

# INTO FILM

## An Introduction to Stop Motion Animation

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Our resources are designed to be used with selected film titles, which are available free for clubs at [www.intofilm.org](http://www.intofilm.org)

See, think, make.  
Imagine

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## Early animation

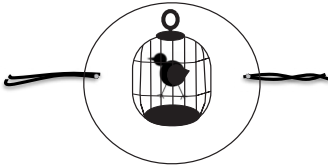
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### How it works

Animation creates the impression of movement through an optical illusion referred to as the "Persistence of Vision." The eye retains an image for a split second after it has actually been shown. Animation works by presenting slightly different images in quick succession, with the persistence of vision filling in the gap between each image and allowing for the illusion of motion.

In the 19th century, this phenomenon was made use of in many children's toys that some students may still be familiar with.

### Thaumatrope



Popularised by John A. Paris in 1824, thaumatropes work by presenting two separate images on the front and back of a piece of card with string attached to each side. When the card is spun quickly using the string the two images are shown in quick succession, giving the illusion of one image. Use the **Thaumatrope worksheets** on pages 11 to 12 to help the class to understand how thaumatropes work and have a go at making their own.

### Mutoscopes

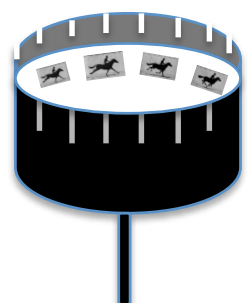
Mutoscopes were manufactured between 1895 and 1909. To achieve the illusion of movement, a series of slightly altered images were mounted onto a circular core (a bit like a filofax) and then turned quickly using a handle or crank. Mutoscopes were coin operated, the viewer would put in their money and then turn a crank to see the animation.

### Flick books

Flick books were invented in the latter half of the 19th century and it is thought that the first flick book was created by John Barnes Linnett in 1868. Flick books use the persistence of vision in a similar way to mutoscopes to fool the eye into perceiving motion. Flick books are essentially a collection of slightly altered images bound at one end to allow the user to flick through the images by hand, viewing the images in quick succession and creating the illusion of movement. Use the **Flick book template** on page 10 to help the class create their own flick books.

### Zoetropes

Zoetropes were also invented in the 19th century and use the persistence of vision to fool the eye into perceiving motion. A zoetrope is a cylindrical drum with slits cut into the sides. On the inside of the drum are a series of slightly different images so when the drum is rotated the viewer looks through the slits to see the animated movement. The invention of the zoetrope is credited to William George Horner in 1884, although a variety of zoetropes that use a similar principle are thought to have been created in China at around 100 BC.



# Story

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Before you start any animation, you will need to come up with a story that you want to bring to life. This could be as simple as a character or two coming into the frame and doing something visual, like jumping in the air, or simply two characters having a conversation.

## Keep it simple

The more characters you have, the more time it takes to create your animation and the more complicated the story becomes, so use no more than four characters to begin with. Remember, you also have to make sets and backgrounds for each scene in the film, so it is good to limit your story to four different scenes maximum if you only have a short amount of time. Give students clear guidelines and set tight limits on what the film needs to include. By limiting them to four characters and four scenes, you are also asking them to think about how they can convey the story concisely and in a visual way.

## Keep it familiar

Animations can take a long time to make (just like anything worth doing), so it is important that the class do not spend all day deciding on the storyline. You could base the animation on something simple that the class have been studying recently, or take your inspiration from a film they have recently seen. By giving the class a starting point such as lyrics from a song, a topic, a prop to include or a suggested title you can reign them in and focus the story, while still asking them to think creatively about their film and visual storytelling.

## Split it into scenes

Once you have your basic narrative in place you will need to break it up into different scenes. This helps the class to start visualising their film and gives you an opportunity to start listing the set, props and background models to be made for each scene. If you are making an animation with the whole class you might want to split them into groups with each one being responsible for a different element of model making. For example, one group could design the main characters while another group could make the buildings needed and a third group could craft the props, trees or outside spaces.

## Pitch it

A great way of allowing the class to decide democratically on what their film is going to be about is to ask them to pitch their ideas to each other and then to vote on the best film idea. If you are making an animation with the whole class then divide them into groups and ask each group to present their best idea. Students generally respond well to this, and it is great practice for pitching their film ideas in the future.

