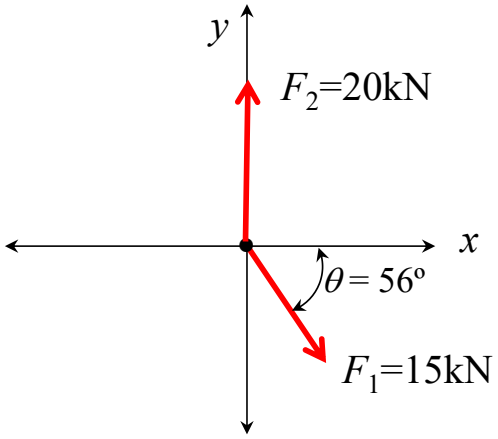
ME 122 **QUIZ 1** **20 April 2020**

Name: _____

Use engineering format to solve Problem 2.

1. (40 pts) What is the resultant of the two-vector sum sketched below.

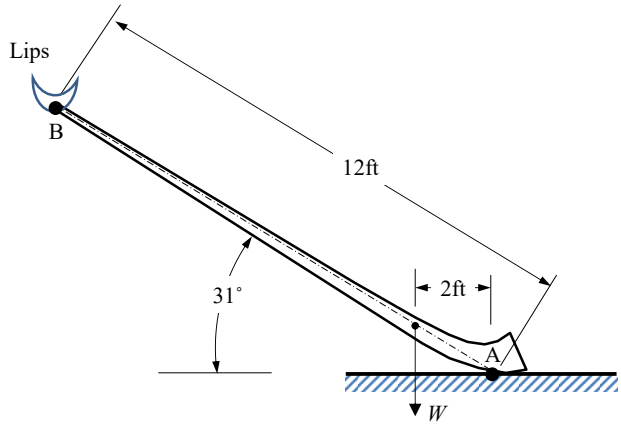
A. Compute the magnitude of the resultant vector.
B. Determine the angle of the resultant vector.
C. Draw the approximate resultant vector on the plot.
D. Assume that a reaction vector at the origin holds the system in place. How would that reaction force compare to the resultant force you just calculated?



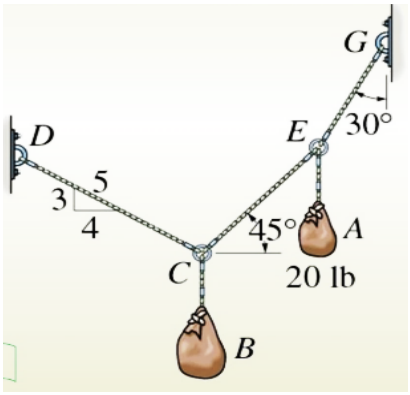
2. (40 pts) Hipsters in the park play alphorns. They can be kind of heavy, W = 110lb! How hard is it to hold one in place?

A. Draw the FBD.
B. Calculate the force at B identified in the suggested simplified model sketched below.

Hint: The reaction force at point A is vertical.



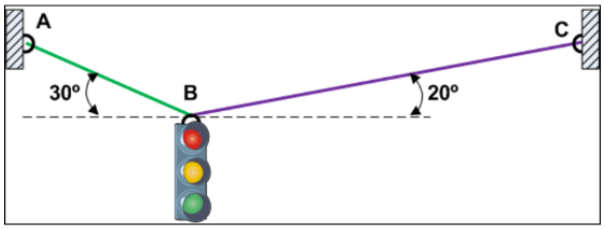
3. (15 points) When studying the picture to the right,



   a. Draw the Free Body Diagram of the ring C

   b. Draw the FBD of the cable CE

4. (15 pts) A traffic light (10 kg) is supported by two separate lines (AB and BC), as shown in the figure. Which line do you expect to be under greater tension and why?



Bonus (10 points) Calculate the tensions in Problem 4 and comment on the results