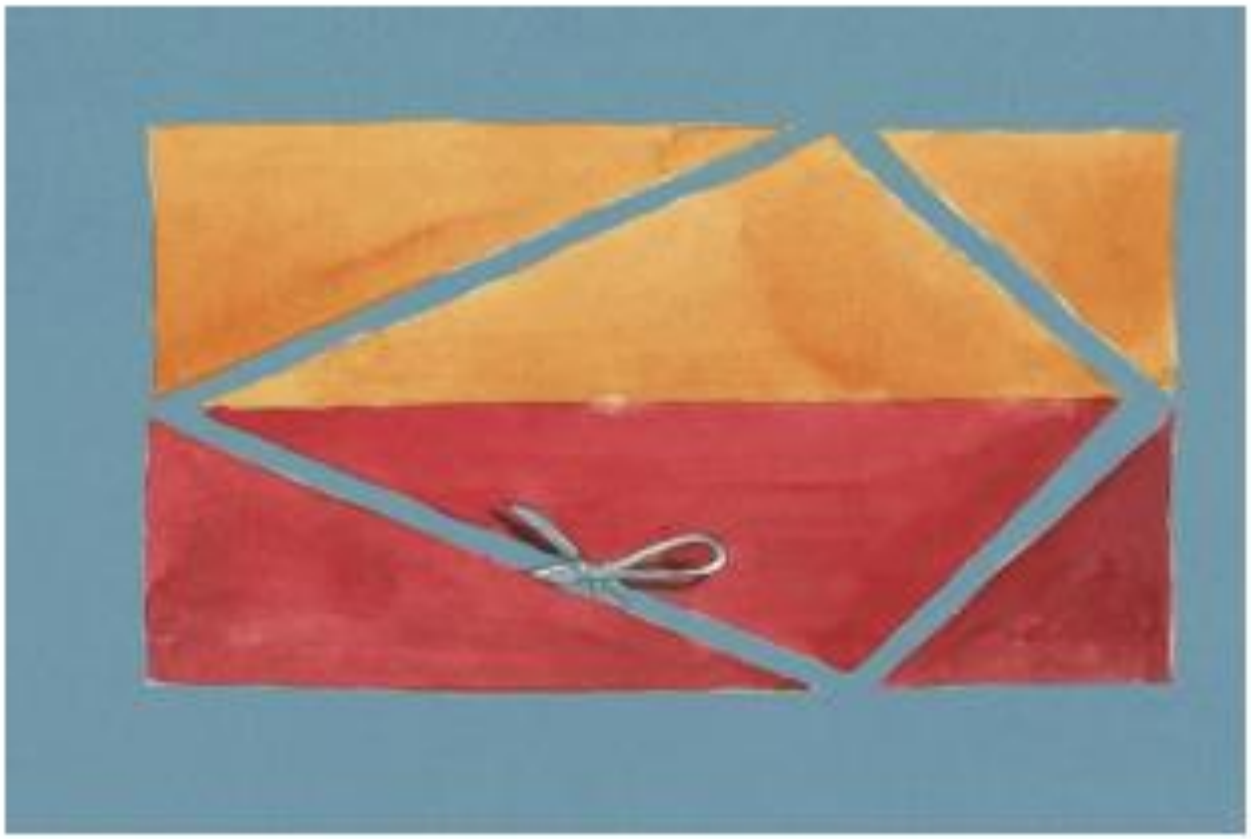
Step 1



Measure your kite

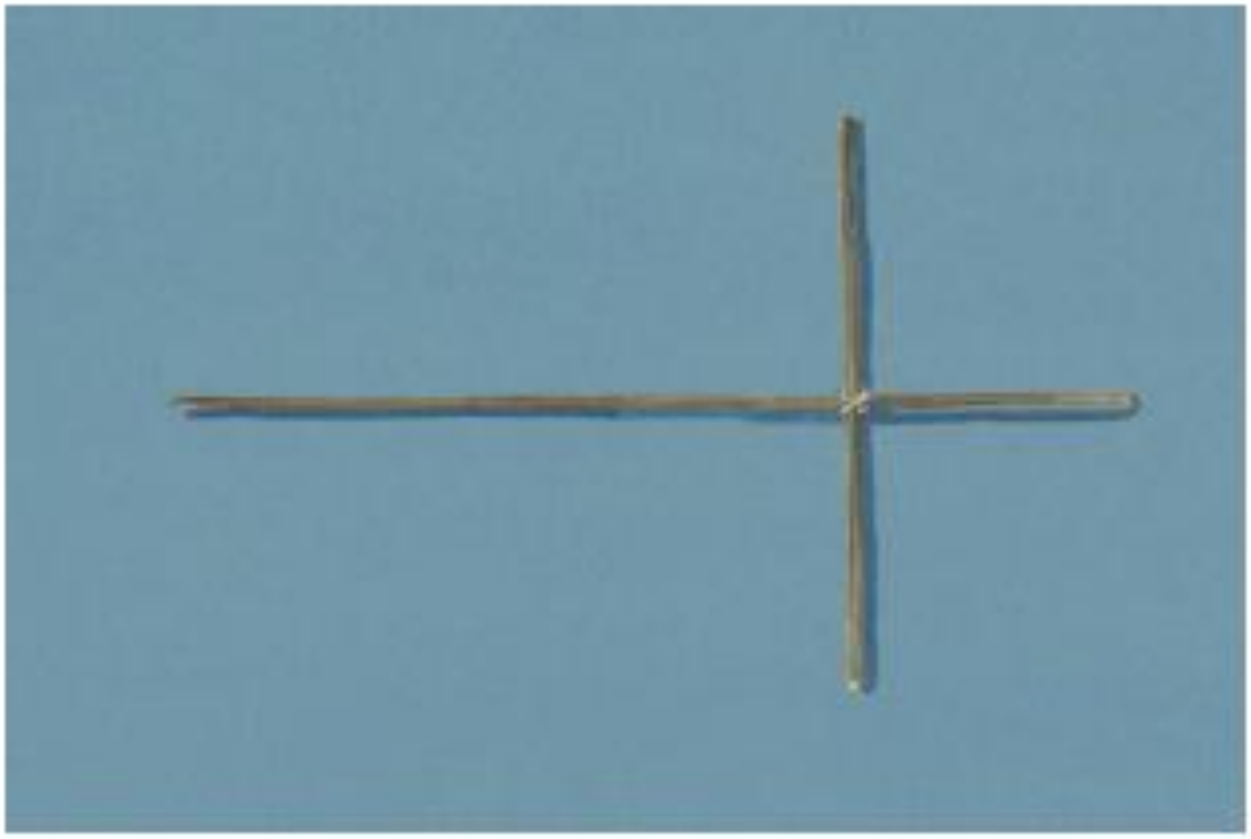
Make the sail of your kite with the large sheet of paper or light material of your choice. Fold the paper in half lengthways. On either side, measure 15cm down from the top. Use ruler or other straight edge to draw a line between these marks and the top centre. Draw two more lines from the marks at the side to the bottom centre, to form a diamond.

Step 2



Carefully cut out your diamond and decorate it!