## Characters, sets and props

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The star of your animation could be anything from models made out of clay/dough and paper cut-outs, to toys, food and cutlery or real people. All you need to do is adjust their position between frames to create the illusion that they are moving. Explain to the students how they are going to be filming their models so they can try to visualise the best way to make them. If you are going to be filming with the camera resting on the table, then the characters will need to be able to stand up unaided or be stuck against a wall. If you film using a tripod with the camera pointed downwards, then the characters will need to be flat onto the surface. Also, it is a good idea to decide on a scale for your animation early on. You can make your models as large or small as you like, but characters, props and backgrounds need to be to the same scale. It is a good idea to show the students the area you will be animating in first, they can then decide on the scale of their models.

### Modelling clay

A quick tip for creating modelling clay characters is to keep them strong and simple – you do not want pieces falling off as you are adjusting their limbs. Younger students may try to shape their characters flat onto the table - this is fine for light weight paper cut-outs but will make clay characters too flimsy. Start them off with blocks or round balls rather than thin strips and encourage them to build models with a flat round base. Thin legs can be a weak area that might see your characters topple over.

**Example film:** *Binn Bunny Goes Green* <http://bit.ly/BinnBunny>

### Paper cut-outs

You could also create characters out of paper or card. Paper figures might be easily broken by the time the whole class has animated with them, so try to use thin card or reinforce coloured paper with card. Ask the students to draw their characters with long arms and legs, these can then be cut out and reattached at the joints with adhesive putty or split pins ready to animate. Remember when using adhesive putty; less is more, you don't want to be able to see the putty past joints as you move your character, so be quite strict with the amount you give out. Unlike claymation, anything you make using paper cut-outs will be in 2D. If you have time, you could make profile and front-on versions of the main characters and models to add depth to your animation. A good cheat is to put detail on both sides of your model, so that one model can be used for the front and back of a character. To give the illusion that a character is turning to the side, simply swap your front-facing character for the side profile.

**Example film:** *Can You Teach a Worm to Tango* <http://bit.ly/WormTango>

### Silhouettes

Using a lightbox can create a very dramatic and filmic aesthetic for your animation. Lightboxes can be bought cheaply but it may be worth checking with the school art department as they may already have one or two. For a bold and eerie animation, use black card to create silhouetted characters, backgrounds and sets. Any details, character features and definition should be cut out so that the light can shine through the card. Cut out windows and cut around doors (leaving the hinge attached) and have your characters move through houses by moving them behind the card. Coloured acetate and thin tissue paper can also be used to add a little colour to your animation.

**Example film:** *Ominous Shadows* <http://bit.ly/1r94a2i>

### Mixed media

Ask the students to be creative and experiment with different mediums, colours and textures. Newspaper, corrugated cardboard, reflective paper, sandpaper and tissue paper can be used to create different textures and patterns. Crumpled, coloured tissue paper can be used for water and fire effects in particular. They could also experiment with different textures by adding sand to paint before painting the backgrounds.

**Example film:** *High Above the Sky* <http://bit.ly/HighAbove>

## Equipment

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### Cameras

You can capture frames with a video camera, stills camera, tablet or mobile phone and then transfer the images onto a computer to edit. You could also try stop-motion software, capturing the frames directly into a timeline. The most important thing to remember is to keep the camera still and in the same position. A good idea is to sticky tack your camera down to the table so it does not move, or alternatively you could mark its position with tape. When using sticky tack, be careful to ensure that the frame is straight, as this may affect the film when you put it all together.

### Tripod

If you are using a tripod, mark where the legs are placed with duct or masking tape, so that if the tripod is knocked you can line it up to the original position. This is where using animation software such as iStopmotion can be really helpful as it keeps your last image up on the screen whilst also showing you the live feed image from your camera, allowing you to match up the images. This process is called 'onion skinning'. Tripods are particularly useful when using a light box to animate. Ensure your tripod can be tilted 180 degrees as this will allow you to shoot from above onto a flat surface.

### The bare bones

A tripod and camera are not always necessary – for example, you could use the the inbuilt camera on your laptop with free software like iMovie or Windows Movie Maker. Or you could simply take images with your phone or camera and feed them into the software with a USB lead. The most important thing is that you are able to get a clear, straight photograph of each movement of your set, work with what you have in the classroom already. The students will learn a lot from the process of animating so to begin with, the equipment used is less important.

