SIMPLE MACHINE SCAVENGER HUNT

RACHEL SIMS

POE-B8

FORMULAS:

IMA= Ideal Mechanical Advantage

DE= Distance of the effort

DR= Distance of the resistance

IMA= DE/DR

AMA= Actual Mechanical Advantage

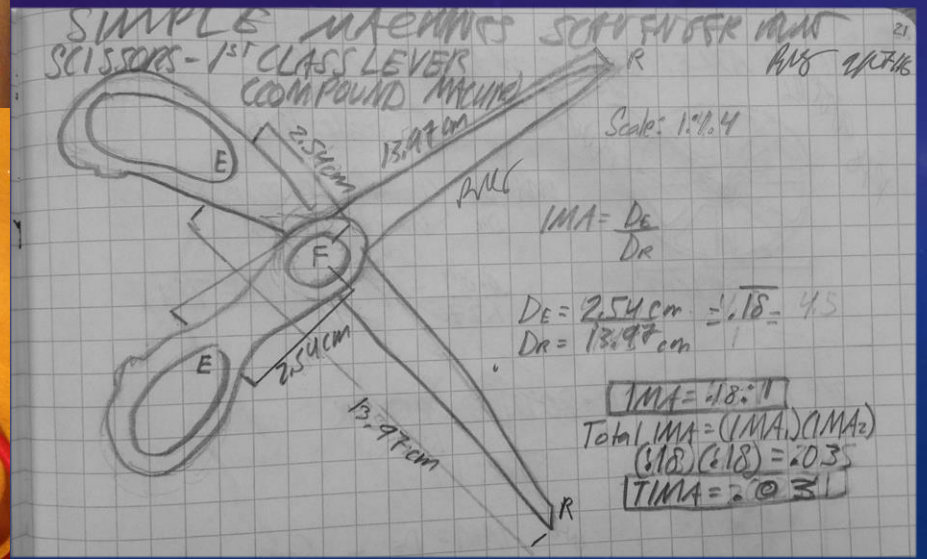
FR= Force of the resistance

FE= Force of the effort

AMA= FR/FE

FIRST CLASS LEVER: SCISSORS

- Compound machine created by two first class levers connected at the fulcrum
- The blades are also classified as wedges.
- Designed to slice through objects such as paper

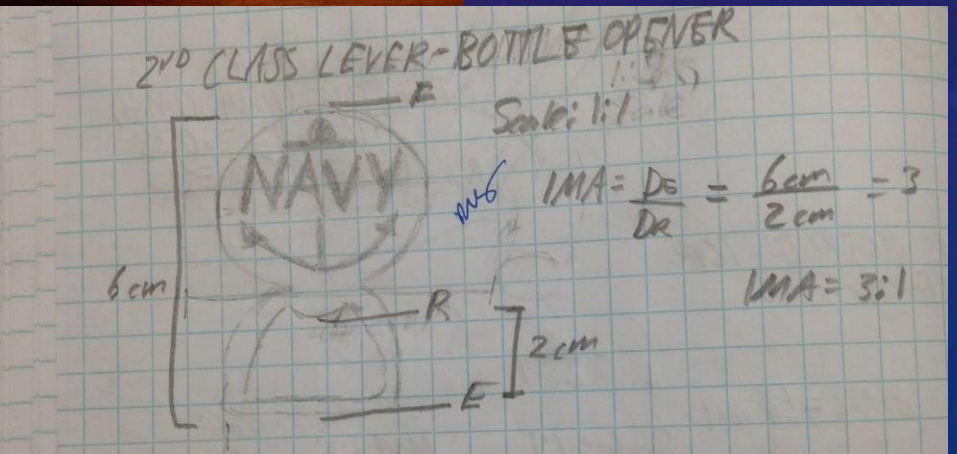


IMA= DE/DR
DE= 2.54 CM
DR= 13.97 CM
IMA= 2.54/13.97
IMA= .18:1

Since this is a compound machine, you must multiply both IMAs to get the total IMA. Since each lever has the same effort distance and resistance distance, that would be (.18)(.18) or .03 so the total IMA of the scissors is .03

SECOND CLASS LEVER: BOTTLE OPENER

- Effort at the top (pressing down on it)
- Fulcrum at the other end (the bottle cap, which the lever is pushing down against)
- Resistance force in between (the bottom of the bottle cap which the notch is pushing up against)
- Designed to remove caps from beer or soda bottles



