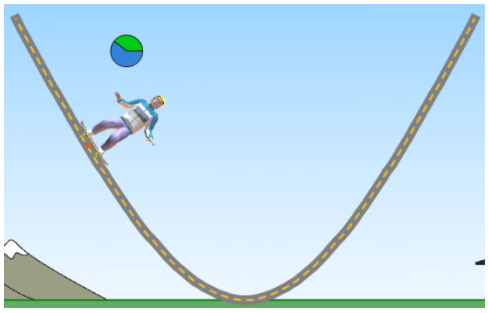
First Name: _____ Last Name: _____Grade 5. Class (circle one) A, B, C

Energy Skate Park Pre-Lab

1. **In the next moment, the *kinetic energy* of the skater gets *smaller*.**

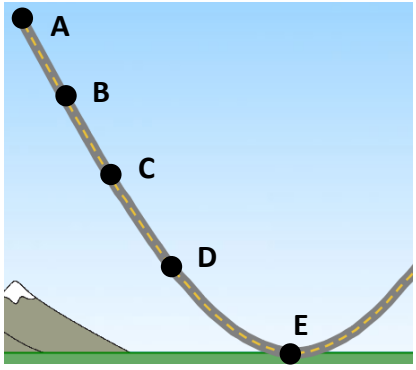


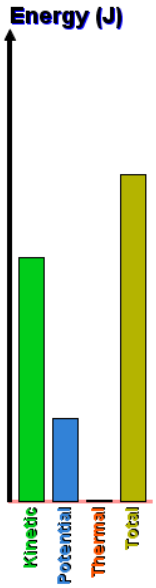
For each quantity, write whether it will be *increasing*, *decreasing*, or *staying the same*.

Explain your answer in the box on the right.

Quantity	Increasing/Decreasing/Same	Explain your answer
Height of the skater		
Potential energy of the skater		
Speed of the skater		

2. **The bar graph shows the energy of the skater.**



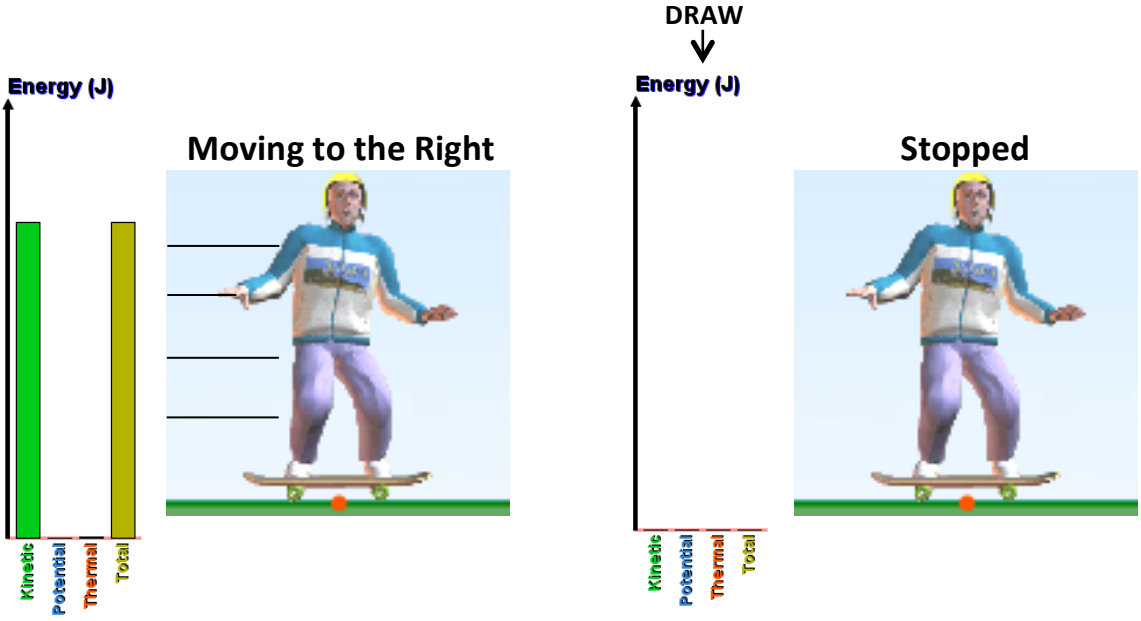


Where could the skater be on the track? _____

Explain your answer

_____

3. **The skater starts moving to the right and then slows to a stop.**
   On the right, *draw* what the Energy Chart will look like *when the skater is stopped*.



Explain your answer

_____

4. Your friend plays soccer. Describe a situation in a soccer game where your friend would have:

   High Kinetic Energy:

   _____

   Low Kinetic Energy:

   _____

First Name: _____ Last Name: _____Grade 5. Class (circle one) A, B, C

Energy Skate Park

Learning Objectives

- Explain the relationship between total energy and kinetic, potential, and thermal energy
- Explain how changing track friction affects kinetic, potential, and thermal energy.
- Design a skate park using the concepts of mechanical energy and energy conservation.

