

**AP Physics – Assignment #3**  
**Static Equilibrium II**

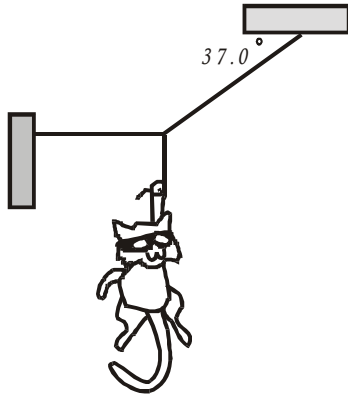
**Instructions:** Complete these problems on separate paper. On ALL questions (yes, even multiple choice), you must:

1. Draw a picture or diagram to visualize the problem
2. Show each step of your calculations clearly
3. Write a few sentences explaining important steps and discussing the reasonableness of your result.

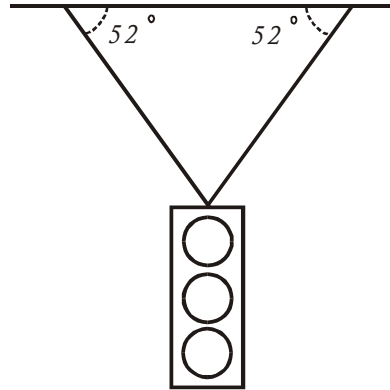
It is ok to collaborate with your peers, but the work must be your own.

*You must take assignments seriously to learn physics*

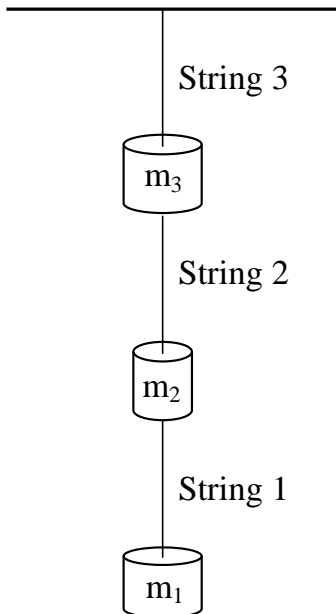
1. Find the tension in each cable supporting the 600.0 N cat burglar.



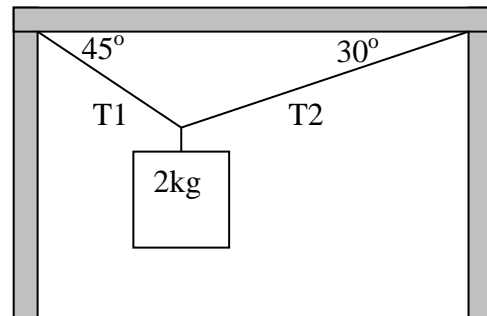
3. A 46.5 kg traffic light hangs from two cables which are at the angles shown. Calculate the tensions in the two cables.



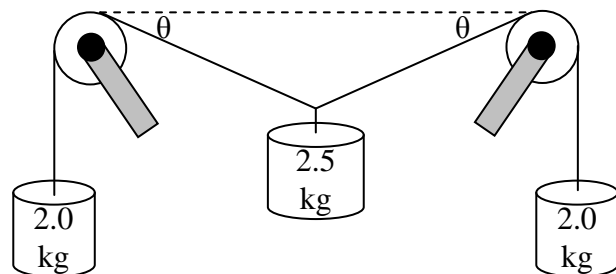
2. Three masses hang on three strings as shown. Find the tension in the three strings. Express your answer in terms of  $m_1$ ,  $m_2$ ,  $m_3$ , and  $g$  only.



4. Find  $T_1$  and  $T_2$ .



**Challenge:** Two 2.0 kg masses are connected by a string and hung over two pulleys. A 2.5 kg mass is then hung between the pulleys, which causes the rope to sag. Find the angle.



*"You don't have to be a fantastic hero to do certain things. You can be just an ordinary chap, sufficiently motivated to reach challenging goals."*

- Sir Edmund Hillary