**What are simple machines?**

**Work**

**You are doing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_when you use a force to cause motion.**

**This kind of work has 2 parts:**

1. **Force: what is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to do the work**



1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: how far the force is used.**

**Simple Machines**

**We usually think of machines as something with a motor**

**Examples: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**But a machine is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**It does not have to have a motor.**

**Simple machines make work easier by allowing us to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over increased distances.**

**Types of Simple machines**

**There are \_\_\_\_\_\_\_\_\_\_\_ different kinds of simple machines:**

**Lever, Pulley, Wedge, Inclined Plane, Screw, and Wheel and Axel**

**Lever**

**Definition: a stiff bar that turns on a point (called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**A lever trades distance for force or force for distance, which means you use less force over a greater distance or more force over a shorter distance.**

**There are different kinds of levers depending on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the fulcrum:  The fulcrum can be between the force and what you want to move. (seesaw, crowbar)**

**The fulcrum can be at one end, the force at the other end, and what you want to move in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (bottle opener)**

**The fulcrum can be at one end, the force in the middle, and what you want to move at the other end. (tennis racquet)**

**Sometimes 2 levers are put together like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Pulley**

**Definition: uses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to raise, lower or move a load.**

**A fixed pulley changes only the direction of the force but not the force, distance or speed.**

**Examples:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Inclined Plane**

**Definition: a slanting surface connecting a lower level to a higher level.**

**The inclined plane does\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It works by allowing less force but over a greater distance.**

**This way you do not have to lift the object, you can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it to the next level.**

**Example: Ramp**

**Wedge**

**Definition: an object with at least one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_side ending in a sharp edge, which cuts material apart or push them together.**

**A wedge is really two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ joined back to back.**

**Example of push together:**

**Nail**

**Examples of pull apart:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Axe**

**Screw**

**Definition: an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ wrapped around a pole which holds things together or lifts materials.**

**A screw allows you to use \_\_\_\_\_\_\_\_\_\_\_\_\_\_ force, and it changes the direction of the force.**

**Nuts and bolts (a type of screw) allow you to fasten things together. Almost every machine built has some form of screw to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it together.**

**Wheel and Axel**

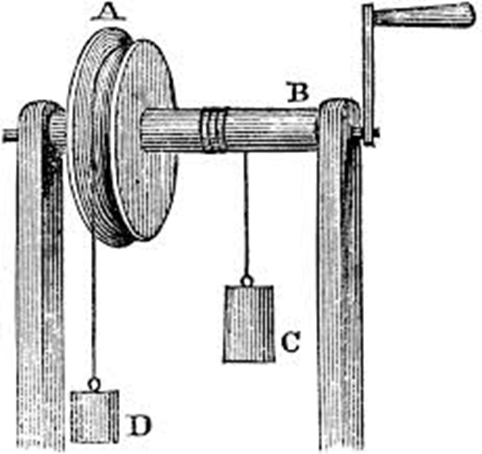
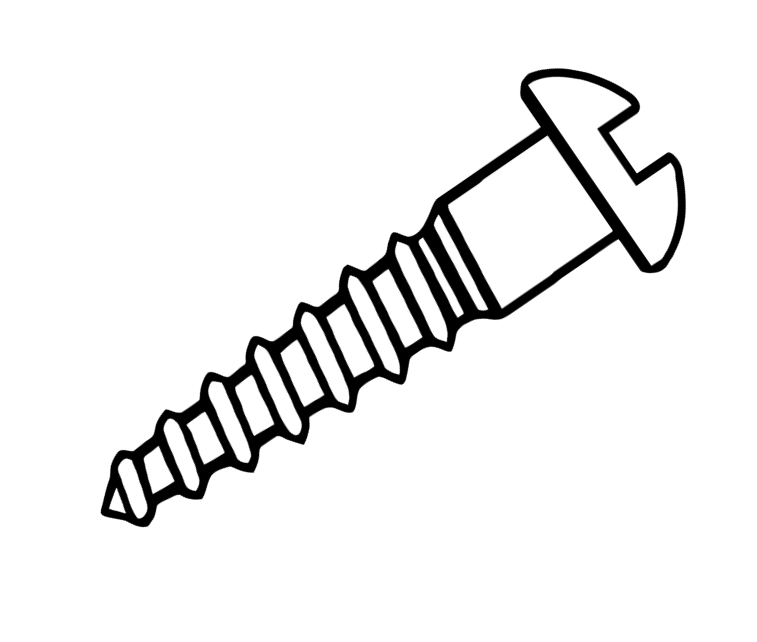
**Definition: A wheel with a \_\_\_\_\_\_\_\_\_\_\_\_\_, called an axle, through its center lifts or moves loads.**

**It can be used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force and to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distance.**

**Examples:**

**Doorknob**

**Bike**

**Airplane propeller**