MILLBROOK PRIMARY SCHOOL

BELIEVE | ACHIEVE | SUCCEED

Today we are...

Design & Technology

In Design and Technology, we develop a range of **creative and practical skills** using our **imagination** and **creativity**.

Designers:

- Invent solutions to problems in life
- Create better ways of living
- Express themselves in a unique way

This term, our learning will be focused on:

Textiles

Mechanisms

Structures

Cooking & Nutrition

Electrical Systems

Multi-aspect Projects

PRIME DESIGN PROCESS:

Problem

Research

Ideas

Make

Evaluate

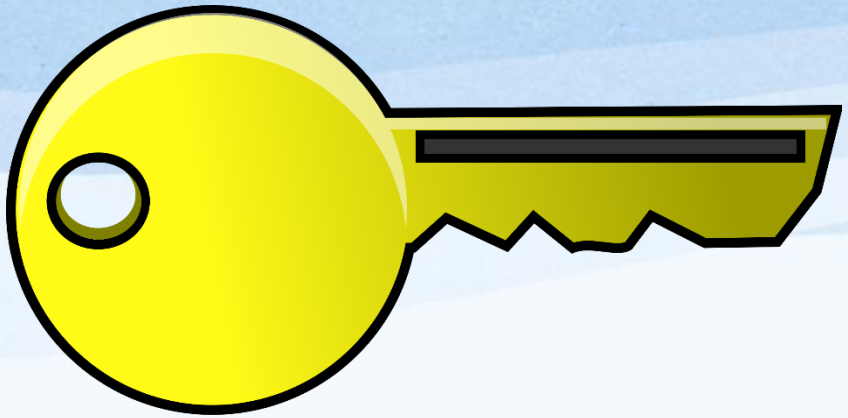
Design & Technology

Mechanisms:

1. Problem and research.
2. Designing our picture book.
3. FPT – How do levers and linkages work?
4. Making the mechanisms for our picture book.
5. Finishing our picture books.
6. Evaluating our products
7. **Our outcome:** A moving picture book about volcanoes that contains 1 lever and 1 linkage.

Learning Objective

KL: Research ideas to solve a problem.

