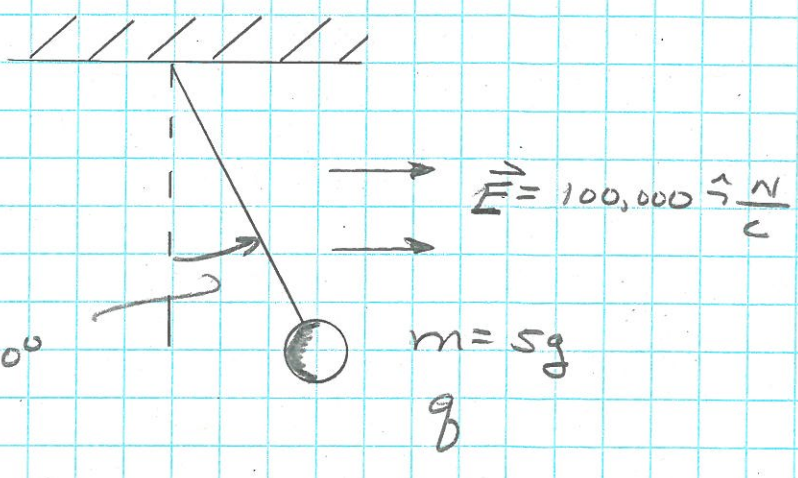
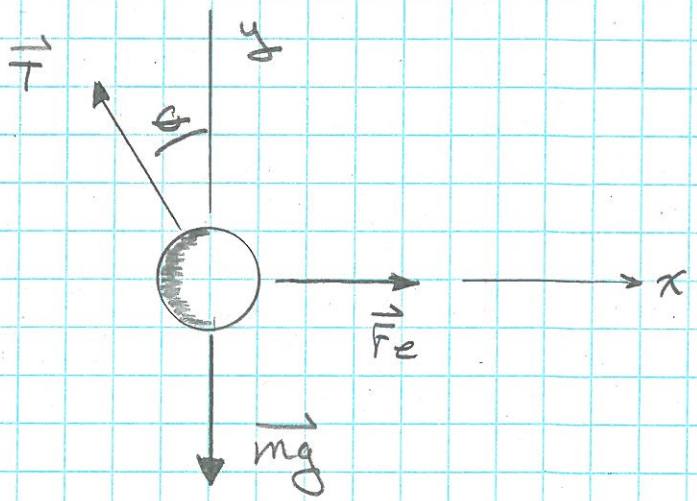



FBD




Equilibrium:

$$\Sigma F_x = -T\sin\theta + F_e = 0$$

$$\Sigma F_y = T\cos\theta - mg = 0$$

Now, $\vec{F}_e = q\vec{E} \Rightarrow F_e = qE$

So

$$T\sin\theta = qE \qquad (1)$$

$$T\cos\theta = mg \qquad (2)$$

Divide (1)/(2):

$$\tan\theta = \frac{qE}{mg} \Rightarrow q = \frac{mg\tan\theta}{E} = 1.783\times10^{-7}\,C$$

$$= 178.3\,nC$$