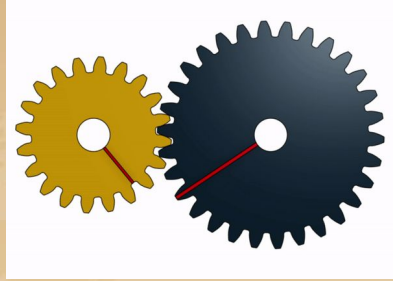


The background is a textured, light brown surface. It is decorated with stylized mechanical elements: gears in various sizes and colors (black, orange, yellow, grey) and pipes in brown and orange. The gears are scattered across the page, with some larger ones in the corners and smaller ones interspersed. The pipes form a network-like structure, primarily on the left and right sides, with some connecting to the gears.

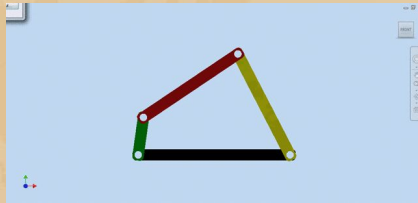
# LINKAGE SCENE

DIY Project to Learn about Linkages!

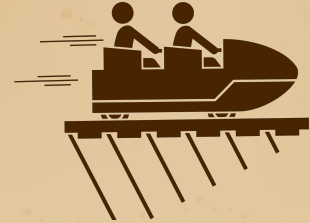
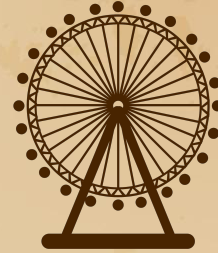
## GEAR RATIOS



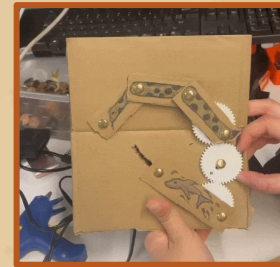
## LINKAGES



## ROTATION VS. TRANSLATION

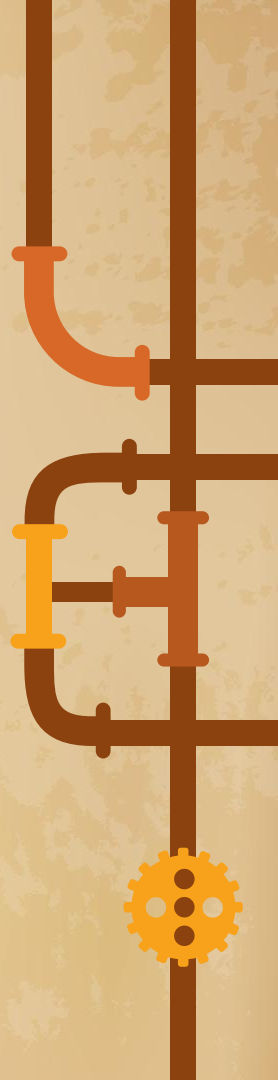


## YOUR GOAL





# GEAR RATIO REVIEW

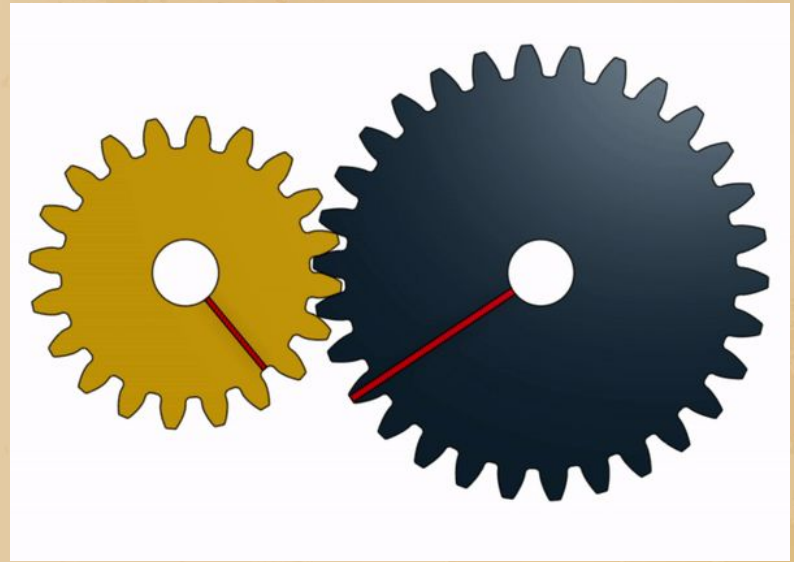


# GEAR RATIO REVIEW!!!

How many revolutions does the **blue gear** make for **one revolution** of the **yellow gear**?

