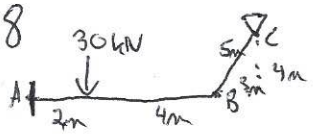
Eg. 8



A in double shear w/ ø 20mm, B in single shear w/ ø 30 mm

$\sum(M_A) = 0, \; -30(2) + \frac{4}{5}F_{BC}(6) = 0$

$F_{BC} = 12.5 \text{ kN}$

$\sum F_y = 0, \; -30 + 4/5(12.5) + A_y = 0$

$F_{A_y} = 20 \uparrow$

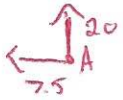
$\sum F_x = 0, \; \frac{3}{5}F_{BC} - F_{A_x} = 0$

$F_{A_x} = 3/5(12.5)$

$= 7.5 \leftarrow$

@ A

Since we're looking for shear in pin instead of shear in beam, find resultant of x and y forces applied @ A



$F_A = \sqrt{20^2 + 7.5^2}$

$= 21.36 \text{ kN}$

Since double shear, $V = \frac{21.36}{2} = 10.68 \text{ kN}$

$\tau_{avg} = \frac{10680 \text{ N}}{\pi/4 (20)^2}$

$= 34 \text{ MPa}$

@ B

$V = 12.5$

$\tau_{avg} = \frac{12500}{\pi/4 (30)^2} = 17.68 \text{ MPa}$