PHYSICS 12

TORQUE

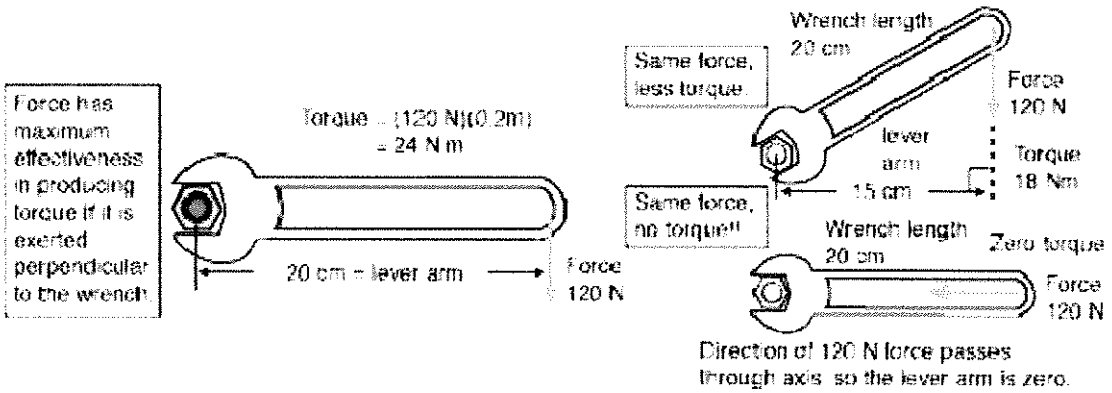
$$\vec{\tau} = Fd$$

$\vec{\tau}$ is a vector – negative when the force tends to *produce clockwise rotation and positive when the* force tends to produce counter-clockwise rotation

A torque is an influence which tends to change the rotational motion of an object. One way to quantify a torque is

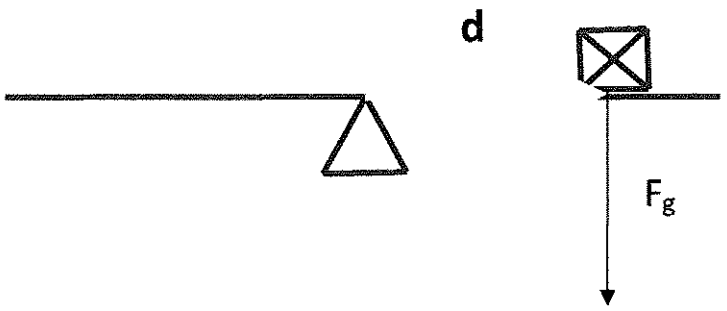
Torque = Force applied x lever arm

The lever arm is defined as the perpendicular distance from the axis of rotation to the line of action of the force.

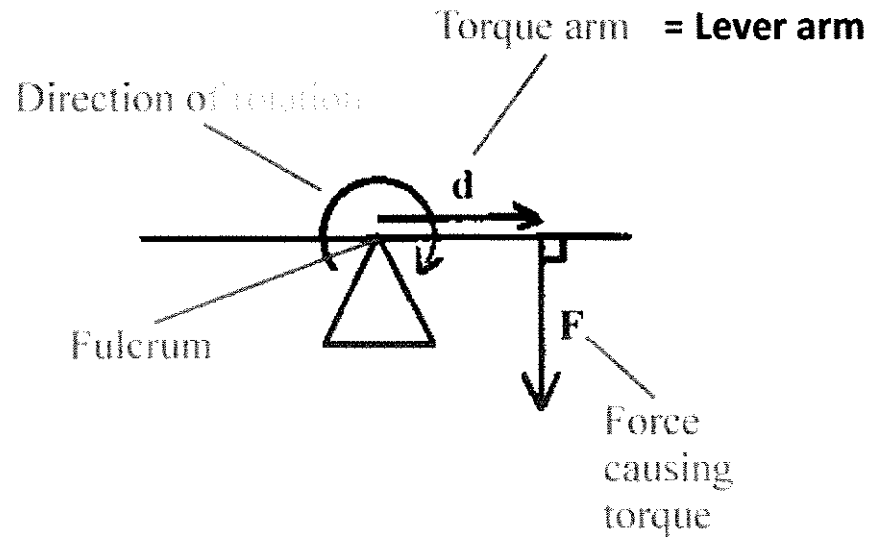


Three examples of torque exerted on a wrench of length 20 cm.

Example1: Find the torque (magnitude and direction) produced by the weight of a 70-kg object placed on a lever at 0.5 m away from the fulcrum.



Example 2: Label the lever arm and calculate its length is the applied force is exerted 2.0m from the fulcrum. Label the line of action.



LINE OF ACTION