

a) $g_e = 9.8 \text{ m/s}^2$
 $T_p = 1 \text{ sec}$

$$g_m = 3.7 \text{ m/s}^2$$

$$T_p = 2\pi \cdot \sqrt{\frac{L}{g}} \quad \text{so} \quad 1 \text{ sec} = 2\pi \cdot \sqrt{\frac{L}{9.8 \text{ m/s}^2}} \quad (\text{Earth})$$

$$L_{\text{earth}} = .24 \text{ m}$$

$$1 \text{ sec} = 2\pi \cdot \sqrt{\frac{L}{3.7 \text{ m/s}^2}} \quad (\text{Mars})$$

$$L_{\text{mars}} = .094 \text{ m}$$

b) $k = 10 \text{ N/m}$
 $T_s = 1 \text{ sec}$

$$T_s = 2\pi \cdot \sqrt{\frac{m}{k}} \quad \text{so} \quad 1 \text{ sec} = 2\pi \cdot \sqrt{\frac{m}{10 \text{ N/m}}}$$

$$m = .25 \text{ kg}$$

(Earth & Mars)