Nom : _____ PHYS 11

Test 2	Énergie mécanique

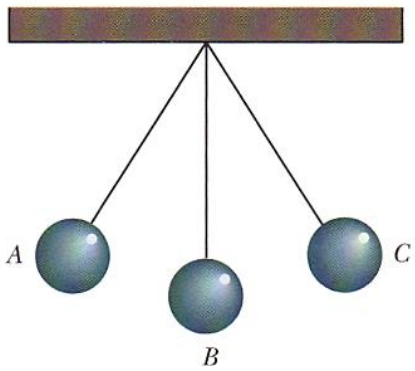
Le Châtelard

Formulas

énergie potentielle	énergie cinétique	énergie mécanique
$E_p = mgh$	$E_c = \frac{1}{2}mv^2$	$E_m = E_p + E_c$

unités de longueur	unités de vitesse	unités d'énergie
$1\ \text{m} = 100\ \text{cm}$	$1\ \text{m/s} = 3.6\ \text{km/h}$	$1\ \text{kJ} = 1000\ \text{J}$

Exercise 1 (6 points) We release a pendulum at A and it begins to oscillate:



a) Where does the ball go the fastest?

b) Where is the ball stopped?

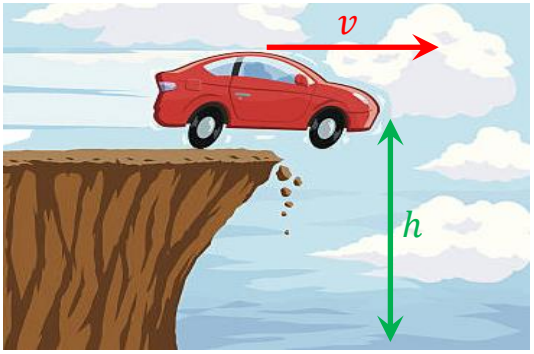
c) In what form is the energy of the ball at A?

d) In what form is the energy of the ball at B?

e) In what form is the energy of the ball at C?

f) Why does the amplitude of the oscillation gradually decrease in reality?

Exercise 2 (20 points) Une voiture de 1200 kg quitte la route sur une falaise :



	procedure	result
a) If the speed of the car is 20 m/s, what is its kinetic energy?		
b) If the speed of the car is 108 km/h, what is its kinetic energy?		
c) If the car is 20 m high, what is its potential energy?		
d) If the car is 80 cm high, what is its potential energy?		
e) If the potential energy of the car is 10 000 J, what is its altitude?		
f) If the potential energy of the car is 20 kJ, what is its altitude?		
g) If the kinetic energy of the car is 375 000 J, what is its speed?		
h) If the kinetic energy of the car is 540 kJ, what is its speed?		
i) If the speed of the car is 20 m/s and its altitude is 20 m *(see questions a and c),* what is its mechanical energy?		
j) If the speed of the car is 108 km/h and its altitude is 80 cm *(see questions b and d),* what is its mechanical energy?		