Hand-In Problem 6 PH 211—Fall 2020

m2

m1

**Question 1**

m1 is sliding across a table with coefficients of friction μs and μk due to m1 hanging over the edge of a table connected to m1 via a massless and frictionless string/pulley system as shown above. Using the supplied measurements, find how long it takes m2, starting at rest, to fall a distance h. Include error bars with your calculated time measurement.

|  |  |
| --- | --- |
| Data Table |  |
| m1 = (137 ± 32)grams | μk = (0.321 ± 0.009) |
| m2 = (358 ± 41)grams | μs = (0.428 ± 0.009) |
| h = (1.1 ± 0.1) meters | g = (9.8 ± 0.0) m/s2 |

**Question 2 (extra credit):**

Model the motion of the above situation using VPython. Submit a copy of your code and a screenshot of the time and final velocity of mass 2 when it hits the ground. Your code does not need to have any cool graphics, but if it does, include a screenshot of the cool graphics.

**Chapter 7:**

Now, we are going to deal with multiple bodies interacting with each other.

***New equations introduced:***

There are no new equations.

**Chapter 8:**

In Chapter 8, we learn that whenever an object goes around in a circle at constant speed then the sum of the forces must add up to equal mv2/r. We call this sum of forces the Centripetal Force.

***New equations introduced:***

Fnet = Fc for an object experience uniform circular motion where ****

***Main Problem Solving Strategies Discussed:***

We’ve added a complexity to our standard “to do” list:

1. Draw a picture!
2. Set up a “good” coordinate system
3. Make sure that you analyze each dimension
4. Draw a FBD ***for every body in the problem.***
5. Create an equation using Fnet = manet ***for every body in the problem.***If the object is undergoing constant circular motion then Fnet = Fc.
6. Always check to see if you have constant accelerations or changing accelerations.