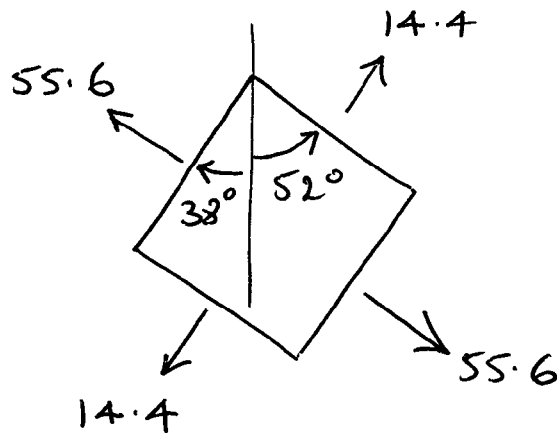


iii) Maximum shear stress occurs on planes at 45° to principal planes

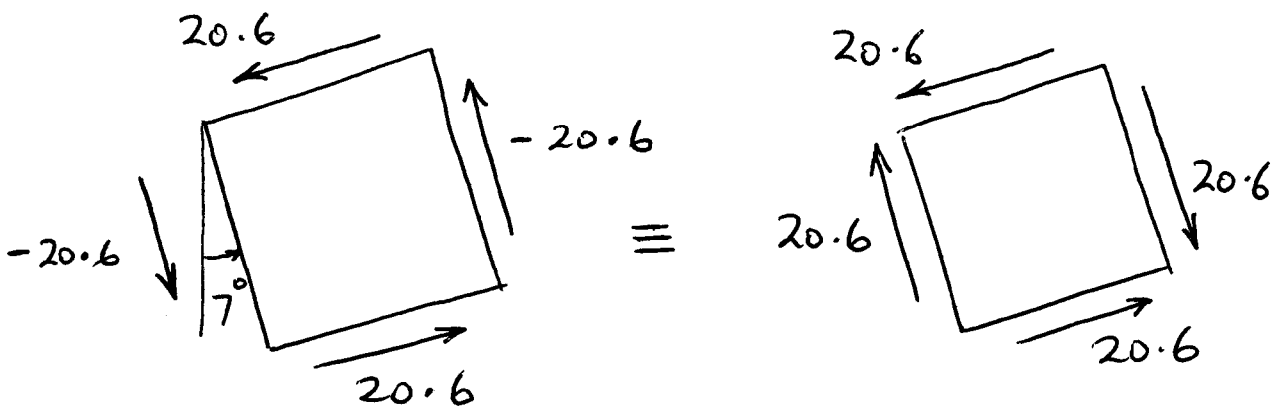
$$\begin{aligned}\tau_{70} &= -\frac{1}{2}(40-30)\sin 14^\circ - 20\cos 14^\circ \\ &= -1.2 - 19.4 = \underline{\underline{-20.6 \text{ MPa}}}\end{aligned}$$

$$\begin{aligned}\text{and } \tau_{97} &= -\frac{1}{2}(40-30)\sin 194^\circ - 20\cos 194^\circ \\ &= 1.2 + 19.4 = \underline{\underline{20.6 \text{ MPa}}}\end{aligned}$$

Principal stresses



Maximum shear stresses



Note Normal stresses normally exist on the planes of maximum shear stress. These stresses have not been calculated and are therefore not shown.