### Top tip

You might not have enough animation kits and models for everyone to animate at once, so it is best to rotate the groups. While some groups are using the backgrounds, models and animation kits, the others can be coming up with dialogue for the film, finishing off their model making, recording sound effects and voiceovers or creating promotional posters for the finished film's 'theatrical release'. Use the **Film poster template** on page 16 to give students an idea of how they can structure their poster.

## Animating

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Now that you have your set, props, characters and equipment in place it is time to start animating. At this stage it may be a good idea to split the class up into small groups of four or five with each group taking a turn to animate. This will make things easier to manage, will ensure everyone has the opportunity to animate and will help prevent students from becoming restless with the process. It could also be an idea to split the sessions into Pre-production and Production days if you have the time to do so. If you have the space, equipment and staff available you can also set up multiple animating stations and animate scenes simultaneously.

### On your marks

Ask the students to put all models and scenery in place for the first scene to begin. It is a good idea to take four or five establishing frames at the beginning of every new scene, this will slow down the action and allow the viewer to take in the new surroundings.

### Get set

To give an impression of movement, carefully adjust your props and characters' positions by a tiny amount. Once everyone in the group is happy then take a photograph. Take care that the group do not change anything that is meant to stay still.

It is worth taking two photographs every time you move your character or object as this will help to ensure the movements are smooth.



### Go

A rule of thumb is that 12 adjustments, each one captured twice on camera, will add up to about one second of film. Remember to make only small adjustments each time, the bigger the movements between the frames, the faster the action and jerkier the animation.

### In the frame

A good tip for helping younger pupils to keep their fingers out of shot when capturing each frame is to mark a line of the floor with gaffer tape and ask everyone to stand behind this line while one member of the group captures the frame. Ask the group to give a signal to the student taking the photo each time, this can be "Action" or simply "Ready". The student capturing the frame can then respond, letting the group know they are ready to put the new frame in place. Younger pupils respond especially well to this as it encourages a team dynamic and helps them to take responsibility for their own work.

## Software and editing

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There are two very basic and easy to use animation software packages that you can use to make your films. iStopmotion can be downloaded onto macs and iPads and allows you to import images directly on to a timeline, and export the footage as a QuickTime file to edit in iMovie. If you have PCs in school, you can download Windows Movie Maker for free and use this to edit your finished footage. These both come with easy to follow instructions. You might need to play back your animation and check that the movements you have made are smooth and not jerky.

### Slow down and repeat it

Once you have exported your footage to your editing software, it is now possible to slow down the action, simply by adjusting the speed settings. It is likely that some parts of the animation will have to be slowed down but you may also want to encourage students to think about looping and reusing some of their footage. For example, a short scene where two characters are talking to each other can be looped to fit a longer conversation or reused with different voiceovers. Similarly you can also reverse some of your footage to create a bigger impact, if you have footage of your character looking away from the camera, this can be copied then reversed so that the character looks away from and then back to the camera.

### The process verses the product

Most computers, tablets and phones will have some kind of editing software that the class can use, however if you don't have the time to make edits to your final film don't worry. The beauty of animation is that a lot of the editing is achieved 'in-camera', this means that the way you set up the shots and the amount of movement between frames can often determine how smooth the finished film is. Animation is about teamwork, creativity and visual storytelling and students will gain a lot through the process of making an animation, even if the finished product is not polished or edited to industry standard.



### Adding sound

Adding voiceovers, sound effects and music will have a dramatic effect on your animation. Voice overs can help to move the action along and reiterate the storyline for the audience. Adding atmospheric music and sound effects can help to punctuate the action, infer an emotion or feeling to the audience and add humour. If you are using iMovie to edit your films, this program comes with a bank of royalty-free music and sound effects that you can add to your film. If not, then there are many royalty-free music websites that you can use to download music and sound effects.



## Free Software

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### Some great free software and apps:

#### **Stick man: drawn animation**

<http://www.stygz.net/>

#### **Stop motion animation**

<http://www.culturestreet.org.uk/activities/stopframeanimator/>

#### **Sound effects**

[www.freesound.org](http://www.freesound.org)

