

1) Given:

$$m = 19g = .019 \text{ Kg}$$

$$K = 83 \text{ N/m}$$

$$X = ?$$

Soln:

$$F = -KX$$

$$F = mg \text{ sub in}$$

$$mg = -KX$$

$$X = \frac{mg}{K} = \frac{(.019 \text{ Kg})(9.81 \text{ m/s}^2)}{83 \text{ N/m}}$$

$$X = -2.3 \times 10^{-3} \text{ m}$$

4) Given:

$$m = 18.6 \text{ Kg}$$

$$X = -3.7 \text{ m}$$

$$K = ?$$

Soln:

$$F = -KX$$

$$K = \frac{-F}{X}$$

$$F = mg \text{ sub in}$$

$$K = \frac{mg}{X} = \frac{(18.6 \text{ Kg})(9.81 \text{ m/s}^2)}{(-3.7 \text{ m})}$$

$$K = 49 \text{ N/m}$$

6) Given:

$$K = 2.00 \times 10^2 \text{ N/m}$$

$$X = -15.8 \text{ cm} = -.158 \text{ m}$$

- A) $F = ?$
B) $m = ?$

Soln:

$$F = -KX$$

$$= -(2.00 \times 10^2 \text{ N/m})(-.158 \text{ m})$$

$$F = 31.6 \text{ N}$$

$$F = mg$$

$$m = \frac{F}{g} = \frac{31.6 \text{ N}}{9.81 \text{ m/s}^2}$$

$$m = 3.22 \text{ Kg}$$

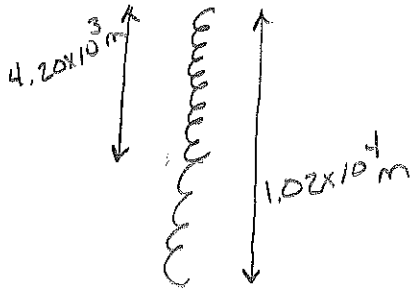
7) Given:

$$K = 3.20 \times 10^2 \text{ N/m}$$

$$F = ?$$

$$x_1 = -4.20 \times 10^3 \text{ m}$$

$$x_2 = -1.02 \times 10^4 \text{ m}$$



Soln: $F = -KX$

$$F = -K(x_2 - x_1)$$

$$= -(3.20 \times 10^2 \text{ N/m})[-1.02 \times 10^4 \text{ m} - -4.20 \times 10^3 \text{ m}]$$

$$F = 192 \text{ N}$$