20 teeth

30 teeth



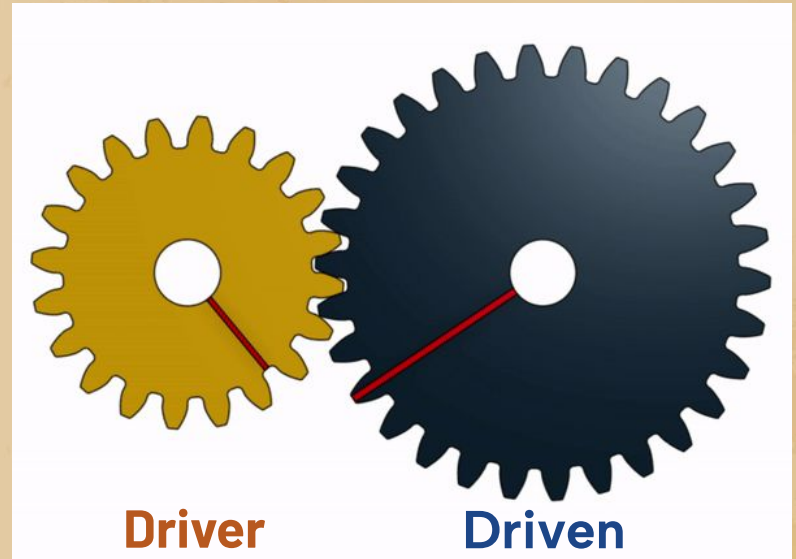
# GEAR RATIO REVIEW!!!

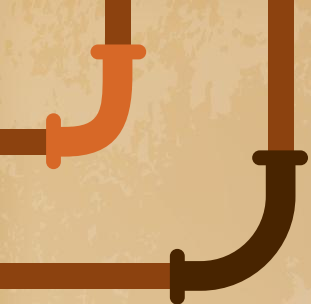
How many revolutions does the **blue gear** make for **one revolution** of the **yellow gear**?

$$\frac{\text{Driver}}{\text{Driven}} = \frac{20 \text{ teeth}}{30 \text{ teeth}}$$

20 teeth

30 teeth



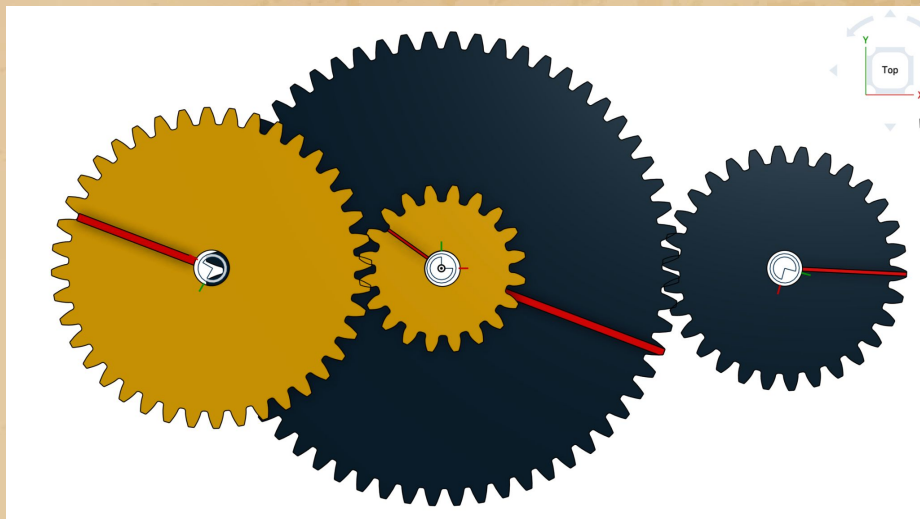


2

Solve this gear ratio!

