

26. (a) The problem states that each hinge supports half the door's weight, so each vertical hinge force component is  $F_y = mg/2 = 1.3 \times 10^2$  N.
- (b) Computing torques about the top hinge, we find the horizontal hinge force component (at the bottom hinge) is

$$F_h = \frac{(27 \text{ kg}) (9.8 \text{ m/s}^2) \left(\frac{0.91 \text{ m}}{2}\right)}{2.1 \text{ m} - 2(0.30 \text{ m})} = 80 \text{ N} .$$

Equilibrium of horizontal forces demands that the horizontal component of the top hinge force has the same magnitude (though opposite direction).