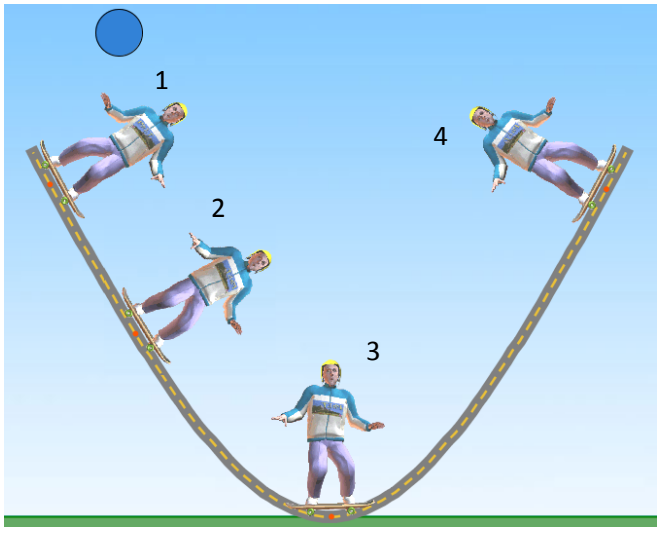
1. Explore the simulation. Describe how the skater moves.

2. Describe how the skater's *height* is related to the skater's *speed* at different points on the track.

3. **Go to the "Introduction" tab.**
   In the table below, write down whether each quantity *increases, decreases*, or *stays the same.*

Skater's Movement		Potential Energy	Kinetic Energy	Total Energy
Up the hill				
Down the hill				

4. The picture shows the skater starting at the top of the ramp (position 1). Draw the pie chart for the skater at positions 2, 3, and 4.



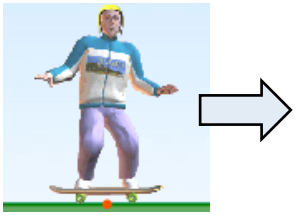
   Explain your reasoning for each point:
   2:_____
   _____

   3:_____
   _____

   4:_____
   _____

Energy Skate Park 1/27/12

5. **Go to the "Friction" tab.**



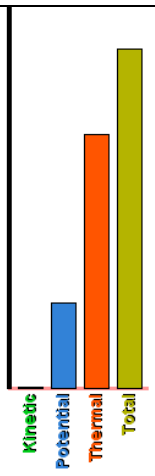
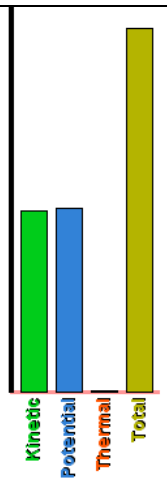
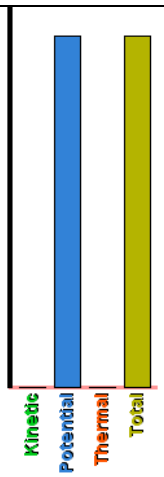
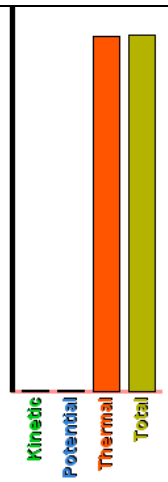
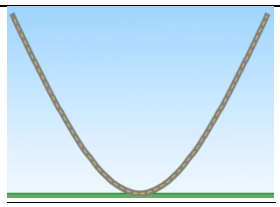
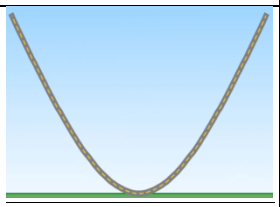
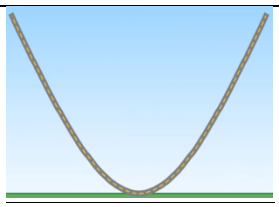
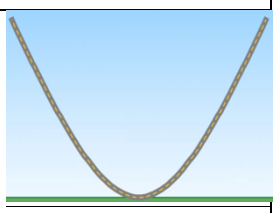
The skater is moving *to the right* along flat ground.

In the table below, write down whether each quantity is *increasing, decreasing*, or *staying the same*.

Track Friction	Potential Energy	Kinetic Energy	Thermal Energy	Total Energy
Zero				
Greater than Zero				

6. The skater is started at the top of the track. The table below shows *Energy Bar Charts* for the skater.

In the table, draw where you think the skater is on the track, and if you think friction is *on* or *off*.

