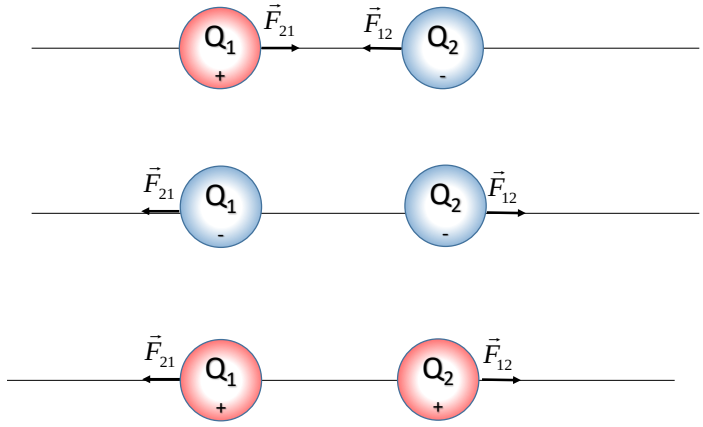
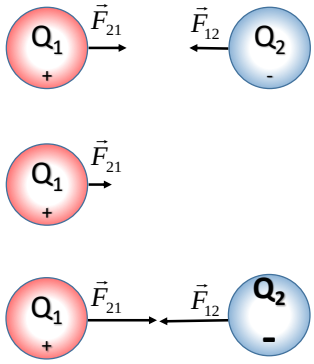
Coulomb's law



Coulomb's law

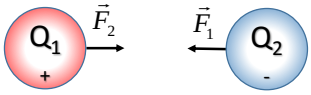


$$|F| \sim \frac{1}{r^2}$$

$$|F| \sim |Q_1|.|Q_2|$$

Q_2 is larger then Q_1

Coulomb's law

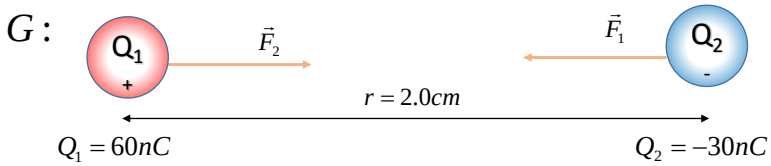


$$\left|F_1\right| = \left|F_2\right| = k\frac{\left|Q_1\right|\left|Q_2\right|}{r^2}$$

$k = 8.99\times10^9 \frac{N.m^2}{C^2}$ (depending on medium)

Coulomb's law

Example: A positive charge of 60 nC is located at a distance of 2.0 cm from a negative charge of -30 nC. Calculate the magnitude of the force the two charges exert on one another.



$F : F\,?$

$S : \left|F_1\right| = \left|F_2\right| = k\frac{\left|Q_1\right|\left|Q_2\right|}{r^2}$

$$\left|F_1\right| = \left|F_2\right| = 8.99\times10^9 \frac{N.m^2}{C^2}\frac{60\times10^{-9}C\ 30\times10^{-9}C}{\left(2.0\times10^{-2}m\right)^2} \quad \left|F_1\right| = \left|F_2\right| = 0.040N$$