Forces of Friction Lab

In this lab, you will be using brass masses and string to calculate the coefficients of static and kinetic friction between the masses and the table or desk top. Static friction is the frictional force that prevents movement, while kinetic friction is present when the object is already moving.

Directions:
1. Tie one end of the string around one of the larger masses below the middle of the mass.
2. Make a loop with the other end of the string so that smaller masses can be hung from it.
3. Place the heavier mass in the middle of the table.
4. Add smaller masses to the looped end of the string hanging off of the table until the large mass begins to slide.
5. Record this data in the table below.
6. Reset the system place all but one of the small masses back on the looped end.
7. Record the movement of the large mass across the table top when the last small mass is added. Analyze this movement in video physics and calculate the acceleration of the mass using the formula $a = \Delta v/\Delta t$.

Large Mass (kg)	Fg of Large Mass	Combined Mass of Small Masses	Fg of Smaller Masses

Questions:

1. Draw free body diagrams for both the heavier mass and the combined smaller masses just before movement and while the masses were sliding. Do not ignore friction

2. What is the coefficient of static friction between the table and the mass? Remember that the net force is zero, because the objects are not yet accelerating.

3. What is the coefficient of kinetic friction between the table and the mass? Use the measured value for acceleration.

4. What is the expected value for the acceleration when there is no friction for the masses used in (3)?

5. Compare these two values and determine whether or not they make sense. If they do not, state a reason why that may be so.

6. What are two aspects of this lab set up that you did not account for in your equations that may make the observed values different from your calculations?