

## Classes of Levers

### SPH4C

A 1st class lever has the \_\_\_\_\_ in the centre.

Sketch:

The fulcrum may be positioned closer to the load or closer to the effort force.

Example: \_\_\_\_\_

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A 2nd class lever has the \_\_\_\_\_ in the centre.

Sketch:

Example: \_\_\_\_\_

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A 3rd class lever has the \_\_\_\_\_ in the centre:

Sketch:

Example: \_\_\_\_\_

The ideal mechanical advantage of a lever is defined as the ratio of the \_\_\_\_\_  
to the \_\_\_\_\_:

Note that for 3rd class levers, the IMA will be \_\_\_\_\_!

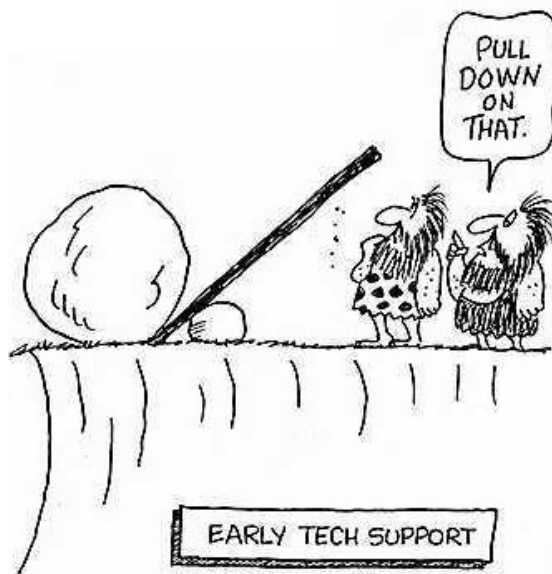
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The actual mechanical advantage of a lever is defined as the ratio of the \_\_\_\_\_  
to the \_\_\_\_\_:

This mechanical advantage may be affected not only by friction but also by factors such as the \_\_\_\_\_.

Efficiency is, as before:

Note that a lever can have a low (even less than 1) AMA and IMA but still have a high efficiency if \_\_\_\_\_.



## More Practice

1. Identify the class of lever for each of the following examples:



*(Yes, the body of someone doing a push-up is a lever.)*



2. A person applies a force of 810 N to one end of a 2.4 m 1<sup>st</sup> class lever to lift a rock of weight 3900 N. The fulcrum is positioned 0.4 m from the rock. Find the:

(a) IMA

(b) AMA

(c) percent efficiency of the lever.