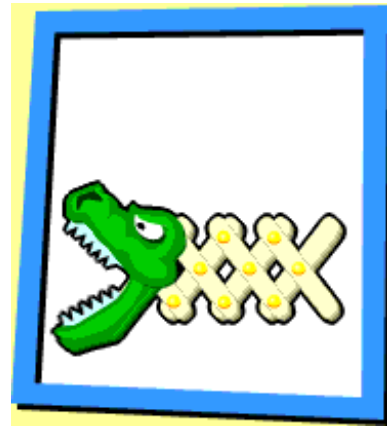




# Angry Alligator

Have you got any old lollipop sticks? Here is an idea about how to use them to make an angry alligator.

A series of mechanical levers can make his jaws snap open and closed. Once you've made him, you can probably design lots of different things to make using levers.



## Equipment

1. Eight wooden lollipop sticks.
2. Ten paper fasteners (the type with split pins. You can buy these quite cheaply from any good stationary store.)
3. Some stiff green card.
4. Some coloured pencils of different colours.
5. Some acrylic or poster paints and paintbrushes.
6. A roll of sticky tape.

## Safety Stuff

Check with an adult before you begin any of these projects. You'll probably need their help at some stage and it's best if they know that in advance. Working with items such as scissors can be dangerous, so be very careful when you use them. Make sure that you never leave them open or lying around where smaller children can reach them.

Before starting, cover the work surface you're going to use with some newspaper or an old cloth, and make sure that you are wearing an apron or some old clothes. Gather together all the items you will need before you begin. That way everything stays organised!

When you have finished, don't forget to tidy up afterwards!

# Steps

## Step One

Start by asking an adult to help you make three small holes in each of the lollipop sticks. You'll need one hole in the middle, and one hole about 1cm from each end of the stick. Make the holes just large enough to fit the ends of a paper fastener through.

Lay two lollipop sticks on top of each other so that they form a cross (X) shape.

Join them together in the middle with a paper fastener.

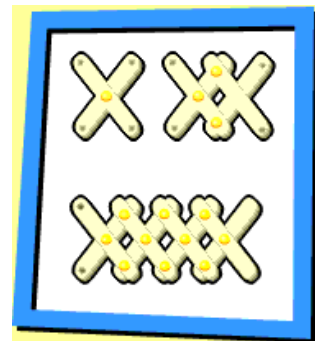
Repeat this with a second pair of sticks.

## Step Two

Line the crosses up so that the two ends overlap.

Join them together with two paper fasteners.

Repeat this until all eight lollipop sticks are joined in a criss-cross shape to form a series of levers.



## Step Three

Now make the face for the alligator. It's best to do this in two sections, making the upper and lower parts of the face separately.

First think about how an angry alligator looks! Practise drawing his face on some rough paper first. Then draw the face on the green card in two parts (one for above his mouth, and one for below). Draw the eyes, nose, teeth and tongue with coloured pencils and paint, or use other pieces of coloured card. Then cut the two parts of the face out.



## Step Four

Now attach the face parts to one end of the linked lollipop sticks. Attach the upper part of the face to the top stick and the lower part to the bottom, securing them with sticky tape at the back.

Push a paper fastener through the centre of the face, making sure it also goes through the central hole of the two end lollipop sticks.



## Step Five

The jaws of your alligator should now snap angrily when you open and close the two end lollipop sticks.

The lollipop sticks form a series of levers that link together. When you squeeze together the two 'handles' at the end of the linkage, all the link joints along its length close, including the alligator's mouth. If you open the handles, the mouth will snap open again.



## Step Six

This is a very useful design trick, because, as you can see, the linked levers mean that a large movement can be achieved with very little effort. The lollipop sticks stretch and close in a scissor movement, and the jaw at the end snaps open and shut.

Can you think of some other things that you could design that would also use levers? See if you can design a similar toy to the angry alligator, that has an up and down action rather than a side to side one (such as a frog that hops up and down, for example). Or you could design some 'tongs' to use at mealtimes to pick up sugar lumps across the table without leaving your seat!