1. The antenna tower is supported by three cables. If the forces in these cables are $F_B = 520 \text{ N}$, $F_C = 680 \text{ N}$, and $F_D = 560 \text{ N}$, determine the magnitude and coordinate direction angles (direction cosines) of the resultant force acting at $A$. 
2. If the man at $B$ exerts a force of $P = 30$ lb on his rope, determine the magnitude of the force $F$ the man at $C$ must exert to prevent the pole from tipping, i.e. so the resultant moment about $A$ of both forces is zero.
3. A 20-N horizontal force is applied perpendicular to the handle of the socket wrench. Determine the moment vector created by this force about point $O$. 

![Diagram of a socket wrench with a 20-N force applied perpendicular to the handle. The force is indicated by an arrow from the handle to the tip of the wrench.]
4. Replace the loading by an equivalent **resultant force** and specify its **location** on the beam, measured from point $O$. 

![Beam Diagram]