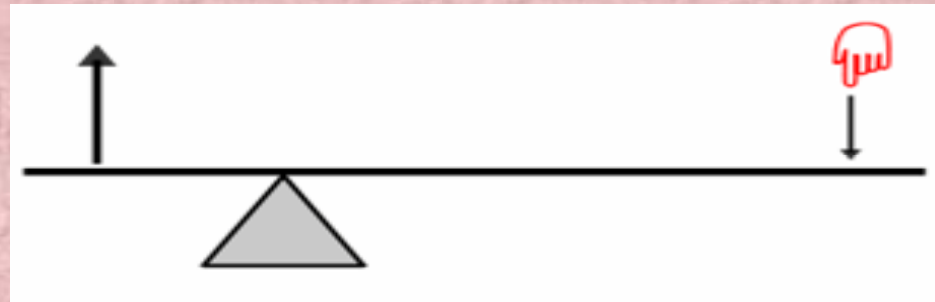




By  
Rocheli Apilan & Betty Picpican

# What is a First Class Lever?

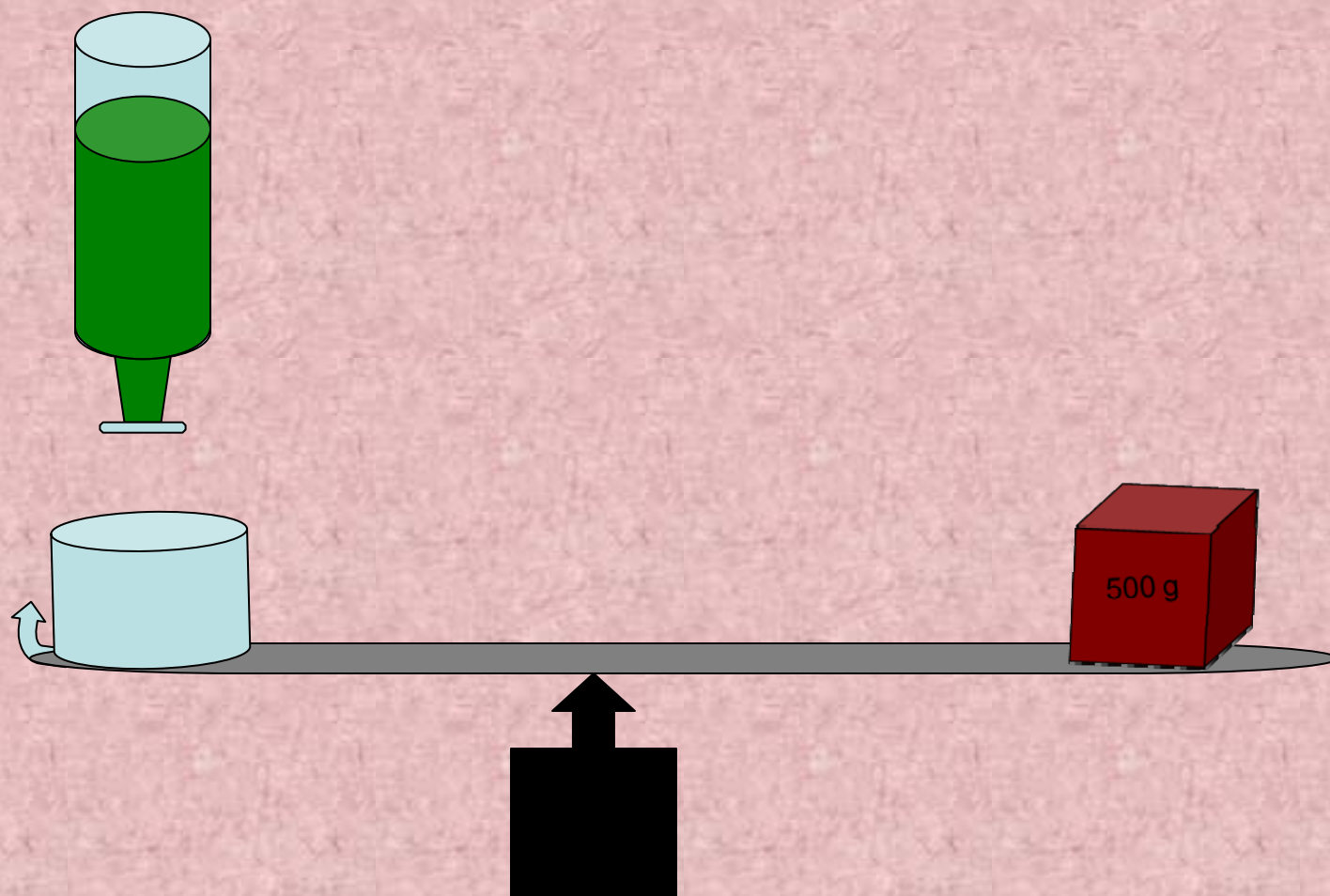
In a first class lever, the fulcrum is between the input force (↑) and the output force (↓)

