

Physics Lab

Energy Skate Park

Name: _____

Synopsis

The purpose of this lab is to learn more about energy conservation.

Procedure

1. Open a web browser and go to <https://phet.colorado.edu/>
2. Search for "Energy Skate Park: Basics" and run the simulation
Once your simulator begins running you should see a skater in a given half pipe. Do not make any changes to the skater or the half pipe at this time.
3. Click the option to Show Pie Chart

In the space below, create a rough sketch of the half-pipe.

Slow the skater down using the bottom slider and watch the pie chart at the side as the skater moves back and forth. What do you notice?

Use the pie chart to find the positions where the skater experiences maximum kinetic energy (KE), maximum potential energy (PE), and where $KE = PE$.

1. Draw an A on the half-pipe you sketched above to indicate the position(s) where $KE = PE$. How did you know this was the position?
2. Draw a B on the half pipe you sketched above to indicate the position(s) where KE is at its maximum.
3. Draw a C on the half pipe you sketched above to indicate the position(s) where PE is at its maximum.

At the bottom of the screen, switch to "Friction." Reset the skater at the top and allow them to move. What do you notice about the skaters thermal energy as he skates back and forth? What happens to the thermal energy of the skater if you increase or decrease the friction using the slider control on the bottom?

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Now use the controls on the side to make some modifications. You can change the skater, change the mass of the skater, and even change the location of the skater. As you make each of these modifications make sure to record the changes you notice about the motion of the skater. Use words like gravity, friction, velocity, acceleration, and inertia to describe the motion of the skater as it changes.

Modification Description	Noted Changes