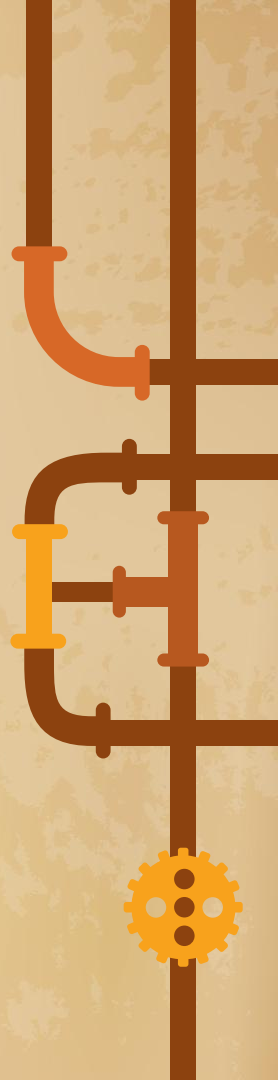
$$\frac{40 \text{ teeth}}{20 \text{ teeth}} \times \frac{60 \text{ teeth}}{30 \text{ teeth}}$$

40 teeth    60 teeth    20 teeth    30 teeth

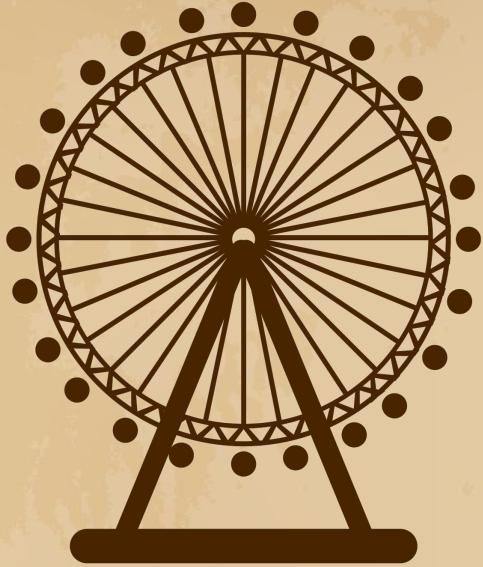




# ROTATION VERSUS TRANSLATION



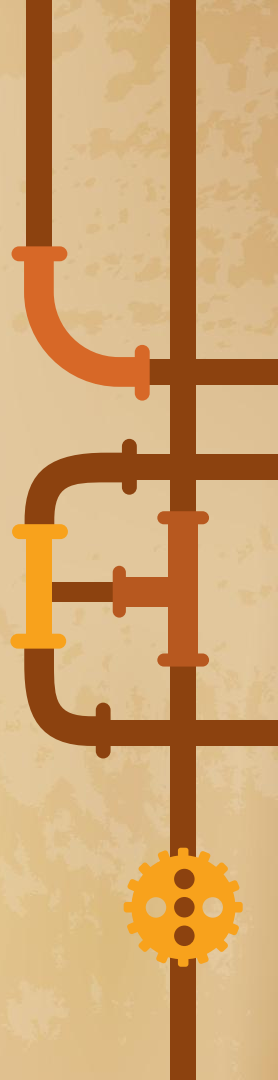
# ROTATION VERSUS TRANSLATION



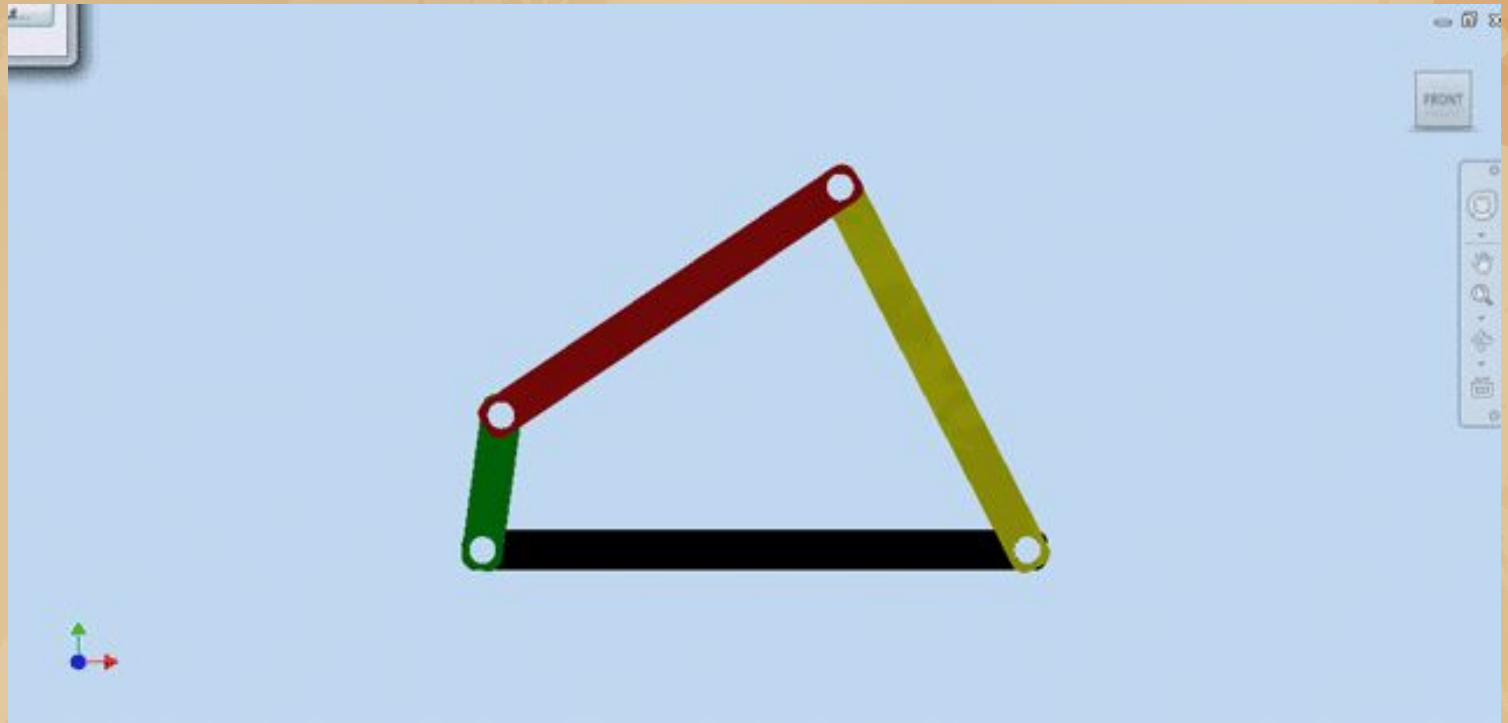




