Name _____ # _____   AP Physics 1

Date _____   Section_____

Part I - Sliding Block F$_{net}$ = ma - Pre-Lab Questions   **Partial Sentence deduction - 3 pts**

$\mu \neq 0$**(friction is not negligible)**

1. When the hanging weight shown above is released, the wooden block slides across the table. The weight of the string and the mass and friction of the pulley are negligible. **(3 pts)**

   Name at least three factors that determine the magnitude of the acceleration of the system above.

        a)

        b)

        c)

2. Use **Newton's Second Law** to create an equation that would help you calculate the acceleration of the system above.

   First, define all the variables used in your equation **(8 pts)**

   _____ = _____   _____ = _____

   _____ = _____   _____ = _____

Answer here:

3. What motion equation would you use to find the acceleration of the hanging weight? _____

What else would you need besides a meter stick, to find the acceleration of the system described above? **(6 pts) As always, full sentence!**

Part II - Sliding Block - Conservation of Energy - Pre-Lab Questions

Let's define our system as the <u>hanging weight and the wooden block</u>

1. State the <u>complete</u> Law of Conservation of Mechanical Energy (Find a definition that mentions the work done on or by your system your definition). **(5 pts)**

2. As the hanging weight falls, does the total mechanical energy of the system remain constant? Increase? or Decrease? **(6 pts)**

If the total mechanical energy of the system decreases, what is the name of the energy produced? Include the Conservation of Energy in your explanation.

3. As the hanging weight falls toward the floor, it loses gravitational potential energy. Where does that energy go? (hint: it goes 3 places) **(6 pts)**

4. Write an equation to express what you wrote above. **(6 pts)**
   First, define all the variables used in your equatio.n

   _____ = _____   _____ = _____

   _____ = _____   _____ = _____

5. If you experimentally determined the acceleration of the falling weight from a drop height of h, how would you use this to find the KE of weight just before it hit the ground? How would you find v and KE? Show your equations.
   First, define all the variables used in your equation **(8 pts)**

   _____ = _____   _____ = _____

   _____ = _____   _____ = _____