

Mechanisms are usually a clever combination of a few simple mechanical parts or elements.

They:

- Make a job **easier** to do
- Involve some kind of **movement**
- Involve some kind of **force**
- Need some kind of **input** to make them work

_____ is the term used when the teeth of a gear fit tightly together.

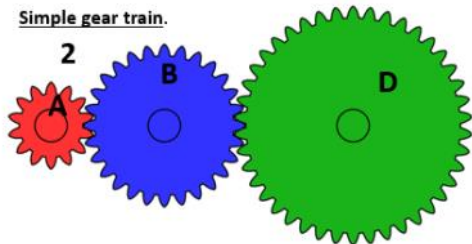
When the teeth mesh together, this is called a _____.

What is a gear used for?

- i _____ or r _____ s _____ and f _____;
- change the d _____ of movement;
- transmit a m _____ over a d _____

Word bank—Increase, gear train, direction, mesh, force, reduce speed, distance & movement

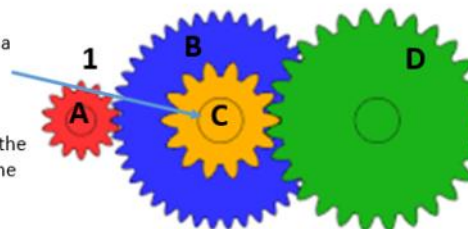
Simple gear train.



Compound Gears Train

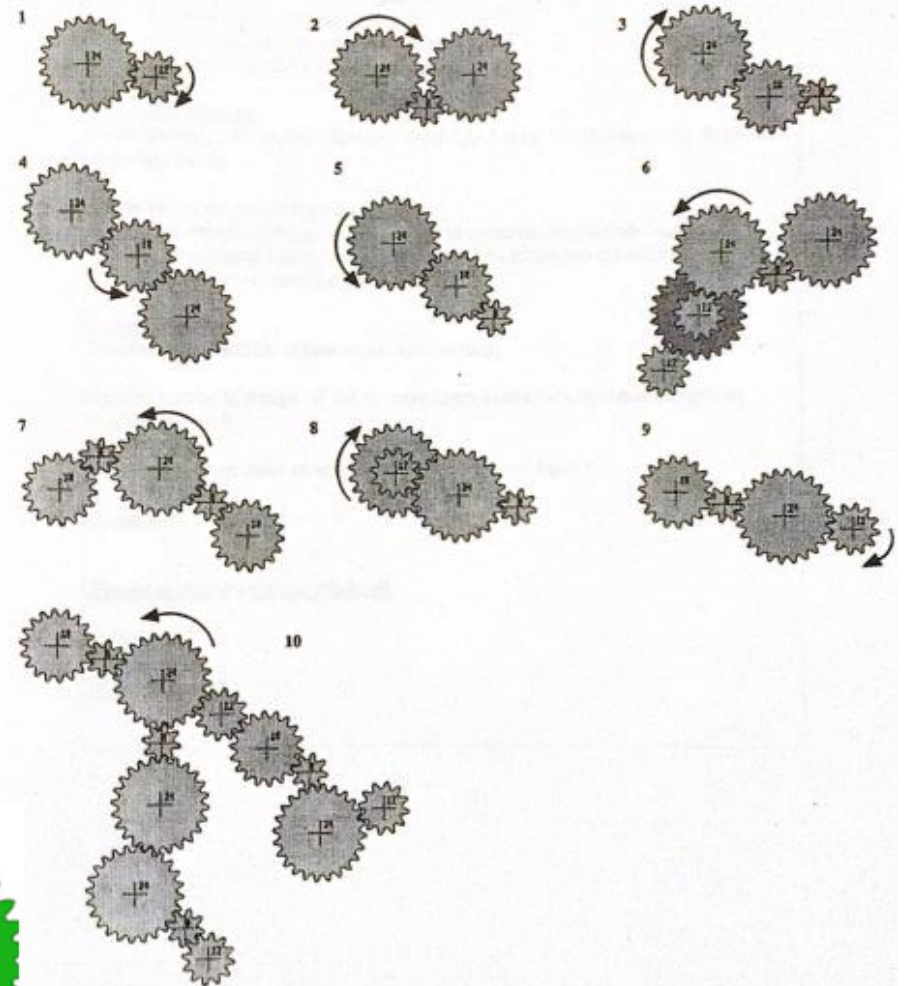
Compound Gears share a gear shaft with another gear

Eg; gear B and C are on the same shaft rotating at the same pace.



Look at the gears below.

1. Name the gear chain of each
2. Show the direction of the output(s)
3. Say if the output speed(s) will be bigger than the input speed



Levers & Linkages

Draw a diagram to demonstrate each class of lever.

DIAGRAM	PICTURES OF LEVERS
Class 1 Lever	
Class 2 Lever	
Class 3 Lever	

There are four kinds of motion that are able to describe actions of mechanisms and these are represented below. There is also a selection of linkages that could form part of a machine, the input and its' direction is shown. Your task is to label the examples to show the direction of movement of each of the parts using the appropriate arrow shape and if possible name the types of cranks used.

Linear →

↔ Redprocatng

↻ Oscillating

↻ Rotary

1

2

3

4

5

6

7

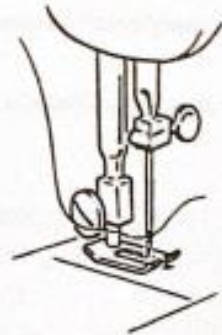
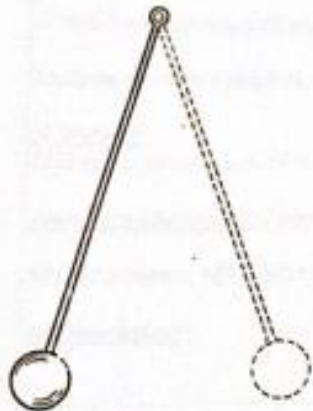
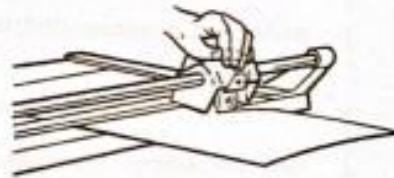
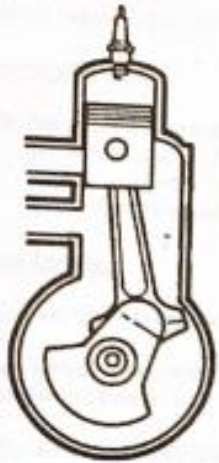
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9

10

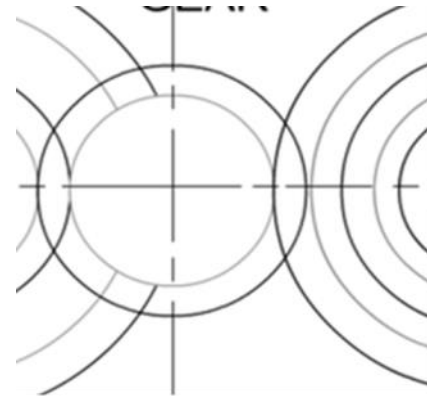
Motion

Linear, reciprocating, oscillating and rotary are the four types of motion. Below are pictures of mechanisms, draw on the pictures each motion that will occur and name it.

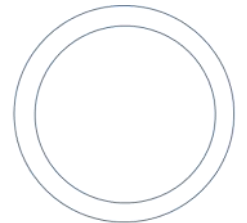


Drawing Gears

When drawing a gear train it is not necessary to draw all the individual teeth. Two concentric circles represent the gear wheel and

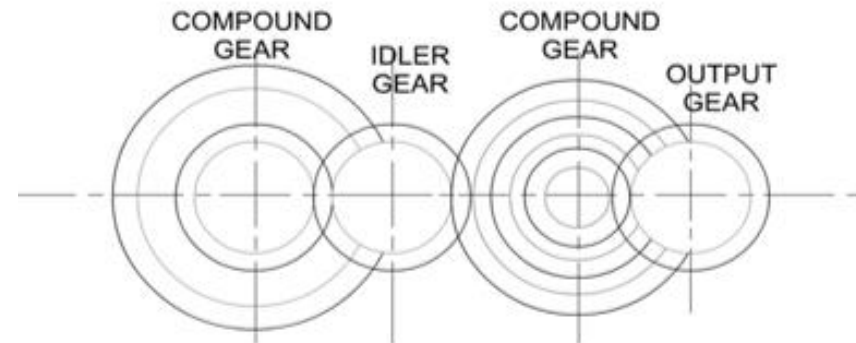


The highlighted section displays the overlapping circles. This represents the gears teeth.

