1. Describe the mechanical properties desired in a cricket bat, and recommend different materials for each part.

2. Following the analysis from the previous class, derive the strength property group that one needs to look at in order to minimize mass of frame tube per unit length, if you are asked to keep the ratio R/t constant.

3. Consider a state of pure shear stress in the 1-2 plane. If the magnitude of the shear stress is τ, what are the stress components $\sigma_{11}, \sigma_{12}, \sigma_{22}$ in a coordinate system obtained by rotating the original coordinate system 45$\circ$ CCW?