2. (15 pts) An object, initially at rest, is acted upon by a constant total force $F$ having a magnitude of 2N. The mass of the object is 5 kg.

(a) (3 pts) What is the acceleration of the object? Use proper units.

$$\text{acceleration} = \frac{F}{m} = \frac{2}{5} = 0.4 \text{ m/s}^2$$

(b) (3 pts) What is the speed of the object after 5 seconds? Use proper units.

$$s = \frac{1}{2}at^2$$

$$\text{speed} = (0.4)(5) = 2 \text{ m/s}$$

(c) (3 pts) What distance has the object travelled during the 5 seconds? Use proper units.

$$d = \frac{1}{2}at^2$$

$$\text{distance} = (\frac{1}{2})(0.4)(25) = 5 \text{ meters}$$

(d) (3 pts) What is the kinetic energy $K$ of the object at the 5 second moment? Use proper units.

$$K = \frac{1}{2}mv^2$$

$$K = (\frac{1}{2})(5)(4) = 10 \text{ Joules}$$

(e) (3 pts) What is the work $W$ is done by $F$ during the 5 seconds? Use proper units.

$$W = Fd$$

$$W = (2)(5) = 10 \text{ Joules}$$