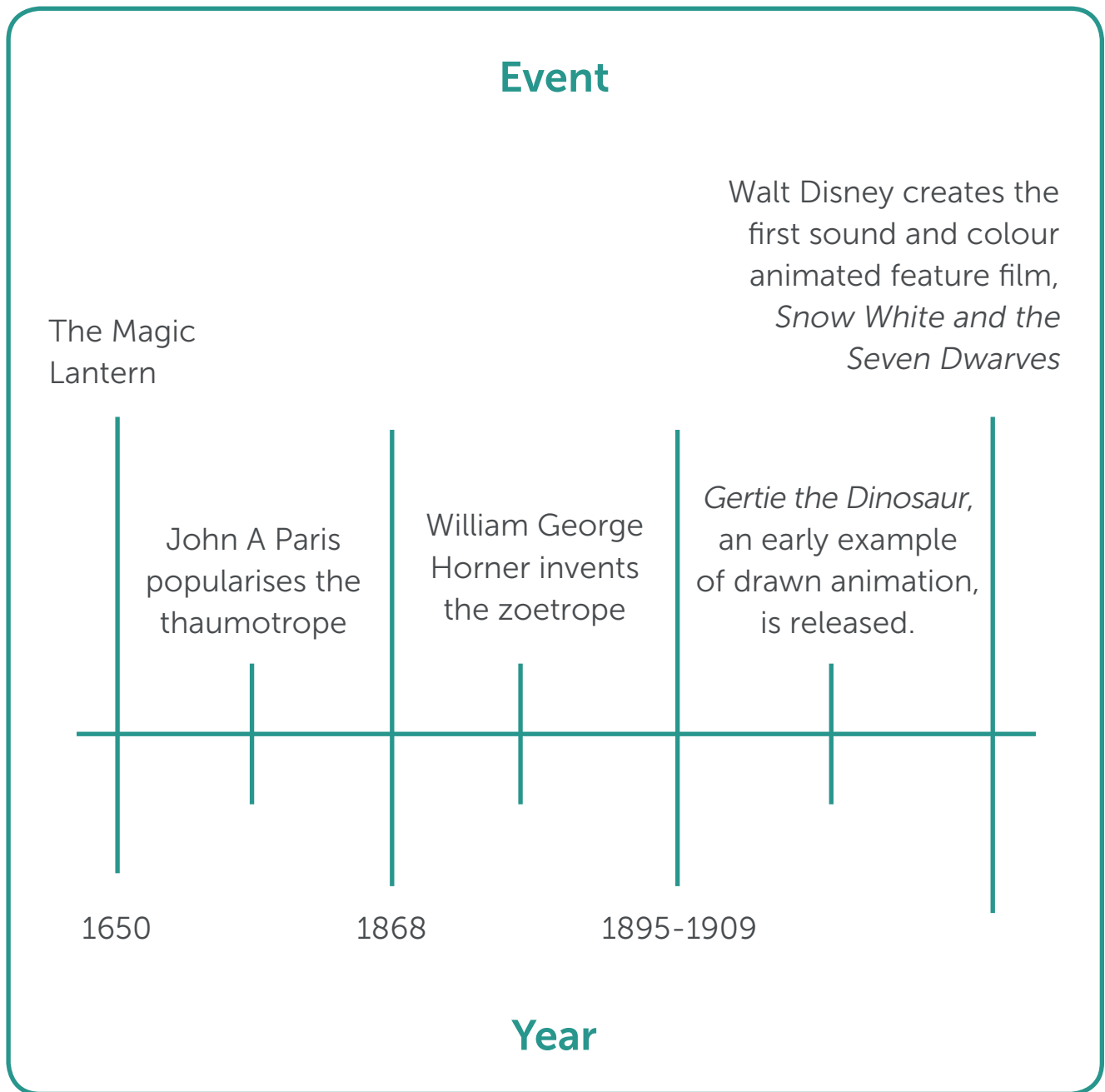
#### **Royalty free music**

<http://www.freesfx.co.uk>

## Early animation timeline

### Instructions

Fill in the missing information on the timeline below.  
Use the internet to search for the missing events and years.