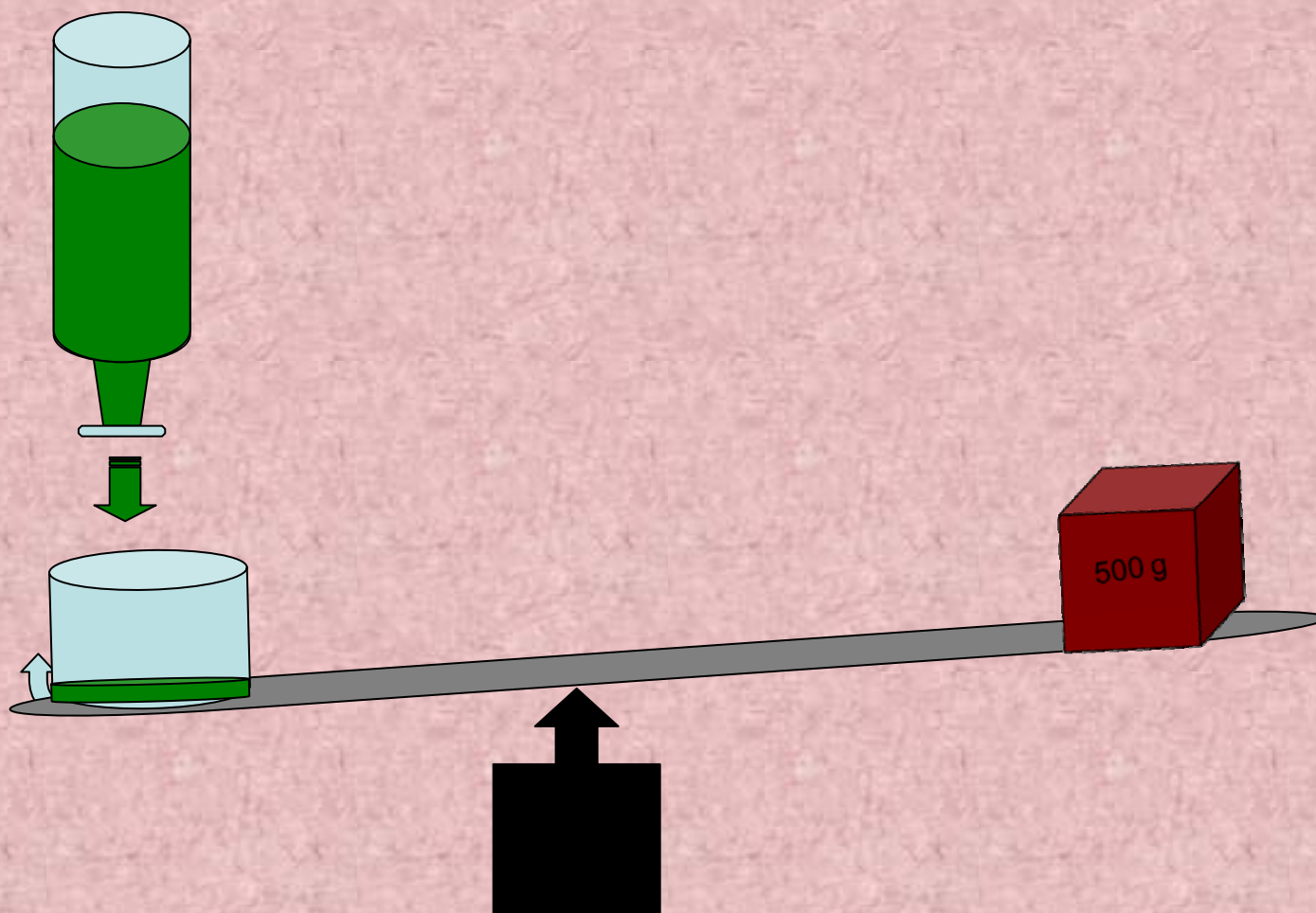


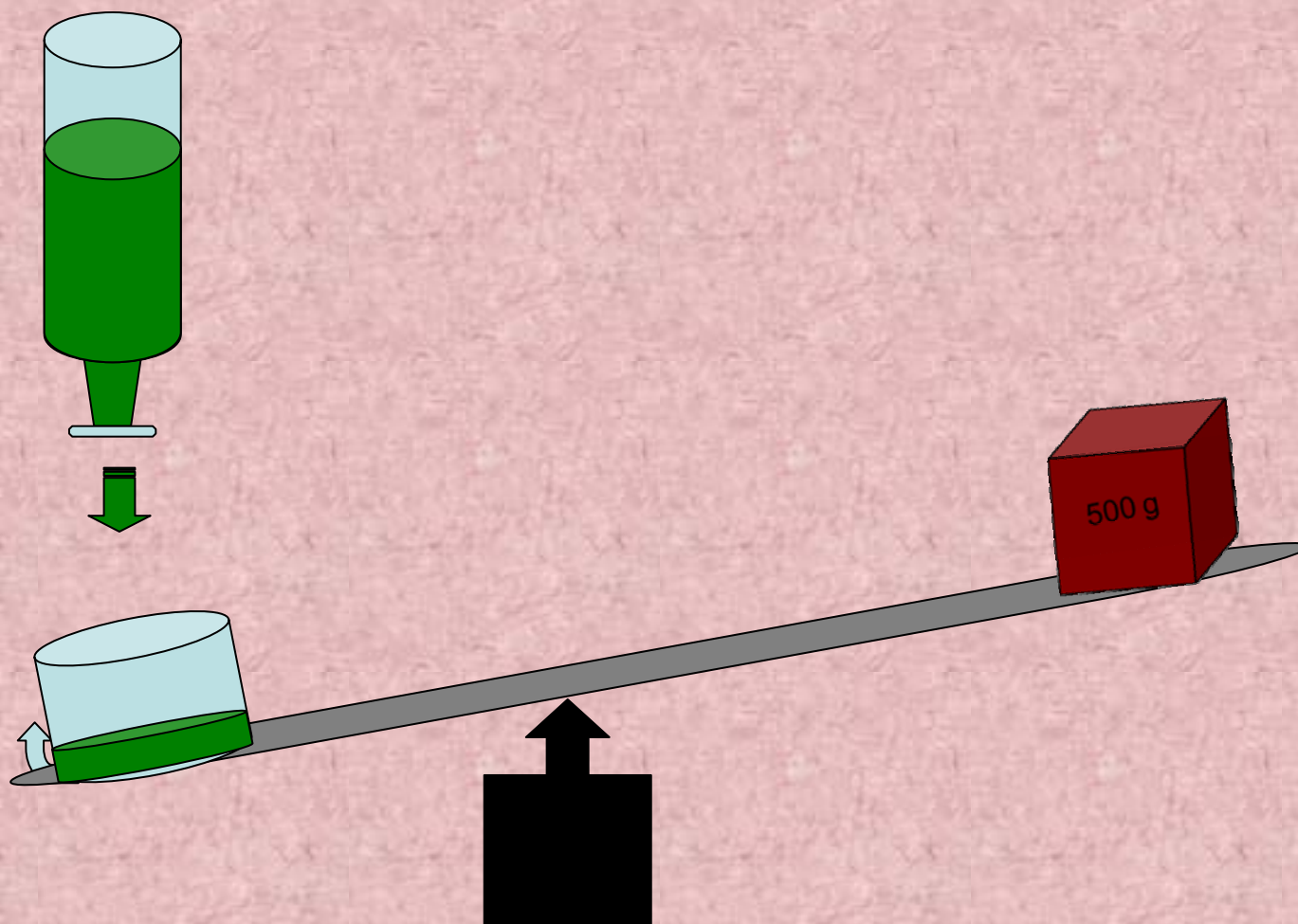
First class lever can be applied in

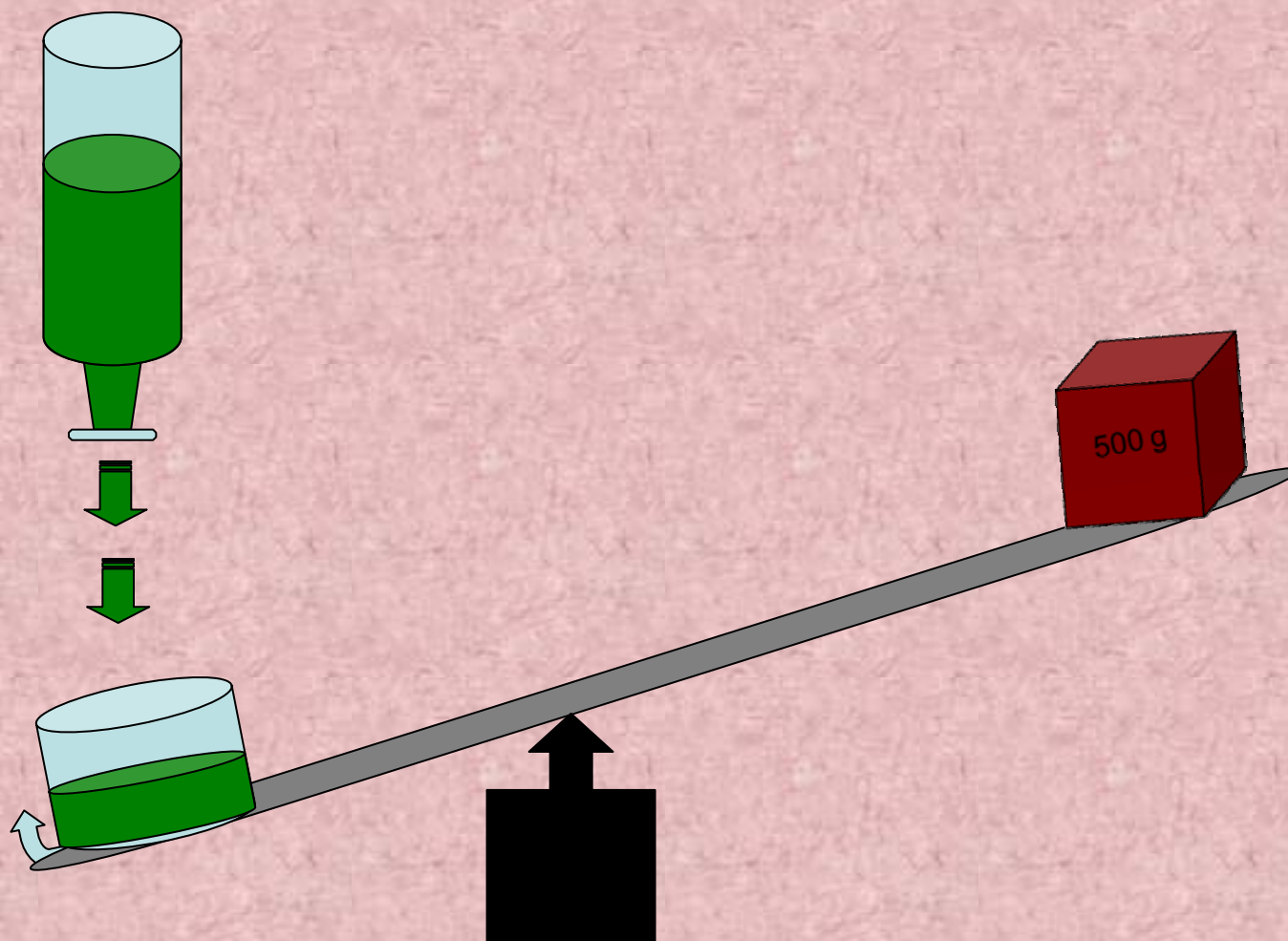


pairs of  
scissors,  
pliers,  
oars, can  
opener

