Name: _____

Kinetic and Potential Energy

Learning Goal:

- **Students will explore the interaction between Kinetic and Potential energy and be able to explain the relationship when compared to a real-world example.**

Materials:

Work with your lab partner sharing a computer with the following simulations:

http://phet.colorado.edu/simulations/sims.php?sim=Energy_Skate_Park
http://phet.colorado.edu/simulations/sims.php?sim=Pendulum_Lab

Activity:

BEGIN AT THE ENERGY SKATE PARK SITE.

Part 1: Play! 	Build a skate track and choose a skater to test it. Draw a diagram of what happened to your skater on the first try:
	Adjust your track (if needed) to keep the skater from flying off and dying! Draw a second diagram of your solution:

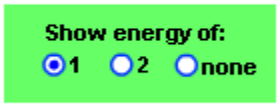
What variable(s) did you change? Why did it help the skater survive?

Define the following using your own words:

- Kinetic Energy –
- Potential Energy –

Part 2: Observe 	Click on the Pie Chart box and run your skater through the track again. Use this tool to help you label the spots on the track where there is the greatest KE and PE from Part 1. Draw your results below:
	Compare what happens to KE and PE as the skater moves along the track. What general statement can you make about the relationship between KE and PE?

NOW, GO TO THE PENDULUM LAB SITE.

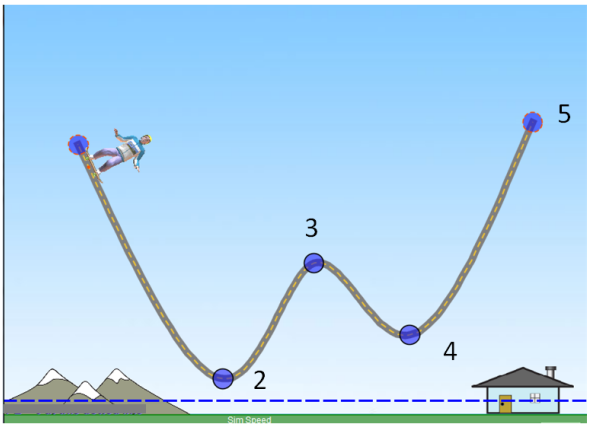
Part 3: Compare Click on the "1" button 	Change the speed of the pendulum to slow it down 	Click and drag the pendulum to start the motion. Watch the KE and PE bars as the pendulum swings back and forth.

Explain (in words or with a drawing) what you see happening with the KE and PE:

How does this relate to the skater?

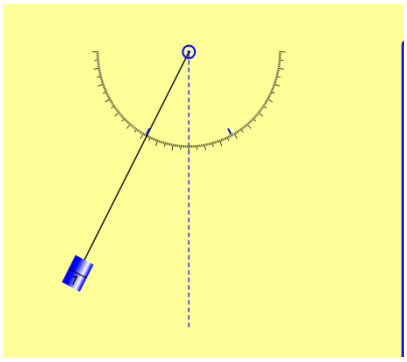
Part 4

1. A skater starts from rest at the position shown in the *frictionless* track to the right. Is it possible for the skater to reach each of the blue dots?



2. Explain your answer using kinetic and potential energy.

3. A student sets up the Pendulum lab as shown in the first screenshot on the right. Draw in the position of the pendulum where it stops moving to the right and begins moving back to the left. Provide a short explanation about how you figured out where to draw the pendulum.



4. Does this second screen shot present an accurate picture of the pendulum swinging for the set up in the question above? Again, use kinetic and potential energy in your explanation.