Work. Machines

Simple machines

ARE → Devices that can alter the forces acting on a body.

HOW THEY WORK → Simple machines follow the law of conservation of energy, so the machines do not increase energy. Rather, they multiply force (except in the case of the pulley). But a longer distance must be covered.

LET'S TAKE A CLOSER LOOK

- THE LEVER
- PULLEYS
- THE SLOPING PLANE

Work. Machines

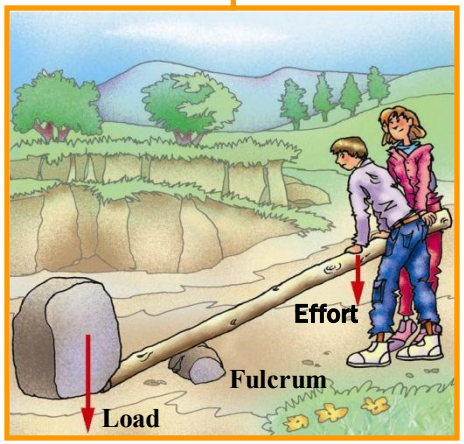
The lever IS A bar that pivots on a support point called a fulcrum. Depending on the position of the fulcrum...

THERE ARE THREE CLASSES OF LEVERS

CLASS ONE

if

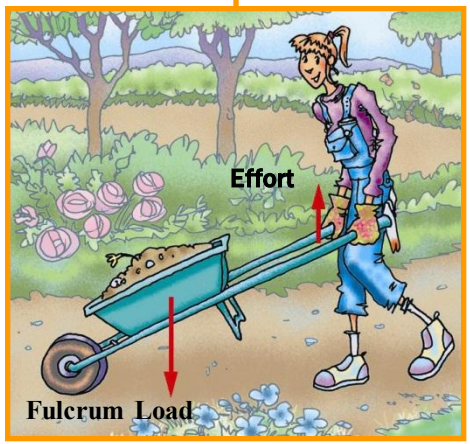
THE FULCRUM IS BETWEEN THE EFFORT AND THE LOAD



CLASS TWO

if

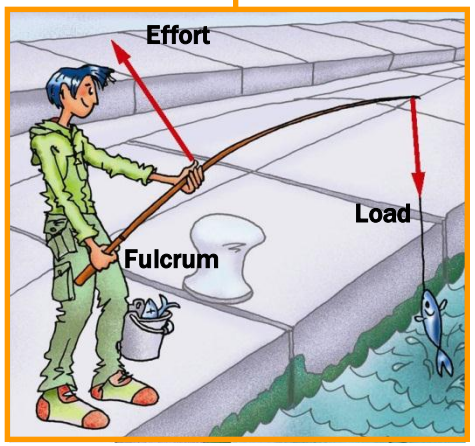
THE LOAD IS BETWEEN THE FULCRUM AND THE EFFORT



CLASS THREE

if

THE EFFORT IS BETWEEN THE FULCRUM AND THE LOAD



Work. Machines

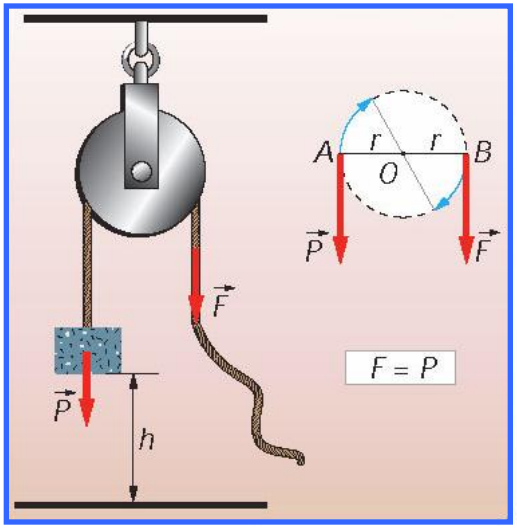
The pulley IS A wheel with a groove along its edge, in which a rope or a chain is placed. The wheel revolves around a stationary axis.

A FEW EXAMPLES OF PULLEYS

SIMPLE PULLEY

in which

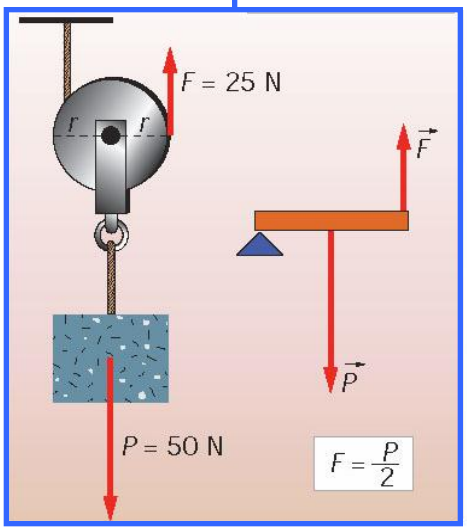
THE APPLIED FORCE (EFFORT) IS EQUAL TO THE LOAD FORCE, BUT IT MAKES WORK EASIER BY CHANGING THE DIRECTION OF THE FORCE



MOVABLE PULLEY

moves vertically and

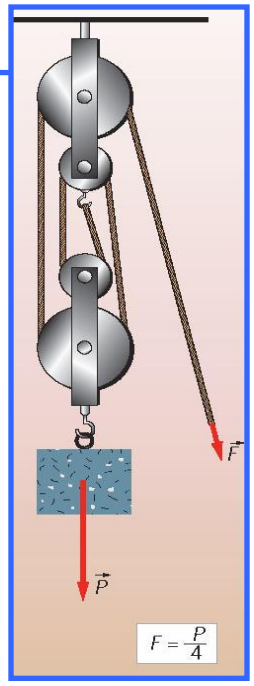
THE FORCE REQUIRED TO LIFT A WEIGHT IS EQUAL TO HALF OF THIS WEIGHT



BLOCK AND TACKLE

is a system of pulleys

IN WHICH EACH MOVABLE PULLEY USED REDUCES THE RESISTANCE BY HALF



Work. Machines

The sloping plane **IS** A flat, hard surface that lies at an angle relative to level ground. The force required to move an object up a sloping plane is less than the weight of the object; however, the object must cover a longer distance, as you can see in the photo on the left. On the right, you can see two screws, which are the result of wrapping a sloping plane around a cylinder or cone, the body of the screw.