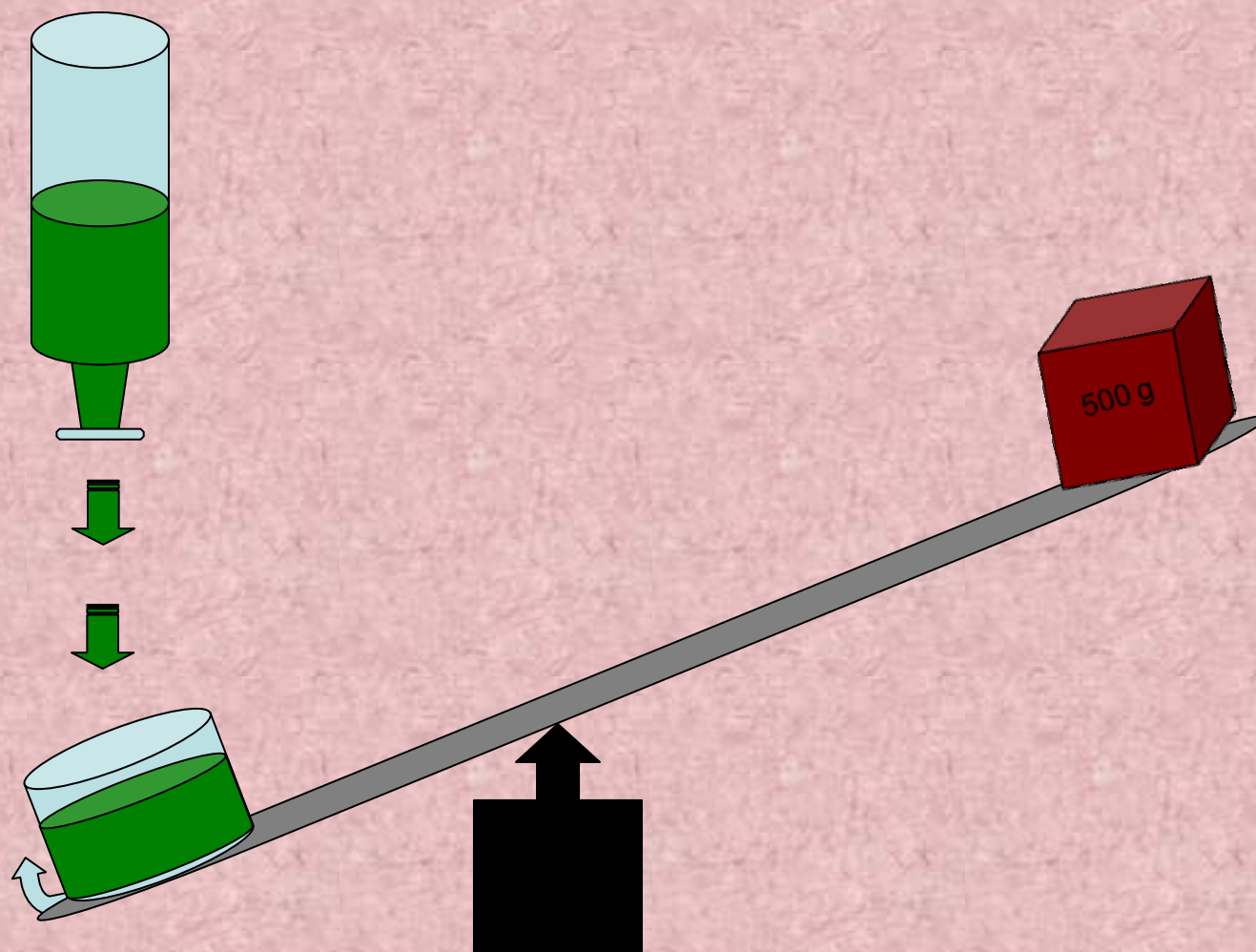




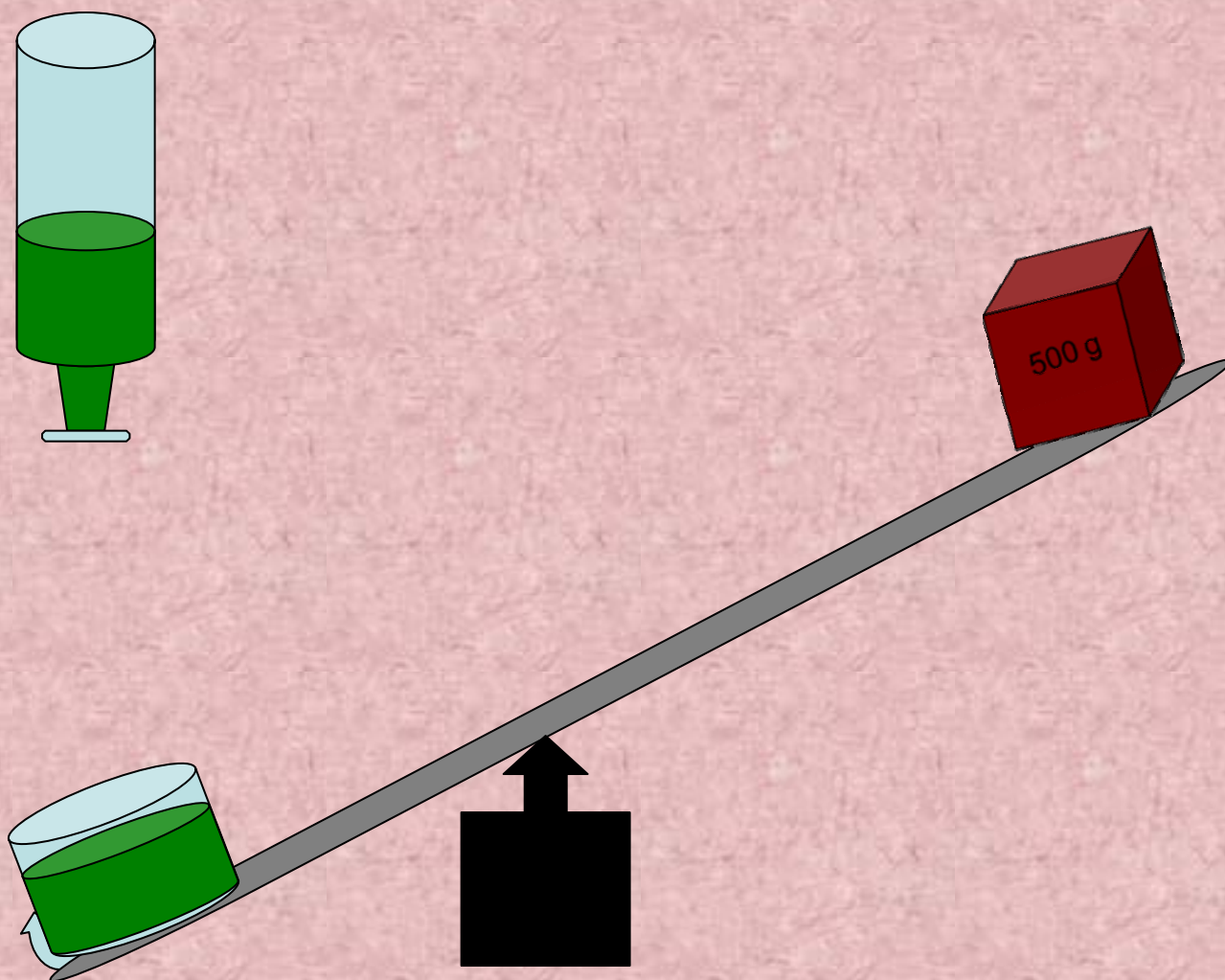












# Standards

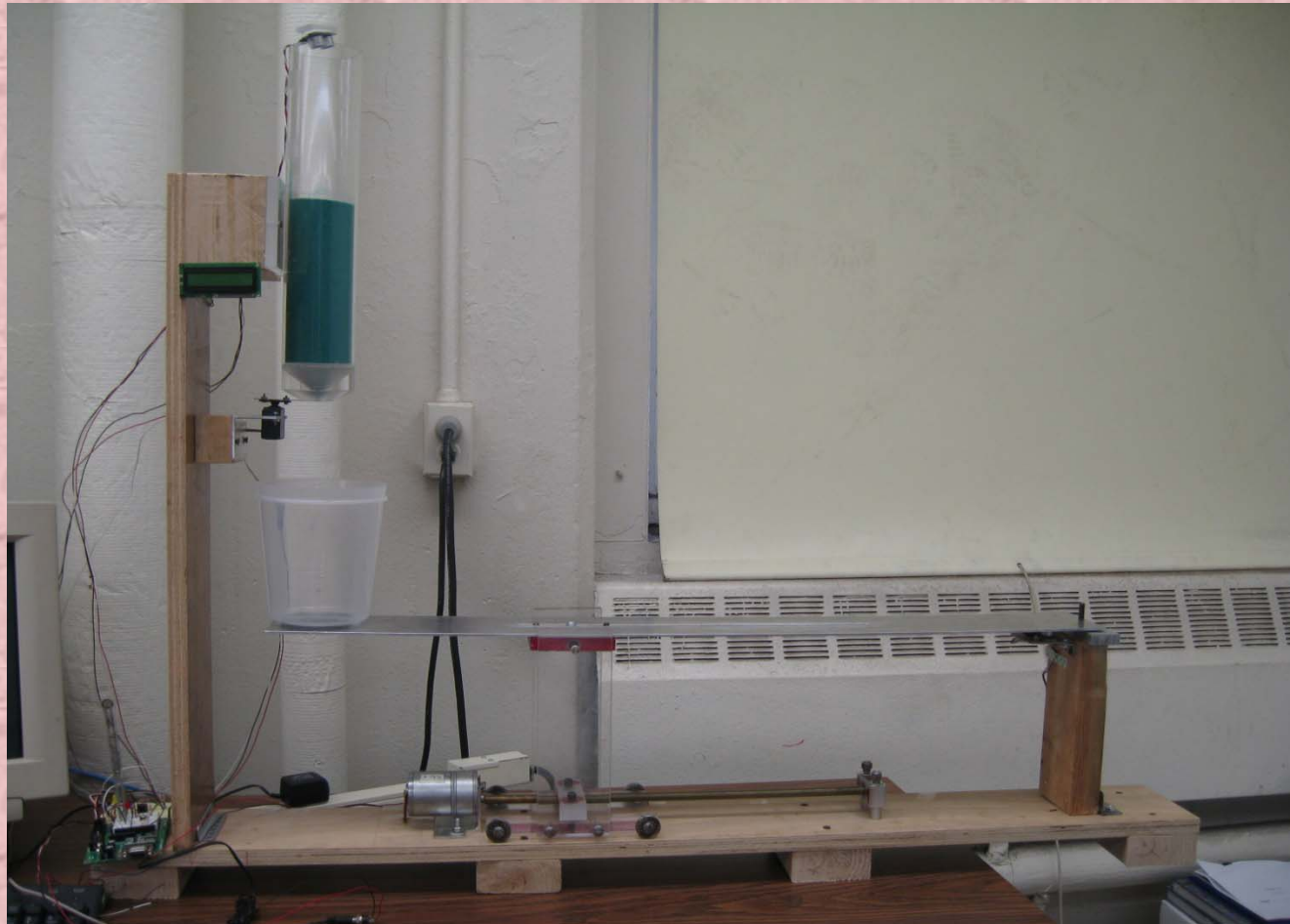
## S1 Physical Science Concepts

- S1b – demonstrates understanding of position and motion and forces;
- Demonstrates understanding of big ideas and unifying concepts;
- Demonstrates understanding of the designed world;
- Demonstrates understanding of impact of technology

## ...standards

- Uses technology and tools to observe and measure objects, organisms, and phenomena, directly, indirectly, and remotely;
- Demonstrates scientific competence by completing a design

# How our first class lever works



Position  
the  
fulcrum

——  
centi-  
meters  
from  
input  
force.

# The push button (A) signals for start of operation ...



A push button is a device that connects wires to complete a circuit thus allowing current to flow

