Mechanical Force

Force - Applying the formula **MA = Load / Effort

Force is measured in "Newtons" (N)

LOAD and EFFORT are both measured in “Newtons” as they are both forces

****MA is short for "mechanical advantage"**

In the example below the “Wheel Barrow” is an example of a second class lever. The mechanical advantage is calculated by dividing the LOAD by the EFFORT used to lift the load.

If the load is 300N and the effort required to lift it is 100N then the mechanical advantage is: 300/100 = 3/1 or 3:1 or 3

You can work out the effort required for the load for any given lever if you know where the LOAD is relative to the Fulcrum and where the force is applied relative to the Fulcrum.

In this case the ends of the barrow handles are 3 times the distance from the Fulcrum (The front wheel) than the centre of the weight of sand being lifted.

But the handles of the barrow need to be lifted three times as far as the load is lifted. The handles move by 300mm, and the load only raises up by 100mm.

By placing the load on this “Sack barrow” as close to the wheel **(Fulcrum)** as possible the amount of effort needed to lift the handles is greatly reduced.