Name _____ # _____ AP Physics 1

Date _____

Conservation of Energy Lab - Sliding Block. **(10 pts)**

Introduction (Define mechanical energy. Give examples. Discuss the Conservation of Mechanical Energy. Under what conditions is energy conserved? Define friction and discuss what kind of energy it produces. DO NOT use a list. Do this in a few paragraphs.

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Purpose (a) To determine the energy changes that occur as a 270. gm mass, at a height of 70. cm accelerates a block across a table.

(b) Predict how far the sliding block will travel after the hanging block hits

Materials

- Wood Block + 100. gm mass, 360. gm hanging mass
- C clamp, pulley
- String

Procedure **(5 pts)**

1._____

2._____

3._____

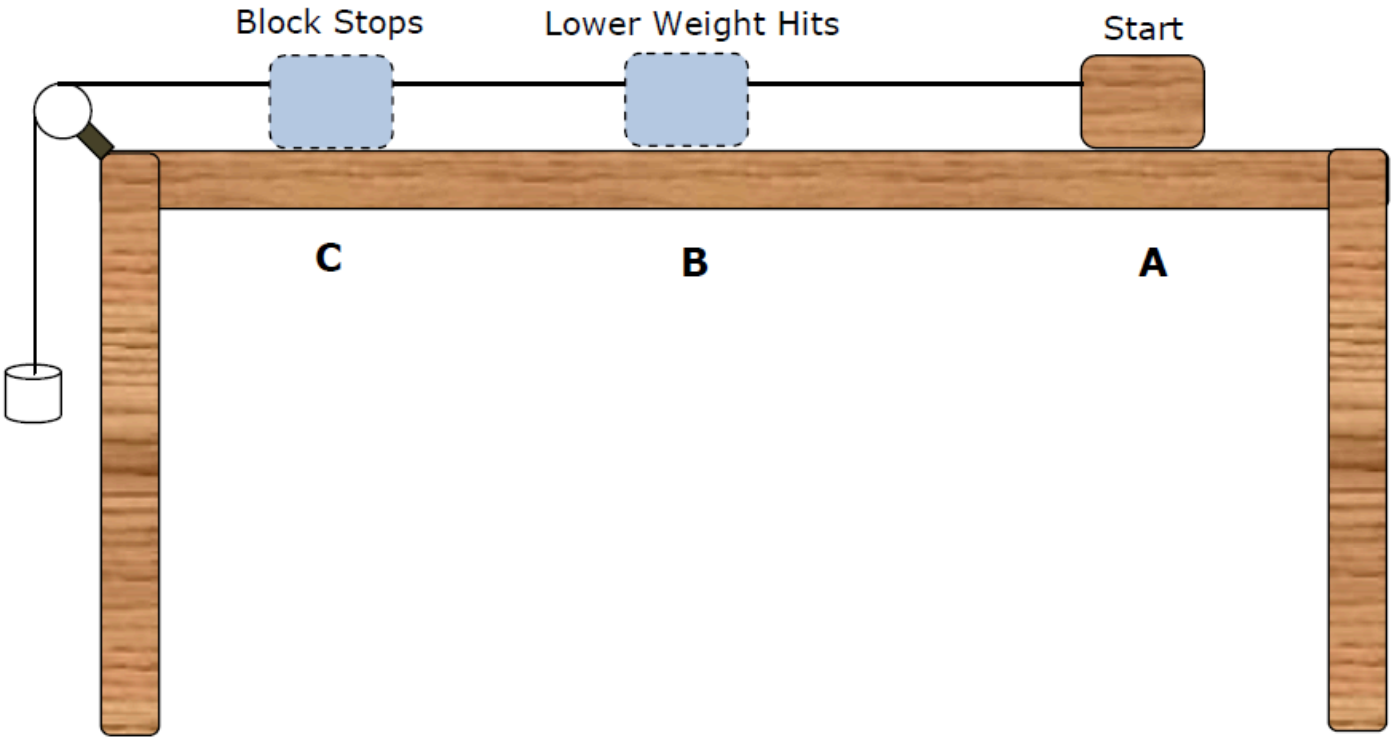
4._____

Part III - Sliding Block Experiment

1. Find the acceleration of the sliding block/falling block system. **(6 pts)**
   Show your acceleration calculations in the table below.

