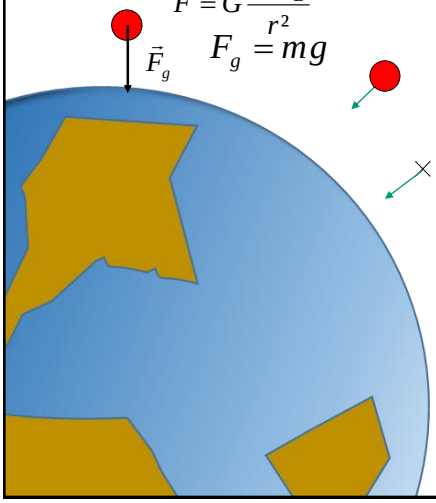
Electric Field

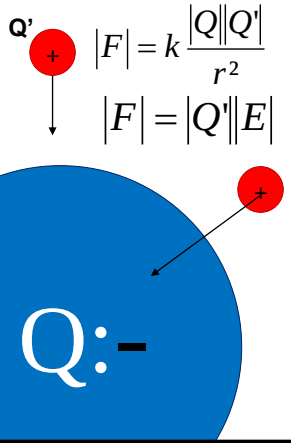
$$F = G\frac{m m_E}{r^2}$$

$$F_g = mg$$



$$g = G\frac{m_A}{r^2}$$

Electric Field



$$|F| = k\frac{|Q||Q'|}{r^2}$$

$$|F| = |Q'||E|$$

$$|E| = k\frac{|Q|}{r^2}$$

$$|E| = \frac{|F|}{|Q'|}$$

Force between two objects with mass:

$$F = G\frac{mm_A}{r^2}$$

Force between two charges.

$$|F| = k\frac{|Q||Q'|}{r^2}$$

Force between a mass on a certain point on earth and the earth.

$$F = mg$$

Strength of the gravitational field.

$$|F| = |Q'||E|$$

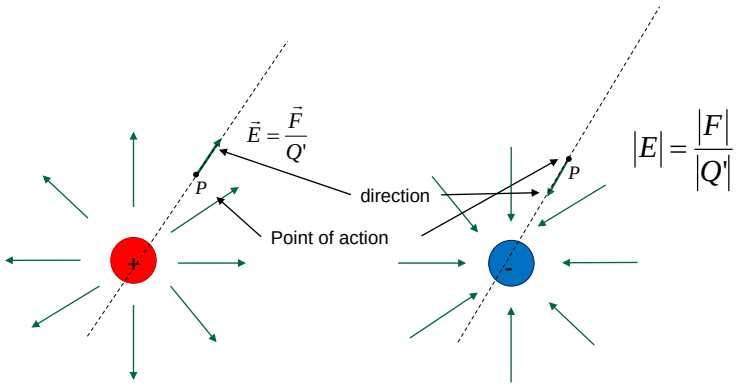
Force between a charge on a specific point in relation to another charge Q and the other charge Q.

The magnitude of the electric field at that specific point.

$$g = G\frac{m_A}{r^2}$$

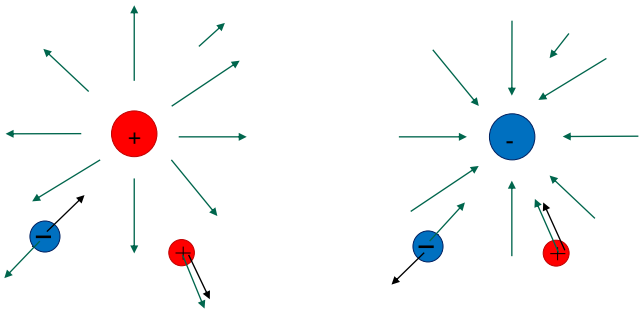
$$|E| = k\frac{|Q|}{r^2}$$

Electric field



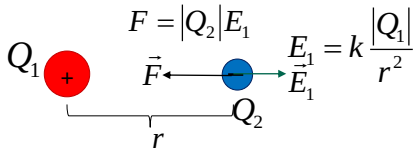
An electric field goes from a positive charge towards a negative charge.

Electric field



The force working on a positive charge is in the same direction as the field. The force working on a negative charge is in the opposite direction to the field.

Electric field

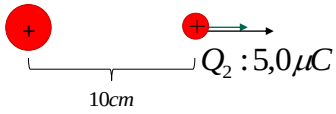


Quantity:	*Electric field*
Symbol:	*E*
Unit:	*Newton per Coulomb*
Symbol:	*N/C*

Electric field

Example: Find the magnitude of the electric field created by a charge of 20mC in a point on 10cm. Next find the force on a charge of 5 μC which is brought in that point.

G: $Q_1 : 20mC$ **F:** $E\,?\,F\,?$



S:

$$E_1 = 8.99\times10^9 \frac{N m^2}{C^2} \frac{\left|20\times10^{-3} C\right|}{\left(10\times10^{-2} m\right)^2} \qquad E_1 = 1.8\times10^{10} \frac{N}{C}$$

$$F = Q_2 E_1$$

$$F = 5.0\times10^{-6} C \; 1.8\times10^{10} \frac{N}{C} = 9.0\times10^4 N$$