

Ch 4 HW: Written; Con Mas Wks Sec 4.1-4.2  
 Sec 4.1B  
 obj: How are simple machines related to compound machines?

### Simple Machines

- Simple Machines operate w/ only one movement.
- Simple machines are the most efficient types of machines.
- There are six types of simple machines.

#### 1) Lever

- a Lever is a bar that is free to pivot about a fulcrum.

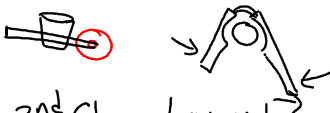
- 3 Classes of levers

#### A) 1<sup>st</sup> Class Lever

- Crowbars, Pliers, and Scissors
- The fulcrum is btw the Load and the effort force.
- 1<sup>st</sup> Class Levers have MAs greater than 1

#### B) 2<sup>nd</sup> Class Lever

- Wheel barrel, Nut Cracker
- The fulcrum is opposite the effort force and the load is in the middle.



- 2<sup>nd</sup> Class levers have -- MA greater than 1.

#### 3) 3<sup>rd</sup> Class lever


Brooms, Shovels, Fishing Rods.

- The fulcrum is at one end the load is @ the opposite end and the effort force is in the middle.
- The MA of a 3<sup>rd</sup> Class lever is less than 1.  
 \*Increases speed and distance.

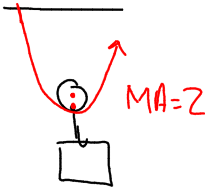
2) Pulley

- Wheel w/ a groove for a rope to pivot about.
- Pulleys are just like levers.
- used to change the direction of the force.
- 3 Types of Pulleys.

A) Single fixed Pulley B) Single Movable Pulley




$MA=1$



$MA=2$

c) Block + Tackle



$MA > 1$

### 3) Wheel and Axle

- A Large wheel that pivots around a small wheel called an axle.
- Door Handle, Tires, manual pencil sharpeners.
- Just like a lever.

### 4) Inclined Plane

- A slanted surface used to raise an object.
- Usually called a ramp.
- This is a machine that does not move in order to use it.

### 5) Wedge

- A type of inclined plane used to separate an object into pieces.

### 6) Screw

- A type of inclined plane where the ramp is wrapped around a post.

## Compound Machines

- Machines that operate with more than one movement.
  - \* They have more than one simple machine.
- The more simple machines in a compound machine the less efficient it becomes.