Drop Height (m)	M_{table}	$M_{hanging}$	Hanging Weight Drop Time	Hanging Weight Drop Height

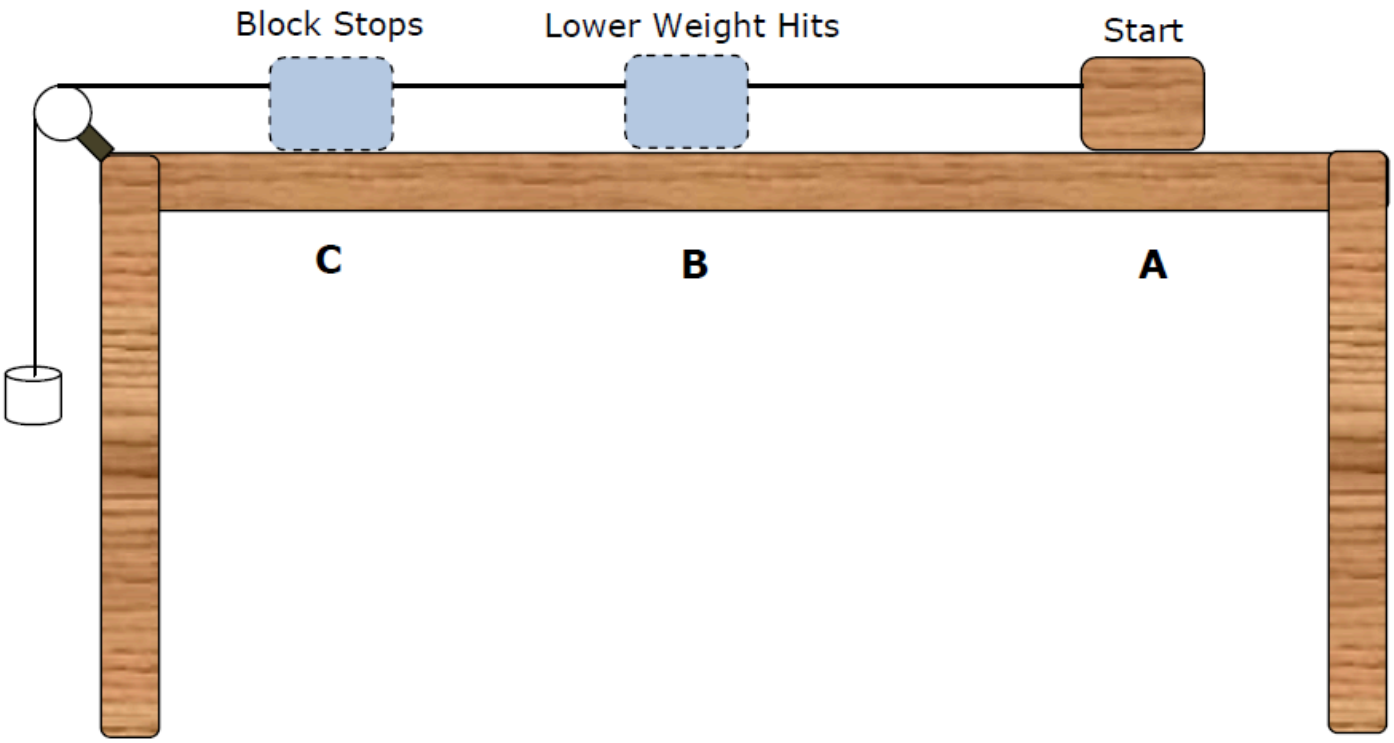
Calculations **(10 pts)**



2. Find the coefficient of kinetic friction of the sliding block. **(10 pts)**

3. What is the system's total energy just before the hanging weight is released? **(10 pts)**

4. Find the KE of the falling weight just before it hits the ground. **(10 pts)**



5. Find the KE of the sliding block just before the falling block hits the ground. **(8 pts)**

6. Use your data to find how far the wooden block slid after the hanging weight hit the ground? **(8 pts)**

(5 pts)

State	Total Energy of Both Blocks	The energy of the Block on the Table (J)	Hanging Block Energy (J)	Energy That Left The system
A (Before weight is dropped)		0		
B (Lower weight hits)				
C (Sliding block stops)				

7. When the falling weight hits the ground, its energy equals zero. Where did the energy go? What kinds of energy were produced? Was work done by the falling weight? **(6 pts)**

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8. If everything in your experiment was the same but your hanging weight was **600 grams,** what would be the **new**:**(12 pts)**

a) acceleration of the system? (note that the sliding block friction is the one you already calculated)
Equation Substitution with Units Answer with Units!

b) the velocity of the hanging block just before it hits the ground?
Equation Substitution with Units Answer with Units!

c) KE of the sliding block just before the hanging block hits the ground?
Equation Substitution with Units Answer with Units!

d) the sliding distance of your block after the block?
Equation Substitution with Units Answer with Units!