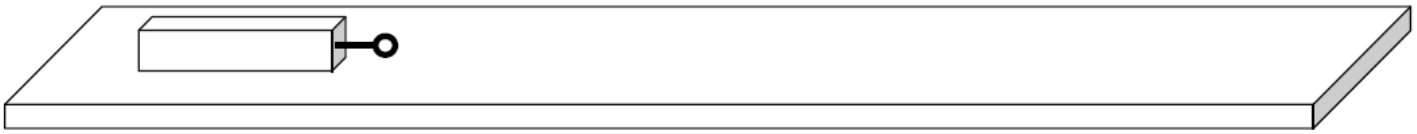
Name _____ # _____ AP Physics 1

Friction Lab (55 pts)

Part I – Experimental Design - Friction on a Flat Surface

Purpose: Design an experiment to determine what effect, if any, the adding weights on a wooden block has on the coefficient of kinetic friction between your block and ramp. Use a scientific method to determine the coefficient of kinetic friction between your block and ramp.

Materials: Digital mass scale, 1.00 kg, .90 kg, .80 kg, .70 kg, .60 kg, .50 kg masses, masking tape



Data (5 pts)

Procedure - Be very specific. Describe what you will do with enough specificity that someone who has never seen you do this experiment could exactly repeat it. **(5 pts)**

1. _____

2. _____

3. _____

4. _____

Calculations - Show the calculations that you used to find the U_k from your plot.**(5 pts)**

Plot **(10 pts)**

μ_k = _____

Part II – Experimental Design = Measuring the **Coefficient of Static Friction** using an incline

1. Tape a .200 kg mass to your wooden block and use your incline to find the coefficient of static friction of your block and ramp.

Purpose: To use an incline plane to experimentally determine the coefficient of static friction.

Equation **(5 pts)**

μ_s = _____ **(5 pts)**

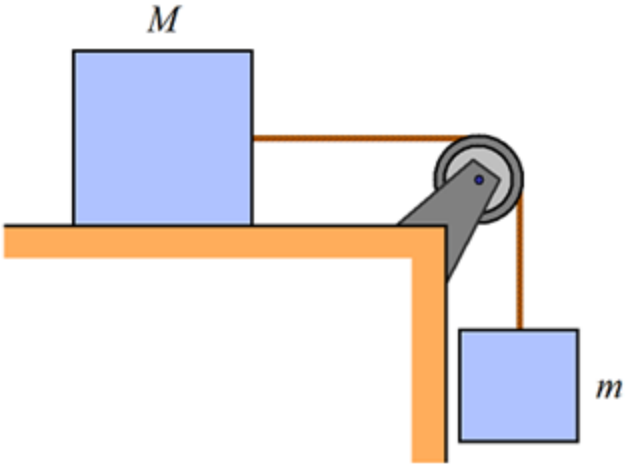
2. Do the same experiment, but replace the .200 kg mass with a .400 kg mass.

(5 pts) Show Equations

μ_s = _____ **(5 pts)**

Part III - Experimental Design - Coefficient of Kinetic Friction using Acceleration

1. Tape your .200 kg weight to your block
2. Connect your 1.5 m string to your block and hanging weight



- Digital Timer, Meter Stick, .200 kg mass hanging mass (m)
- Wooden Block with a .200 kg mass taped to the top (M)
- Steel table, 1.5 m string

3. Find the acceleration of boxes m, M and g. **(5 pts)**

(5 pts) μ_k = _____