



Aston Comprehensive School
Design and Technology Department

Design & Technology

Automaton Project

My name is: _____

My teacher's name is: Mr. Clarvis

My technology group is: _____

My target level is: _____



Using the workshop is not dangerous provided that we follow a few simple safety rules...

1. Do not enter a technology room unless a teacher is present;
2. Do not touch a piece of equipment or tool without the permission of your teacher;
3. Always wear an apron during practical activities;
4. Always tie back long hair and tuck in loose clothing;
5. Always wear safety goggles when using the machines in the workshop;
6. Always stand well away from people using machines and do not distract them;
7. Never run;
8. Always store bags under desks and out of the aisles;
9. When walking with tools, remember to hold them by your side and not pointing outwards;
10. Report any accidents to your teacher straight away.

Design Brief

Design and make an automaton using cams as a mechanism to create Movement that is interesting and amusing.

Project Aims:

- To develop an understanding of materials and processes that are used within D&T Resistant Materials;
- To develop an awareness of simple mechanisms and how they work;
- To produce a fully working automaton with an amusing design and movement.

Research

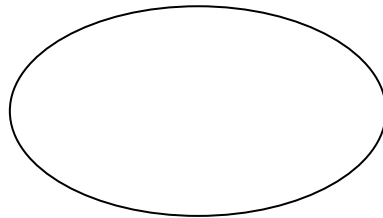
In the spaces below paste or draw three examples of automata that you can find that have already been made. One has been found for you already:

Example no.1

Example no.2

Example no.3

Example no.4



1.

2.

3.

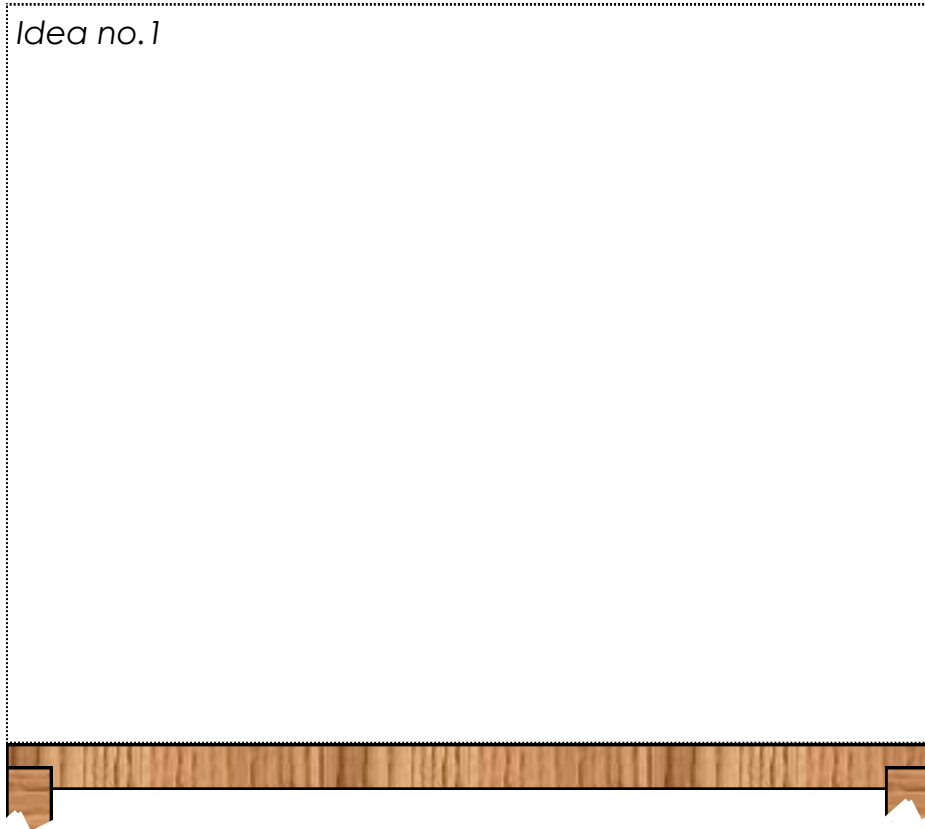
4.

