

38. Letting $kq^2/r^2 = mg$, we get

$$r = q\sqrt{\frac{k}{mg}} = (1.60 \times 10^{-19} \text{ C}) \sqrt{\frac{8.99 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2}}{(1.67 \times 10^{-27} \text{ kg})(9.8 \text{ m/s}^2)}} = 0.119 \text{ m} .$$