

Name: _____
Mr. Willis
Conceptual Physics: _____
Date: _____

Unit IV
Work, Power and Machines
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IV

Efficiency of Machines Lab

Objective: _____

Procedure:

1. Hang the lever so that it is 15 cm from one end. Place a weight on the effort arm of the lever (the long arm) and then use the spring balance to find the resistance force (F_r).

Record the effort force (F_e).

$$F_r = \underline{\hspace{10cm}}$$

$$MA = d_e/d_r = \underline{\hspace{10cm}}$$

- a. Find the work input by multiplying the effort force times the effort distance.
 $W_{in} = \underline{\hspace{10cm}}$
- b. Find the work output by multiplying the resistance force times the resistance distance.
 $W_{out} = \underline{\hspace{10cm}}$
- c. Find the efficiency by dividing the work out by the work in.
 $Eff. = \underline{\hspace{10cm}}$

2. Use a single fixed pulley arrangement to lift an object. Lift the object a distance of 10 cm.

Record the weight. $F_r = \underline{\hspace{10cm}}$

Record the force required to lift the weight. $F_e = \underline{\hspace{10cm}}$

Calculate the mechanical advantage. $MA = F_r/F_e = \underline{\hspace{10cm}}$

- a. Find the work input by multiplying the effort force times the effort distance.
 $W_{in} = \underline{\hspace{10cm}}$
- b. Find the work output by multiplying the resistance force times the resistance distance.
 $W_{out} = \underline{\hspace{10cm}}$
- c. Find the efficiency by dividing the work out by the work in.
 $Eff. = \underline{\hspace{10cm}}$