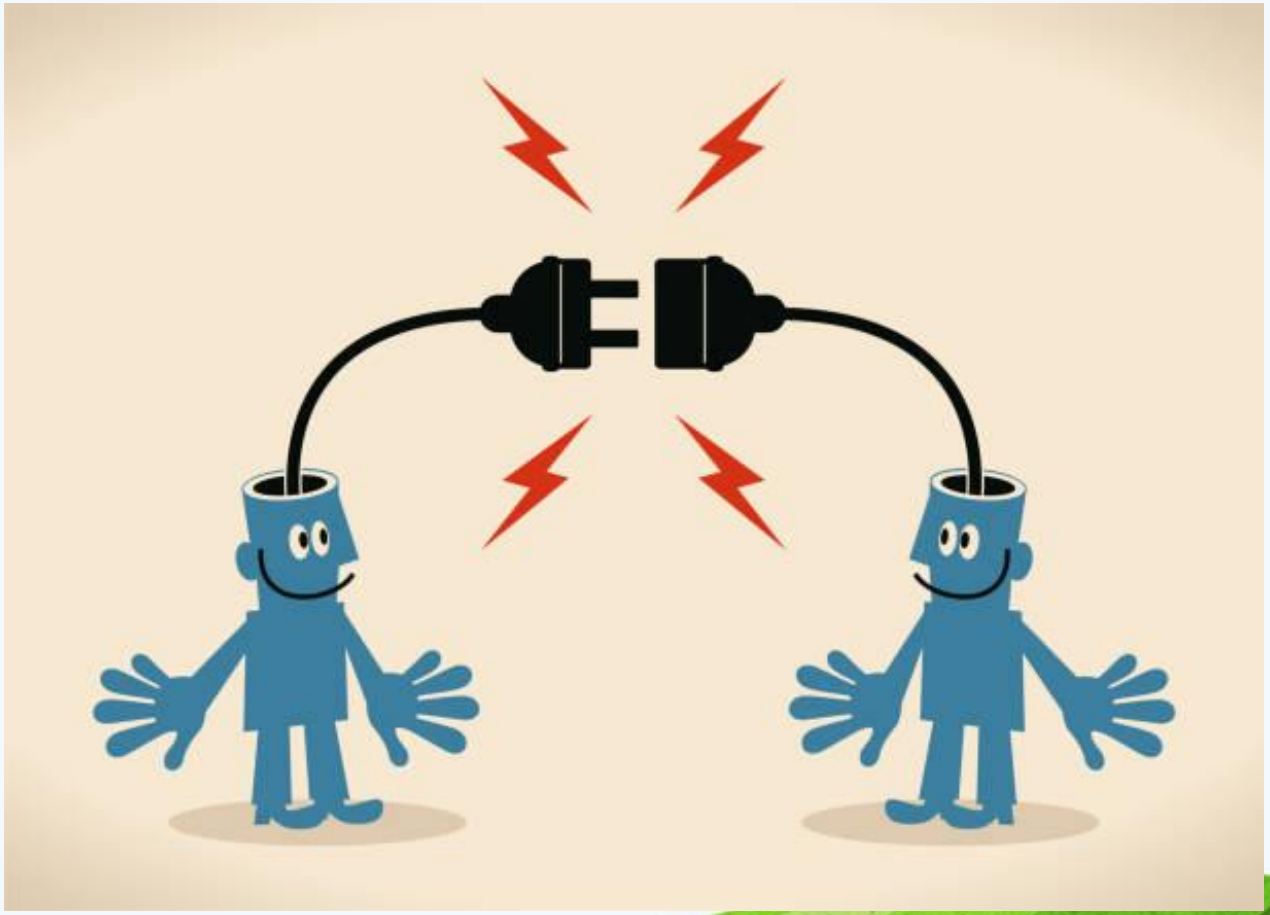


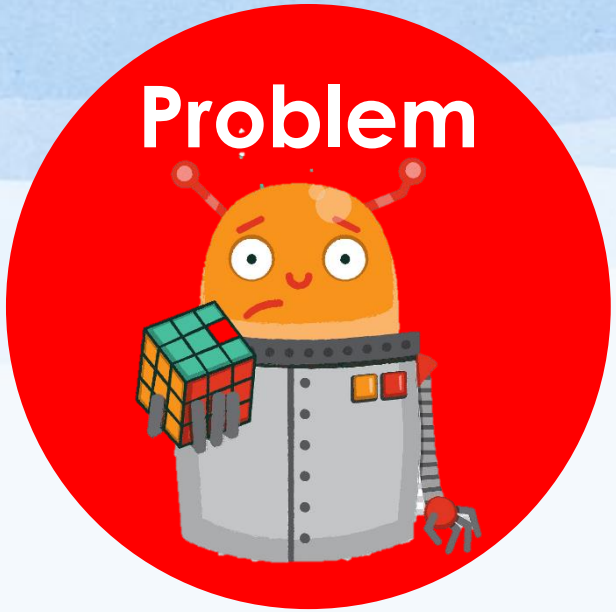
Vocabulary

Lever	Linkage
Mechanism	

Why are we learning this?

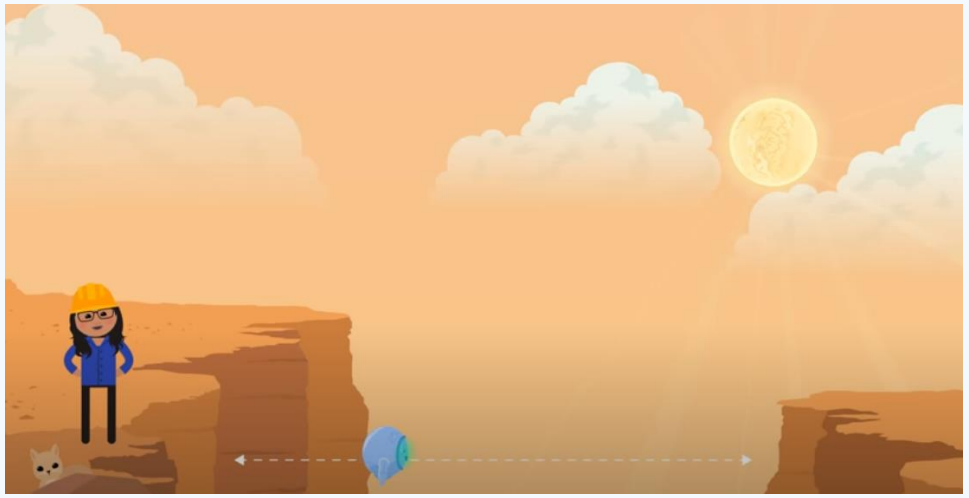
What connections does this have with other lessons and previous lessons?

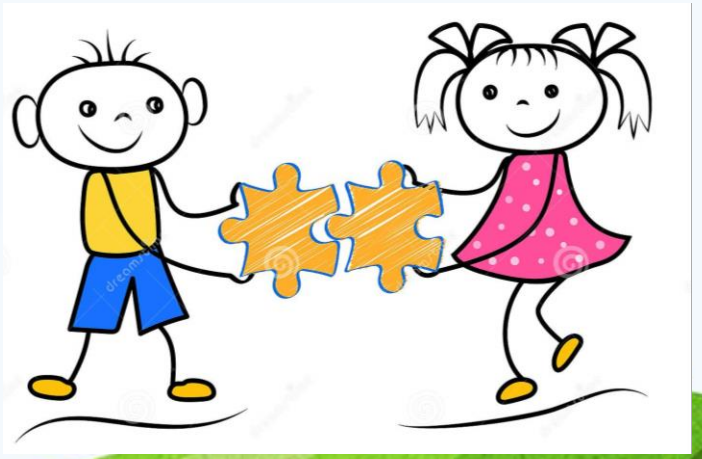




1. What do we need to solve?

- ✓ What is the problem you have to overcome or the objective you want to achieve?
- ✓ Discuss what you need to design or create





https://www.youtube.com/watch/OyTEfLaRn98

Our Problem:

A flood has occurred in South Korea! The children are trying to find out all about volcanoes but all of their books are ruined and their computers got wrecked in the flood.

