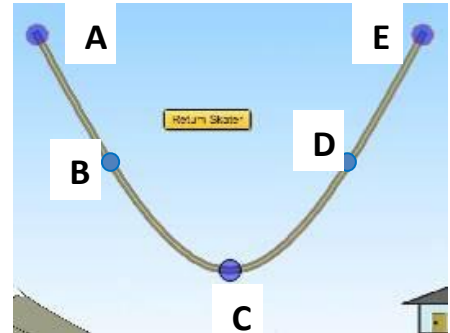


SKATE PARK

Part 1 : Work with your lab partner, using the computer, and follow the next simulations:

http://phet.colorado.edu/simulations/sims.php?sim=Energy_Skate_Park

Change the skater and click on "bar graph"



1) Where is the kinetic energy maximum?

Where is the maximum kinetic energy?

- A B C D E

2) At this point, what can you say about the skater's speed? It's ...

- Minimum Medium Maximum

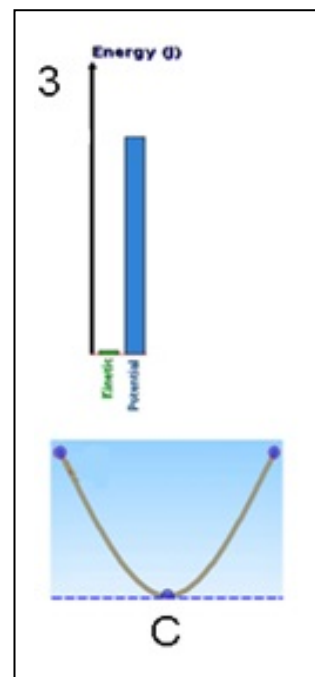
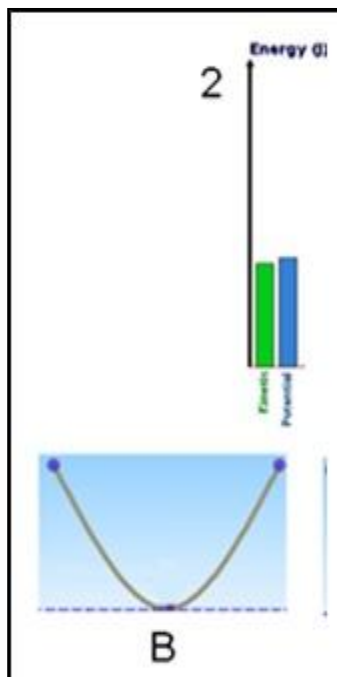
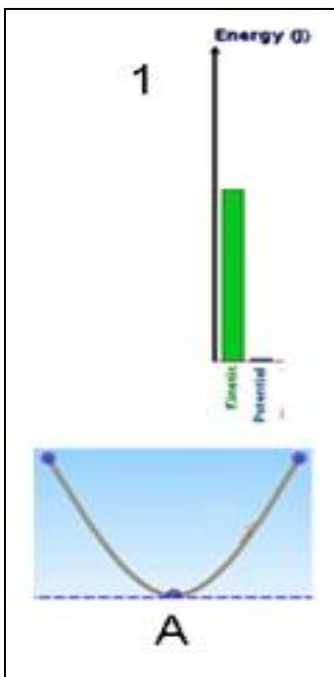
3) Where is the maximum gravitational potential energy? Where is the climax of the gravitational energy?

- A B C D E

4) At this point, what can you say about the skater's height? It's...

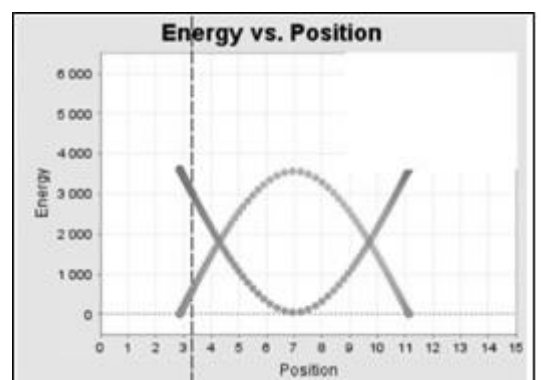
- Minimum Medium Maximum

5) With bar graphs, draw the skater on the skate park A, B, C.

