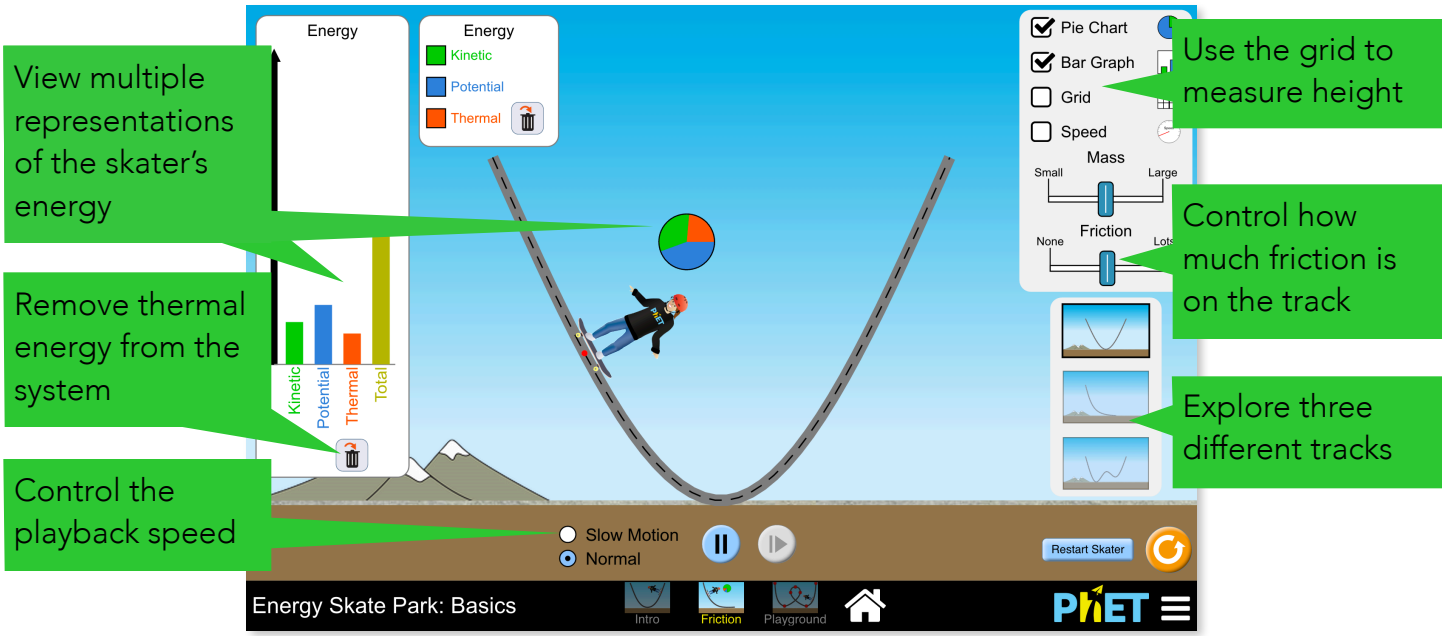
PhET Tips for Teachers

Energy Skate Park: Basics

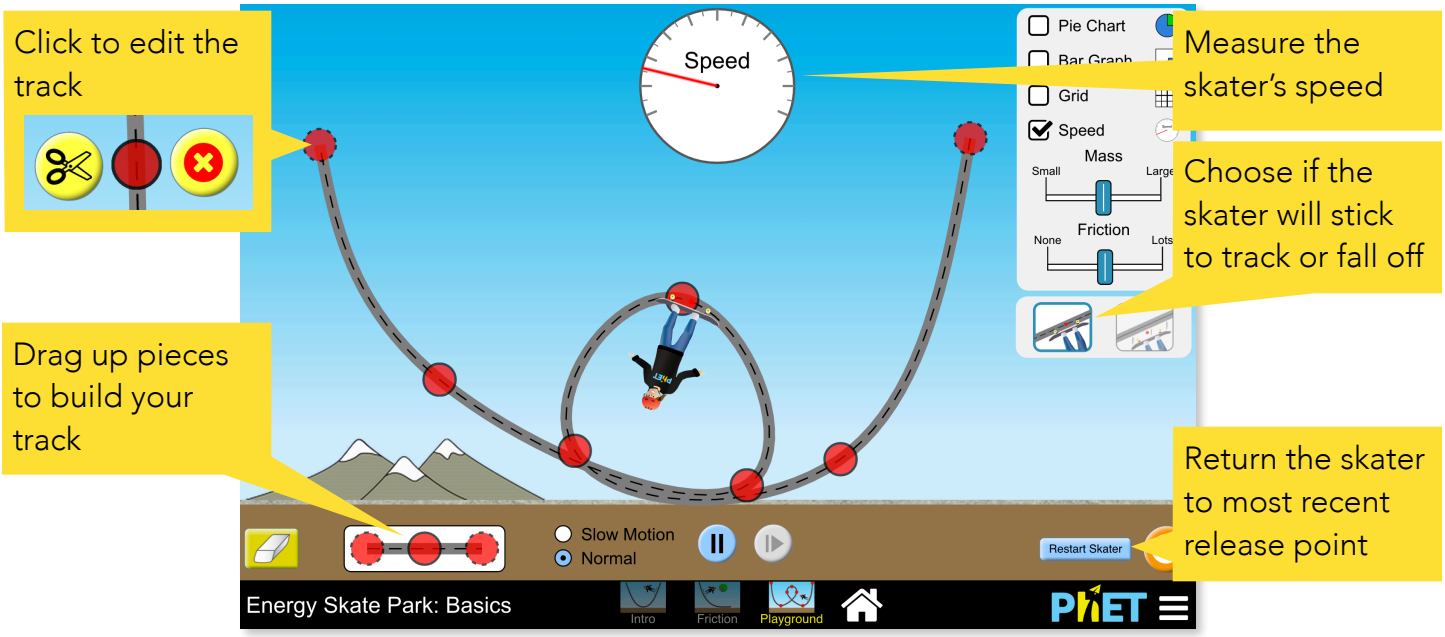
Intro and Friction Screens

Students can explore different tracks and investigate the relationship between the kinetic energy, potential energy, and thermal energy of the skater. In the Intro screen, the track is frictionless. In the Friction screen, students can control the amount of friction between the track and skater.



Playground Screen

Build your own tracks, ramps, and jumps for the skater.



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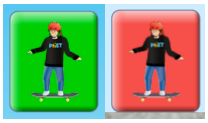
Complex Controls

When the skater exits the screen, two additional return skater buttons appear on the screen. Clicking on either button will return the skater to the location of the button. The green button appears where the skater was most recently released, and the red button appears at the starting position of the skater on the ground next to the track.

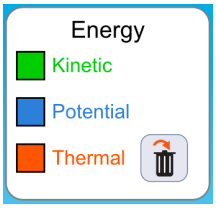


Model Simplifications

When the skater lands on the track, the vertical component of his kinetic energy is converted to thermal energy. You can do experiments where there is no loss to thermal energy (only PE and KE conversions) by turning friction off and by making sure the skater doesn't leave the track.

Insights into Student Use

Students may not notice or use the remove heat button located in the bar graph and pie chart. This feature is particularly useful to remove the heat that is created by the skater's initial collision with the track when the goal is to consider only the PE and KE in a frictionless environment.



Suggestions for Use

Sample Challenge Prompts

- Design an experiment to determine the relationship between kinetic energy and speed.
- Build a track with a loop that the skater can complete.
- At what point on the track does most of the energy get transferred to thermal energy? Why?

Clicker Questions

- Given the energy bar graph, determine the skater's speed.
- Match the skater's energy pie chart with his location on the track.
- If the skater's kinetic energy is getting larger, determine the direction of his motion.
- Determine if the skater can make it over a hill given his starting location.

See all published activities for Energy Skate Park: Basics here.
For more tips on using PhET sims with your students, see Tips for Using PhET.

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