2. What are the current solutions available (what's already been created)?

- ✓ Look at what has already been made to see if you can 'magpie' ideas!
- ✓ Note what you like and don't like about the current designs
- ✓ Create a checklist of criteria that your product needs to match

Home
Price: £

cer's

Ikea
Price: £15
Function: Dimming light which can be wirelessly dimmed via an app on your phone.
Material:

Lumie
Vitamin L
Price: £75
Function: if you don't get enough sunlight within the daytime, you get it through the night with the light.
Guarantee: 3 years

John Lewis
Waking up light
Price: £130
Function: gently wakes you up with simulated sunlight, slowly brightening your room an hour before your alarm is due to go off. Also helps to get to sleep with a sunset simulation.
Guarantee: 3 years
Material: Acrylic

John Lewis
Lumie bedbug child sleep aid
Price £59.95
Guarantee: 3 years
Material: plastic

LuxDeco
Price: £1,360
Material: Glass
Function: Provide a room with a romantic glow.

Habitat
£160
Material: Copper
Function: Large table lamp

Research Time:

Using the iPads and books available, complete some market research.

What do they look like?	What mechanisms?

Our Design Criteria:

As a class, let's come up with criteria for our books:

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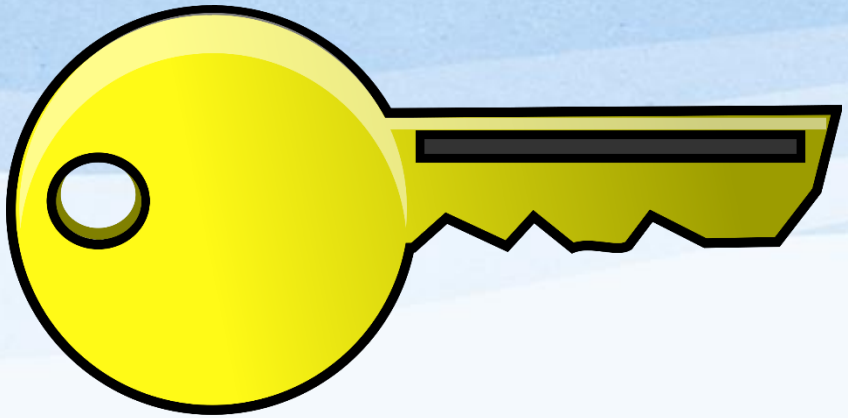
Learning Objective

KL: Design a product to fit a criteria.

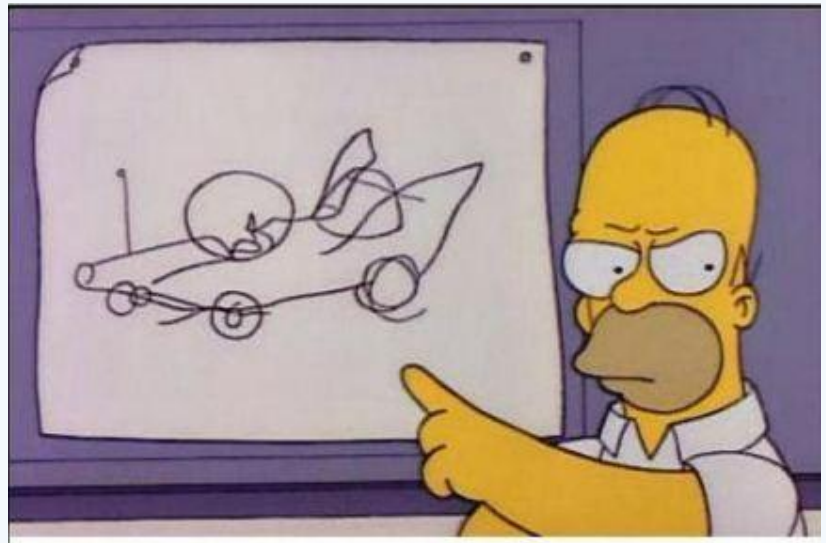


Vocabulary

Lever	Linkage
Mechanism	Annotated sketch

3. Create lots of possible designs to solve the problem!

https://www.youtube.com/watch?v=WGESd704_Uk



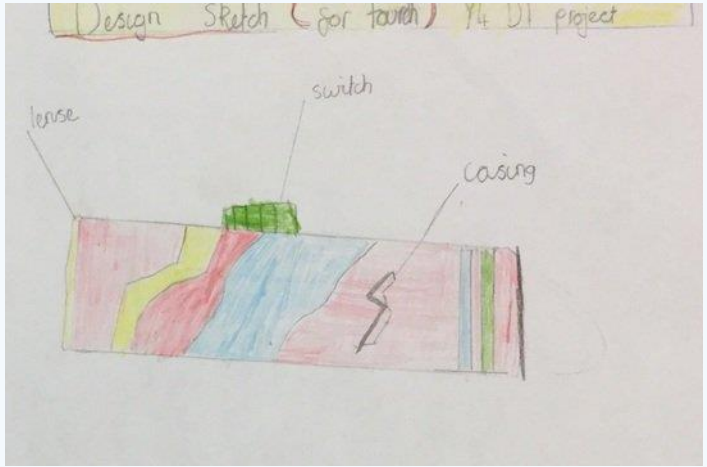
- ✓ Sketch lots of solutions – it doesn't matter if they're not brilliant!
- ✓ Choose your best design
- ✓ Create a list of instructions for how you think you will need to make your idea