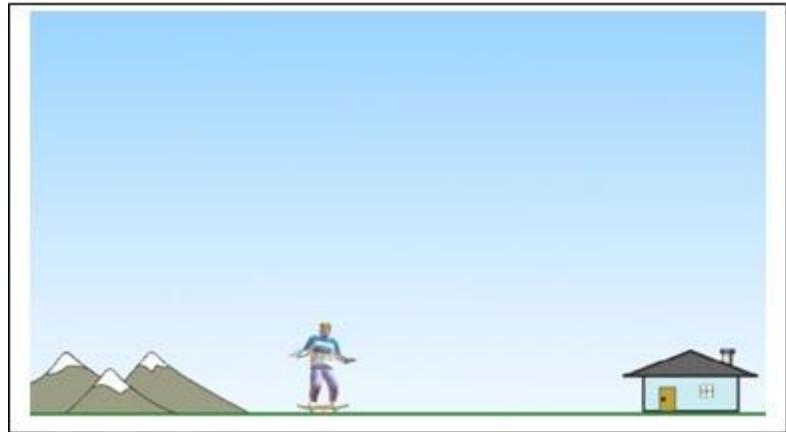
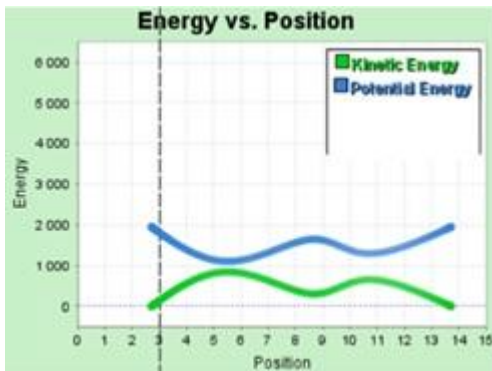


7) Identify the gravitational potential energy graph and color it green.

8) Identify the kinetic energy graph and color it in red.



9) With the graph draw the skate park:



10) Change the skater? What is different?

- Mass Speed Height gravitational potential energy kinetic energy total energy

11) With your answers choose the right words :

- Kinetic energy depends on the speed height mass temperature
- Gravitational potential energy depends on the speed height mass temperature

12) Change "location" and observe. What is different?

- Mass speed height gravitational potential energy kinetic energy total energy

13) Match the definitions with the words

$\frac{1}{2} \times \text{mass (kg)} \times [\text{speed (m/s)}]^2$ ● ● GPE

$m \text{ (kg)} \times g \text{ (N/kg)} \times h \text{ (m)}$ ● ● Total energy

Loss of GPE = gain in KE ● ● KE

14) What general statement can you make about the relationship between KE and PE?

Part 2 : Write the principle of the **conservation** of energy during a fall (5 sentences and use words; kinetic energy (KE), gravitational potential energy (GPE), total energy, increase, decrease.

VOCABULARY :

Gravitational potential energy (GPE)= Energie de position (Ep)

Kinetic energy (KE) = Energie cinétique(Ec)

Mecanic energy = Energie mécanique (Em)

