

PROB. 13.2

$$W = 870 \text{ LB}, \quad r_s = (3973 + 3960 \text{ mi}) \left(\frac{5280 \text{ ft}}{\text{mi}} \right) = 4.189 \times 10^7 \text{ ft}$$

$$g_s = 8.03 \frac{\text{ft}}{\text{s}^2}, \quad v = (12,500 \frac{\text{mi}}{\text{hr}}) \left(\frac{\text{hr}}{3600 \text{ s}} \right) \left(\frac{5280 \text{ ft}}{\text{mi}} \right)$$

$$v = 1.833 \times 10^4 \frac{\text{ft}}{\text{s}} \quad \text{FIND KINETIC ENERGY}$$

$$T = \frac{1}{2} m v^2 = \frac{1}{2} \frac{W v^2}{g}$$

$$T = \frac{(870 \text{ LB}) (1.833 \times 10^4 \frac{\text{ft}}{\text{s}})^2}{(32.2 \frac{\text{ft}}{\text{s}^2})} = 4.541 \times 10^9 \text{ ft} \cdot \text{LB}$$

LOCAL GRAVITY DOES NOT AFFECT MASS