Step 3



Build the frame

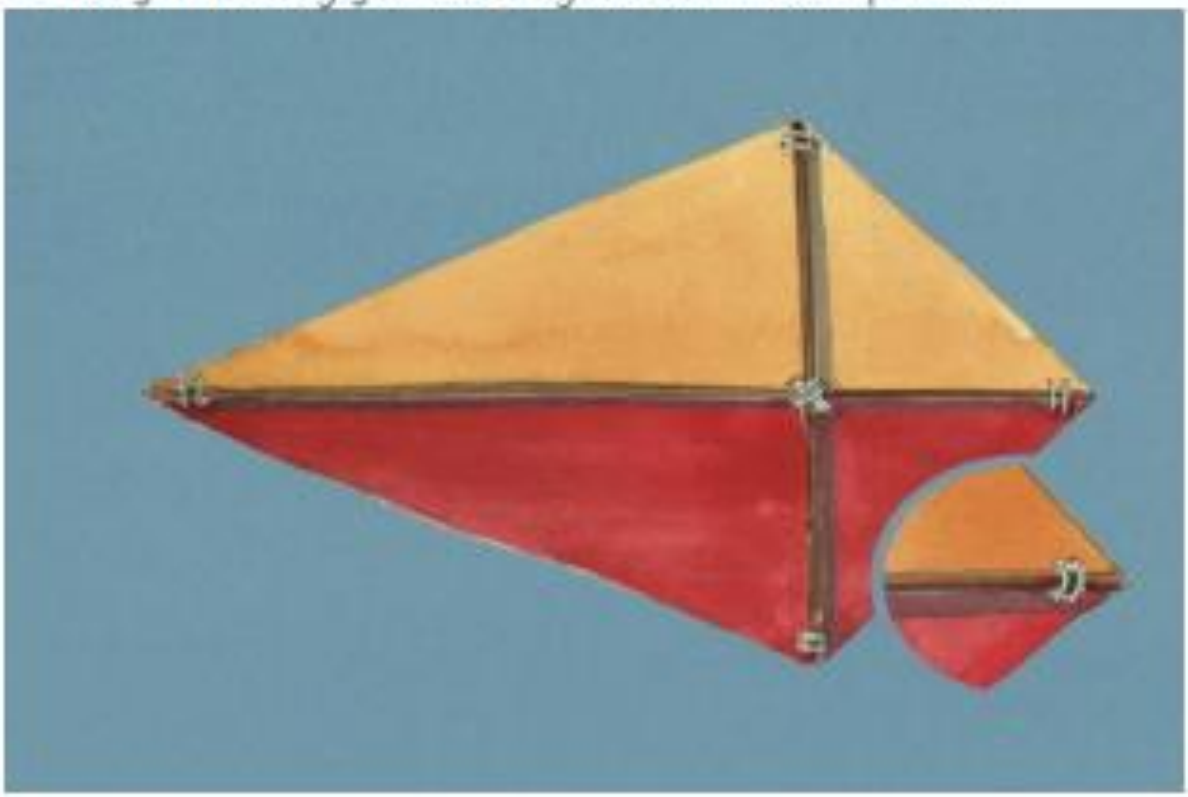
Thin 60cm bamboo plant supports from garden centres make good, lightweight spars. Using secateurs, or scissors if you are using a straw, cut one of them to a length of 45cm. Tie the two spars together with twine – checking that the spar ends still line up with the corners of the paper sail – then knot firmly. Trim the twine.

Step 4

At each corner, use something sharp (such as a cocktail stick) to pierce two holes on either side of the spar. Thread twine through each hole (this is fiddly!) and tie it to the spar, leaving some loose ends for attaching ribbons. Glue the spars the paper and allow to dry.

Step 5

Attach a piece of string firmly to the spar at the left and right corners, allowing plenty of slack – there should be about 60cm of twine loose between the two corners. Fix your flying line firmly to this twine. (I reused a reel of old string from a tangled kite in the cupboard.)



Step 6

Cut two 2m x 2cm strips of crepe paper, and tie them to the bottom of the kite. Add two more strips, around 1m long, to the sides or you could use ribbon instead.