5.

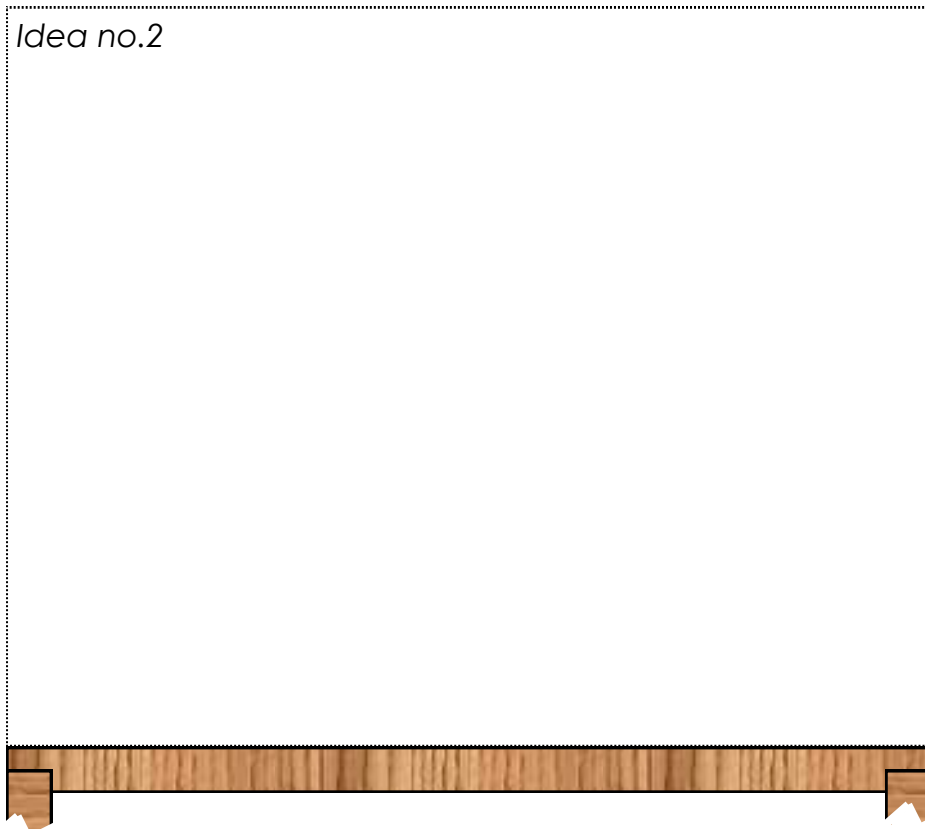
6.

Draw four different ideas on the following sheets showing what you want to move and the direction of movement:

Idea no.1



Idea no.2



Idea no.3

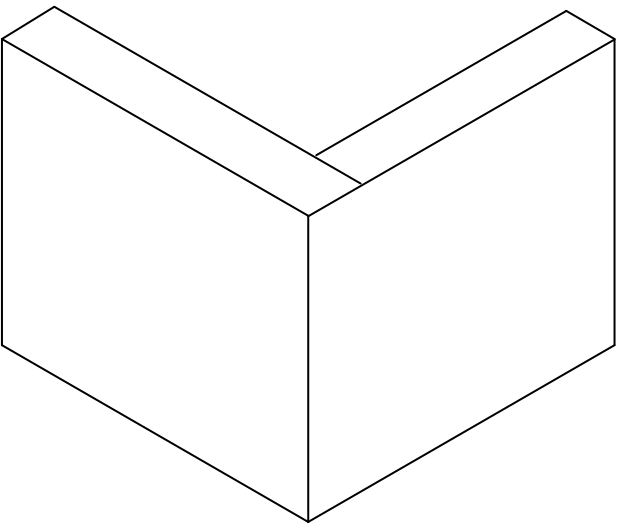


Idea no.4



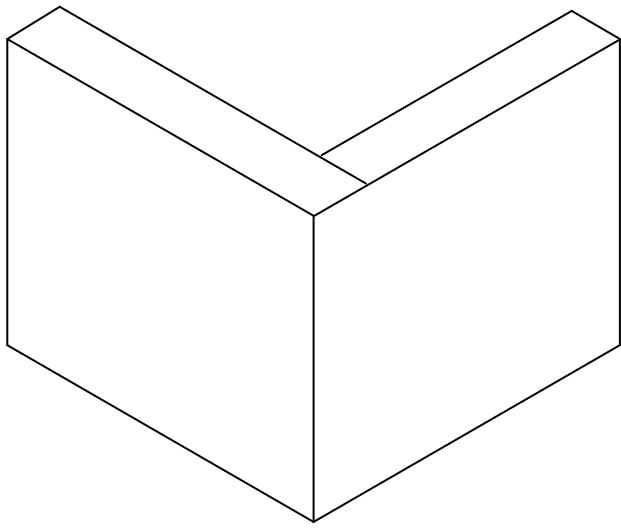
Find four different box joints and label them in the spaces below:

1.



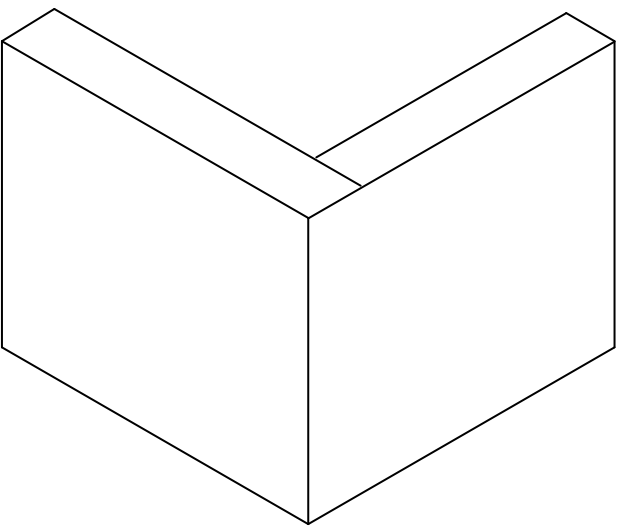
Joint name: _____

2.



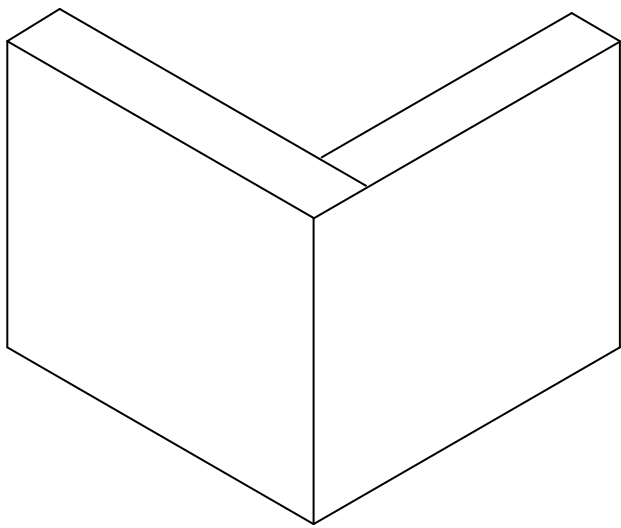
Joint name: _____

3.