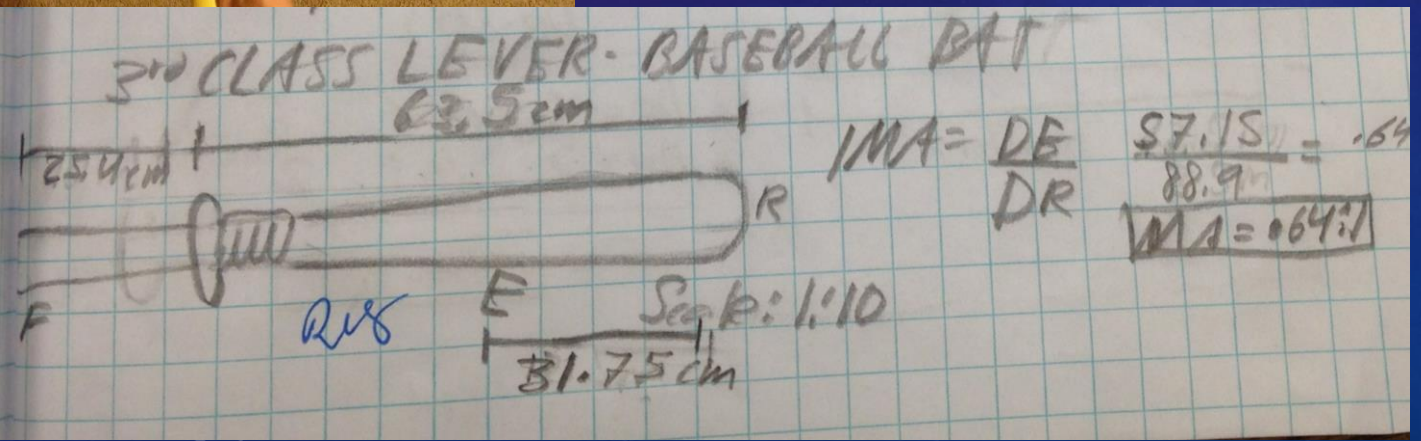
IMA= 3:1

IMA= DE/DR
DE= 6 CM
DR= 2 CM
IMA= 6/2
IMA= 3

THIRD CLASS LEVER: BASEBALL (WIFFLEBALL) BAT

- Resistance force at one end (ball hitting the top0
- Effort force in the middle (power from swing)
- Fulcrum at other end (elbow or wrist)
- Used to propel an object foward

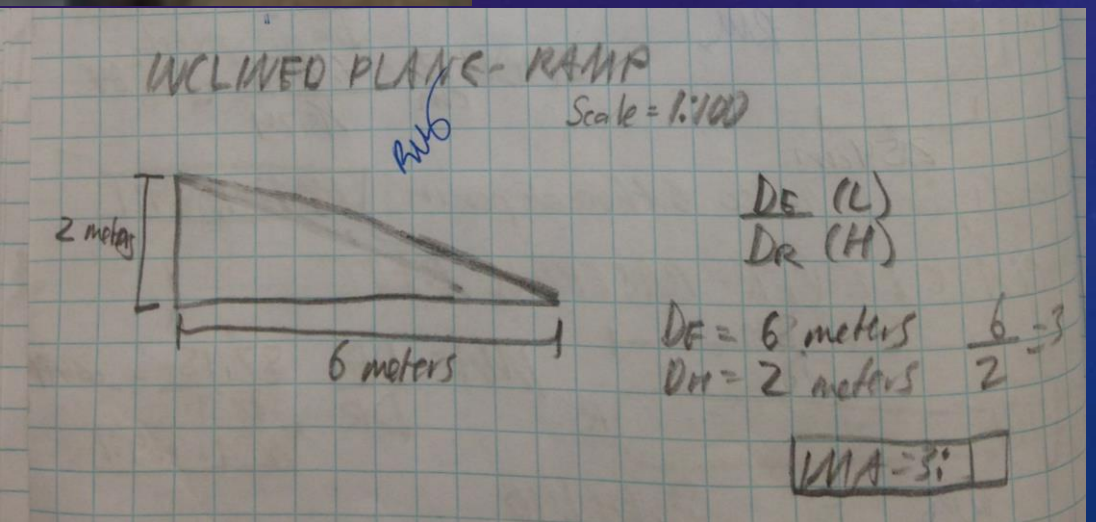
IMA= DE/DR
DE= 57.15 CM
DR=88.9 CM
IMA= 57.15/88.9
IMA= .64