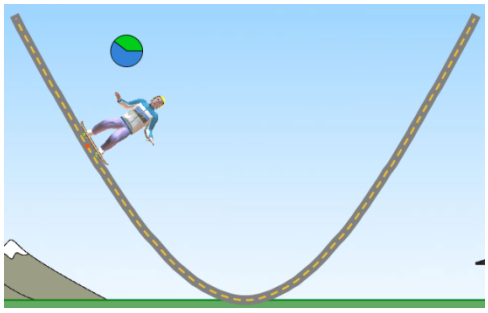
				
Draw Skater Position				
Friction *on* or *off*				

7. Design your own skate park! *Draw your skate park on another sheet of paper.*

First Name: _____ Last Name: _____Grade 5. Class (circle one) A, B, C

Energy Skate Park Post-Lab

1. **In the next moment, the *kinetic energy* of the skater gets *smaller*.**

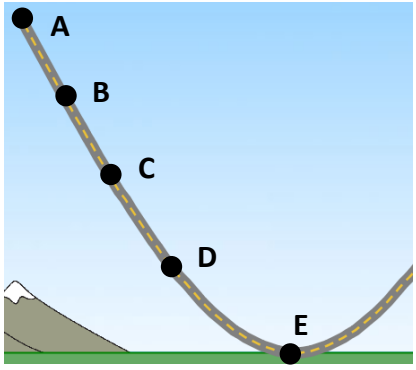


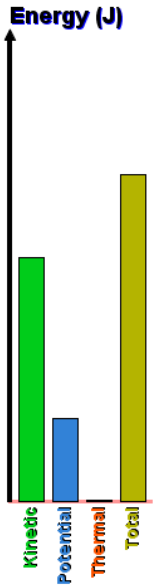
For each quantity, write whether it will be *increasing*, *decreasing*, or *staying the same*.

Explain your answer in the box on the right.

Quantity	Increasing/Decreasing/Same	Explain your answer
Height of the skater		
Potential energy of the skater		
Speed of the skater		

2. **The bar graph shows the energy of the skater.**



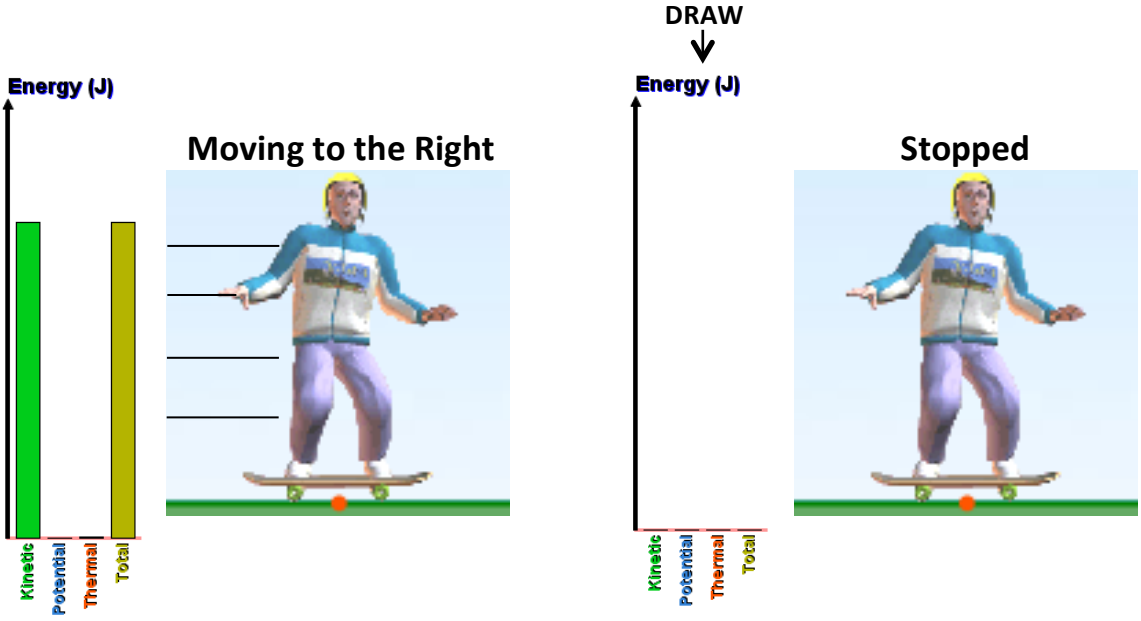


Where could the skater be on the track? _____

Explain your answer

_____

3. **The skater starts moving to the right and then slows to a stop.**
   On the right, *draw* what the Energy Chart will look like *when the skater is stopped*.



   Explain your answer

   _____

4. Your friend plays soccer. Describe a situation in a soccer game where your friend would have:

   High Kinetic Energy:

   _____

   Low Kinetic Energy:

   _____

5. How ***useful for your learning*** was this science activity, compared to other science class activities? (circle)

   More useful About the same Less useful

   How ***enjoyable*** was this science class activity, compared to other science class activities? (circle)

   More enjoyable About the same Less enjoyable

   Why did you or did you not find it useful or enjoyable?

   _____