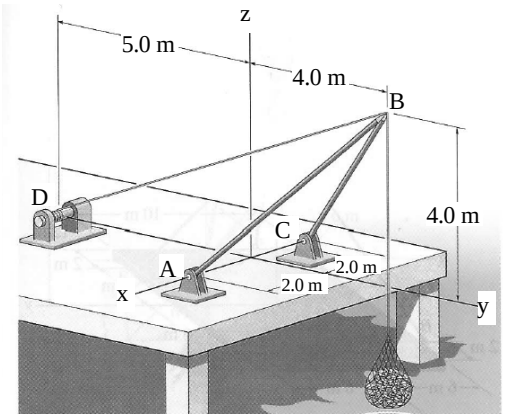
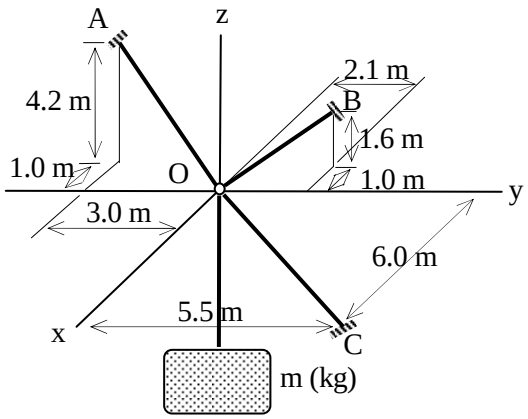
UNIVERSITY OF TORONTO
Department of Civil Engineering

CIV100F - MECHANICS – 2011 – GROUP G (107)
Problem Set 4
Due: 2:30 pm on October 05, 2012

1. The shear leg derrick is used to haul the 300-kg net of fish onto the dock. Determine the force along each of the legs AB and CB and the tension in the winch cable DB. Assume Members AB and CB are two force members.



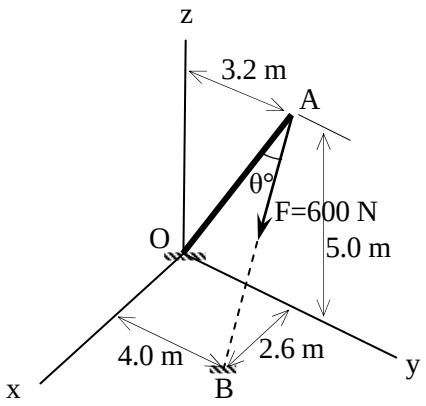
2. Cables OA, OB and OC are used to support a crate as shown. If the allowable tensile strength of each cable is 1200 N, determine the largest mass of the crate that can be supported. Note that the cable supporting the mass has a higher strength and therefore will not rupture.



3. Pole OA is subjected to the force shown.

Find the magnitude and Cartesian vector expression of the projected components of the force:
i.) parallel to the pole, and
ii.) perpendicular to the pole.

iii.) Find the angle θ.



4. A bent pipe is subjected to the forces as shown. Determine:

i.) the resultant moment of the force about point O as a Cartesian vector, and
ii.) the magnitude of the moment.