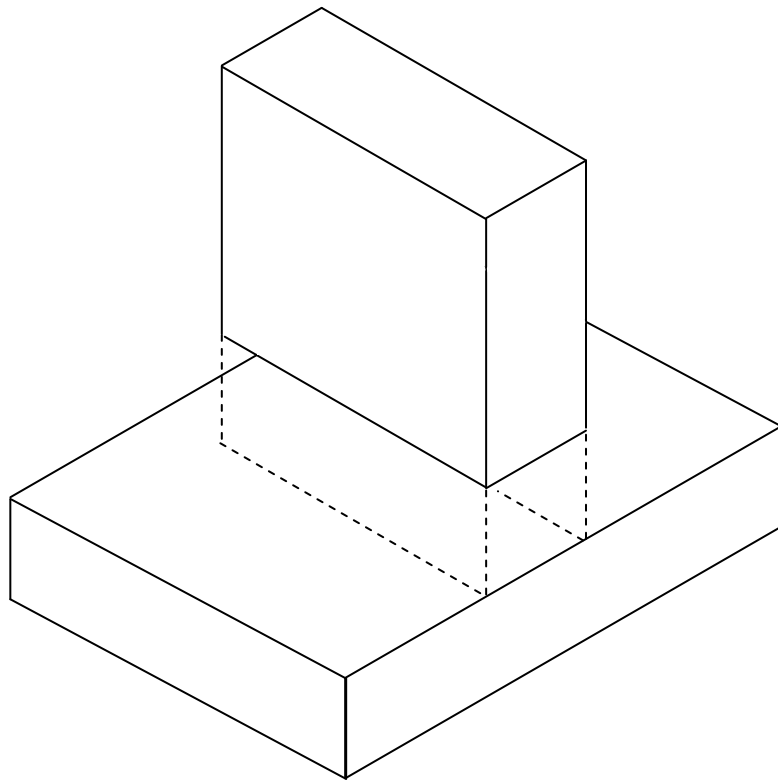
Joint name: _____

4.



Joint name: _____

Find two different joints that will connect the pieces shown below and then draw them in the spaces below:

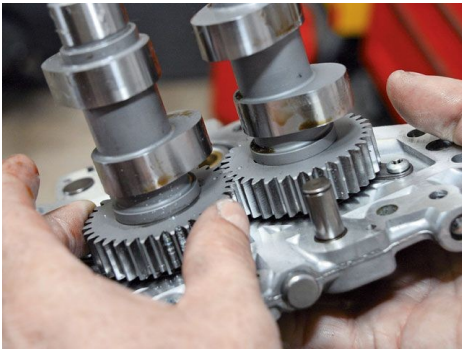


1.

2.

Joint name: _____

Joint name: _____

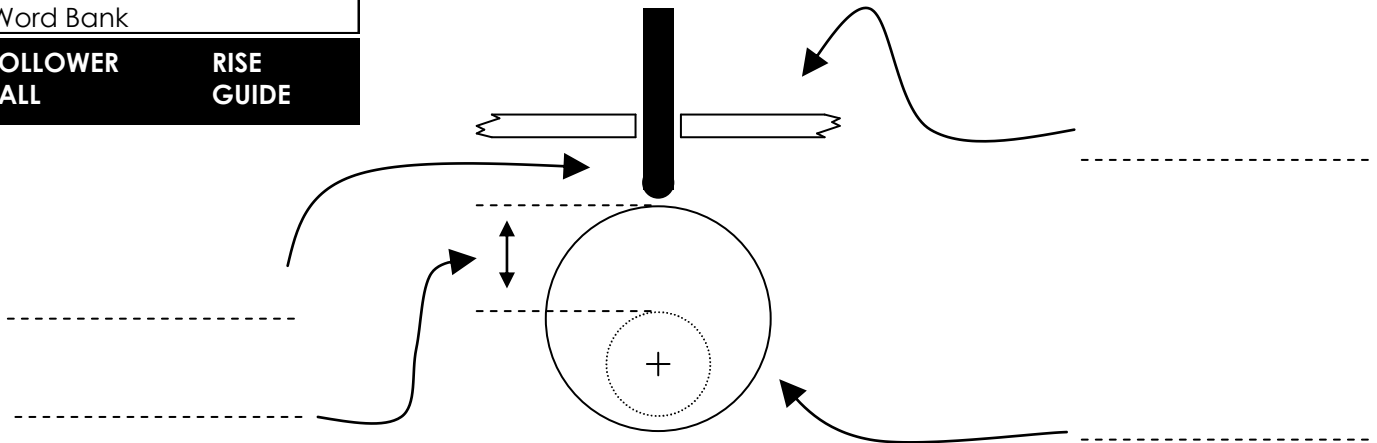


CAMs are mechanical devices used in a range of different machines. The most common use is in the engine of a car or motor bike. They are used to couple the pistons of the engine to the drive shaft.