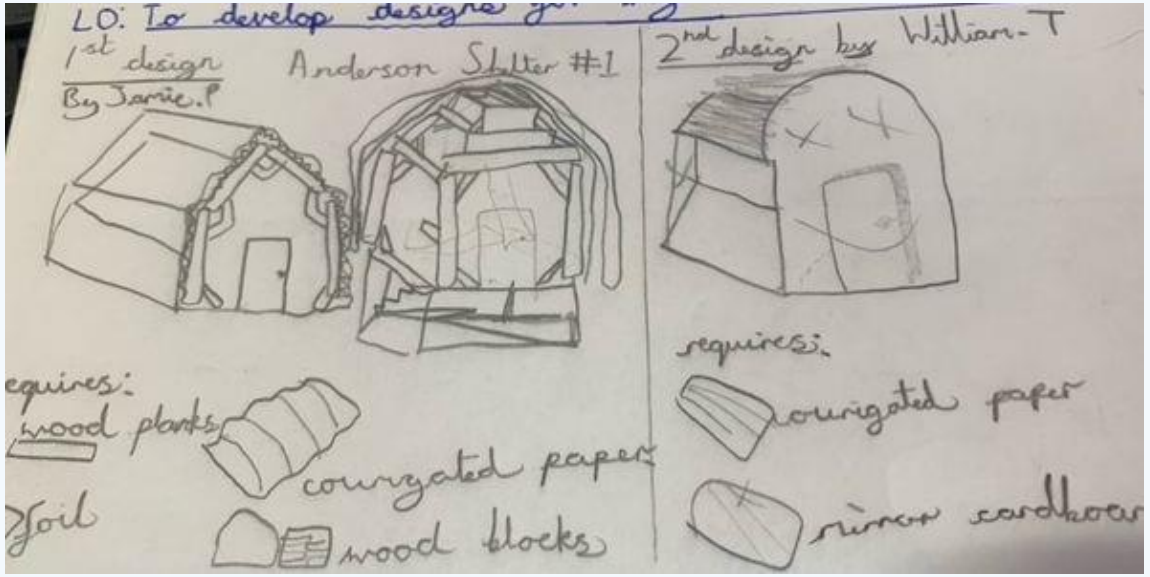
Our Design Criteria:

As a class, let's come up with criteria for our books:

How can we design?

You should have measurements and annotations on your sketch.





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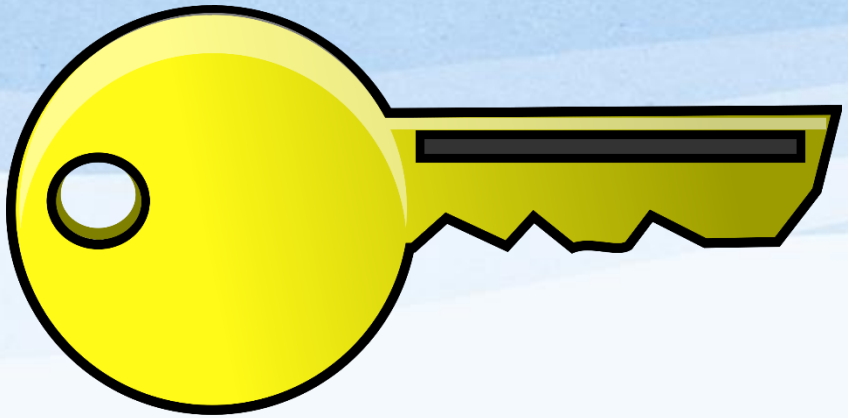
Learning Objective

KL: How levers and linkages work

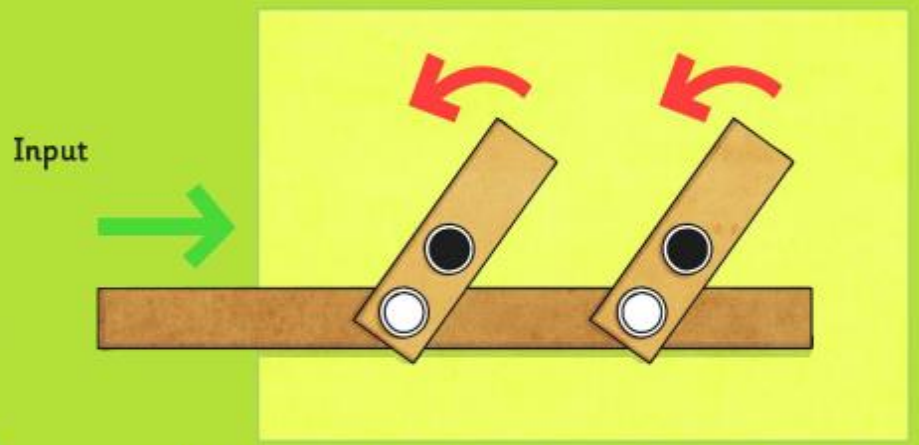


Vocabulary

fixed point	Loose point
input	output

Levers and Linkages

Exploring Mechanical Systems - Inputs and Outputs



Which parts move?

