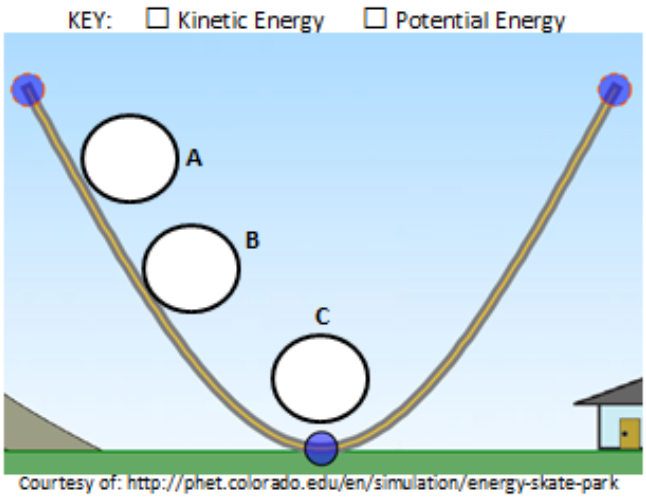
Kinetic and Potential Energy in Action

What is energy?

Investigating Energy: PHeT- Energy Skate Park Basics
http://phet.colorado.edu/en/simulation/energy-skate-park-basics



- ***Select " Pie Chart"***

1. Why do we use pie charts to communicate data?

2. What are the pie charts representing in this animation?

3. Draw the skater's pie chart when he is at the top of the track (A), between the top and bottom of the track (B) and at the bottom of the track (C).

4. How are the pie charts different from each other?

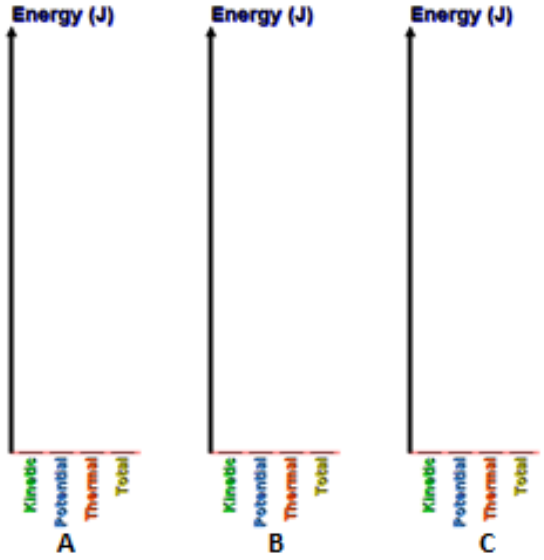
5. a. What do you notice about the size of each of the pie charts as the skater moves along the track?

   b. What does that tell you about the total energy of the system?

- ***Select "Bar Graph"***

6. Draw the skater's bar graph when he is at the top of the track (A), between the top and bottom of the track (B) and at the bottom of the track (C).

7. What is the relationship between the amount of total energy and the amount of kinetic and potential energy of the skater?



- ***Select "Grid"***

8. Describe how the potential energy changes when the height of the skater changes.

9. Describe how the kinetic energy changes when the potential energy of the skater changes.

- ***Select "Speed"***

10. Describe how the kinetic energy changes when the velocity (speed) of the skater changes.

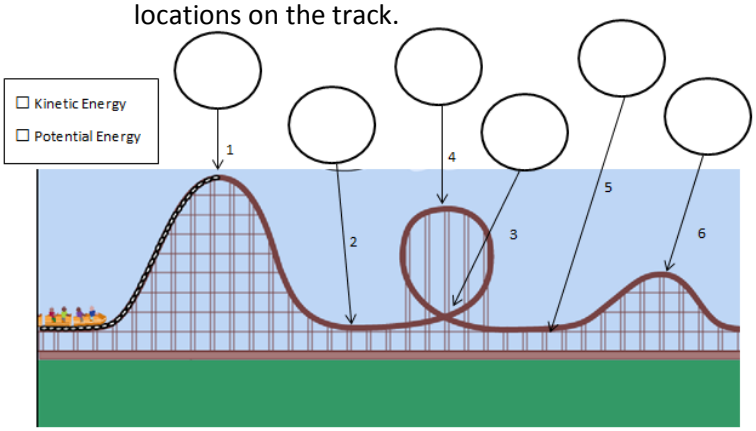
11. Describe how the potential energy changes when the kinetic energy of the skater changes.

12. Based on your observations, what **law** do you think this animation illustrates?

Investigating Energy: Teachers' Domain – Energy in a Roller Coaster Ride

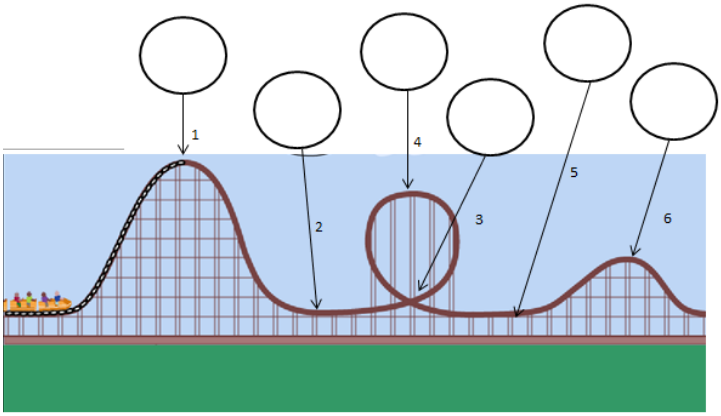
http://www.teachersdomain.org/resource/hew06.sci.phys.maf.rollercoaster/

13. PREDICT what the roller coaster's energy pie charts will look like for each of the following locations on the track.



Courtesy of: http://www.teachersdomain.org/asset/mck05_int_rollercoaster/

14. Draw the roller coaster's ACTUAL energy pie charts as indicated by the animation.



Courtesy of: http://www.teachersdomain.org/asset/mck05_int_rollercoaster/

15. How did your predictions differ from the actual pie charts?

16. a. How does the roller coaster's potential energy differ at points 1, 4 and 6?

b. Why do you think this happened?

17. a. How does the roller coaster's kinetic energy differ at points 1 and 2?

b. Why do you think this happened?

18. Based on these animations, which type of energy is directly affected by height (distance from the ground)? Describe how it is affected.

19. Based on these animations, which type of energy is directly affected by velocity (speed)? Describe how it is affected.

20. Use what you have learned from both of these animations to draw the energy pie charts for this new skate track.