# INTRO TO LINKAGES



# FOUR-BAR LINKAGES



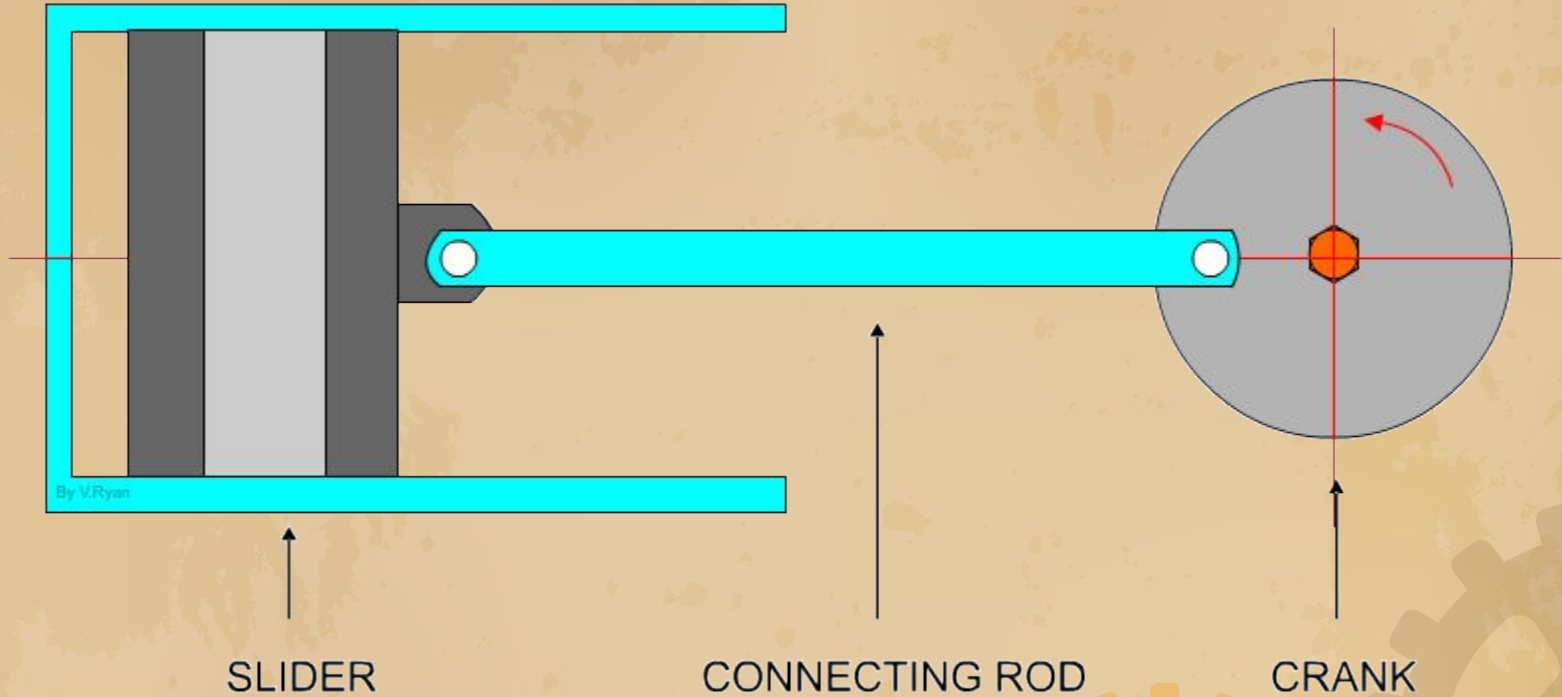
# EXAMPLE OF FOUR BAR



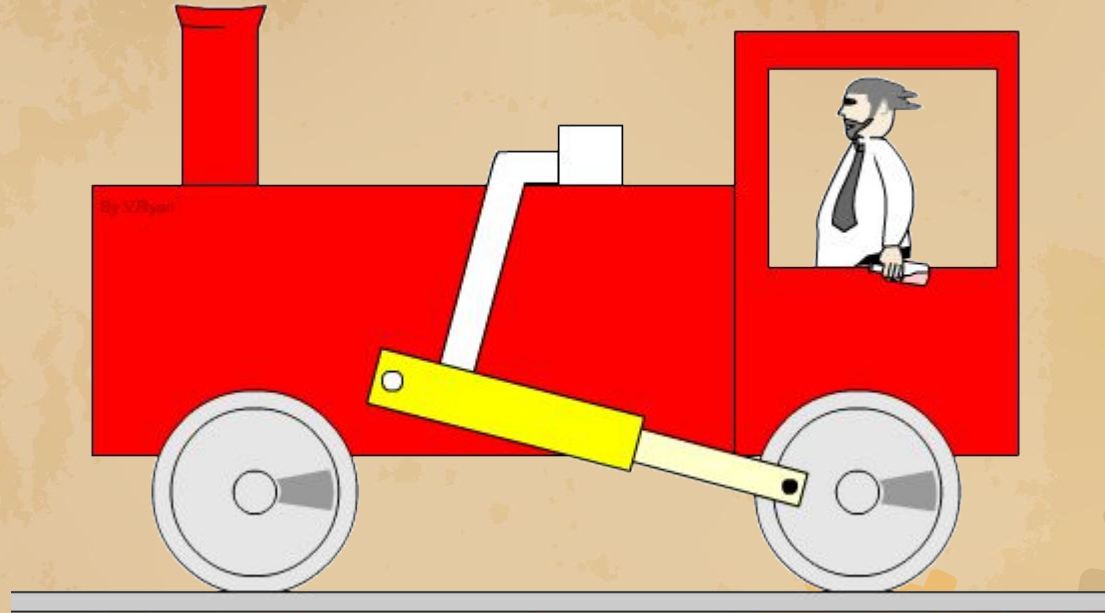
# FOUR-BAR KNEE



# CRANK AND SLIDER LINKAGE