How does it work?
(**Input** and **Output**)

Many mechanisms take one type of **input** motion, and **output** it as a different type of motion.

In a lever and linkage mechanism, the '**input**' is where the user pushes or pulls a card strip. The 'output' is where one or more parts of the picture move.

When you push the linkage (input), it moves the two levers (output).

Levers and Linkages

Making it Move

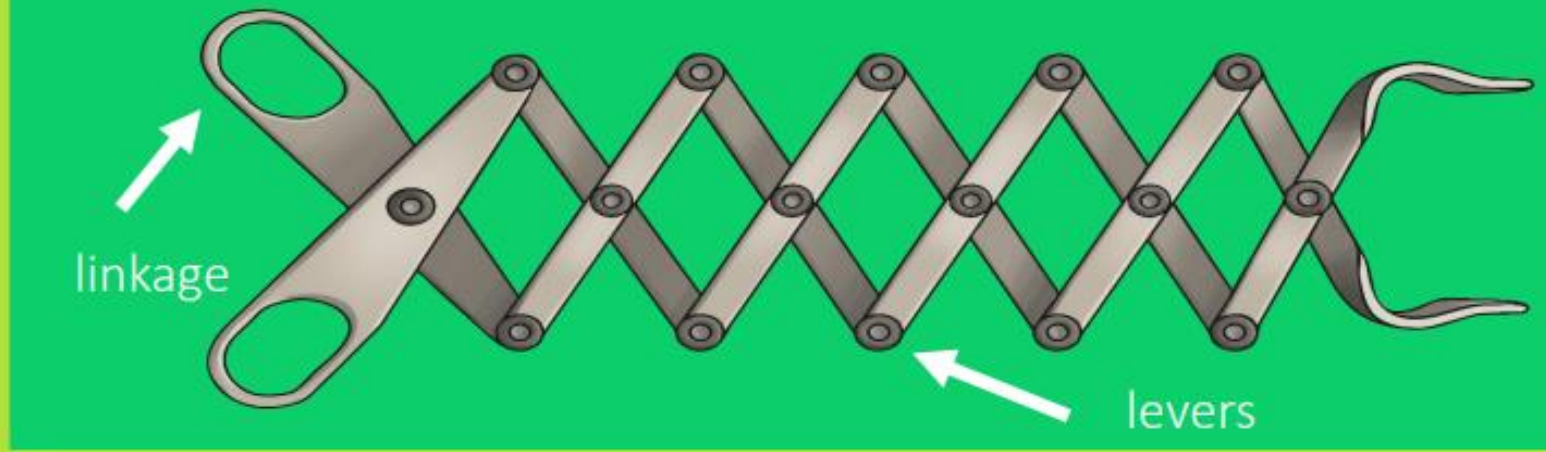
Lever - The simplest type of mechanism is called a **lever**. A lever is a stiff bar which moves around a pivot. The pivot can be **loose** or **fixed**. Levers are used in many products.

In this project you will use card strips for levers and split pins for pivots.

Levers and Linkages

Making it Move

Linkage - the card strips joining one or more levers to produce the type of movement required.

