

WORKSHEET 4



$$E_g = E_k + E_{th}$$

$$E_g = \frac{1}{2} m v^2 + E_{th}$$

$$E_g = m a g h$$

$$= (40 \text{ kg}) (9.8 \text{ m/s}^2) (5 \text{ m})$$

$$= 1960 \text{ J}$$

$$E_{th} = (0.1) E_g$$

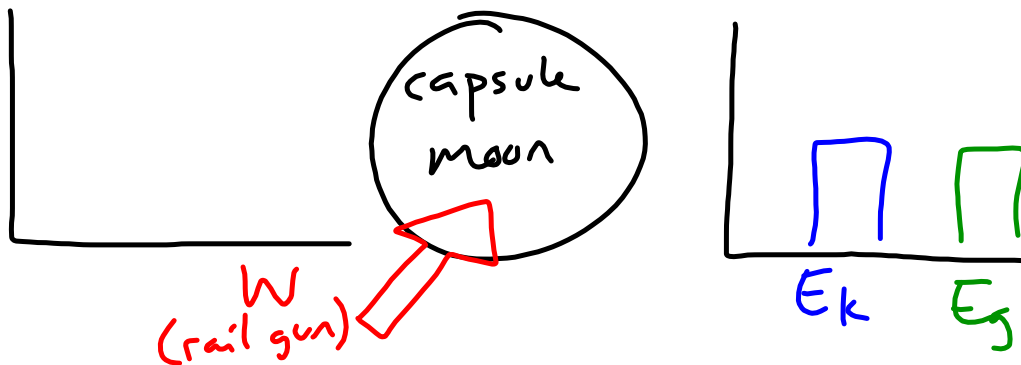
$$= 196 \text{ J}$$

$$v = \sqrt{\frac{2}{m} (E_g - E_{th})}$$

$$= \sqrt{\frac{2}{(40 \text{ kg})} (1960 \text{ J} - 196 \text{ J})}$$

$$= 9.39 \text{ m/s}$$

4)



$$\begin{aligned}
 W &= E_k + E_g \\
 &= \frac{1}{2}mv^2 + mgh \\
 &= \frac{1}{2}(10000\text{ kg})(1700\text{ m/s})^2 + (10000\text{ kg}) \\
 &\quad \quad \quad (1.6\text{ N/kg}) \\
 &\quad \quad \quad (100000\text{ m}) \\
 &= 1.61 \text{ E } 10 \text{ J}
 \end{aligned}$$

