Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period \_\_\_\_\_\_\_\_\_\_

Work and Simple Machines Notes

**What is WORK?**

* Work is done when a \_\_\_\_\_\_\_\_\_\_\_\_\_ causes an object to \_\_\_\_\_\_\_\_\_\_\_ in the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that the force is applied.
* The formula for work is: \_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_ X \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* If there is no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, there is no \_\_\_\_\_\_\_\_\_\_\_\_\_ being done!!

**When is “work” being done?**

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_must applied to an object *(called “effort force” or input)*
* The object must move in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as the force.

**What is purpose of a machine?**

* To make work seem \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!

**How do machines make work “easier”?**

* They can change the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ required.
* They can change the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the object has to move.
* They can also change the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (allowing you to work WITH gravity rather than against it)
* Any change in the size of the force changes the distance. No machine can increase both force and distance. This is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship.

1. If you increase \_\_\_\_\_\_\_\_\_\_\_\_\_you decrease distance. (W = F x D)
2. If you increase \_\_\_\_\_\_\_\_\_\_\_\_\_\_ you decrease force required. (W = F x D)
3. Or, leave force and distance alone but change the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that the load moves. (*Use gravity!)*

**Units to Know:**

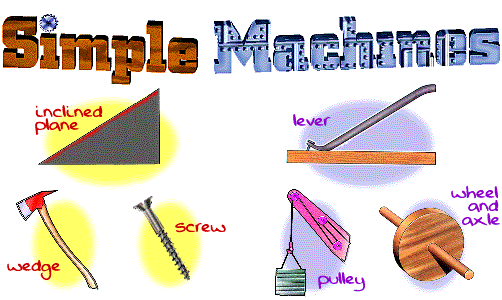
Work is measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Force is measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Distance is measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**What is mechanical advantage?**

* The number of times a machine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the effort force.



**Four types of simple machines**

* + 1. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    2. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    3. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    4. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**LEVER:**

a simple machine made with a rigid bar free to \_\_\_\_\_\_\_\_\_\_\_\_\_ (move) around a fixed point called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PULLEY:**

A simple machine made with a rope, belt or chain wrapped around a grooved \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a pulley works two ways. *(changing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or amount of force)*

**WHEEL and AXLE:**

large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rigidly secured to smaller wheel, called the axle

**\*\*INCLINED PLANE:**

A simple machine with no moving parts, it is simply a straight slanted surface. (ex: a ramp)

**IT INCREASES THE DISTANCE TRAVELED, but REQUIRES LESS FORCE FROM YOU!!!**

* Formula for mechanical advantage:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Other types of inclined planes:
  + \_\_\_\_\_\_\_\_\_\_\_\_: separating or holding device
  + \_\_\_\_\_\_\_\_\_\_\_\_: circular inclined plane

**Final THOUGHT:** WORK always stays \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with or without a simple machine!

* Whether you use a machine or not, the TOTAL WORK done stays the same.
* What would increase/decrease? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_