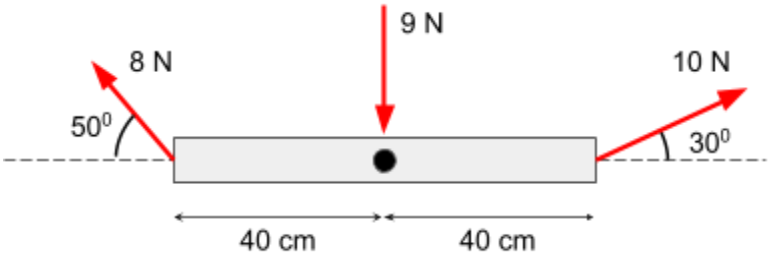
PAL Problem Set 13 for Phys 5A (Torque and Center of Mass)

Always explain your answers and show your work.

Problem 1 - The figure below shows a 300 g solid bar which is free to rotate about the axis indicated by the dot. Answer the questions below making sure to include units and checking whether the numbers are reasonable or not.



A. What is the net torque on the bar around the axis indicated by the dot?

B. What is the net force on the bar?

C. What is the angular acceleration of the bar?

D. Assuming the bar is initially at rest, how fast will it be spinning after the forces have been acting for 5 seconds?

E. What is the linear acceleration of the bar?

F. Assuming the bar is initially at rest, how fast will it be moving after the forces have been acting for 5 seconds?

Problem 2 - The three point masses shown are connected by massless, rigid rods.

A. Find the coordinates of the center of mass

B. Find the moment of inertia about an axis that passes through mass A and is perpendicular to the page.