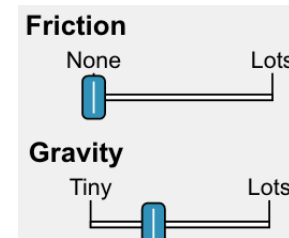
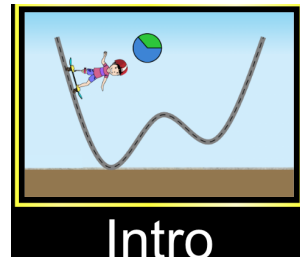


## PhET simulations: Energy Skate Park.



**1) Kinetic energy (KE) is the energy of moving object.**

### Kinetic Energy

$$KE = \frac{1}{2}mv^2$$

m; is the mass of the object, in kilogram (kg)

v; is the speed of the object, in meters per second (m/s)

KE; is the kinetic energy in joules (j)

**2) Gravitational Potential Energy (PE) is the stored energy.**

### POTENTIAL ENERGY (PE)

$$PE = mgh$$

$$1 \text{ N} \cdot \text{m} = 1 \text{ joule (J)}$$

m is the mass of the object, in kilograms

g is the gravitational field strength. It is a constant value.  $g = 9.8 \text{ m/s}^2$

h is the height or the vertical displacement the object is moved, in meter

Simulation:

**Simulation:**

- 1) Run the skater along the track.
- 2) Stop the skater at one point on the track.
  - A. Calculate the kinetic energy (KE) and the potential energy (PE) at that point.
  - B. Calculate the total energy ( KE + PE)
- 3) Stop the skater at another point on the track.
  - A. Calculate the kinetic energy (KE) and the potential energy (PE) at that point.
  - B. Calculate the total energy ( KE + PE)
- 4) Stop the skater at another point on the track.
  - A. Calculate the kinetic energy (KE) and the potential energy (PE) at that point.
  - B. Calculate the total energy ( KE + PE)
- 5) What is your conclusion about the total energy?
- 6) At what position the KE is maximum? At what position the PE is maximum?

**7) Change the Friction to some**

- 8) Stop the skater at one point on the track.
  - A. Calculate the kinetic energy (KE) and the potential energy (PE) at that point.
  - B. Calculate the total energy ( KE + PE)
- 9) Stop the skater at another point on the track.
  - A. Calculate the kinetic energy (KE) and the potential energy (PE) at that point.
  - B. Calculate the total energy ( KE + PE)
- 10) What is your conclusion about the total energy? Where was the energy lost? How much energy was lost? Why?