

Unit E1 • Potential and Kinetic Energy

LAB: RUBBER BAND ENERGY

Can you use measurements to study the relationship between **potential** and **kinetic energy** within a system?

You will need:

- a rubber band
- a Styrofoam or paper cup sliced in half lengthwise
- a ruler

How to cut a cup in half lengthwise...



Procedure:

1. You will stretch your rubber band to three different lengths – short stretch, medium stretch, and long stretch. Each length of the rubber band is a “condition” of your experiment.
2. Conduct 3 trials for each condition.
3. For the 3 trials for each condition, make sure the rubber band is stretched exactly the same length and that the cup starts in the exact same place.
4. Carefully aim the rubber band at the same spot on the cup (so the cup will move in the same direction).
5. Record how far the cup moves for each trial. Then calculate the mean distance for each of the 3 conditions.



Condition 1
(short stretch)

Potential energy (represented by rubber band stretch):

Length of rubber band stretch = _____ cm

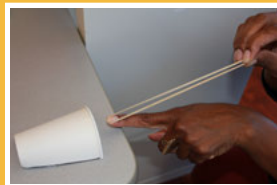
→ First Trial:
Cup moved _____ cm

→ Second Trial:
Cup moved _____ cm

→ Third Trial:
Cup moved _____ cm

Kinetic energy (represented by cup movement):

→ mean cup movement = _____ cm



Condition 2
(medium stretch)

Potential energy (represented by rubber band stretch):

Length of rubber band stretch = _____ cm

→ First Trial:
Cup moved _____ cm

→ Second Trial:
Cup moved _____ cm

→ Third Trial:
Cup moved _____ cm

Kinetic energy (represented by cup movement):

→ mean cup movement = _____ cm



Condition 3
(long stretch)

Potential energy (represented by rubber band stretch):

Length of rubber band stretch = _____ cm

→ First Trial:
Cup moved _____ cm

→ Second Trial:
Cup moved _____ cm

→ Third Trial:
Cup moved _____ cm

Kinetic energy (represented by cup movement):

→ mean cup movement = _____ cm

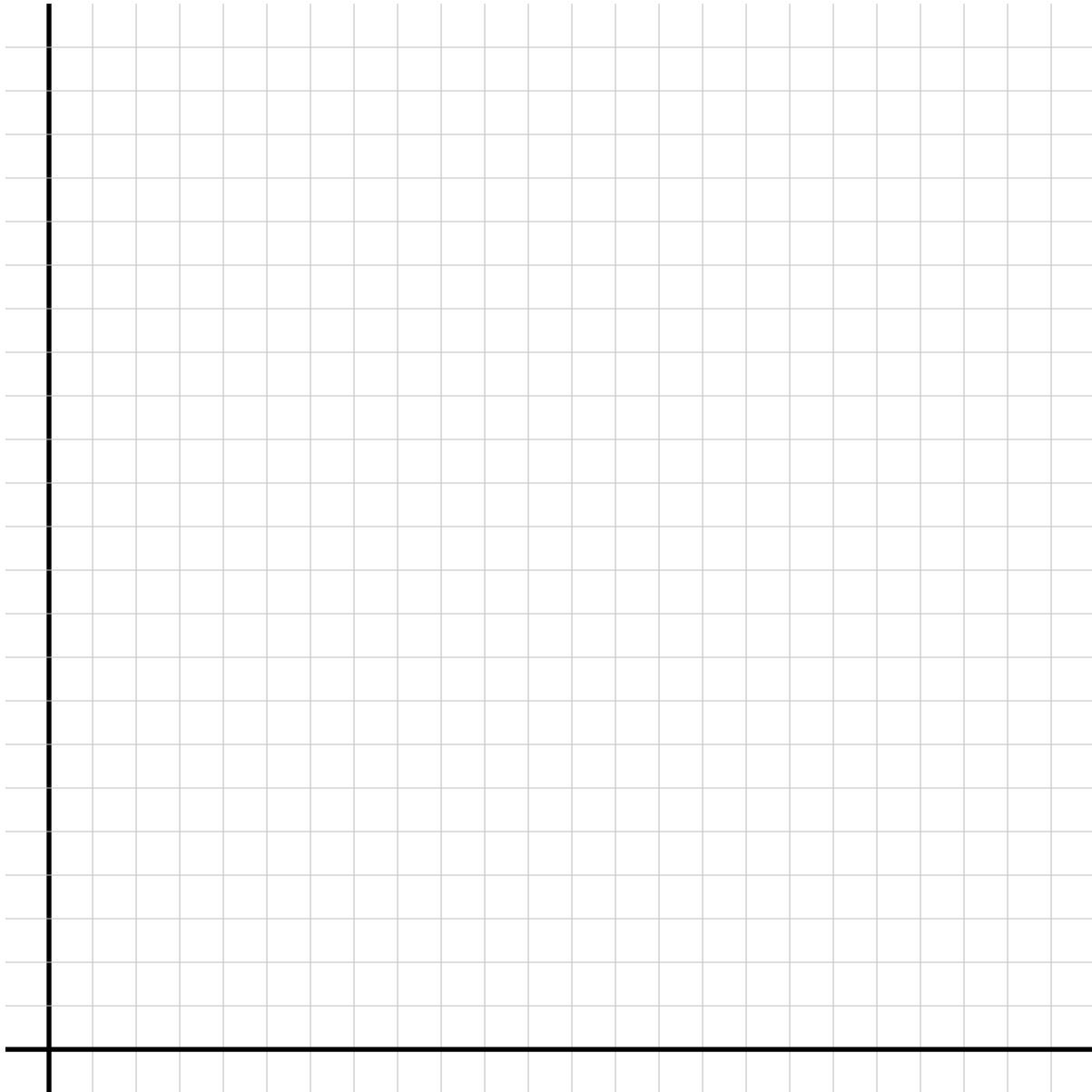
Analyzing your data from the Rubber Band Energy Lab

Restate your results here. Then graph them below.

Condition 1: When the rubber band was stretched _____ cm, the cup moved an average of _____ cm.

Condition 2: When the rubber band was stretched _____ cm, the cup moved an average of _____ cm.

Condition 3: When the rubber band was stretched _____ cm, the cup moved an average of _____ cm.



TURN AND TALK

Do you see a trend? Do these data support any ideas you might have about the relationship of **potential** and **kinetic energy** in this system?