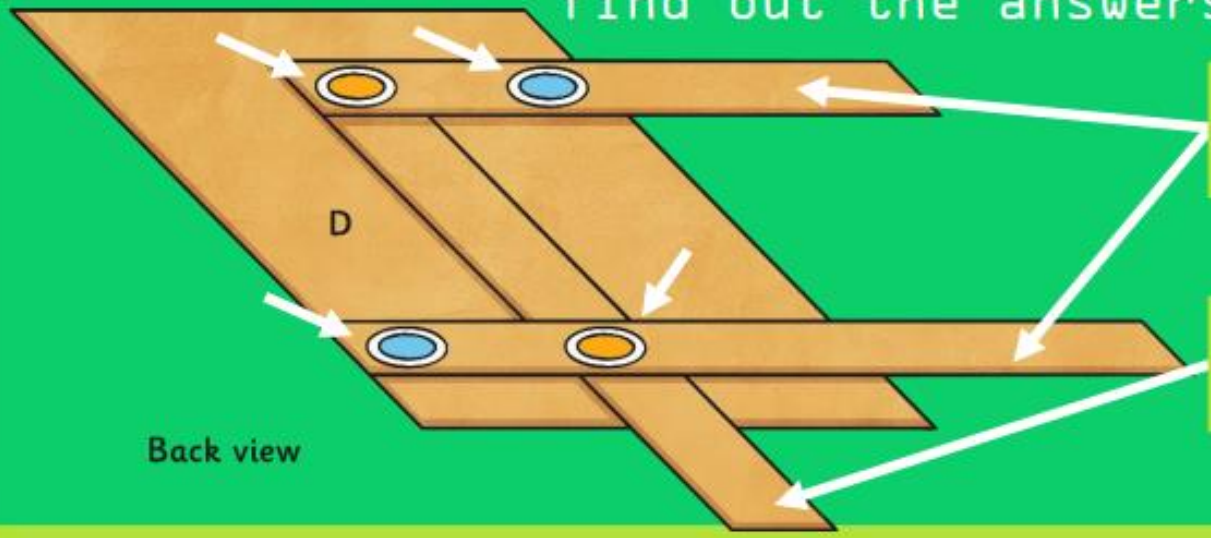


Can you explain the difference between a lever and a linkage?

Levers and Linkages

Identifying Levers and Linkages

Can you identify the levers and linkages? Discuss with your group and then click on the questions to find out the answers



Which are the levers?

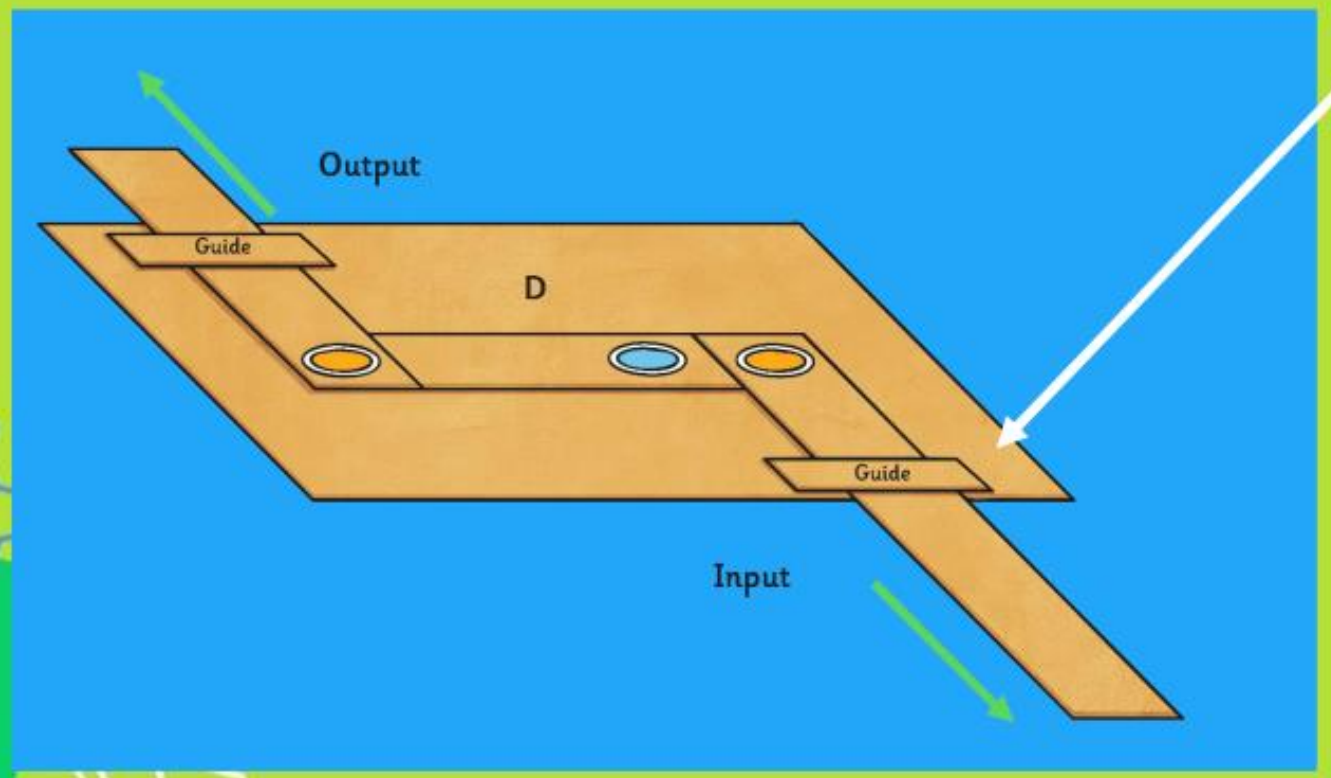
Which are the linkage?

Loose pivot - a split pin that joins card strips together.

Fixed pivot - a split pin that joins card strips to the backing card.

Levers and Linkages

Identifying Levers and Linkages



Guide - a guide is used to keep lever and linkage mechanisms in place and control movement.

Let's have a go!

We are going to make a lever and a linkage in pairs.

