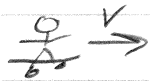


PHY HW. 9.1 ²⁴
22, 23, 27, 30, 32



22) $M_B = 35.6 \text{ kg}$ $P = (35.6 \text{ kg} + 1.3 \text{ kg})(9.50 \text{ m/s})$
 $M_{SB} = 1.3 \text{ kg}$ $P = 350 \text{ kg} \cdot \text{m/s}$
 $v = 9.50 \text{ m/s}$

23) $F = 30.0 \text{ N}$ $F \Delta t = (30.0 \text{ N})(.16 \text{ s})$
 $t = .16 \text{ s}$ $= 4.8 \text{ N} \cdot \text{s}$
 $v = ?$

27) $a) \Delta P = m(v_2 - v_1)$
 $v_1 = 10.0 \text{ m/s}$ $v_2 = 44.0 \text{ m/s}$ $= (625 \text{ kg})(44.0 \text{ m/s} - 10.0 \text{ m/s})$
 $t = 68.0 \text{ s}$ $= 2.13 \times 10^4 \text{ kg} \cdot \text{m/s}$
 $m = 625 \text{ kg}$ $b) F = \frac{2.13 \times 10^4 \text{ kg} \cdot \text{m/s}}{68.0 \text{ s}}$
 $F = 313 \text{ N}$

30) $F = 35 \text{ N}$ $F = \frac{\Delta P}{\Delta t} = \Delta t = \frac{\Delta P}{F} = \frac{(72000 \text{ kg})(.63 \text{ m/s})}{35 \text{ N}}$
 $m = 72000 \text{ kg}$ $\Delta t = 1296 \text{ s}$
 $v = 63 \text{ cm/s} = .63 \text{ m/s}$ $= 1.3 \times 10^3 \text{ s}$
 $t = ?$

32) $v_x = 36.0 \text{ m/s}$ $v^2 = v_0^2 + 2a(\Delta d)$
 $h = 60.0 \text{ m}$ $v^2 = 0 \text{ m/s} + 2(9.80 \text{ m/s}^2)(60.0 \text{ m})$
 $W_T = 175 \text{ N}$ $v_y = 34.3 \text{ m/s}$ $\text{TAN } \theta = \frac{-34.3 \text{ m/s}}{36.0 \text{ m/s}}$
 $m = 17.9 \text{ kg}$ $\theta = 46.4^\circ$
 $v = 49.7 \text{ m/s}$ $P = (17.9 \text{ kg})(49.7 \text{ m/s})$
 $= 8.90 \times 10^2 \text{ kg} \cdot \text{m/s} @ 316^\circ$

24) $\Theta \rightarrow$

$$m = .115 \text{ kg}$$

$$\bar{F} = 30.0 \text{ N}$$

$$\Delta t = .16 \text{ s}$$

$$F \Delta t = \Delta p$$

$$F \Delta t = m(v - v_0)$$

$$\frac{F \Delta t}{m} + v_0 = v = \frac{(30.0 \text{ N})(.16 \text{ s})}{.115 \text{ kg}} + 0 \text{ m/s}$$

$$v = 41.74 \text{ m/s} = \boxed{42 \text{ m/s}}$$