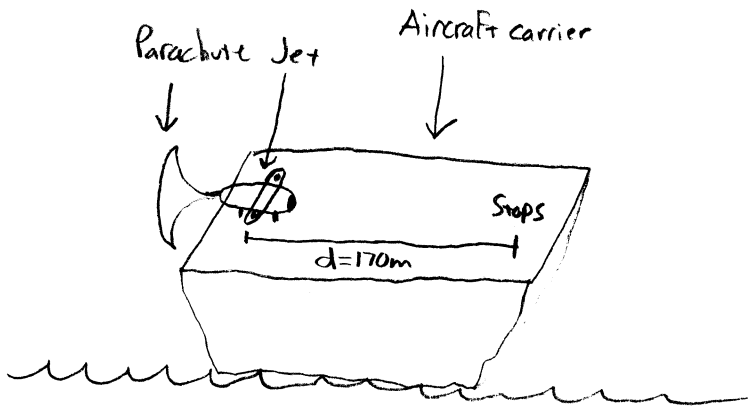
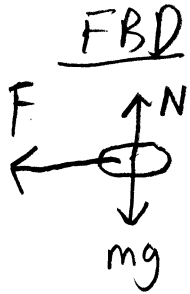


5-14



$$v_0 = 240 \frac{\text{km}}{\text{h}} = 66.67 \text{ m/s}$$

$$v_f = 0$$

$$d = 170 \text{ m}$$

$$a = ?$$

$$m = 3800 \text{ kg}$$

① Find a

$$v_f^2 = v_0^2 + 2a(x - x_0), \quad v_f = 0, \text{ solve for } a$$

$$a = \frac{-v_0^2}{2(x - x_0)}$$

$$a = \frac{-(66.67 \text{ m/s})^2}{2 \cdot 170 \text{ m}} = -13.07 \text{ m/s}^2$$

↑
Negative sign indicates jet is slowing down

$$F = ma$$

$$F = (3800 \text{ kg})(-13.07 \text{ m/s}^2)$$

$$F = -49,673.2 \text{ kgm/s}^2 \quad 1 \text{ N} = 1 \text{ kgm/s}^2$$

$$F = -49.7 \text{ kN}$$

↑ Negative sign indicates Force is ^{in the} opposite direction of motion

$|F| = 49.7 \text{ kN}$ ← magnitude of average force of air on parachute