

Bellwork 5/9

You lift a 15 kg bowling ball 1m. What is the ball's change in Potential energy?
What is the work done by you?
What is the work done by gravity?

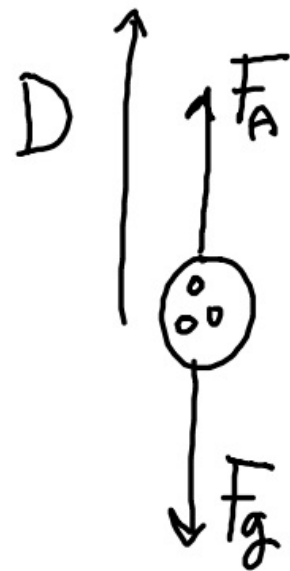
$$P_f = mgh = (15\text{kg})(9.8\frac{\text{m}}{\text{s}^2})(1\text{m}) \\ = 147\text{J}$$

$$P_i = 0\text{J}$$

$$W_A = F_A D$$

don't know

$$W_A = P_f - P_i = 147\text{J}$$



$$W_g = -147\text{J}$$

$$m = 9.75 \text{ kg}$$

$$\Delta t = 1 \text{ s}$$

$$D = 10.0 \text{ m} = h$$

$$1 \text{ hp} = 746 \text{ W}$$

$$1.25 \text{ hp} \times \frac{746 \text{ W}}{1 \text{ hp}}$$

$$= \boxed{932.5 \text{ W}}$$

NOT ENOUGH

Calculate Power ($W \rightarrow \text{hp}$)

Compare to 1.25 hp

$$P = \frac{W_A}{\Delta t} = \frac{mgh}{\Delta t}$$

$$P = \frac{(9.75 \text{ kg})(9.8 \frac{\text{m}}{\text{s}^2})(10.0 \text{ m})}{1 \text{ s}}$$

$$\boxed{P = 955.5 \text{ W}}$$



assume
forces
are
equal

$$\uparrow F_A = mg$$
$$\downarrow F_g = mg$$

$$W_A = +F_A D = mgD$$

$$W_A = mgh$$