A CAM is a device that converts _____ movement into _____ movement.

The diagram below is a cross sectional view of the CAM we can use in our project. Using the word bank, label the parts shown:

Word Bank	
FOLLOWER	RISE
FALL	GUIDE



Explain what the word STROKE means:

.....

.....

.....

Explain what the word FALL means:

.....

.....

.....

Explain what the word RISE means:

.....

.....

.....

What is a follower?

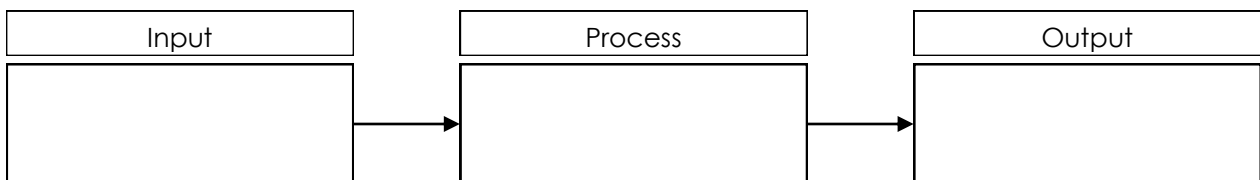
.....

.....

.....

Mechanical Systems

All mechanical systems can be broken down into three basic elements: Inputs; processes and outputs. An input is a device that takes in some kind of energy or movement; An output is a device that produces some kind of movement; A process is something that converts one type of movement into another type of movement. Complete the system diagram below with help from your teacher:



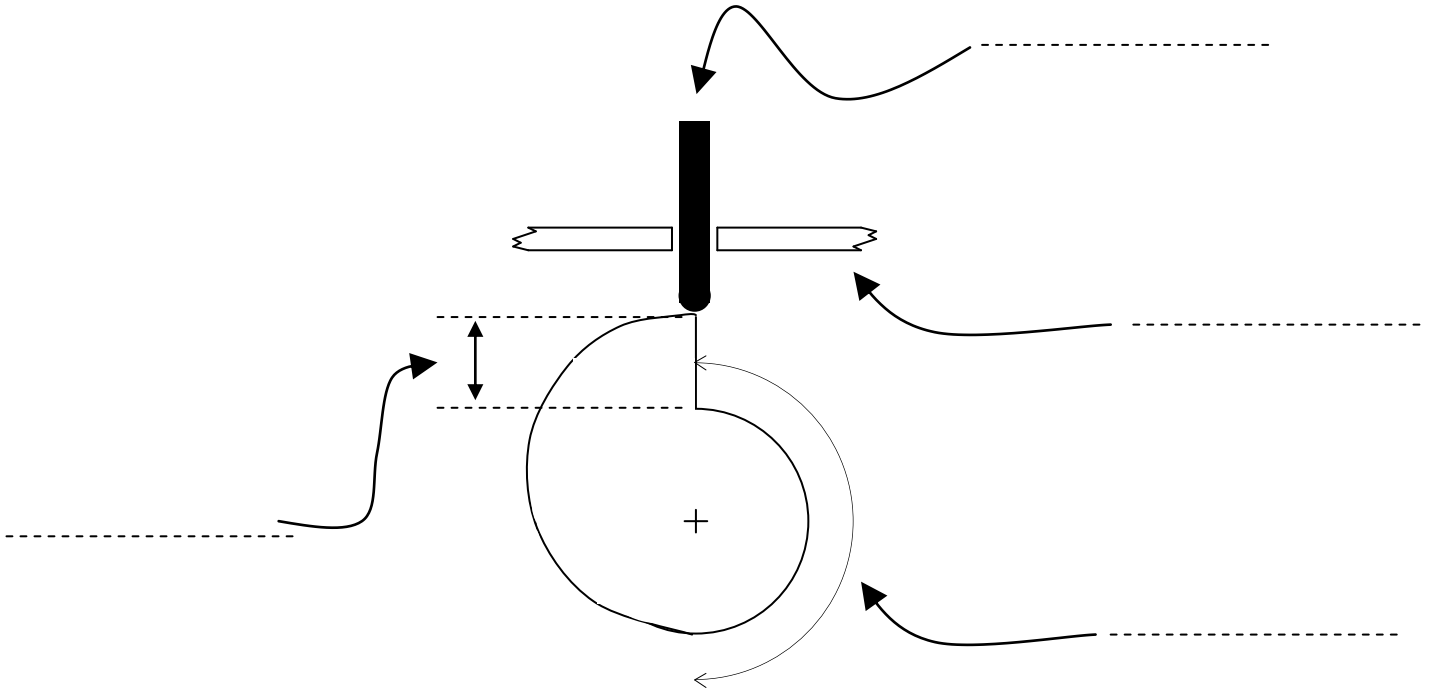
Word Bank

FOLLOWER

DWELL

RISE/FALL

GUIDE



Explain what the word DWELL means:

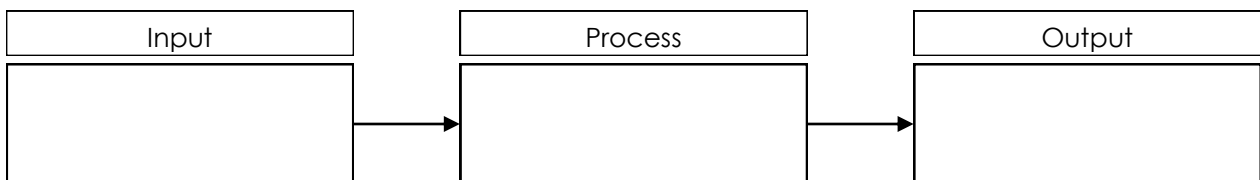
Explain what the word FALL means:

Explain what the word RISE means:

What is a FOLLOWER?

Mechanical Systems

All mechanical systems can be broken down into three basic elements: Inputs; processes and outputs. An input is a device that takes in some kind of energy or movement; An output is a device that produces some kind of movement; A process is something that converts one type of movement into another type of movement. Complete the system diagram below with help from your teacher:



By looking at the models you have been shown, draw the shapes of five different cams and followers in the box labelled *processes*. Explain what movement the follower makes when the handle is turned clockwise:

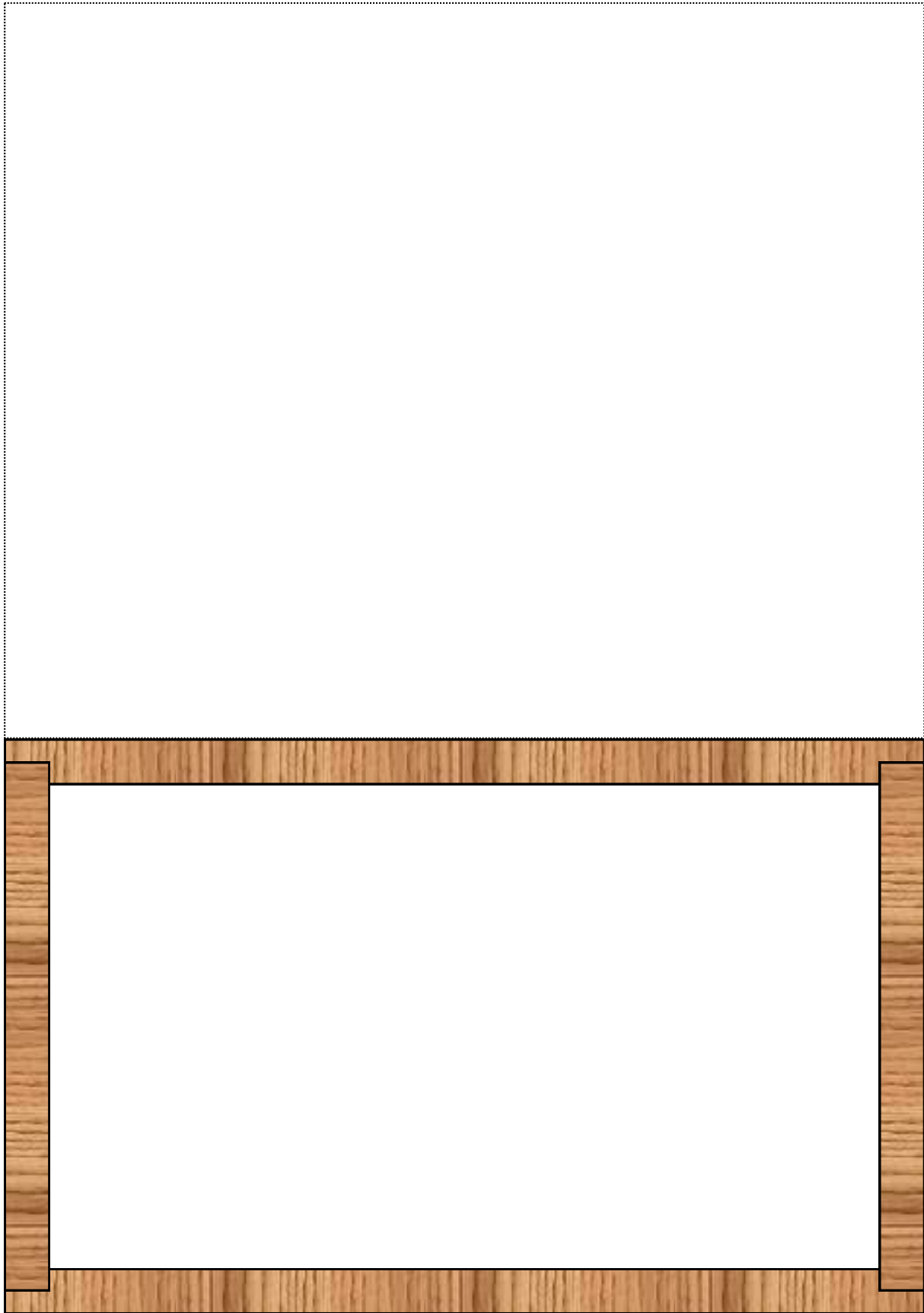
Inputs	Processes	Outputs
1.		
2.		
3.		
4.		
5.		

