# Penny Lever Lab

Using the supplies listed below, build a small lever like the one pictured. Use the ruler as the lever, a pencil as the fulcrum, and tape cups to the ends to hold the pennies. Test the lever with pennies following the instructions given.

<u>Supplies:</u> 2 small paper cups, one ruler (30cm long), One pencil, Some tape, About 60 pennies

#### Lever One:

Build Lever One according to the diagram shown. Place the pencil fulcrum at the 15 cm mark on the ruler. Tape the pencil to the ruler if needed to keep it from sliding. Place 30 pennies in the left side cup. See how many pennies need to be added to the right side to get the lever to tip, and lift the left side cup. Record your results on the data table provided.

#### Lever Two:

Build Lever Two in the same way. Place the pencil fulcrum at the 10 cm mark on the ruler. Place 30 pennies in the left side cup. See how many pennies need to be added to the right side to get the lever to tip, and lift the left side cup. Record your results on the data table provided.

### Lever Three:

Build Lever Three in the same way. Place the pencil fulcrum at the 5 cm mark on the ruler. Place 30 pennies in the left side cup. See how many pennies need to be added to the right side to get the lever to tip, and lift the left side cup. Record your results on the data table provided.



## DATA TABLE

	Load (Resistance force or # of pennies)	Effort force (or # of pennies added to tip the lever)	Effort distance (distance from the fulcrum to the effort force)	Resistance distance (distance from the fulcrum to the load)
Lever 1	30			
Lever 2	30			
Lever 3	30			

1. What happens to the effort force as you move the fulcrum closer to the load?

2. Sketch one of the the levers you built and label the fulcrum, effort force, and load. ALSO label the resistance distance and the effort distance.

3. The lab today showed that if we moved the fulcrum closer to the load, the amount of effort force needed to lift the load would \_\_\_\_\_\_\_. (increase/decrease)

4. Mechanical advantage is a measure of how much \_\_\_\_\_\_ it is to do the work using the lever.

5. Calculate the mechanical advantage of each lever. Show your work. MA= <u>effort distance</u>

resistance distance

Lever 1	Lever 2	Lever 3