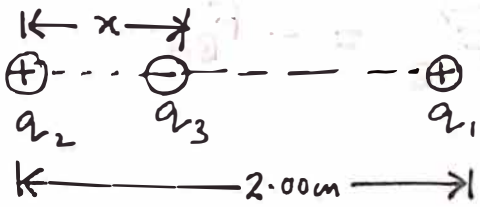
1. Use Coulomb's force law, $F = K\frac{q_1 q_2}{r^2}$

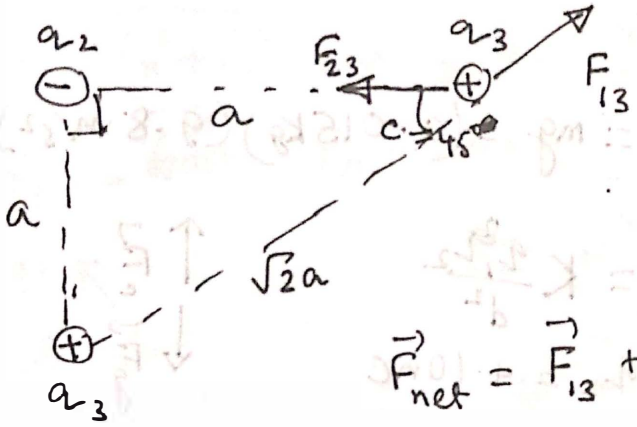
2. Use Coulomb's law

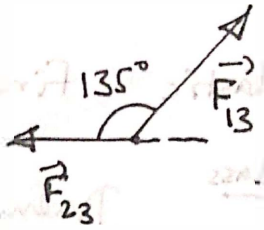
3. 

$F_{32} = K\frac{q_2 q_3}{x^2}$

$F_{31} = K\frac{q_1 q_3}{(2-x)^2}$

Net force zero when, $F_{32} = F_{31}$

4. 

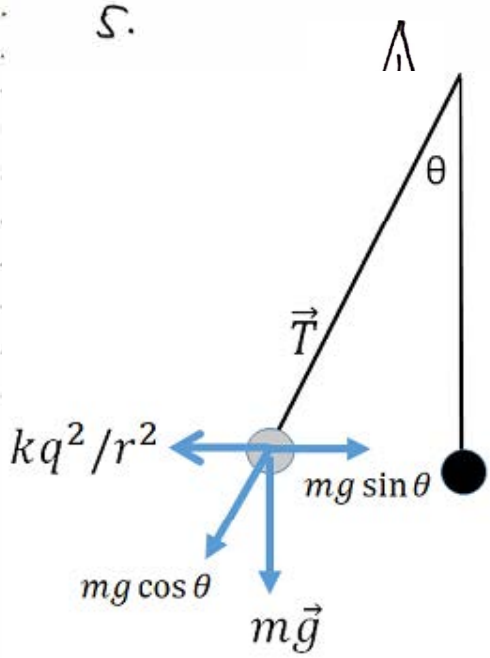


$\vec{F}_{net} = \vec{F}_{13} + \vec{F}_{23}$

$\sin c = 1/\sqrt{2}$

$c = \sin^{-1}(1/\sqrt{2}) = \pi/4$ or 45°

Here,

5. 

The charged balls repelled due to electric force and balanced by the gravitational force sinθ component, according to the picture!

6. (a) use, $F = k\frac{q^2}{x^2}$ (b) use, $F = G\frac{m^2}{x^2}$

7. A ⊖ ←— 1.0cm —→ ⊕ B

−1.0nc 4.0nC

$\vec{F}_{AB} = -\vec{F}_{BA}$

8. Compare F_g and F_c

9. −10nc ⊜ Plastic

O Glass

15mg = 15 * 10^{-6} kg

Find $\vec{F}_g = mg = (0.015kg)(9.8 m/s^2) = \vec{W}$

Then, $\vec{F}_c = K\frac{q_1 q_2}{d^2}$

↑ $\vec{F}_c$

↓ $\vec{F}_g$

Where, $q_1 = -10nc$; $q_2 = +10nc$

If. $\vec{F}_c > \vec{F}_g$ glass will rise.