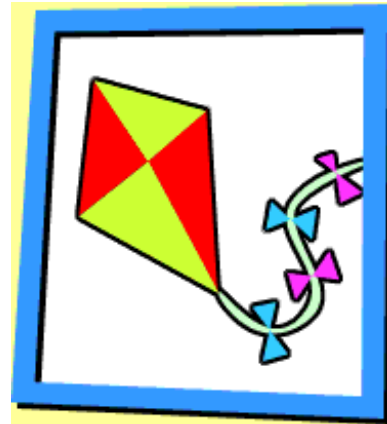




# Diamond Kite

One of the most common shapes for a kite is a diamond. So why not design and make one? Let's start by finding out what tools and materials are needed.



## Equipment

1. A large piece of thin plastic (for example, an opened out black plastic rubbish bag).
2. Two sticks of balsa wood, one 90cm long and the other 60cm long. Balsa wood is a very lightweight wood that you can buy from any model shop or 'DIY' store.
3. One large sheet of coloured tissue paper.
4. Some small pieces of coloured paper for decorations.
5. A small metal or wooden ring, such as a curtain ring.
6. A pencil, a ruler, some string, sticky tape and a pair of scissors.
7. Some special balsa wood glue (you can buy this from a craft shop) and a small knife.

## Safety Stuff

Before you begin, check with an adult, as you'll probably need their help at some point. Cover your work surface with newspaper or an old cloth and make sure you are wearing an apron or some old clothes. Also, gather together all the items you will need before you begin.

Working with items such as scissors can be dangerous, so be very careful when you use them, and make sure that you never leave them open or lying around where smaller children can reach them. You'll probably find most of the things you'll need simply by hunting around the house, but remember to check with an adult before you take anything. And don't forget to tidy up afterwards! When you've made your kite and are ready to fly it, you first need to pick an appropriate spot. Wide-open spaces are best for flying a kite. Make sure that you're well away from trees, buildings and (most important!) power cables.

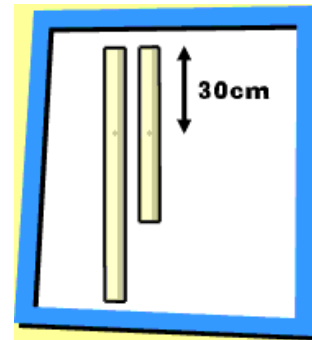
# Steps

## Step One

Prepare the frame for the kite. First, mark the centre, or middle point, of the shorter piece of wood (the 60 cm piece) using a ruler and pencil. (What's the best way to find the centre?)

Next, take the longer piece and mark a line 30cm from one end. Then put the two pieces of wood together where the marks are, with the two pieces at right angles, so they form a cross shape.

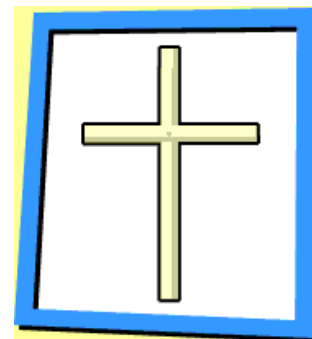
(How can you check that the two pieces of wood make a right angle?)



## Step Two

Now glue the sticks. Use balsa wood glue to hold the sticks together in that position, and use string or sticky tape to bind the sticks together in the cross shape. This will strengthen the join.

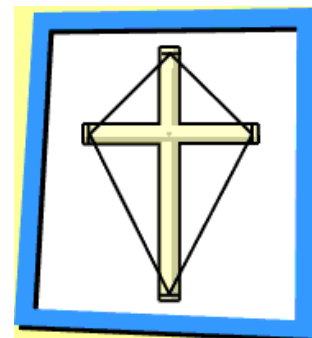
When the glue is dry, ask an adult to help you use a sharp knife to make a small notch in each end of both sticks. Each notch should be one centimetre from each end of the sticks.



## Step Three

Next, wind some string around the outside of the wooden cross, to make the diamond shape. First tie the string onto one end of one of the sticks, and then wind it around each point in turn until it forms a complete diamond shape. Make sure the string is in the notch at each point so it is held securely. Tie the end of the string to the point at which you started.

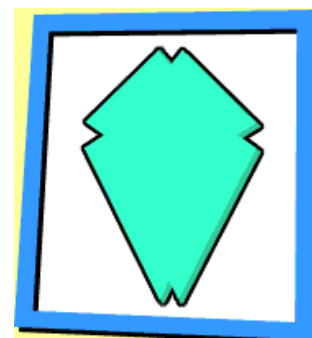
Place the wooden cross onto the piece of plastic. Ask a friend to hold it in place while you cut the plastic around the kite, to make a kite shape. But make sure you leave at least 2.5cm all the way around the edge of the kite.



## Step Four

Cut a v-shape out of the plastic where it meets each point of the wooden cross. Fold the plastic over the string, along the edges of the kite. Make sure that the plastic is quite tight, and then stick it down with sticky tape. The main part of your kite is now ready.

To decorate your kite, turn the kite over and use the small pieces of coloured paper to cut out a design for your kite.



Then glue the pieces of paper onto the front of the kite in the design you have chosen.

## Step Five

Now attach some string to the face of the kite so that you will be able to fly it. First, thread a 120cm piece of string twice through the curtain ring.

Attach one end of the piece of string to the top of the kite, and the other end to the bottom. Then slide the curtain ring until it is about 40cm from the top of the kite.



## Step Six

Cut an 83cm length of string and thread it through the curtain ring. Make sure that the ring is in the middle of the piece of string and attach the ends of the string to each side of the kite. This crossed string structure is called the 'bridle', and it controls the kite a bit like a bridle is used to control a horse when you are riding it.

Now make the tail for the kite. First cut a piece of string 4.5m long. Then cut out 25 rectangles from the tissue paper. Each rectangle should be 20cm by 5cm. Can you work out a way to cut these rectangles out quickly?

## Step Seven

When you have the 25 pieces of tissue paper, attach them to the string tail you've just cut out. Can you think of a way to do this? Then tie the tail to the bottom of the kite.

The final stage is to attach some string to the kite to control it. Tie the string that you will use to fly the kite to the curtain ring. Be careful not to get it caught up with the long tail.

Now your diamond kite is ready to fly!

## Fine Tuning

To fly your kite, ask a friend to hold your kite facing into the wind. You will then need to run into the wind as they let go of the kite. The kite should then be carried up into the air by the wind. When it's flying, tug at the string of the kite and then let it go again - this will help it fly even higher. Keep doing this until it is as high as you want. Make sure you don't run out of string though!

When you have flown your kite a few times, think about how you could make it fly higher, or fly better when there isn't much wind. Would it help if the kite was lighter or heavier? Does it make a difference if the plastic on the kite is stretched more tightly? What if you use a shorter tail, or even no tail?