



Here

$$F_1 = \frac{1}{2} \times 7.5 \times 6 = 22.5 \text{ kN}$$

$$F_2 = \frac{1}{2} \times 4.5 \times 6 = 13.5 \text{ kN}$$

$$F_3 = 15 \text{ kN}$$

$$F_R = F_1 + F_2 + F_3 \Rightarrow F_R = 22.5 + 13.5 + 15 \quad \boxed{F_R = 50}$$

$$\bar{x}_1 = 4.5 + \frac{1}{3}(7.5) = 7.0 \text{ m}$$

$$\bar{x}_2 = \frac{2}{3}(4.5) = 3.0 \text{ m}$$

Now Taking Moment about "O" ($\sum M_x = \sum M_o$)

$$\Rightarrow F_R(\bar{x}) = F_1(12-7) + F_2(12-3) + F_3(12) + 500$$

$$\Rightarrow F_R(\bar{x}) = F_1 \times 5 + F_2 \times 9 + F_3 \times 12 + 500$$

$$\therefore F_R(\bar{x}) = 22.5 \times 5 + 13.5 \times 9 + 15 \times 12 + 500$$

$$\boxed{\bar{x} = 17.92 \text{ m}}$$