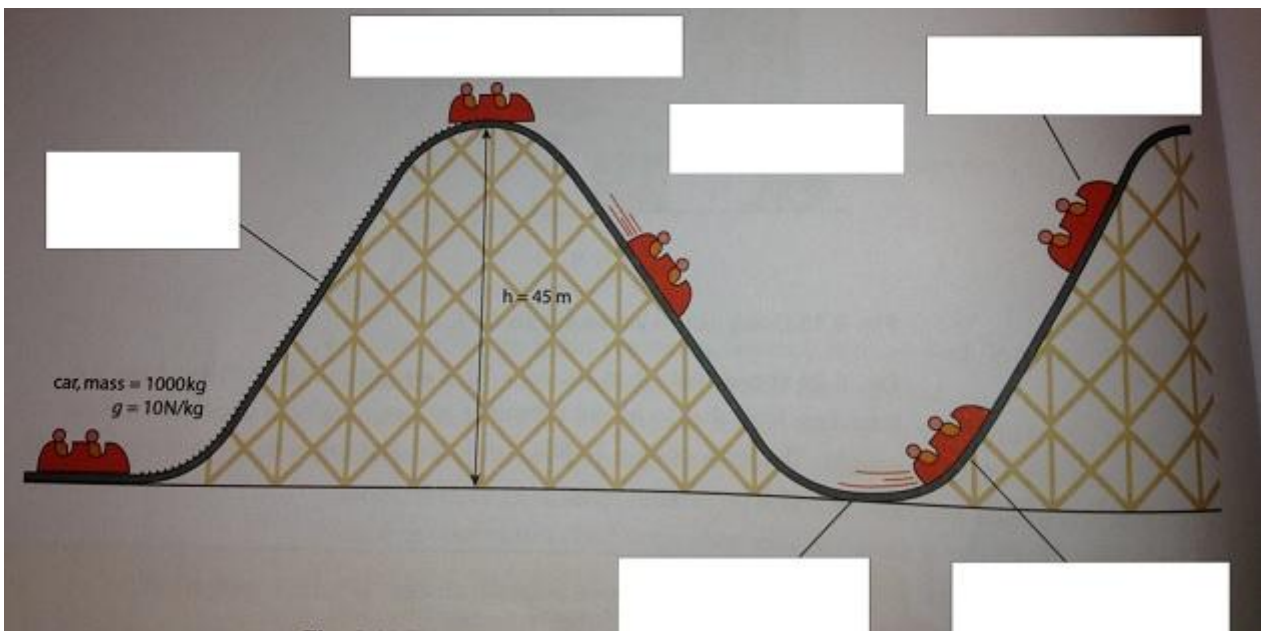
Total energy = Energie totale

Thermic energy = Energie thermique

Energy is measured in Joules (J)

Variable = paramètre

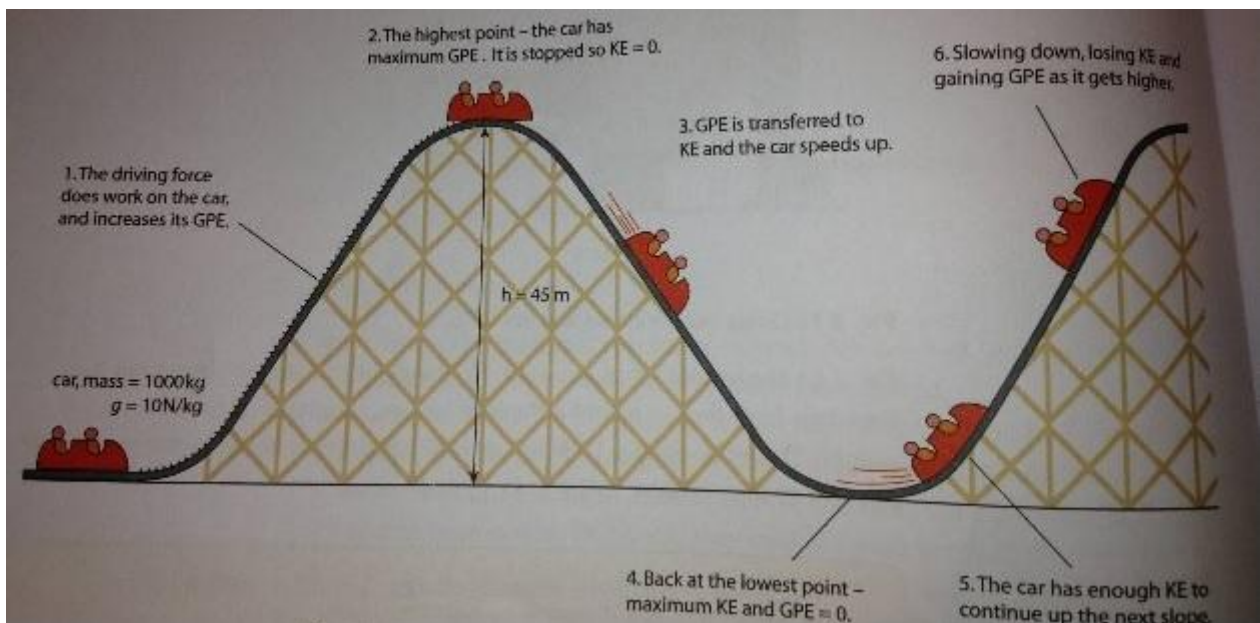
Exercise:



Match these sentences on the diagram

- 1) Slowing down, losing KE and gaining GPE as it gets higher
- 2) The driving force does work on the car, and increases its GPE.
- 3) The car has enough KE to continue up the next slope.
- 4) GPE is transferred to KE and the car speeds up
- 5) The highest point - the car has maximum GPE. It is stopped so $KE = 0$
- 6) Back at the lowest point – maximum KE and $GPE = 0$

Correction



Definitions

A mass that is moving has kinetic energy :

Kinetic energy (J) = $\frac{1}{2}$ x mass (kg) x [speed(m/s)]²

Energy does not have a direction. Speed can be used to calculate the kinetic energy.

Change in gravitational potential energy, GPE (J) = weight (N) x vertical height difference (m)

Or using g = the gravitational field strength (N/Kg)

Change in GPE (J) = m (kg) x g (N/kg) x h (m)

Loss of GPE = gain in KE

The total energy remains the same. This important result is called the principle of conservation of energy. Energy can be stored and transferred in different ways, but when it is all accounted for the total amount stays the same.