

$$V_{ZHQ} = 4 \left(K \frac{Q}{r} \right)$$

$$= 4 \cdot \frac{9 \cdot 10^9 \text{ N} \cdot \text{m}^2}{\text{C}^2} \left| \frac{32 \text{ C}}{(5 \text{ m})} \right| \quad \frac{\text{N} \cdot \text{m}}{\text{C}} = \text{V}$$

$$V_Z = 2.304 \cdot 10^{11} \text{ V}$$

$$V_{\text{satellite}} = \frac{K \cdot Q_{\text{sat}}}{r_{\text{sat}}}$$

$$= \frac{9 \cdot 10^9 \text{ N} \cdot \text{m}^2}{\text{C}^2} \left| \frac{-128 \text{ C}}{15 \text{ m}} \right|$$

$$V_{\text{satellite}} = -7.68 \cdot 10^{10} \text{ V}$$

Now the problem is about the charge on the contact point (Z) and the satellite charge.

$$PE_g = mgh$$

$$= 100 \text{ kg} \cdot 9.8 \frac{\text{m}}{\text{s}^2} \cdot 10000 \text{ m}$$

$$PE_g = 9800000 \text{ J needed to get satellite into orbit.}$$

PE = $\frac{kQ_1Q_2}{r}$ Is the potential difference between the satellite and the contact point equal to or greater than 9800000 J?