Mechanism Definition:
A mechanism is a device which changes an input motion and force, into a desired output motion and force.

Although designed to do different jobs, all mechanisms have some things in common:

-They involve some kind of motion/ movement.
-They involve some kind of force.
-They make a job easier to do.
-They need some kind of input to make them work.
-They produce some kind of output.

Types of movement

Linear

What else could be linear?

Linear motion is **movement** of an object from one place to another in a straight or mostly straight line.
One direction

Rotary

Rotation is a circular **movement** of an object around a centre (or point) of rotation

Oscillating

Oscillating motion occurs when an object swings left and then right (or vise-versa), from a fixed point

Reciprocating

How does the saw blade move?

Reciprocating motion, also called **reciprocation**, is a repetitive up-and-down or back-and-forth linear **motion**.

What is Mechanical advantage?

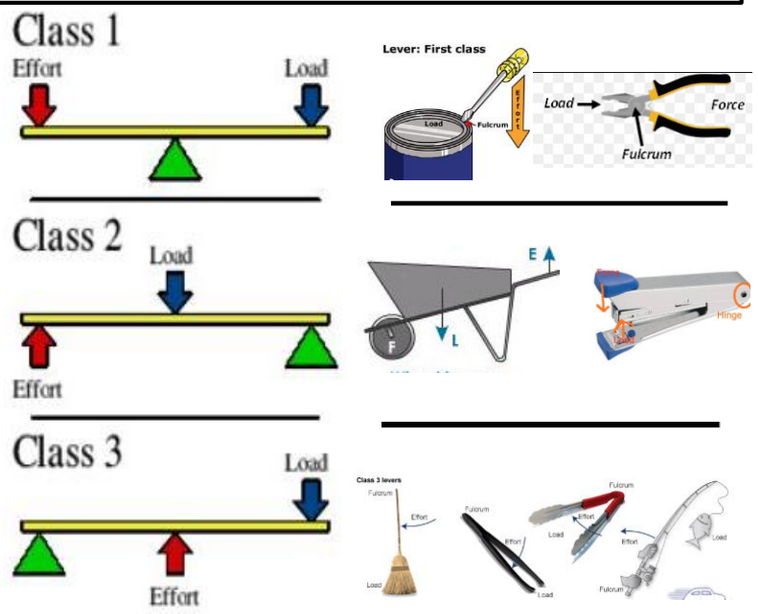
Mechanical advantage is a measure of the ratio of output force to input force in a system, used to analyse the forces in simple machines like levers and pulleys. Despite changing the forces that are applied the conservation of energy is still true and the output energy is still equal to the input energy.

-Mechanism
-Movements
-Motion
-Rotary
-Oscillating
-Reciprocating
- Linear
-Input
-Output
-Lever
-Force
-Load
-Effort
-Pivot (fulcrum)
-Mechanical advantage
-Velocity ration

Design and Technology

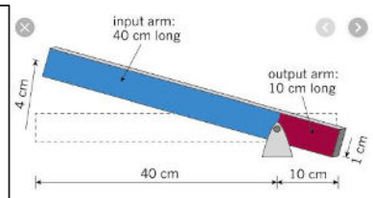
Definition:
A **lever** is a rigid bar pivoted around a **fulcrum**, used to transfer a **force** to a **load** and usually to provide a mechanical advantage

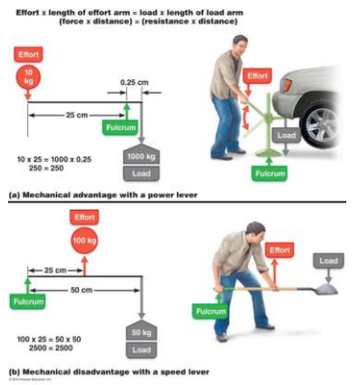
There are 3 classes of lever each with a different arrangement of the Effort , Load and pivot (fulcrum)



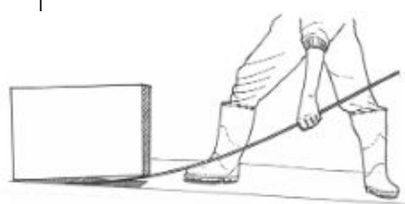
Mechanical advantage in Levers
Class 1 and class 2 levers both provide **mechanical advantage**. This means that they allow you to move a large output load with a small effort. Load and effort are **forces** and are measured in Newtons (N). Mechanical advantage is calculated as follows:

Mechanical Advantage = load ÷ effort
Where the load = 500N and the effort = 100N, the mechanical advantage would be:
500N ÷ 100N = 5





Velocity ratio
The mechanical advantage gained with class-one levers and class-two levers makes it seem like you are getting something for nothing: moving a large load with a small effort**. The catch is that to make the effort smaller, you have to move a greater distance.** In the first diagram the trade-off is that yc need to push the lever down further to move the load up a smaller distance. This trade-off is calculated by the velocity ratio:
Velocity Ratio = distance moved by effort ÷ distanc moved by load



Make sure you use the correct terminology for the different movements.

This is likely to be where some maths based questions are, so make sure you can calculate Mechanical advantage and velocity ratios.

Title: Mechanisms (Movements and levers)

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