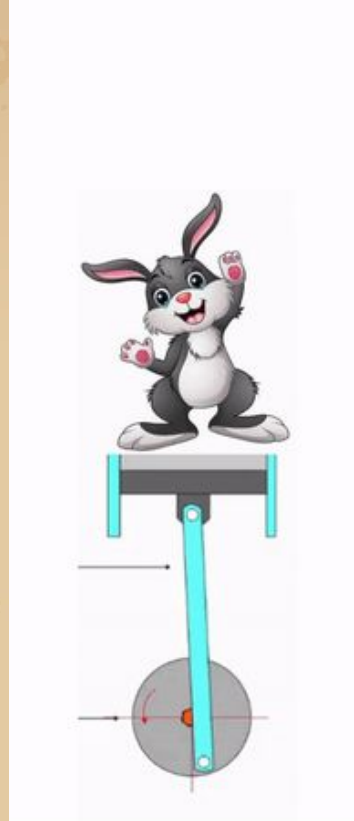
# EXAMPLE OF CRANK AND SLIDER



# HOW DO WE MAKE THIS RABBIT BOUNCE?

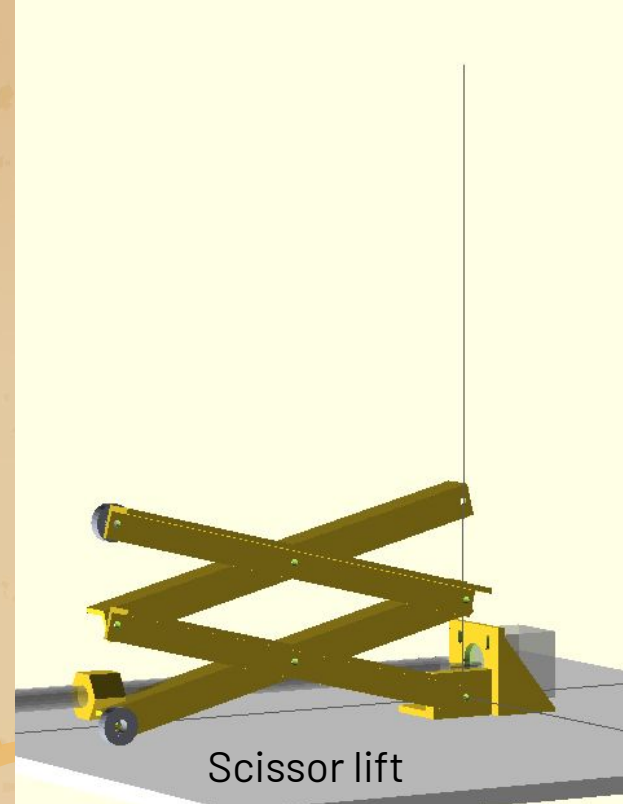
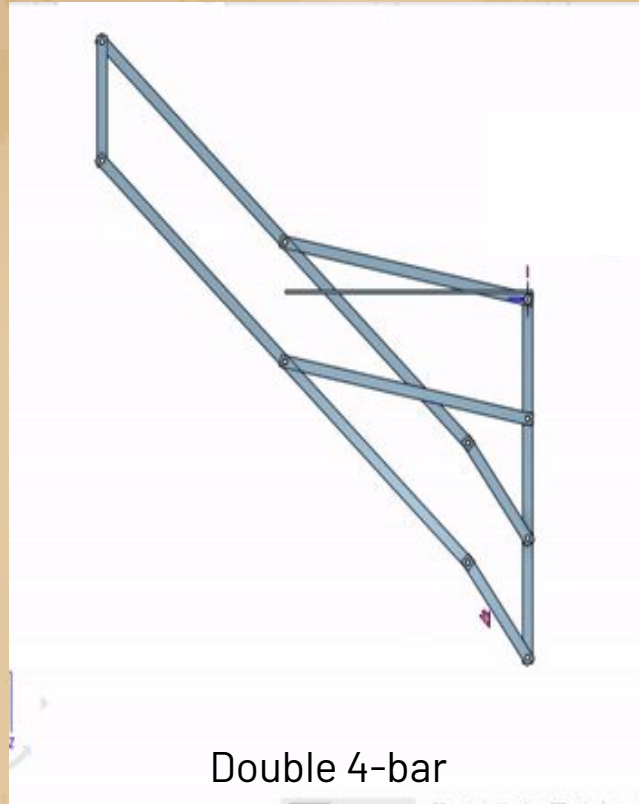


