

# lets do the math

simple machines

so things building big

the job of a simple machine is to help you do things easier. Mechanical Advantage tells you how many times easier it just became. When an object moves work is also being done. Power shows the strength of the machine; and then there is efficiency or how good the machine is.

Work units joules

$$W = F \times D$$

force      distance

Newton's per meter are Joules

How much work is being done to carry a 60N mass a distance of 7m?

Power units watts

$$P = \frac{W}{T}$$

work      time

joules per second is watts

You do 600 J of work in 15 seconds. How much power did you use?

Mechanical Advantage no units

$$\frac{\text{force out}}{\text{force in}} = \frac{\text{load}}{\text{effort}}$$

What is the mechanical advantage if the system if the

Load = N

Effort = N



Efficiency no units (a %)

$$\frac{\text{output work}}{\text{input work}} \times 100 = \%$$

using a pulley system a crew does 3750 joules of work to load a box that requires 2250 J of work. What is the efficiency of the system?

our goal is to understand mechanical advantage and the math associated with it.

For help look in your Glencoe, NY science, grade 8 textbook  
 work pg 76, power pg 77 mechanical advantage pg 81 efficiency pg 83

our second goal is to learn about work, power and efficiency with the math