

p. 42 # 2, 3, 5

2a) $\vec{a} = ?$

$$\vec{F}_N = 27 \text{ N [W]}$$

$$m = 63 \text{ kg}$$

$$\vec{F}_N = m\vec{a}$$

$$\vec{a} = \frac{\vec{F}_N}{m}$$

$$= \frac{(27 \text{ N [W]})}{63 \text{ kg}}$$

$$= 0.43 \text{ m/s}^2 \text{ [W]}$$

\therefore the acceleration is $0.43 \text{ m/s}^2 \text{ [W]}$

b) $\vec{F}_N = 18 \text{ N [forward]}$

$$m = 7.5 \text{ kg}$$

$$\vec{a} = ?$$

$$\vec{a} = \frac{\vec{F}_N}{m}$$

$$= \frac{18 \text{ N [forward]}}{7.5 \text{ kg}}$$

$$= 2.4 \text{ m/s}^2 \text{ [forward]}$$

\therefore the bowling ball has an acceleration of $2.4 \text{ m/s}^2 \text{ [forward]}$.

3a) $\vec{F}_N = ?$

$$m = 5.0 \text{ kg}$$

$$\vec{a} = 5.0 \times 10^3 \text{ m/s}^2 \text{ [forward]}$$

$$\vec{F}_N = m\vec{a}$$

$$= (5.0 \text{ kg})(5.0 \times 10^3 \text{ m/s}^2 \text{ [forward]})$$

$$= 25000 \text{ N [forward]}$$

b) $m = 28 \text{ g}$

$$= 2.8 \times 10^{-2} \text{ kg}$$

$$\vec{a} = 2.4 \times 10^3 \text{ m/s}^2 \text{ [E]}$$

$$\vec{F}_N = ?$$