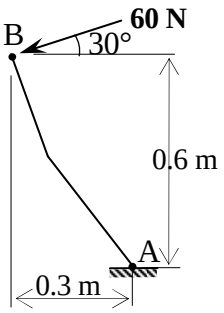
UNIVERSITY OF TORONTO
Department of Civil Engineering

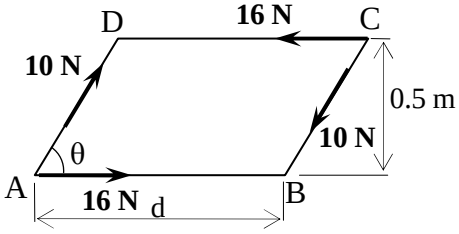
CIV100F - MECHANICS – GROUP G (107)
Problem Set 2
Due: 4:00 pm on September 21, 2012

1. A force is applied to a shift lever as shown. Determine the moment about point B, using



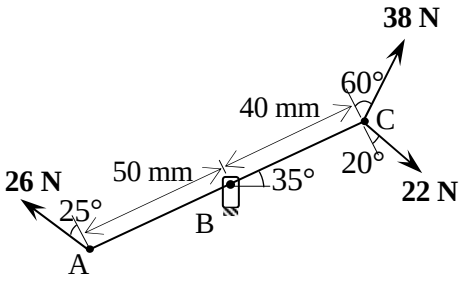
i) the resultant force given.
ii) the components of the force given.

2. A plate in the shape of a parallelogram is subjected to the forces shown. Determine:



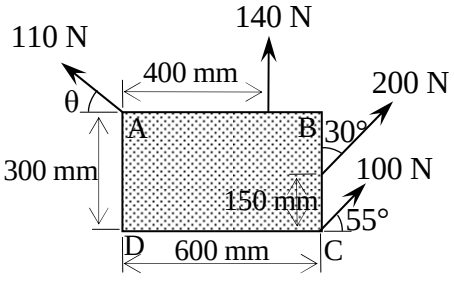
i) the moment of the couple formed by the two 16 N forces.
ii) the perpendicular distance between the 10 N forces if the resultant of the two couples is zero.
iii) the value of θ if the resultant couple is 2.1 N.mm clockwise and *d* is1.20 m.

3. Three forces act on a lever as shown.



i) replace the three forces with an equivalent force couple system at B.
ii) determine the single force which is equivalent to the force-couple system obtained in part (a), and specify its point of application on the lever.

4. A crate is subjected to the forces shown. If the forces are to be replaced with a single equivalent force applied at a point on line AB, determine:



i) the equivalent force and the distance from A to the point of application of the force when θ=30°.
ii) the value of θ so that the single equivalent force is applied at point B.