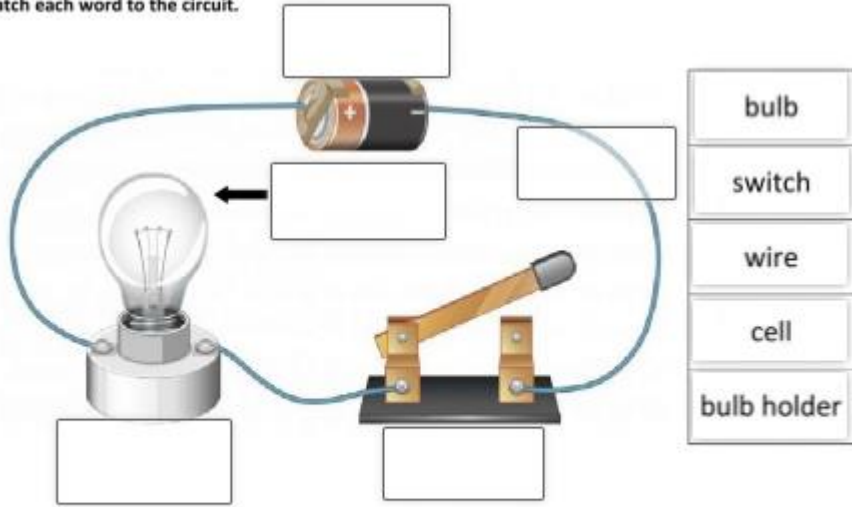


Two concentric circles.

Using Powerpoint, complete a drawing like below to resemble the simple gear train as shown on the left. - You can hand draw this if you have a pair of compasses.



Match each word to the circuit.



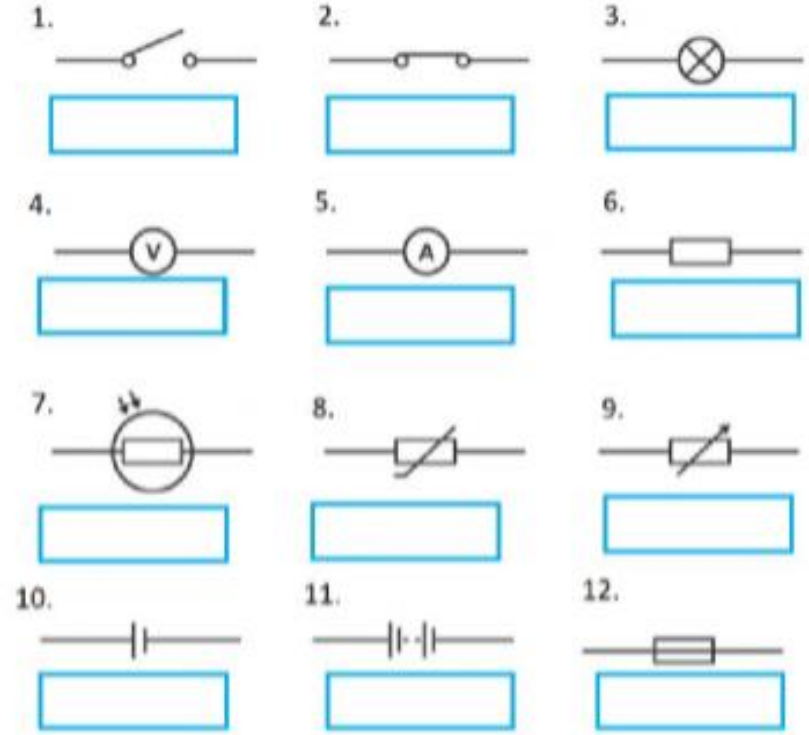
- bulb
- switch
- wire
- cell
- bulb holder

Match the name to the picture and the function.

