

Name _____ Partner(s) _____ Date _____

Lever Lab

Procedure:

For each lever use a scale to measure the force in (effort force) while connected to the lever. Measure the force out (resistance force) using a scale alone connected to the weight. Use the numbers on the meter stick to measure the input distance (effort distance) and output distance (resistance distance).

1. Set up a first class lever using a meter stick as the lever, weights for the force out and a scale to measure the force in. **Use a scale that is best for the force you are measuring.** Measure the forces and distances. Repeat for at least four different forces and distances.
2. Set up a second class lever using a meter stick as the lever, weights for the force out and a scale to measure the force in. **Use a scale that is best for the force you are measuring.** Measure the forces and distances. Repeat for at least four different forces and distances.
3. Set up a third class lever using a meter stick as the lever, weights for the force out and a scale to measure the force in. **Use a scale that is best for the force you are measuring.** Measure the forces and distances. Repeat for at least four different forces and distances.

F _{out}	F _{in}	s _{out}	s _{in}	Work out	Work in	AMA	IMA	% Efficiency

Summary:

1. In general, what occurs with the F_{in} as the s_{in} decreases (slope increases)?
2. In general, how does the work to lift the cart directly compare to the work to pull it up the ramp?
3. Theoretically, how should these two quantities (W_{out} & W_{in}) compare? WHY?
4. What accounts for any differences in your answers to question # 2 & 3?
5. What does IMA mean?
6. In general, what occurs to the IMA as the length (s_{in}) increases?
7. What does AMA mean?
8. In general, how does the IMA compare to the AMA? WHY?
9. What does % efficiency mean? What occurs to the incline's efficiency as the slope increases? WHY?