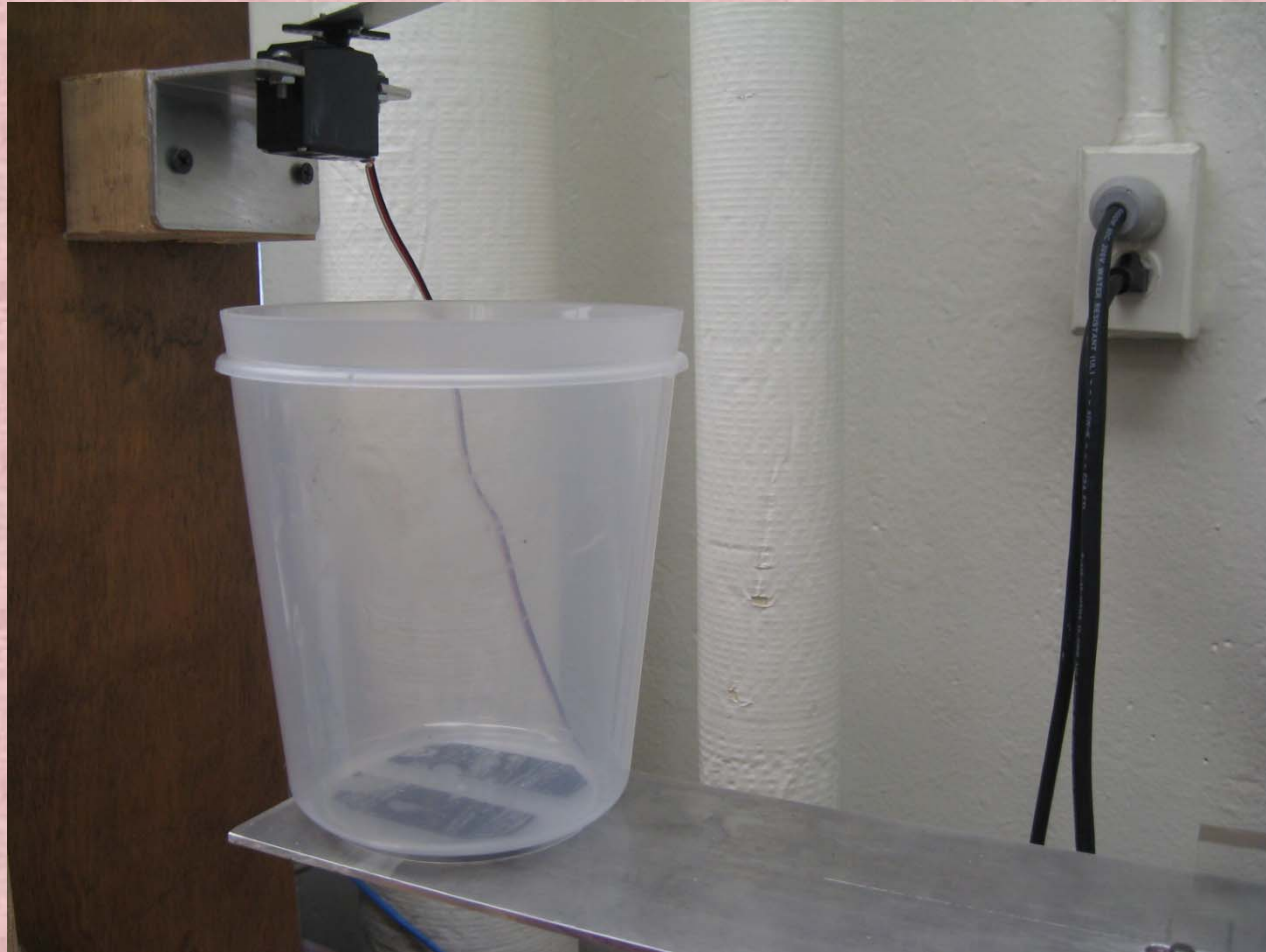


# Servomotor opens tank for sand to be released



A servomotor is an electrical motor that produces rotation of less than a full turn

Filling the lower tank with sand  
until...





Ping ))) Ultrasonic sensor senses  
desired height for lever



# Servomotor closes opening



Ping))) Ultrasonic sensor determines  
amount of released sand

# Finally, LCD displays force in two decimal places

An LCD is a display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector.



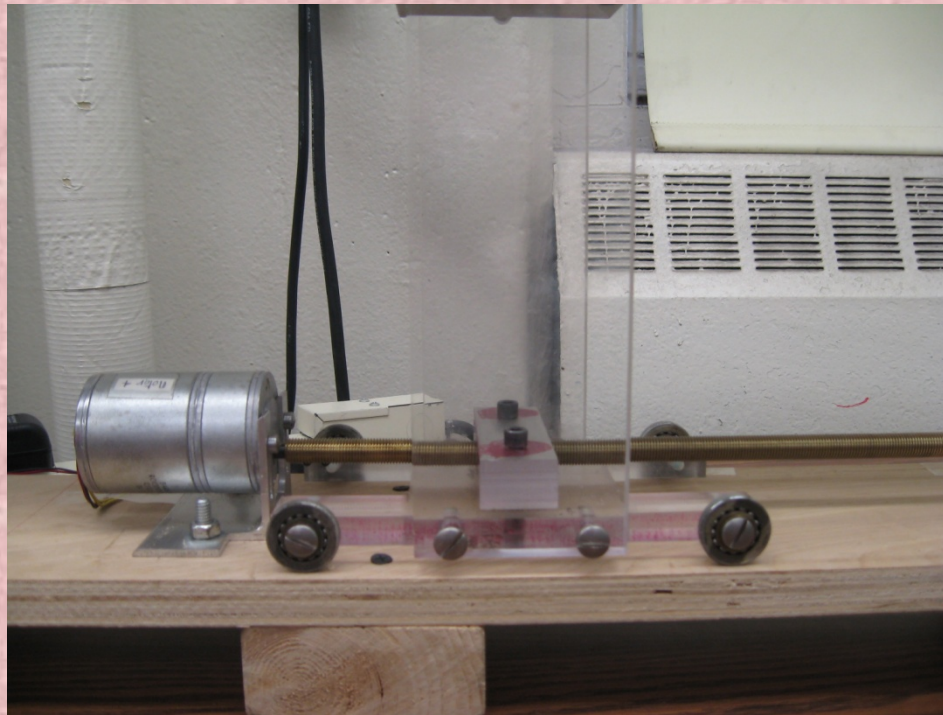


B. Push button (B) signals for the DC motor to move the fulcrum to the middle



Push button (A) to signal for start of operation (starts to measure force exerted if fulcrum is in the middle)

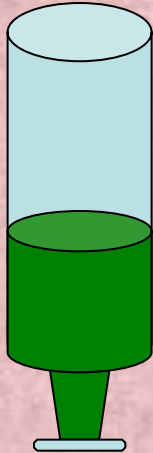
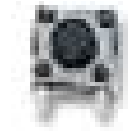
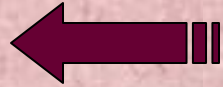
C. Push button (B) to signal for movement of fulcrum \_\_\_\_ inches from the middle to the right



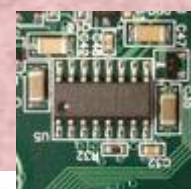
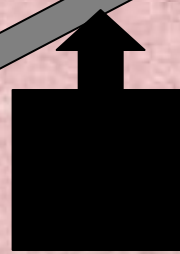
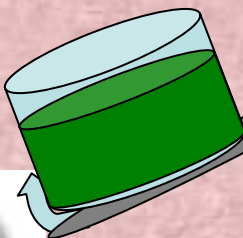
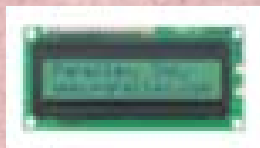
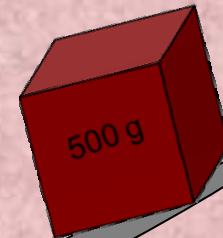


