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>

<http://phet.colorado.edu/simulations/sims.php?sim=Lunar_Lander>

**Activity:**

Begin at the Energy Skate Park site.

|  |  |
| --- | --- |
| **Part 1: Play!** | Build a skate ramp and choose a skater to test it. Draw a diagram of what happened to your skater on the first try: |
|  | Adjust your ramp (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:

* Kinetic Energy –
* Potential Energy –

|  |  |
| --- | --- |
| **Part 2: Observe****MCj03105040000[1]** | 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 ramp 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.

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| **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?

**Extension:**

Now, Go to the Lunar Lander Site.

Use the Lunar Lander to explain how KE and PE are interacting as you try to land on the target. Include a diagram and written explanation to support your theory:

|  |  |
| --- | --- |
| Diagram | Explanation |
|  |  |