Stroke

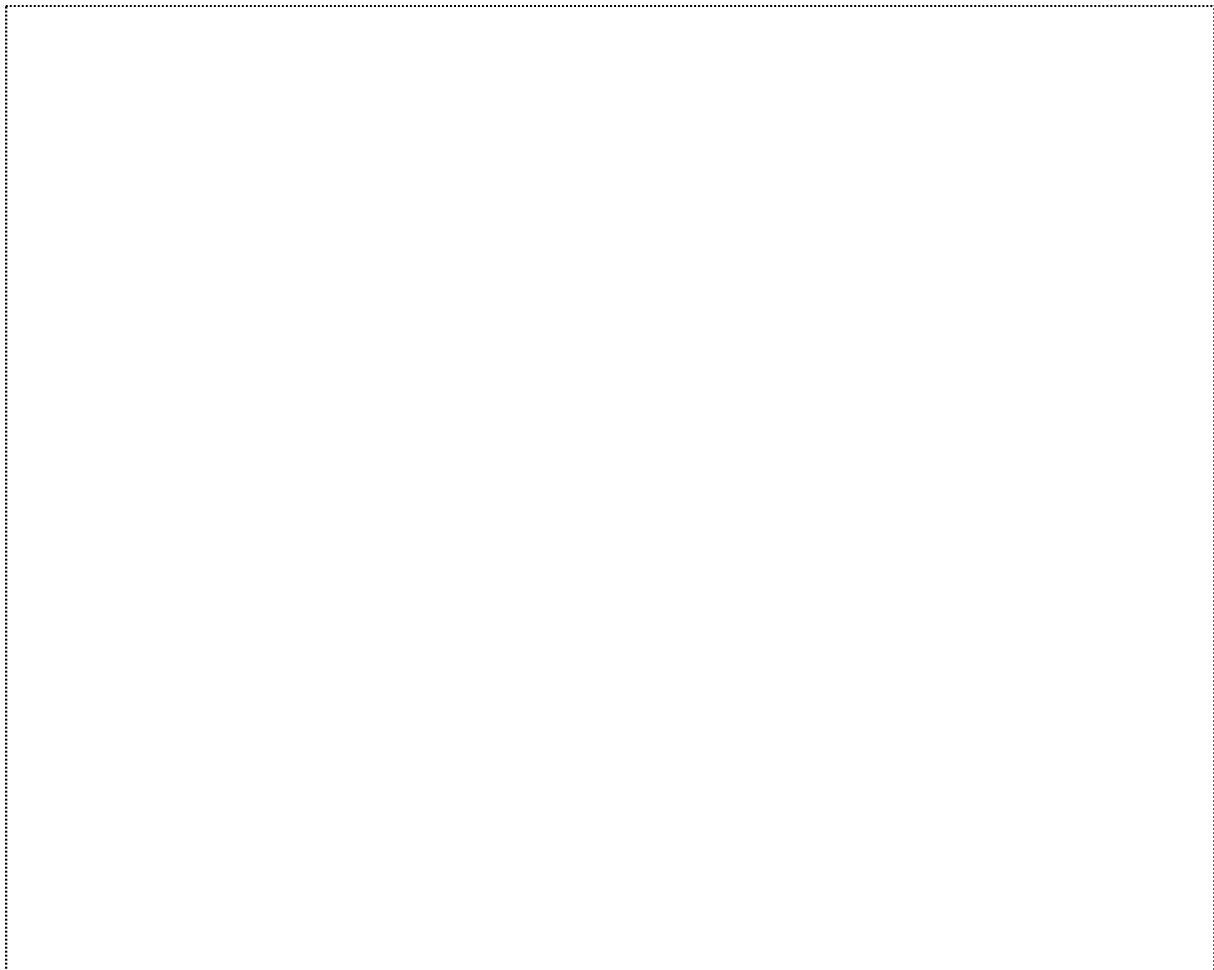
A large empty rectangular box for working out the movement.



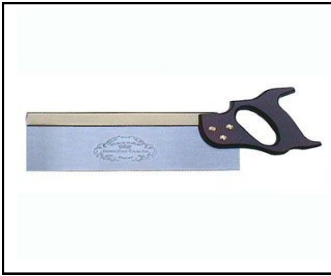
Use the template to help you draw your final design. You must include the following parts: CAMSHAFT; CAMS; WINDING HANDLE; END STOP; FIGURES THAT MOVE; CAM FOLLOWERS and BACKGROUND.



Use the template to help you draw your final design. You must include the following parts: CAMSHAFT; CAMS; WINDING HANDLE; END STOP; FIGURES THAT MOVE; CAM FOLLOWERS and BACKGROUND.



Part	Length	Width	Thickness	Material	Quantity
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



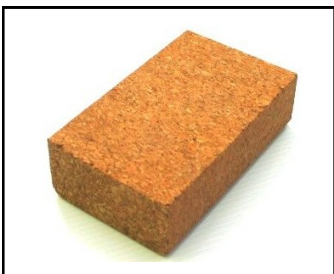
This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:



This tool is called a: _____
We use this tool to:






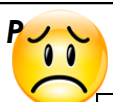
This tool is called a: _____
We use this tool to:





A large rectangular area containing 30 horizontal lines for writing.






Lined area for writing notes, consisting of a vertical rectangular box with a black border and horizontal ruling lines.

Large empty rectangular box for notes.

Assessment:		
Date:	Comment:	E 
Level:		G 
To improve I must:		S 
		P 

Assessment:		
Date:	Comment:	E 
Level:		G 
To improve I must:		S 
		P 

Assessment:		
Date:	Comment:	E 
Level:		G 
To improve I must:		S 
		P 