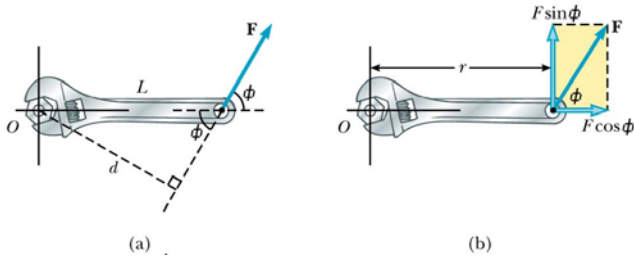


## Chapter 8

### Rotational Equilibrium

Torque ( $\tau$ )-greek symbol tau (which is also used for period which is time for a complete revolution of an object.) Here in rotational motion it stands for Torque.

$\tau = F \cdot d$  where  $F$  is force in Newtons, and  $d$  is length of lever arm or the distance from the point of rotation. Units for torque in  $N \cdot m$ .



Use the perpendicular component of  $F$  to the lever arm, so use  $F \sin \theta$

$$\tau = F \sin \theta \cdot d$$

Rotational Equilibrium-condition where object's forces are all balanced, including torque.

$$\Sigma F=0 \text{ and } \Sigma T=0$$

(pin connections provide horizontal and vertical forces)