# HOW DO WE MAKE THIS RABBIT BOUNCE?





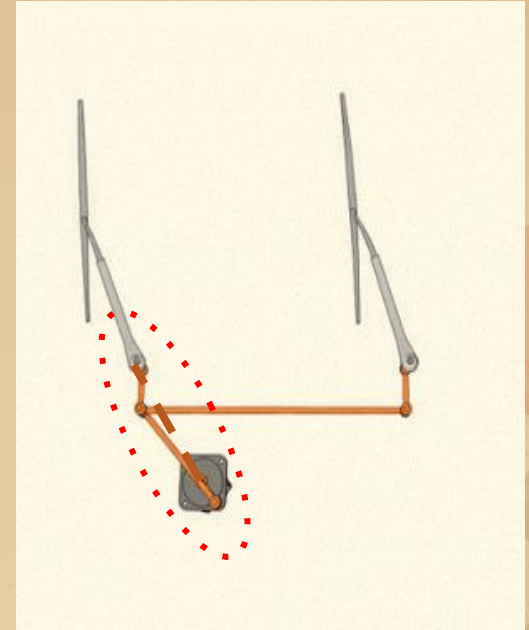
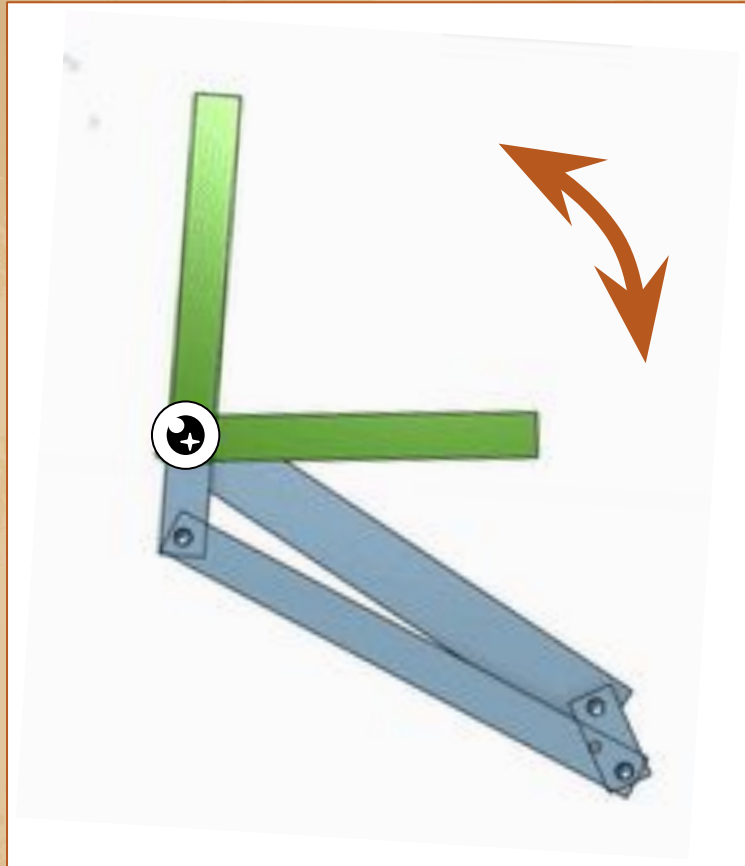
# MORE WAYS THAN ONE!!!



# HOW DO WE HELP THE ALLIGATOR EAT?



# HOW DO WE HELP THE ALLIGATOR EAT?



# LET'S MAKE A SCENE USING LINKAGES!!!