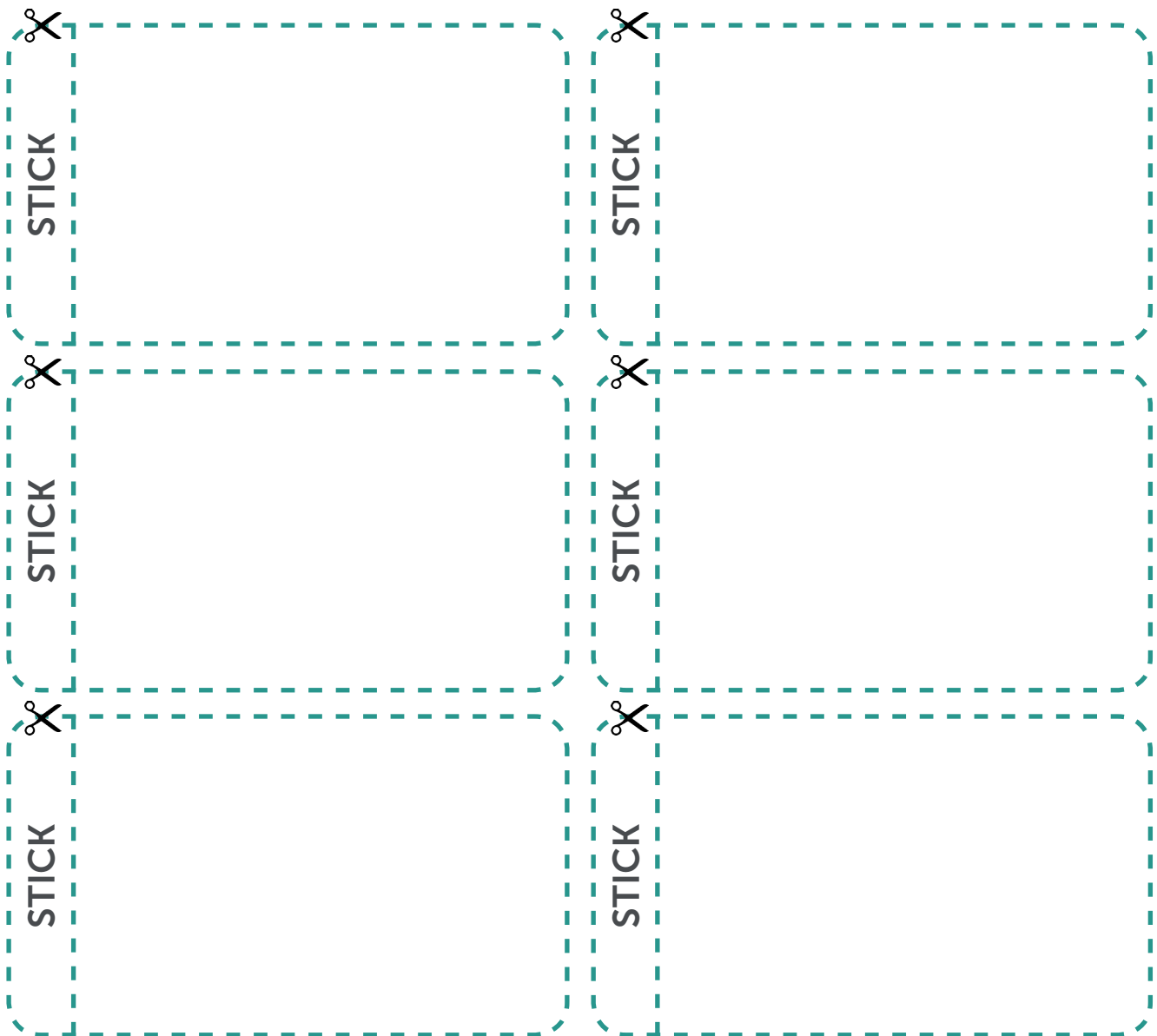


## Flick book

### Instructions

Plan out the storyline for your flick book, making sure to keep most of the action in the bottom right hand corner. Keep your story simple and make sure you tell the story entirely through your drawing. Something quick and easy always works well, like a bouncing ball or jumping frog.

Once you have drawn your story, cut around each box and stick the boxes together (you may want to number each box to make sure you keep them in the right order).