IMA= .64:1

INCLINED PLANE: RAMP

- Gradually slopes upward into an inclined plane
- Designed to allow objects or people to easily get to a higher altitude

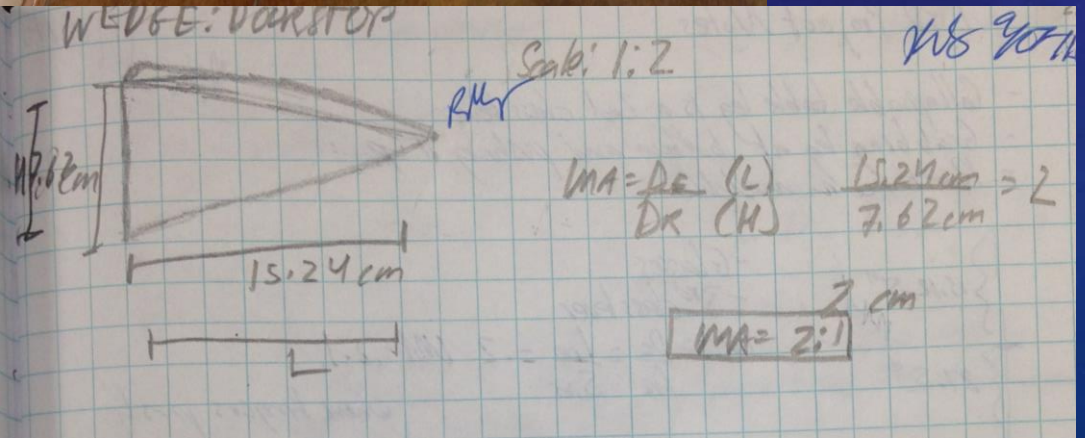


IMA= 3:1

IMA= DE/DR
DE= 6M
DR= 2M
IMA= 6/2
IMA=3

WEDGE: DOORSTOP

- Wedge: form of an inclined plane ending in a point
- Doorstops are designed to fit in between the bottom of the door and the floor so the door stays put

