

### Example 1

In a medium the force of attraction between two point electric charges, distance  $d$  apart is  $F$ . What distance apart should these be kept in the same medium so that the force between them becomes (a)  $16F$ , (b)  $F/16$ ?

### Example 2

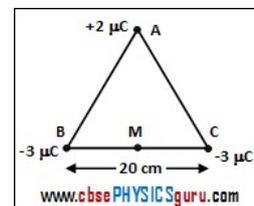
The sum of two point charges is  $7\mu\text{C}$ . They repel each other with a force of  $1\text{ N}$  when kept  $30\text{ cm}$  apart in free space. Calculate the value of each charge. (CBSE 2009)

### Example 3

Two identical point charges  $Q$  each are separated by a distance  $r$ . A third point charge  $q$  is placed on the line joining the two charges such that all the three charges are in equilibrium. What is the magnitude, sign and position of the third charge  $q$ ?

### Example 4

Three point charges of  $+2\mu\text{C}$ ,  $-3\mu\text{C}$  and  $-3\mu\text{C}$  are kept at the vertices  $A$ ,  $B$  and  $C$  respectively of an equilateral triangle of side  $20\text{ cm}$  as shown in the figure. What should be the sign and magnitude of the charge to be placed at the mid-point ( $M$ ) of side  $BC$  so that the charge at  $A$  remains in equilibrium?



### Example 5

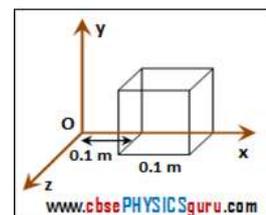
Two identical metallic spheres  $A$  and  $B$ , each carrying a charge  $q$ , repel each other with a force  $F$ . A third metallic sphere  $C$  of the same size but uncharged is successively made to touch the spheres  $A$  and  $B$ , and then removed away. What is the new force of repulsion between  $A$  and  $B$ ? (NCERT Exercise)

### Example 6

Electric charges  $q$ ,  $q$  and  $-2q$  placed at three corners of an equilateral triangle of side length  $d$ . What is the magnitude of the electric dipole moment of this system of charges?

### Example 7

The electric field components due to a charge inside the cube of side  $0.1\text{ m}$  are as shown in figure.  $E_x = \alpha x$ , where  $\alpha = 500\text{ N/C-m}$ ;  $E_y = 0$ ,  $E_z = 0$ . Calculate (i) the flux through the cube, and (ii) the charge inside the cube.



### Example 8

Two small spheres, each having a mass of  $10\text{ g}$  and charge  $0.1\mu\text{C}$  are at rest in the limiting equilibrium on a rough horizontal surface with a separation of  $5\text{ cm}$  between their centres. The coefficient of friction between each sphere and the surface is the same. What is the value of this coefficient? ( $g=10\text{ m/s}^2$ ).