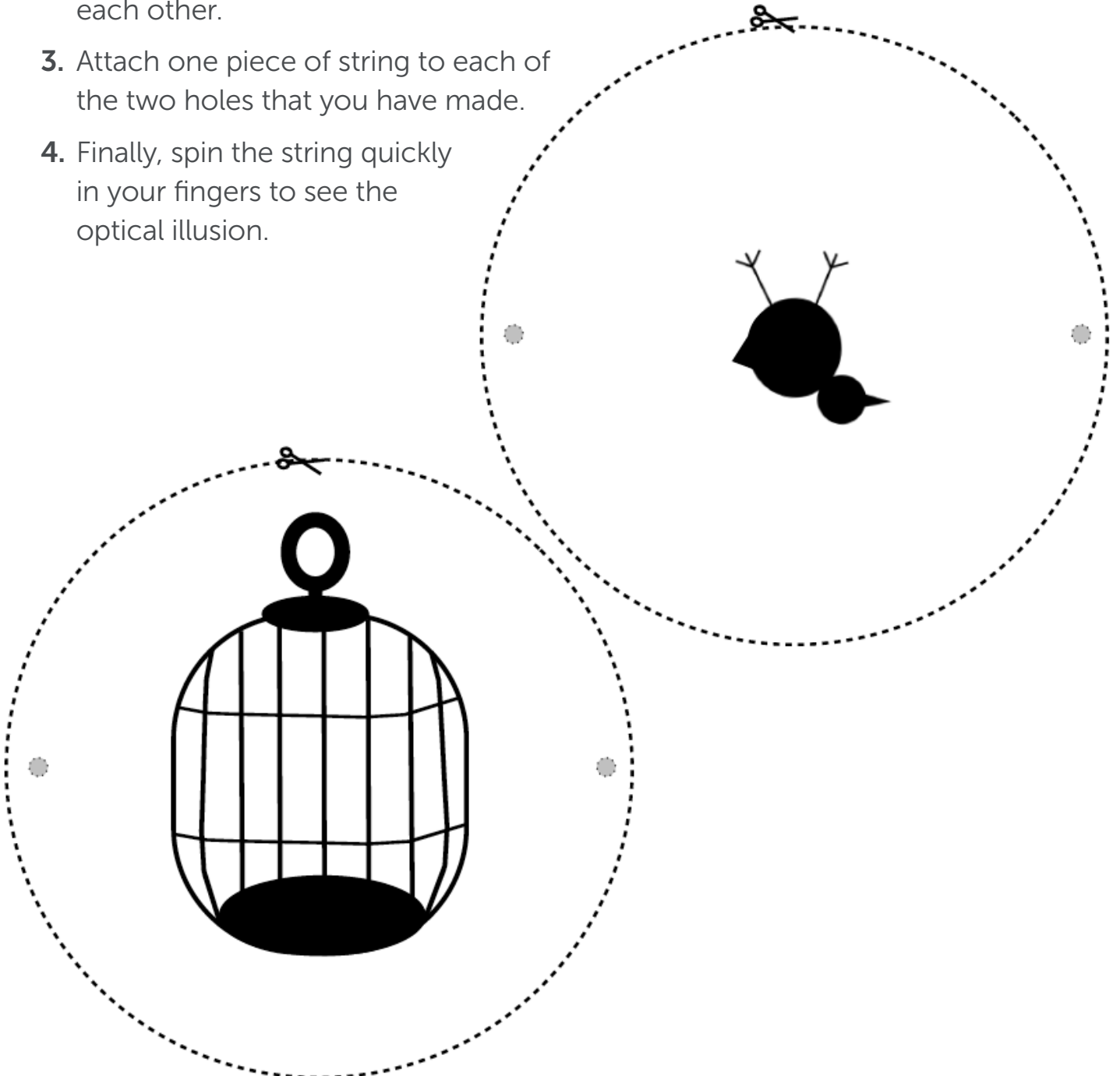
**Top tips:** You can also make an easy flick book by using a pack of sticky notes or drawing in the corner of a notepad

## Thaumatrope

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Thaumatrope were very popular toys during the 19th century. These toys achieve their effect due to the persistence of vision (in the same way as stop motion animation film).