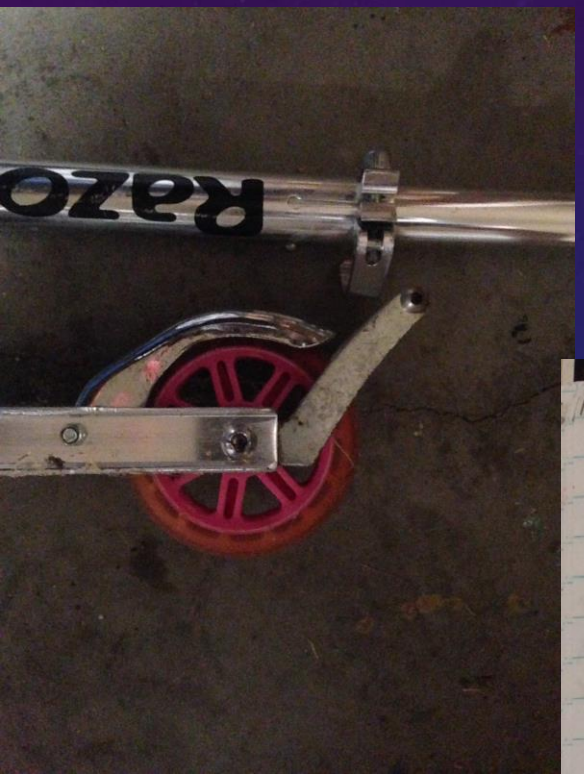


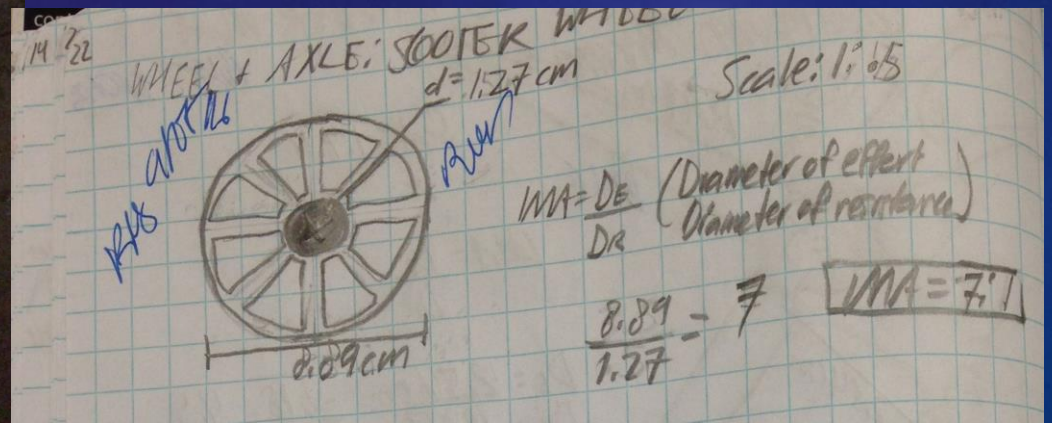
IMA= 2:1

IMA= DE/DR
DE= 15.24 CM
DR= 7.62 CM
IMA= 15.24/7.62
IMA= 2

WHEEL AND AXLE: SCOOTER WHEEL AND AXLE

- Wheel and axle propel scooter along the ground
- This allows us an easy method of transportation
- Fixed wheel
- Wheel driven axle



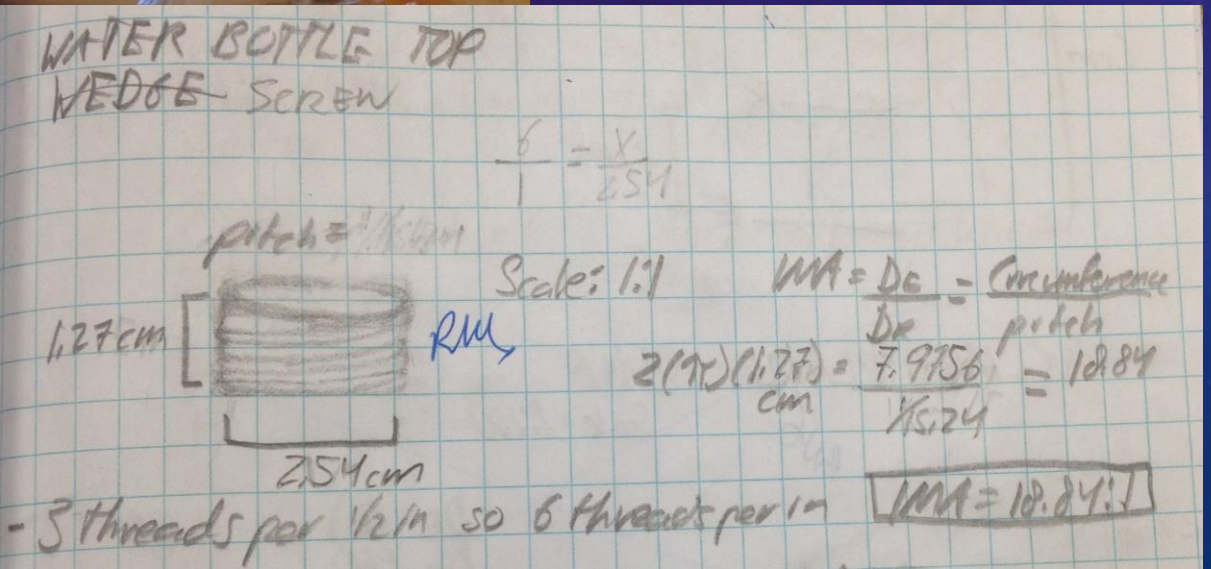


IMA= 7:1

IMA= DE/DR
DE (DIAMETER OF EFFORT)= 8.89 CM
DR= (DIAMETER OF RESISTANCE) 1.27 CM
IMA= 8.89/1.27
IMA= 7

SCREW: WATER BOTTLE TOP

- Screw
- Cap twists onto it
- Enables the bottle to be closed and opened easily multiple times



IMA= 18.84:1

IMA= DE/DR
DE(CIRCUMFERENCE)= 7.9756
DR(PITCH)= 1/15.24
IMA= 7.9756/(1/15.24)
IMA= 18.84