wire		Turns the circuit on or off
buzzer		Moves something move
bulb		Stores the electricity
motor		Connects the parts of a circuit
cell		Lights up
switch		Makes a sound

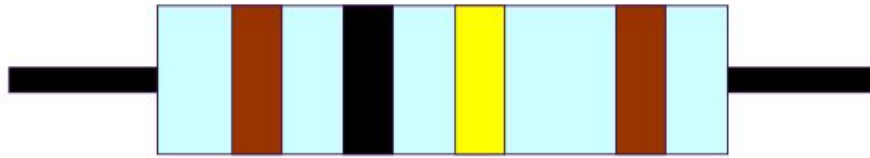
Circuit symbols

Match the labels of the component parts to the circuit symbols.



- open switch
- cell
- thermistor
- variable resistor
- LDR
- ammeter
- resistor
- battery
- fuse
- lamp
- closed switch
- voltmeter

Identifying resistor values



Band Colour	1st Band	2nd Band	Multiplier x	Tolerance
Silver			+ 100	10%
Gold			+ 10	5%
Black	0	0	1	
Brown	1	1	10	1%
Red	2	2	100	2%
Orange	3	3	1000	
Yellow	4	4	10,000	
Green	5	5	100,000	
Blue	6	6	1,000,000	
Violet	7	7		
Grey	8	8		
White	9	9		

Example: Band 1 = Red, Band 2 = Violet, Band 3 = Orange, Band 4 = Gold

The value of this resistor would be:
 2 (Red) 7 (Violet) x 1,000 (Orange)
 = 27 x 1,000
 = 27,000 with a 5% tolerance (gold)
 = 27KΩ

Too many zeros?
 Kilo ohms and mega ohms can be used:
 1,000Ω = 1K
 1,000K = 1M

Calculating resistor markings

Calculate what the colour bands would be for the following resistor values.

Value	1st Band	2nd Band	Multiplier x
180 Ω			
3,900 Ω			
47,000 (47K) Ω			
1,000,000 (1M) Ω			

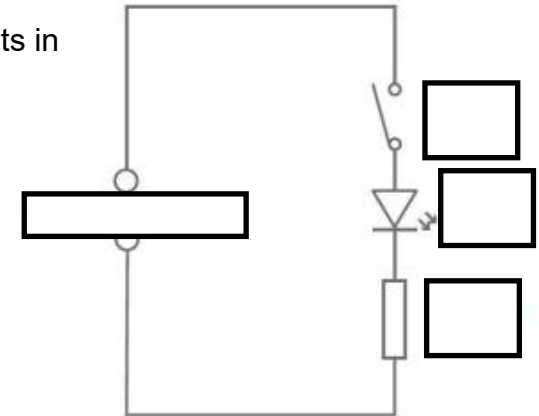
Resistor identification task

Calculate the resistor values given by the bands shown below. The tolerance band has been ignored.

1st Band	2nd Band	Multiplier x	Value
Brown	Black	Yellow	
Green	Blue	Brown	
Brown	Grey	Yellow	
Orange	White	Black	

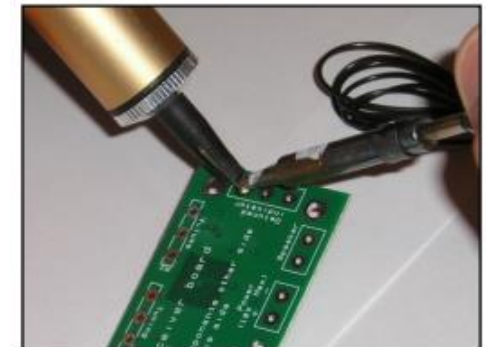
How the USB Lamp Works

Label the components in the circuit diagram.



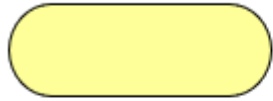
Use notes and sketches to describe the process of soldering a component onto a PCB.

www.technologystudent.com
 or www.kitronik.co.uk can help.



Manufacturing Flowchart

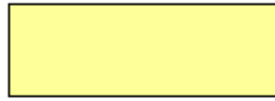
You need to use a flowchart to explain how to make your product. There are different, specific symbols for each stage of the process. Some of these are shown below.



