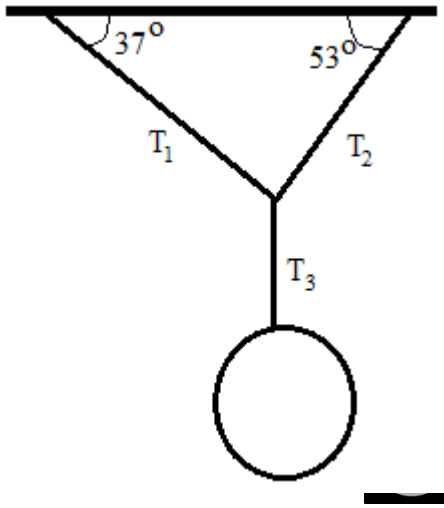
Exercise

Vector in Real Life I Part II

MAZNI BT. MUSTAFA
Faculty Industrial Sciences & Technology
maznim@ump.edu.my

3.3.2 Condition of equilibrium and Torque

A steel ball with a mass 122 N suspends to two other cord. These two cords makes angles of 37° and 53° as shown in diagram. These cords will break if the tension beyond 100 N. Determine if the steel ball keep on hanging or the cord will break?



Ans: $T_A = 74$ N, $T_B = 98$ N, No

3.3.2 Condition of equilibrium and Torque

A 62 kg university student riding a bike and places all her weight on her foot on the pedal. Her foot rotate in a round loop of radius 17 cm. Determine the maximum torque she exerts?

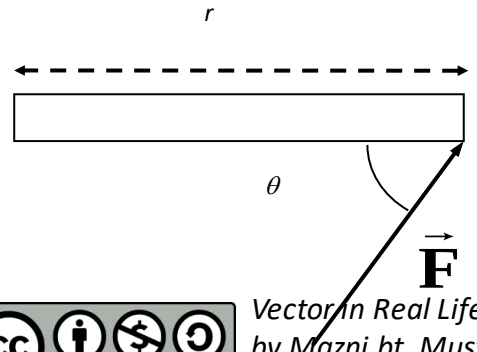
Ans: 103.4 Nm

3.3.2 Condition of equilibrium and Torque

Lucy exerts 32 N force on the door. The door dimension is 96 cm wide. Calculate the torque if the force exerted is

a) At a 60^o angle to the face of the door

b) Perpendicular to the door



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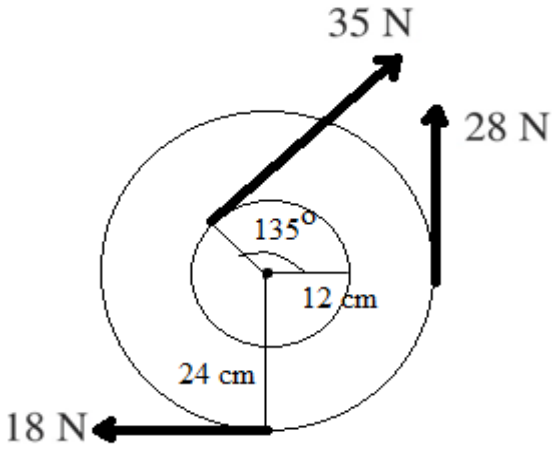
by Mazni bt. Mustafa
http://ocw.utm.edu.my/course/view.php?id=464

Ans: 31 Nm, 27 Nm

3.3.2 Condition of equilibrium and Torque

Given the friction torque of 0.40 and this friction direction is opposite the motion. Calculate the total torque around the axle of the round wheel shown in diagram.



Ans: -1.4 mN