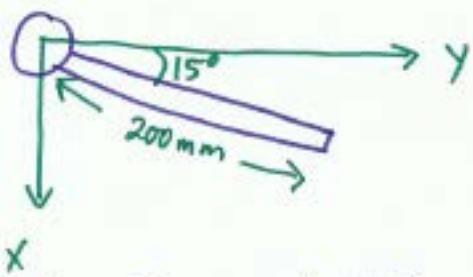
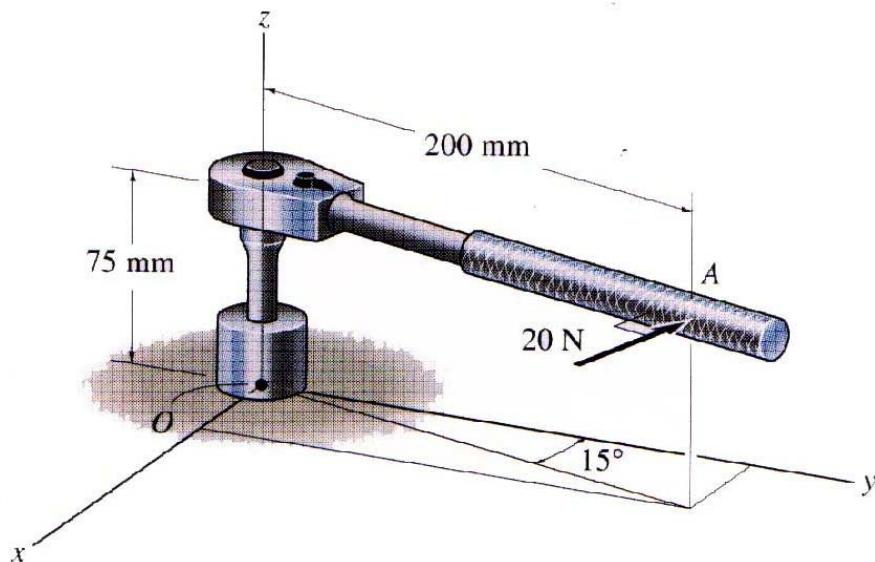


Engineering Mechanics – Statics Worksheets

3D Moments 1

A 20 N horizontal force is applied perpendicular to the handle of the socket wrench. Determine the moment created by this force about point O .

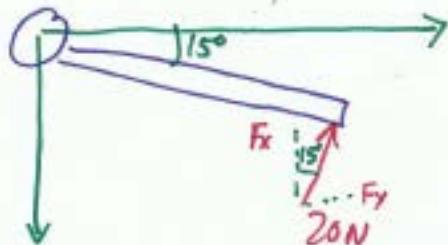


$$X = 200 \sin 15^\circ = 51.0 \text{ mm}$$

$$Y = 200 \cos 15^\circ = 193.2 \text{ mm}$$

$$Z = 75 \text{ mm}$$

$$\vec{r}_{OA} = [51.0 \ 193.2 \ 75] \text{ mm}$$



$$F_x = -20 \cos 15^\circ = -19.32 \text{ N}$$

$$F_y = 20 \sin 15^\circ = 5.10 \text{ N}$$

$$F_z = 0$$

$$\vec{F} = [-19.32 \ 5.10 \ 0]$$

$$\vec{M}_O = \vec{r}_{OA} \times \vec{F} = [51.0 \ 193.2 \ 75] \times [-19.32 \ 5.10 \ 0]$$

$$\underline{\vec{M}_O = [-388 \ -1449 \ 4000] \text{ Nmm}}$$