

50784

$$Q_2 = -q + q = 2q$$

$$Q_2 = -q + q = 0$$

$$F_1 = \frac{Q}{2\epsilon_0} = \frac{2q}{2\epsilon_0} = \frac{q}{\epsilon_0}$$

$$U = E_1 d = \frac{Qd}{\epsilon_0}$$

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$$F_{tp} + mg + F_{gyp} = 0$$

$$N: F_{tp} - mg \sin \alpha - F_{gyp} = 0$$

$$y: N - mg \cos \alpha = 0$$

$$F_{tp} = \mu N$$

$$F_{tp} = mg \sin \alpha + F_{gyp}$$

$$\mu mg \cos \alpha = mg \sin \alpha + k \Delta x$$

$$mg \cos \alpha - \sin \alpha = k \Delta x$$

$$\Delta x = \frac{mg (\mu \cos \alpha - \sin \alpha)}{k} = \frac{0.6 \cdot 10 / 0.8 \sqrt{3} - \frac{1}{2}}{10}$$

$\approx 0.075 \text{ m}$

Answer: $\Delta x = 0.075 \text{ m}$

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Given:

$$\alpha = 30^\circ$$

$$M = 20 \text{ kg}$$

$$M = 5 \text{ kg}$$

$$s = 20 \text{ cm}$$

$$P_0 = 10^5 \text{ Pa}$$

$$g = 10 \text{ m/s}^2$$

V = ?

85

$$F = P \cos \alpha \cos \alpha - p s$$

$$p_1 s = M g + p_0 s$$

$$p_2 s = M g + M g + p_0 s$$

$$p_1 V_1 = p_2 V_2$$

$$\frac{V_1}{V_2} = \frac{p_2}{p_1} = \frac{M g + M g + p_0 s}{M g + p_0 s}$$

$$= \frac{20 \cdot 10 + 5 \cdot 10 + 100000 \cdot 0.02}{5 \cdot 10 + 100000 \cdot 0.02}$$

$$= 1.8$$

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$$R_{AD} = \left(\frac{1}{2r+8r} + \frac{1}{4r+r} \right)^{-1} = \frac{10}{3} r$$

$$R_{CA} = \left(\frac{1}{4r} + \frac{1}{3r} \right)^{-1} = \frac{2.1}{10} r$$

$$R_{ED} = R_{CA} + R_{AD} = \frac{2.1}{10} r + \frac{10}{3} r = \frac{63}{30} r \approx 5.4$$

85

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