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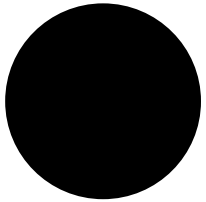
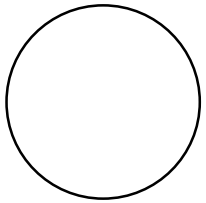
Learning Objective

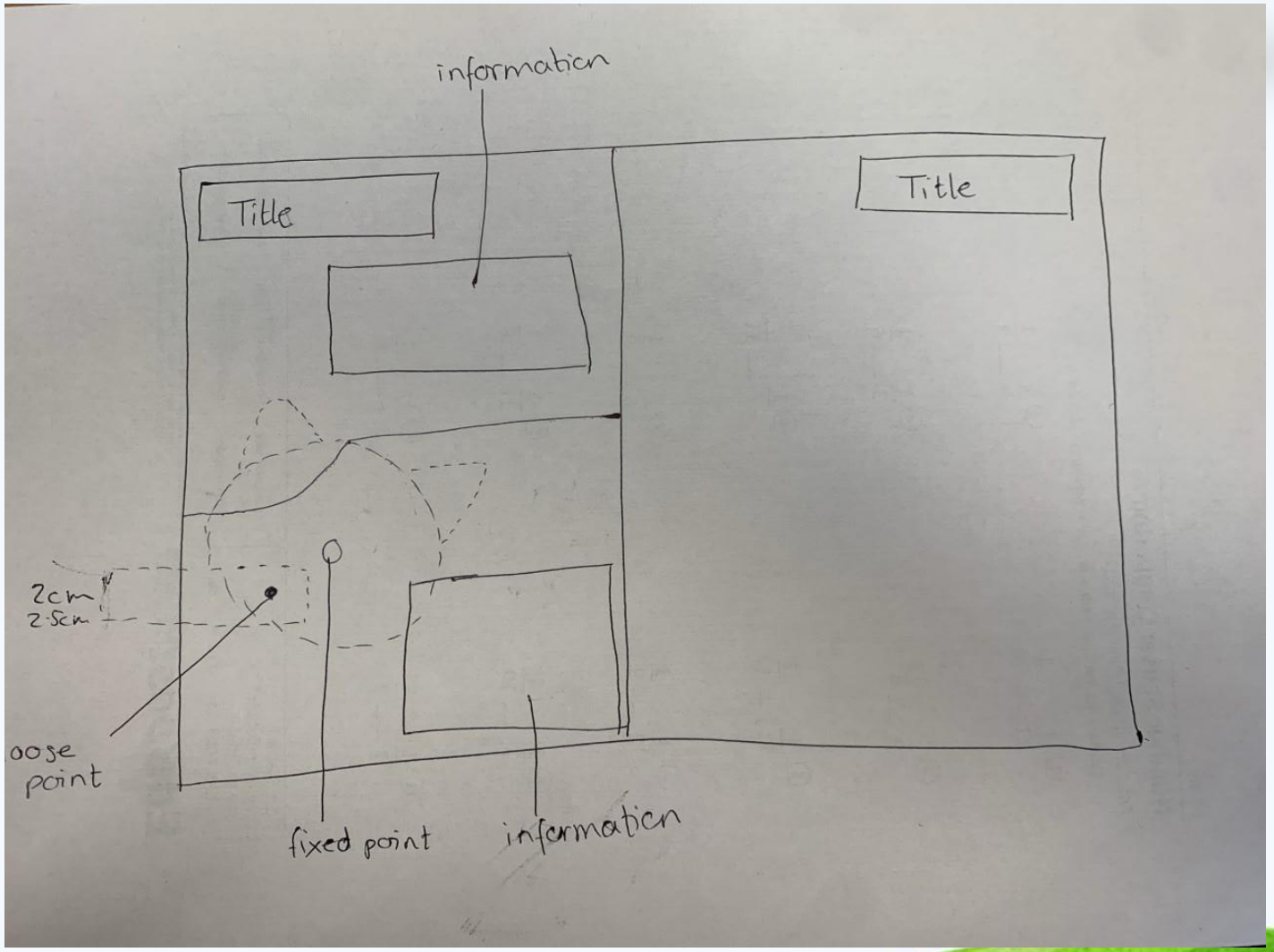
KL: To make a moving picture book

4. Make your idea!

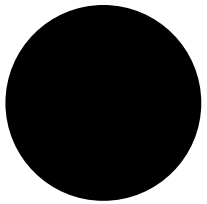
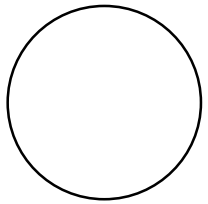
- ✓ Follow your instructions
- ✓ Work with others
- ✓ Test it as you go on
- ✓ Make changes as you go on (if you need to)

