Cart Spring Constant Lab 2

Materials: ramp, cart, meter stick, masses, cup

Use the same cart from 'Cart Spring Constant Lab 1'.

If you do not use the same cart, you must recalculate the spring constant 'k'. Begin by measuring the displaced length of the plunger when the spring is released: _____ m. Then using a cup, stack masses vertically on the spring until the spring is completely compressed: _____ kg. Calculate the force gravity of the masses in Newtons by multiplying the mass in kg by 9.8 m/s/s: _____ N. Divide the force gravity of the masses in Newtons by the displacement of the spring in meters which will result in the spring constant.

Spring constant 'k': _____ N/m

Measure the mass of you cart: _____ kg

Calculate the potential energy stored in the cart using $\frac{1}{2}kx^2$ = _____ J

Using conservation of energy principles and the gravitational potential energy equation (mgh), predict the maximum vertical height the cart would reach if launched straight up the air. Show your work:

Create an incline with the base of the ramp against the wall. From the bottom of the ramp, you will release the cart for three trials at three different angles. Measure the maximum VERTICAL displacement of the cart, NOT the distance traveled up of the ramp. Record your data in the table:

	Vertical Displacement or Height (m)			
Incline Angle Degrees	Trial 1	Trial 2	Trial 3	Average
5				
10				
15				

What do you notice when comparing the average vertical displacements for the angles of incline?

Does the vertical displacement reached by the cart depend on the angle of incline? Explain: