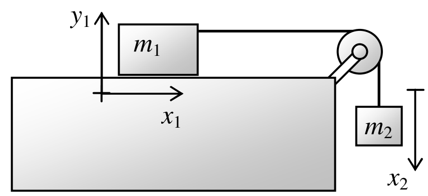
Quiz #8

Name:___________________________

Use a pencil, not a pen.



Block m_1 rests on a table. A thin string passes horizontally from block 1, over a frictionless pulley, and then supports block m_2. There is some friction μ_k between m_1 and the table.

Last week, we discovered that $a = \frac{m_2 g - \mu_k m_1 g}{m_1 + m_2}$.

Also, recall that $m_{tot} = m_1 + m_2$.

1. We intend to plot m_2 vs. a. To make this possible, our original formula can't have an m_1 in it. Replace each of the two m_1 symbols with $m_1 = m_{tot} - m_2$. Then, re-arrange the formula so that it is in the form:

$$m_2 = (\text{something \#1})\cdot a + (\text{something \#2})$$

Obviously, the slope is "something #1", and the intercept is "something #2".Your answers may include only the symbols m_{tot}, g, and μ_k. Don't show your work here… it should be in your logbook!

Slope = s =
Intercept = b =

2. This is harder than it looks! Use the formula you wrote <u>for the intercept b</u> to solve for μ_k. This is hard because μ_k is in there twice! Your answer may include only the symbols m_{tot} and b.

μ_k =

3. Assume that you've already solved for μ_k correctly. Next, look at the formula you wrote earlier <u>for the slope s</u>. Solve this formula for g. It may include only the symbols m_{tot}, s, and μ_k.
Be careful that your "s" doesn't look like a "5".

g =