Wait for a dry, breezy day – strong winds might damage your fragile kite. When you're ready for your kite's maiden voyage, find a patient, excitable person to help you launch the kite. Stand upwind of the kite, and ask your helper to stand directly downwind. Launch and enjoy the sight of your kite fluttering in the breeze!

https://national.macaronikid.com/articles/5ccc74b1d1d436559f19d484/how-to-make-your-own-kite **Here is another way you can make a kite!**

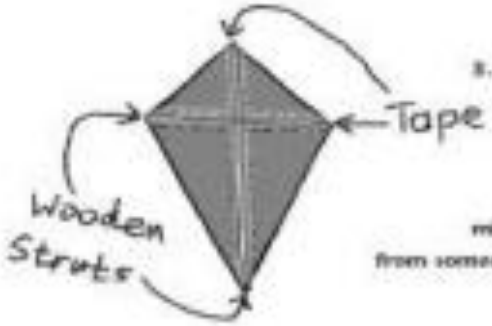
Make the most of your rubbish with SPUD'S fun activities

Spud Goes Green
ISBN 1-4052-1731-6
Price: £4.99

Adi gave me a GREAT present: an amazing multicoloured kite he made himself. And this is how:

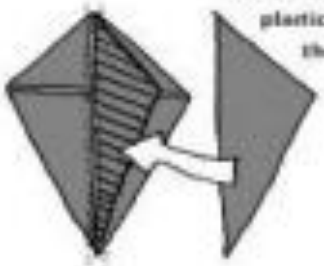
1. Save a bit of soft plastic from being thrown away. A black bin bag is perfect. This is a greenie recycled kite.

2. Cut it to this shape:

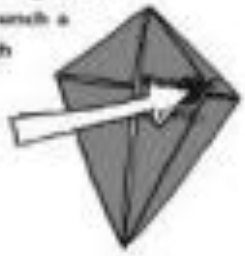


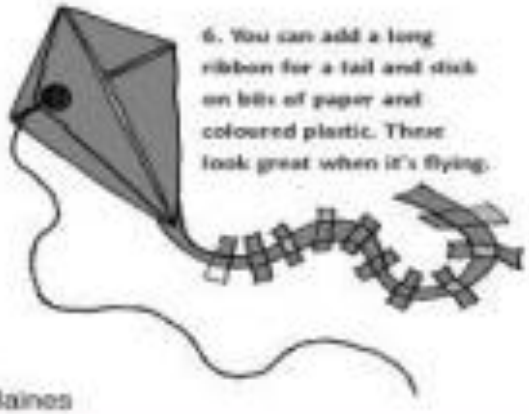
3. Place some thin strips of wood along it and tape them down with strong sticky tape. You might need some help from someone big and clever.

4. Cut another triangle of plastic and tape it along the long middle strip of wood.



5. Reinforce this area with tape and get that big clever person to punch a hole through





6. You can add a long ribbon for a tail and stick on bits of paper and coloured plastic. These look great when it's flying.

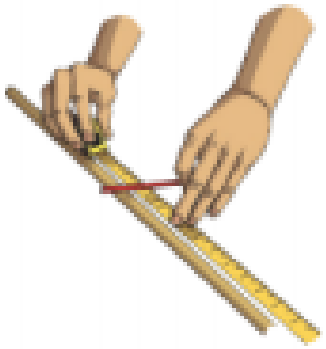
Next it is time to evaluate your kite. This means looking at your kite, thinking about what you like about it, what went well, what was hard and what you could do better to improve it next time. Fill in the next sheet to evaluate your kite!

Design Technology Project Evaluation Sheet

Aim of the Project:

What Worked Well?

Challenges I Faced



How I Dealt with Any Challenges

What I Would Change Next Time

Building Challenge!

How many challenges can you complete?

Building Challenge!

Use your building bricks and baseplate to build a marble maze!

Building Challenge!

Use your building bricks to make a cube.

Building Challenge!

Use your building bricks to make your favourite animal.

Building Challenge!

Use your building bricks to build a skyscraper.

Building Challenge!

Use your building bricks to build a bridge.

Building Challenge!

Use your building bricks to build a catwalk and host a fashion show.

Building Challenge!

Use your building bricks build a dinosaur.

Building Challenge!

Use your building bricks to build a staircase.

Building Challenge!

Use your building bricks to recreate a famous landmark.

Building Challenge!

Use your building bricks to build an igloo.

Building Challenge!

Use your building bricks build a robot.

Building Challenge!

Use your building bricks to create an alien.