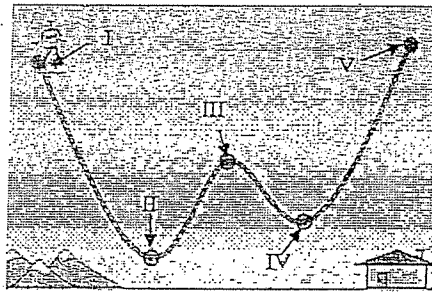


1. Tap **SAFARI** and type in **pHet**
2. Tap **SIMULATIONS** and find (4th line down?) the one called **ENERGY SKATE PARK BASICS**
2. Tap the arrow (>) on the screen
3. Tap the **INTRO** screen
4. It should be set on a parabola, average mass
5. Click on **BAR GRAPH** box on the right.
6. Drag **SKATER** to top left of the track
7. Go through several trial runs, trying the speed, changing the mass, slow motion, step-by-step movement, etc.
8. Try the L-shaped curve, following Step 7 again.
9. Try the Double-well curve, following Step 7 again
10. Watch the **BAR GRAPH** on the right as the skater uses each track. Note the **KINETIC & POTENTIAL** energy.
11. Click on **FRICITION**
12. Try the **FRICITION BAR** in the middle, then at **NONE**, then at **LOTS**
13. Click on **SPEED** to watch how each part of the curve changes speed
14. Tap **PLAYGROUND**
15. You will need to build the **DOUBLE-WELL** curve to look like this: (get several sets of red points)

Double Well(Roller Coaster)



16. Try tapping the skate picture with the skateboard touching the track — run several trials
17. What happens when there is **AVERAGE FRICTION**? \_\_\_\_\_
18. What happens when there is **NONE** on friction? \_\_\_\_\_
19. What happens when there is **LOTS** of friction? \_\_\_\_\_
20. What happens when there is **AVERAGE MASS/NO FRICTION**? \_\_\_\_\_
21. What happens when there is **SMALL MASS/NO FRICTION**? \_\_\_\_\_
22. How long will the skater keep moving? \_\_\_\_\_
23. What happens when there is **LARGE MASS/NO FRICTION**? \_\_\_\_\_
24. Try tapping the skate picture with the skateboard **NOT** touching the track — run several trials
25. What happens when there is **AVERAGE FRICTION**? \_\_\_\_\_
26. What happens when there is **NONE** on friction? \_\_\_\_\_
27. What happens when there is **LOTS** of friction? \_\_\_\_\_
28. 20. What happens when there is **AVERAGE MASS/NO FRICTION**? \_\_\_\_\_
29. What happens when there is **SMALL MASS/NO FRICTION**? \_\_\_\_\_
30. How long will the skater keep moving? \_\_\_\_\_
31. What happens when there is **LARGE MASS/NO FRICTION**? \_\_\_\_\_

32. Click on the **BAR GRAPH** and **SLOW MOTION**

33. Practice several runs with **AVERAGE MASS, NO FRICTION, AND SKATEBOARD OFF TRACK**

34. Where is the skater traveling the **FASTEST**? \_\_\_\_\_

35. In terms of energy, **WHY** is he going the fastest at that point? \_\_\_\_\_

37. **WHY** does the **THERMAL** energy keep increasing? \_\_\_\_\_

36. Change to **LOTS OF FRICTION**

37. **WHY** is the skater no longer able to go as fast or as far? \_\_\_\_\_

38.

Now Click "Bar Graph" on the right hand menu to display the energy bars at each location. Push Play to see what the Bar graphs look like at each location and record them below. (Hint: Notice you can *pause* the simulation and step forward or back to see the bar graph at the desired location.)

(b)	I.	II.	III.	IV.	V.
Actual Bar Graphs:					