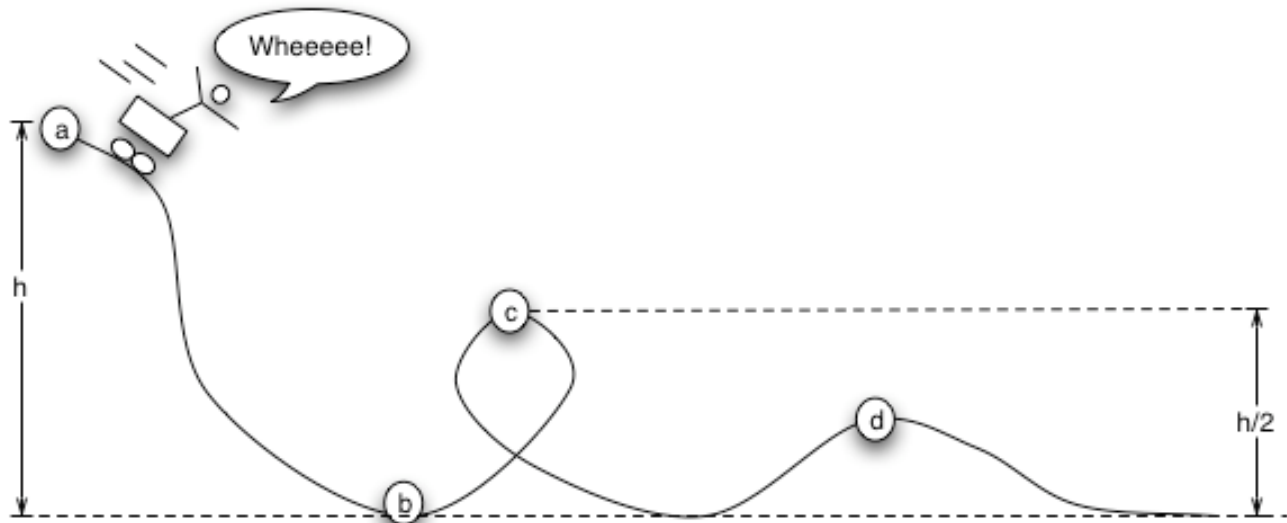


Momentum and Energy Problems

Name: _____

Date: _____

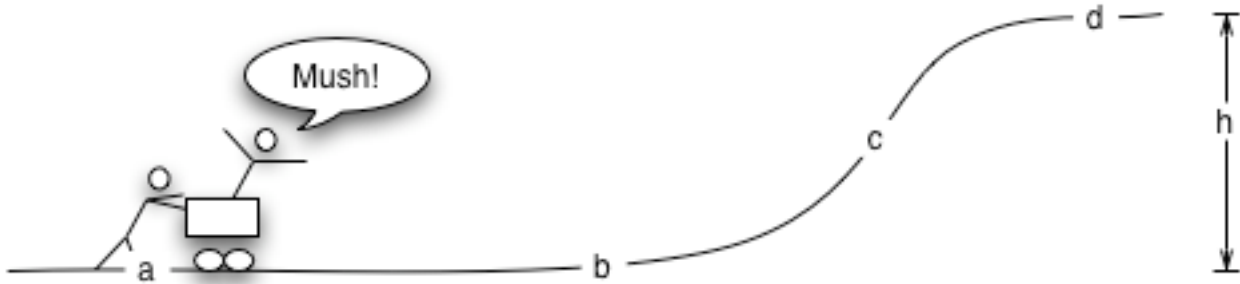
Period: _____



- 1) Make pie graphs for each place on the roller-coaster, assuming there is no friction.
- 2) Does the total energy of the cart change during the ride? Why or why not?
- 3) assume the mass of the cart and rider is 300 kg, and the roller coaster starts at a height of 30 meters.
 - a) calculate E_g at point a.
 - b) calculate E_g and E_k at point c.
 - c) calculate the cart's velocity at point b, c, and d.
- 3) Now lets take friction into account. How would that effect the pie graphs you drew in section 1?
How would it effect the carts velocity at points b,c, and d?

“The Little Eddie That Could”

Once upon a time there was a boy named Eddie. Eddie had a friend named Johnny. One day Johnny said “hey Eddie, I get you can’t push me up that hill in my wagon”. Eddie replied “Oh I bet I could, and I wouldn’t even have to touch you on the hill”. Eddie knew that if he got Johnny going fast enough before the hill started that the wagon could coast up the hill.



1) When Eddie pushes on the wagon he is doing work. What kind of energy is his work being converted into (assuming that the wagon has very low friction wheels)?

2) Draw pie charts to represent how the total energy is divided at each lettered point.

3) If Johnny and the wagon have a mass of 80 Kg, and the hill is 1 meter high...

a) how much work does Johnny need to do in order to just make it to the top of the hill?

b) How fast must the wagon be going when Eddie stops pushing in order to just make it to the top?

c) What impulse did Eddie give to the cart?

4) If Eddie can push with a force of 200N...

a) for how many seconds did he push on the cart?

b) for how many meters did he push on the cart?