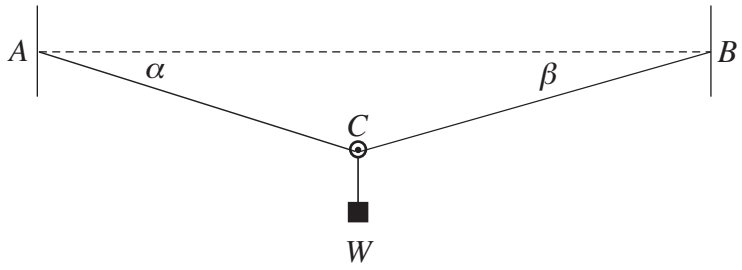
Quiz **Name**

1. A weight W is suspended on a cable as shown in the figure (with AB horizontal). Let T_1 and T_2 be the tensions in the cable segments AC and CB respectively. Assuming that the system is in equilibrium, draw a force diagram at the point C and use it to determine (explain your reasoning along the way) two equations that relate T_1, T_2, and the angles α and β. Extra credit: Under the assumption that W is attached at C with a pulley wheel that can rotate freely, show that $\alpha = \beta$.



2. A cable car weighing 2000 pounds has come to a stop during its trip to the top of a mountain. It is suspended from the weight bearing cable by a single pulley wheel. The part of the cable from the pulley wheel toward the peak makes an angle of 40° with the horizontal and the part from the pulley wheel downward makes an angle of 37° with the horizontal. Draw a diagram that illustrates the various forces.

Compute the tensions in the cable both below and above the cable car.