

Support Worksheet – Topic 5, Worksheet 4

- 1** The radius of the Earth is R_E . The gravitational force on a satellite in orbit around the Earth a distance of R_E from the surface is F . The gravitational force on the same satellite when in orbit at a distance of $2R_E$ from the surface is

A $\frac{F}{4}$

B $\frac{F}{3}$

C $\frac{F}{9}$

D $\frac{4F}{9}$

[1]

- 2** The electric force between two bodies X and Y of electric charge q_1, q_2 respectively when a distance r apart is F . The charge q_1 on X is doubled. The electric force on X and Y is

| | Force on X | Force on Y |
|----------|------------|------------|
| A | F | F |
| B | $2F$ | F |
| C | F | $2F$ |
| D | $2F$ | $2F$ |

[1]

- 3** The electric force between two bodies X and Y of electric charge q_1, q_2 respectively when a distance r apart is F . The charges q_1 and q_2 are both doubled. The separation of the charges is also doubled. The electric force on X and Y is

| | Force on X | Force on Y |
|----------|------------|------------|
| A | F | F |
| B | $2F$ | F |
| C | F | $2F$ |
| D | $2F$ | $2F$ |

[1]

- 4 A point charge q is placed at some distance from a spherical charge Q . The vector electric force experienced by q is \vec{F} . The electric field vector created by a spherical charge Q at the position of q is defined as

A $\frac{\vec{F}}{Q}$ with Q positive

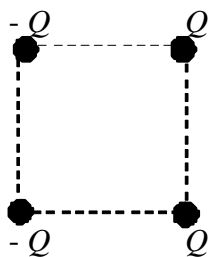
B $\frac{\vec{F}}{q}$ with q positive

C $\frac{\vec{F}}{Q}$ with Q small

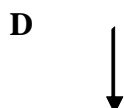
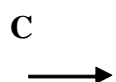
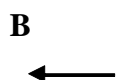
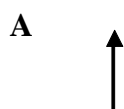
D $\frac{\vec{F}}{q}$ with q small

[1]

- 5 Four point charges of equal magnitude are held at the corners of a square as shown.



Which arrow shows the direction of the resultant electric field strength at the centre of the square due to the four point charges?



[1]