-----------------------------Understanding the Properties of Energy

Energy Skate Park   **(<u>NOT</u> skate park: basics)

Instructions: Go to this web page:
http://phet.colorado.edu/simulations/sims.php?sim=Energy_Skate_Park **or**, go to Google and search for: **phet skate park.** OR Go to phet.colorado.edu , click on play with sims, then Physics , Energy, and Energy Skate Park (Not the basics one)

 Click on the Run Now! Button. (Java will download a file, and if you have an old browser it may need to update.
1. Click on Show Pie Chart
2. Find the box that says **Location**. You should be on Earth.
3. The program should be running. You can click on **Pause** or simply drag the skater and put him anywhere on the ramp at any time.

What do the pie charts tell you?

Click on Bar Graph on the tool panel. What does the bar graph show? What rules does it follow?
(total E = ?)

What makes the Thermal energy pie section to grow? (there are two ways; one by adjusting one of the settings on the Right side)

What determines the Gravitational Potential energy / Kinetic Energy pie sections? What rule(s) does they seem to follow?   Draw a diagram to explain.

Play around with settings on the right; Location and the "Choose Skater" button. What does the size of the pie represent? How many ways can you find to make the pie bigger or smaller? How does it relate to the bar graph?

What "system" is being monitored in this simulation? (what has the energy?) What things do you think store the energy? How can you tell?

How does going into **outer** space (far, far away from planets or stars) affect the energy pie charts? Specifically, what happens to the gravitational energy?

What conditions must exist in order to have Gravitational energy? (from your notes as much as this simulation)

Click on Reset in the upper right corner and Pause the Skater. Click on the three blue dots in the upper left hand corner that says, "Tracks". Add some sections onto your track and arrange your track as you see fit. Keep friction turned off, and leave the gravity on Earth.
Sketch your track below:

J. Label your track diagram with "Max GPE, Max KE, and KE = GPE.

K. What general rule about the hills do you have to follow to get the skater to go all the way from one side of your track to the other? What can affect whether it works or not?

L. If your track is not symmetrical, can the skateboarder reach the same height on both sides?   Under what conditions does the skateboarder NOT make it to the same height?

M. With the Bar graph still shown, alter the Gravity by switching to Jupiter or the Moon. What affect does Gravity have on the skateboarder's motion?

N. At what location of the track is the most internal E (Thermal E) gained?

O. At what location(s) of the track is there no internal E (Thermal E) produced? Why not?