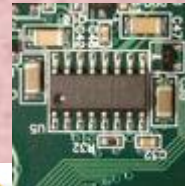
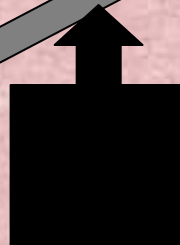
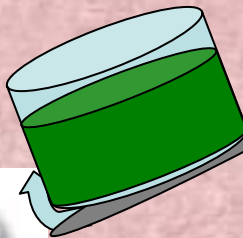
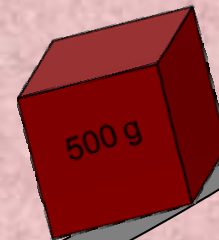
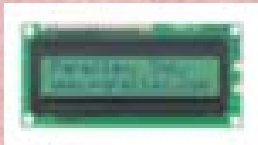
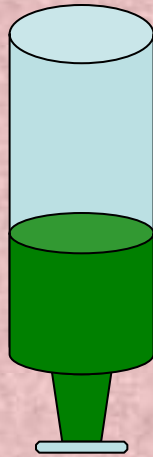
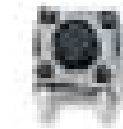
Push button (A) to start operation (to measure forces exerted by input force when fulcrum is \_\_\_\_ inches to the right from the middle)

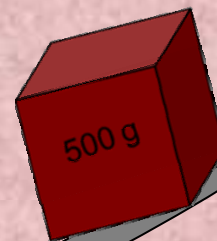
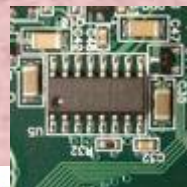
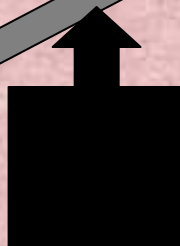
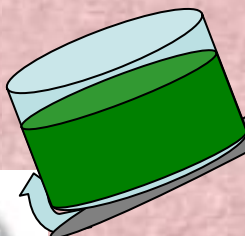
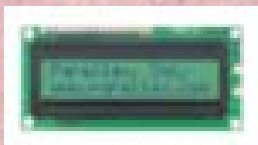
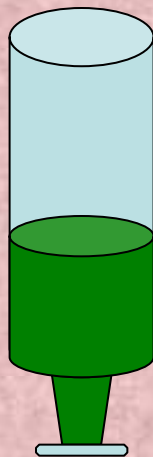
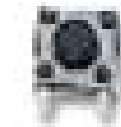




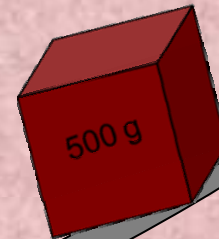
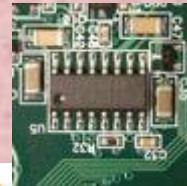
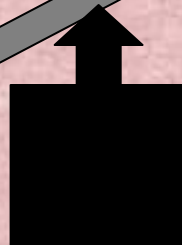
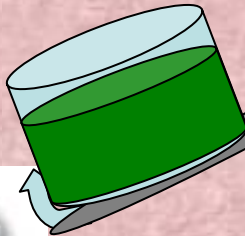
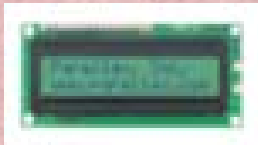
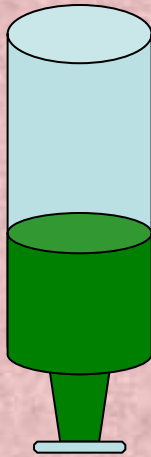
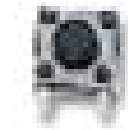
**Force and Height  
Measurement  
Flow Chart**

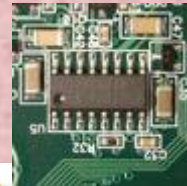
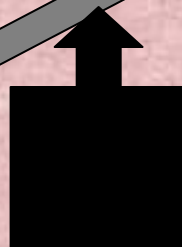
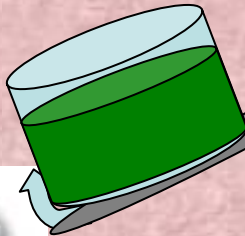
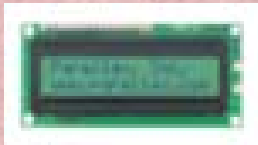
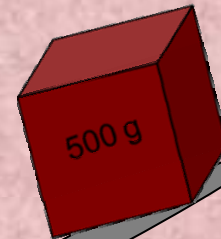
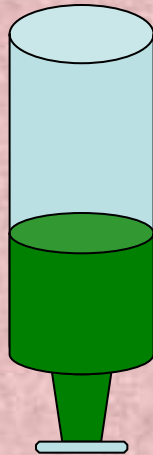
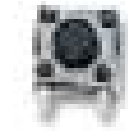












Compare forces exerted by  
input force at the three  
locations of the fulcrum