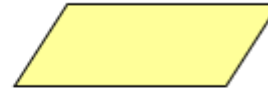
TERMINATOR
represents start, restart, stop.



DECISION
represents a choice which can lead to another pathway



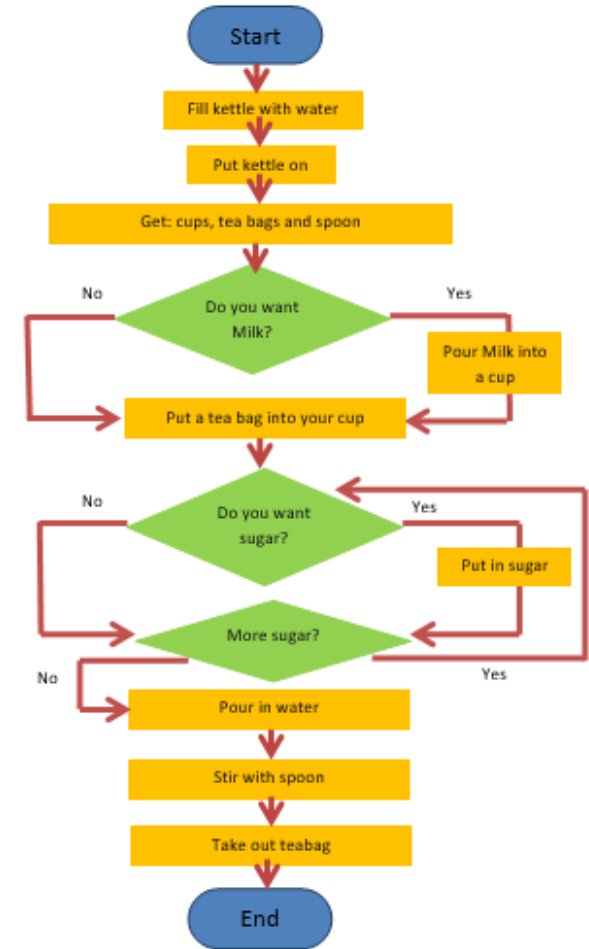
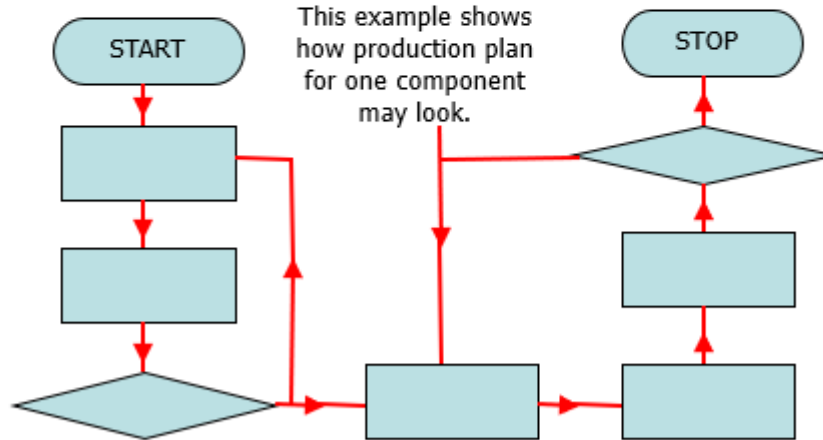
PROCESS
Represents a particular instruction or action



INPUT/OUTPUT
represents additions to or removals from the particular process.

The symbols are linked together by arrows which indicate the correct sequence of events. The aim should be to make the flowchart as clear and simple as possible.

- Always start with the correct symbol.
- Show each stage in a rectangle using clear easy to follow instructions
- You will need to undertake some quality checks, what will they be? Quality checks require a decision so a diamond shape is used.
- You will need to build in feedback loops if something is found to be wrong. This could take you back one or several stages so that some process can be adjusted before going forward again.



DT Coursework

Complete a flow process chart for one of the following:

- Making a cup of coffee
- Making toast under the grill

How do you know where a flowchart begins?

What name is given to the start and end symbol?

What are the lines in a flowchart called?

What do the flow lines do in a flowchart?

What name is given to the diamond shape?

.What should be next to the lines coming out of the decision box?

Give an example of an input

Give an example of an output