

PHYS 211

Test 1 - Take Home Portion

Name _____

What to do:

Read the following story Determine who committed the murder described in this story by clearly laying out the physics arguments, equations, and calculations that would convict this person.

What to turn in:

1. Identify the criminal.
2. Turn in your organized work that clearly shows both who did the crime and shows that none of the other people could have done it. This should include equations, calculations and a short explanation of what the answers to the calculations mean.

When to turn it in:

The take home problem should be completed by 3 PM Monday, Sep 26 and attached to back of the in-class test.

Read the murder mystery entitled A Damnable Man that follows. In order to solve the crime, read the section on projectile motion in your text carefully and reason out for yourself what variables might be important in solving the crime. In fact, not all of the information given in the mystery is relevant and some information, which you can find for yourself by observation and experiment, is missing. Solve the crime by presenting a clear explanation of the equations and calculations you used. (*Hint*: If you are in the physics lab and shove your lab partner fairly hard, you will likely find that your partner ends up with a speed of about 2 m/s.)

A Damnable Man
by Kevin Laws

It is a warm, quiet, humid night in the city—the traffic has died away and there isn't even a cooling breeze. There is a busy hotel that is so well built that sounds don't carry through the windows. The hotel has impressively large rooms. This is obvious from the outside because there is more space between floors and rooms than normal. The rooms appear to have 14-foot-high ceilings, nice plate glass windows that slide open, and fully two-foot-thick floors for ducting and sound insulation. This is the type of hotel that people like to stay at when someone else is paying the bill.

Outside the hotel, a man is speaking quietly with the doorman, then begins to measure the plush runway carpet for replacement. He is reeling out the tape measure between the hotel and the curb when a scream breaks the quiet. Looking up, he sees a man falling toward him. Stunned, he drops the tape measure and runs for the safety of the hotel. The doorman stands, horrified, as the man completes his fall with a sickening sound, ensuring that the carpet must be replaced. At intense times, people can think of the strangest things, and the carpet-man finds this to be true . . . all he can think of are the bloodstains left on his tape measure. Even if they are cleaned off, he doesn't think he can use it again without thinking of tonight. Even measuring with another will be hard, and 18 feet will be indelibly marked in his memory—that's where the blood stains are.

The police arrive and quickly conclude that it is not a suicide—among the victim's personal effects, they find pictures and records that indicate he has been blackmailing four other occupants of the hotel. He also has bruises on his shins where the ledge at the bottom of the tall hotel window would have hit them; he must have been pushed pretty hard. Adam Able is the dead man's name, as it appears on the driver's license in his wallet. His license indicates that Adam was 5' 11" tall and weighed 160 lb. He has been blackmailing Adrianna Myers, a frail widow in Room 356; Steven Caine, a newspaper reporter in Room 852; Mark Johnson, a body builder in Room 1956; and Stanley Michaels, an actor in Room 2754. All of the suspects admit they were in their rooms at the time of the murder. **WHO KILLED ADAM ABLE?**