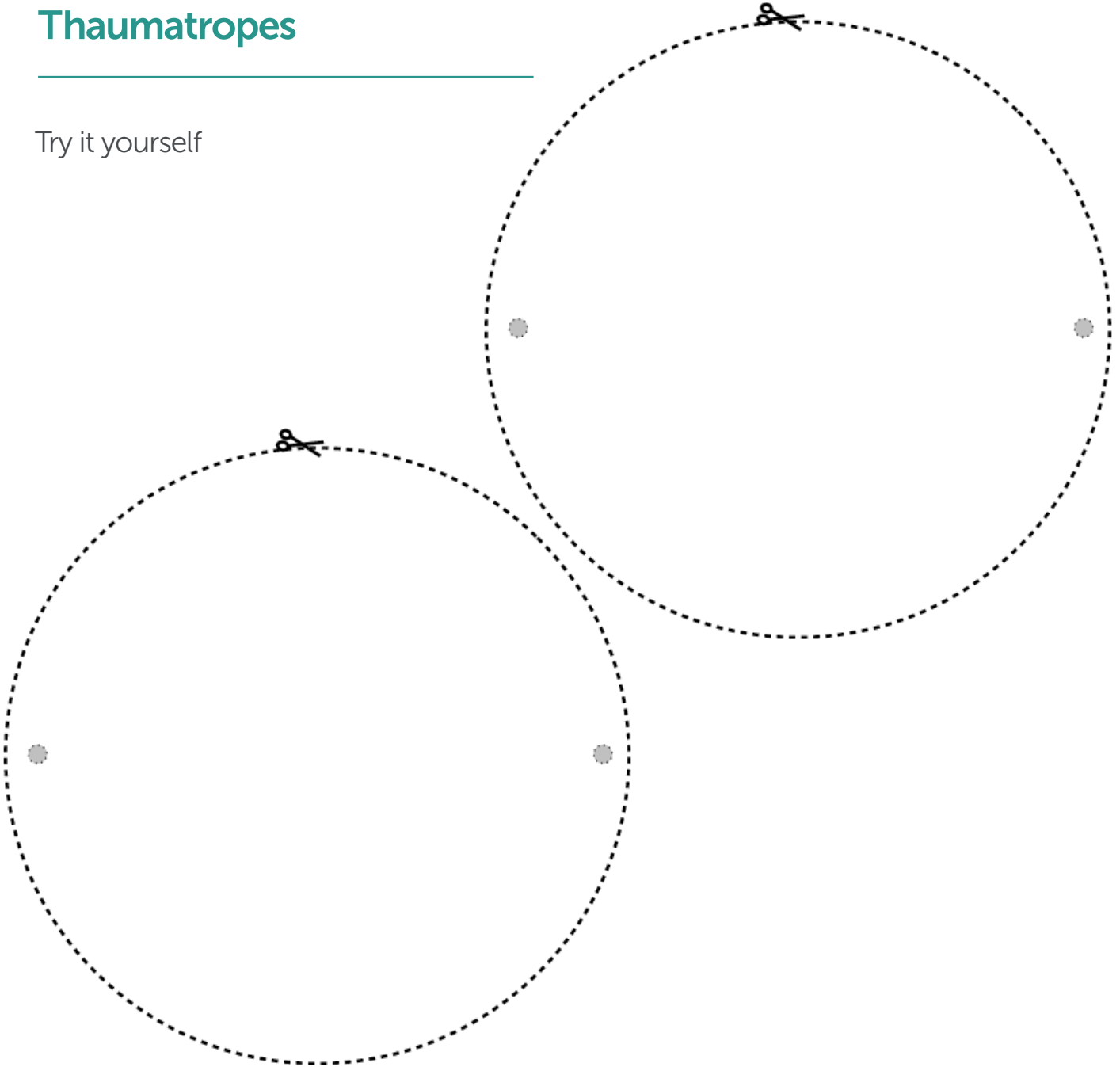
1. First cut out the two circles below, then make a hole in, or hole punch the shaded circles on the right and left of each image.
2. Stick the two circles of paper together, making sure to keep one image upside down and match the holes on both pieces so that they line up with each other.
3. Attach one piece of string to each of the two holes that you have made.
4. Finally, spin the string quickly in your fingers to see the optical illusion.



# Thaumatrope

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Try it yourself



### Top tips:

1. Use two pieces of paper in case the image that you draw bleeds through to both sides of paper.
2. Keep your drawings in roughly the same space on both pieces of paper.
3. It is not necessary to use a circle of card or paper, any shape will work as long as both pieces are exactly the same.
4. Make sure that you stick the paper together so that one of your drawings looks like it is upside down.

## Planning sheet

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In your groups, fill out the sheet below, including a short synopsis of your film idea.

Next, think about the characters that will appear in your animation and how you can show their personalities through the clothes they wear and their appearance.

Think about the places in your story. What sets will you need to make?

How can you use different textures and what materials can you use?

Finally what props, backgrounds and background characters do you need to make your story come to life on the screen?

