

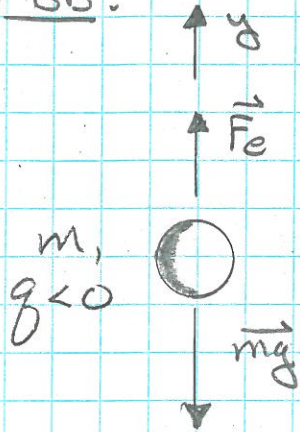


$$q = -3 \text{ nC}$$

$$m = 1.0 \text{ g}$$



FBD:



To balance: the electric force is up.

$$\sum F_y = F_e - mg = 0$$

$$F_e = mg$$

The electric force is up, but since  $q < 0$ , the electric field must be down.

Using Vectors:

$$\vec{F}_e = mg \hat{j}$$

and

$$\vec{F}_e = q \vec{E}$$

So:

$$q \vec{E} = mg \hat{j}$$

∴

$$\vec{E} = \frac{mg \hat{j}}{q} = \underline{\underline{-3.267 \times 10^6 \hat{j} \text{ N/C}}}$$

Note  $q$  is negative, and  $\vec{E}$  points in the negative  $y$ -direction.

So, magnitude:

$$|\vec{E}| = 3.267 \times 10^6 \text{ N/C}$$