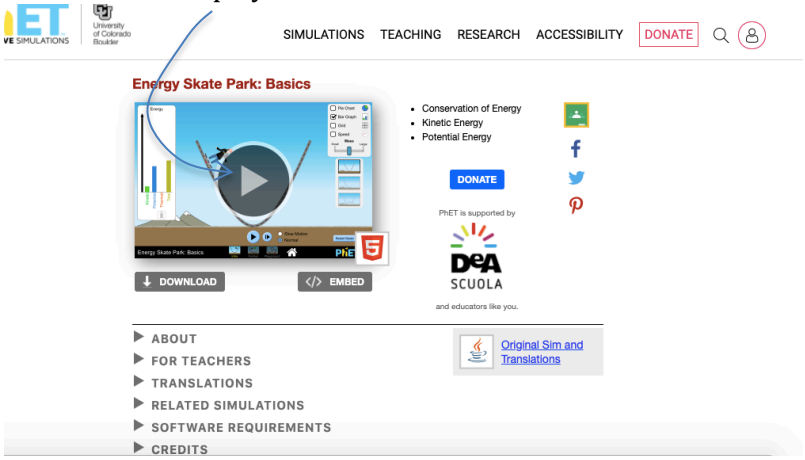
Name: Section: Number:
Date: Teacher: Period:

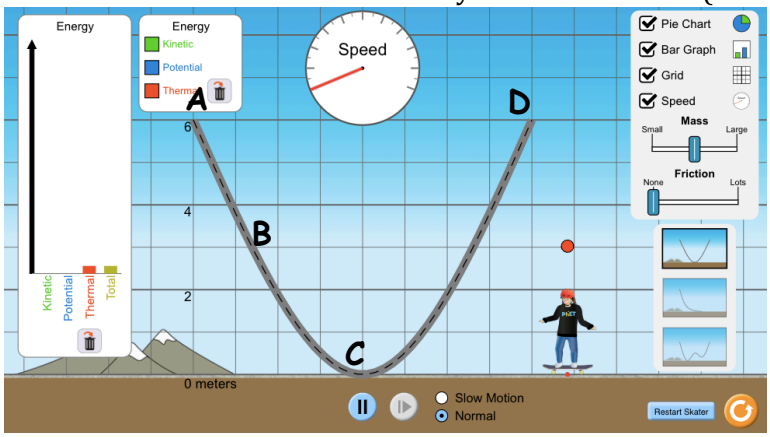
Regents Physics Lab #26: Qualitative conservation of energy
Objective: Investigating relationships between Kinetic, potential and thermal energy
Introduction:
Potential Energy is stored energy. Kinetic Energy is the energy of motion. Thermal energy corresponds to an objects internal energy (Q on your reference table) in the form of increased temperature due to kinetic friction.
Instructions:

1. Click this link: https://phet.colorado.edu/en/simulation/energy-skate-park-basics
2. Click the play button to run the simulation



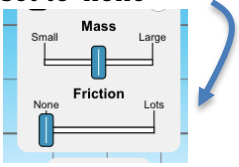
3. Click on Friction and click the *speed, bar graph, grid and pie chart* buttons.

4. Set the friction to 'none' and you should see this (without the letters ABCD):



Click the slow motion button to make it easier to see the readings on the pie chart, bar graph and speedometer.

****Make sure the friction is set to 'none'****



Acquaint yourself with the simulation:

(a) Place the skater at various starting points on the ramp.
(b) Explore changing their mass and the type of ramp.
(c) Look at the variety of ways to display the data while the skater is moving.
(d) Notice the reset button in the bottom right hand corner. It is orange with a white arrow.
(e) There is also a button to restart the skater from the original position he was set up in.

Click and drag the skater to the top of the ramp's left side (Point A on the image above). Release the skateboarder and you should observe them oscillating back and forth. Record the energy type the skater has at each position by using a check mark in each box below. If a particular energy type is absent leave the box blank.

Position	Potential Energy	Kinetic Energy	Total Energy	Thermal Energy
A				
B				
C				
D				

Questions.

1. The skater should have the most potential energy at points A and D? Why?

   _____

2. The skater should have the most kinetic energy at point C? Why?

   _____

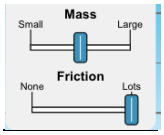
3. How does the mass of the skater affect the total amount of energy?

   _____

4. How does the potential energy at A compare to the potential energy at point C?

   _____

****Next click the slider and increase the friction to 'lots'****



Click and drag the skater to the top of the ramp's left side (Point A on the image above). Release the skateboarder and observe.

-In the frictionless ramp scenario, the skater moved endlessly back and forth because there was no loss of kinetic or potential energy because there was no friction.
-There was no increase in temperature of the skater or the ramp so the internal energy of each remained constant.

Finish the two sentences below in contrast to what is written above:

-In the scenario with 'lots' of friction, the skater_____

_____.

-There was an increase in temperature in the skater and ramp_____

_____.