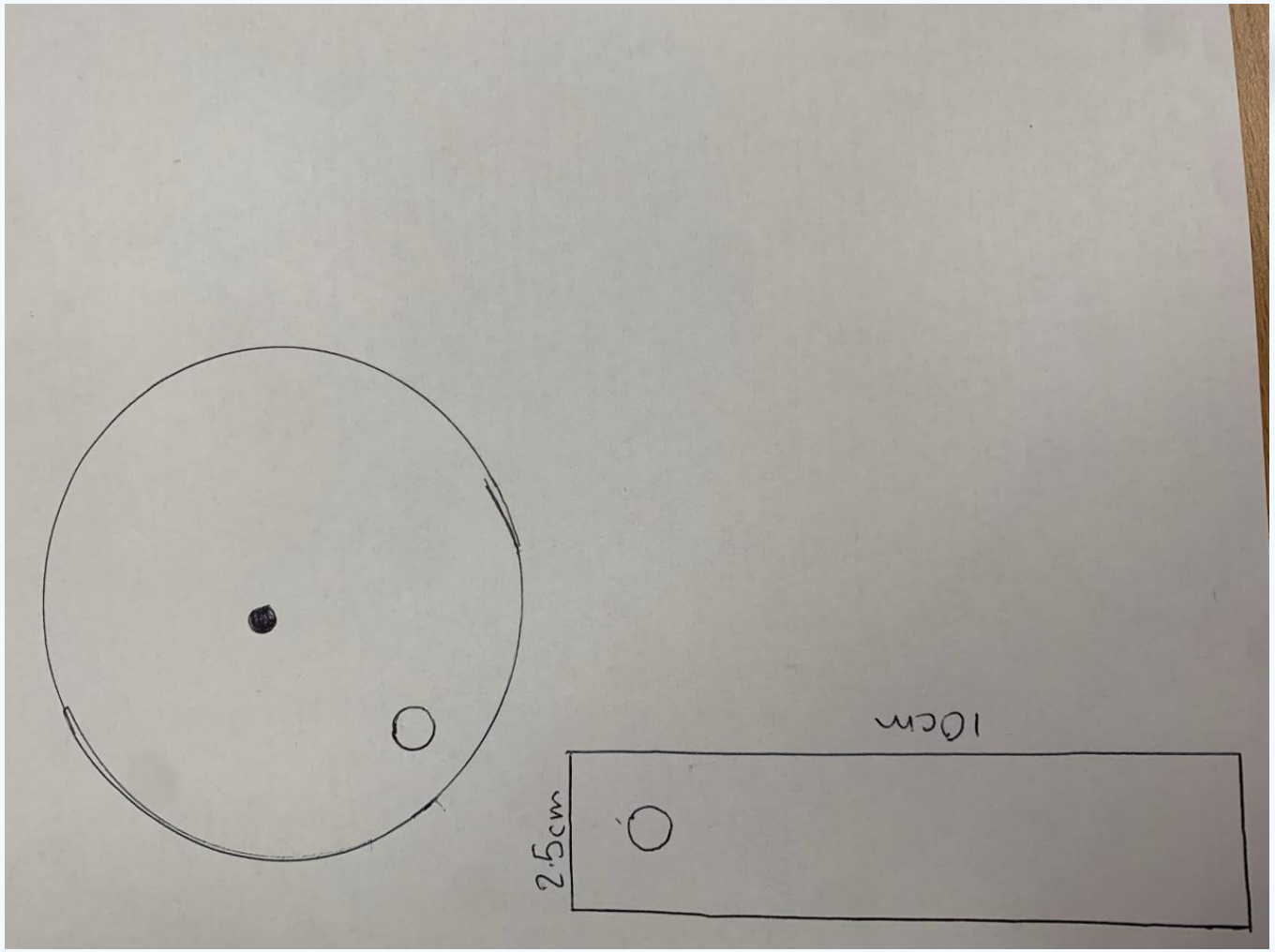
Re-design

- - - - - -	Hidden from view
	Fixed point (attached to the main piece of card)
	Loose point (not attached to the main piece of card)



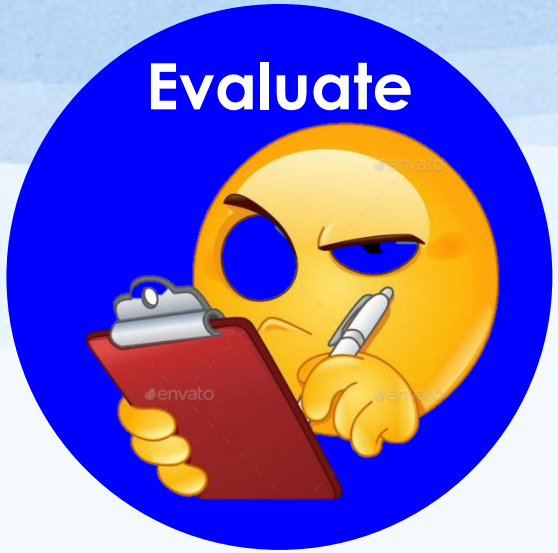
Draw out your components

	Fixed point (attached to the main piece of card)
	Loose point (not attached to the main piece of card)
Remember to keep the loose points at least 1cm in from the edge so it doesn't rip!	



Make your components

1. Cut CAREFULLY and ACCURATELY on the lines!
2. Use the blu tac to puncture the holes.
3. Count and collect the number of split pins.
4. Join your components together.



5. Review and test your design

- ✓ Did your product match the checklist you created from stage 2?
- ✓ Do you need to make any changes?
- ✓ What might you do differently next time?
- ✓ What have you learnt from this experience?