**Film synopsis** (description of your film in only a couple of sentences):

**Characters**

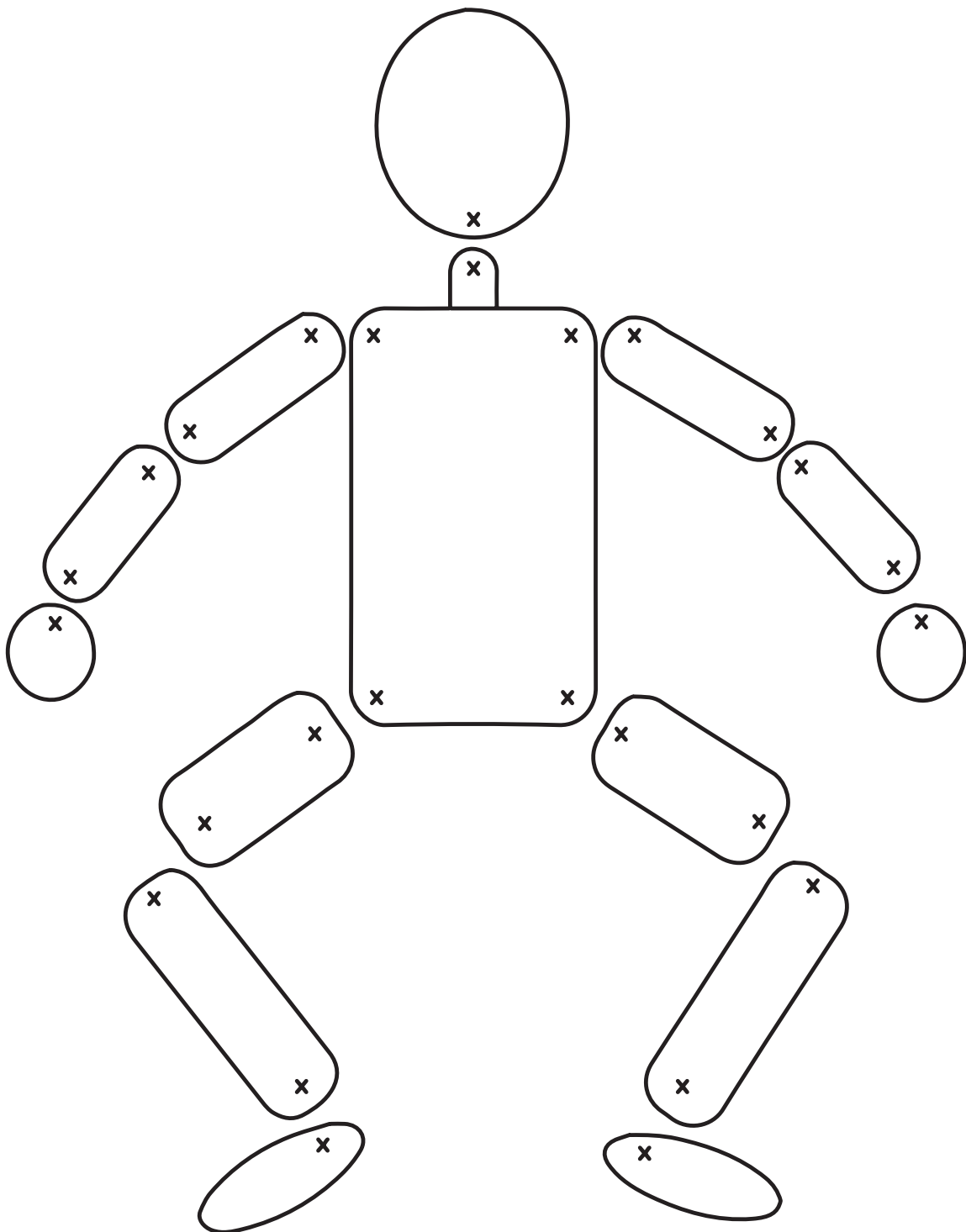
**Places and materials**

**Props and backgrounds**


## Character dimensions

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1. Cut out the pieces of the figure below and join them together on the places marked "x" with sticky tack or split pins.
2. Decorate the character by drawing features and clothing on them.
3. Extension activity: Try to make your own character using the same dimensions.





## Film poster template

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A film poster will usually have one photograph or still image from the film as a background image for the entire poster

Often the lead cast members are credited above the title

**THE FILM TITLE WILL BE BOLD AND NOTICEABLE**

The date the film is out in cinemas

"Sometimes a quote from a review or a star rating is included",  
Person, Company



At the bottom you will find credits for:

The studio name, producer, script writer, lead actors, "Film title", music composer, costume design, editor, production design, cinematographer, executive producer, producer, story writer, screen writer and director...

in that order