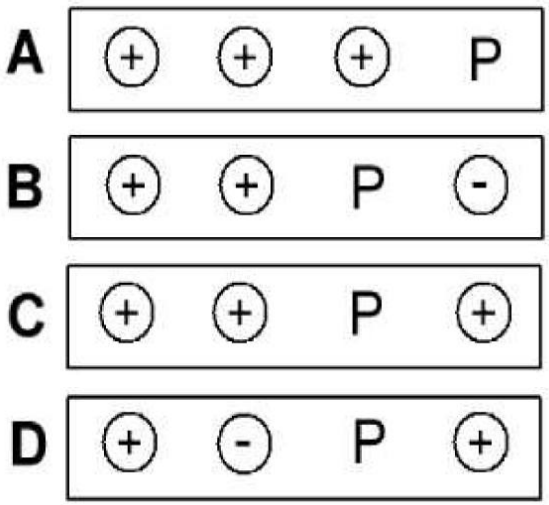
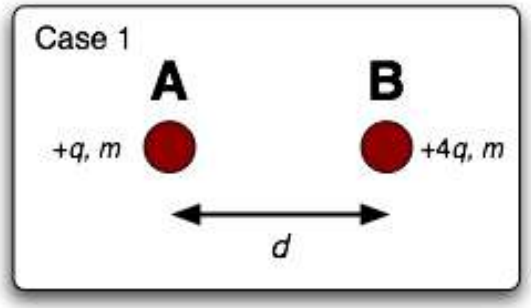
In the figure are shown four arrangements of charge. Each charge has the same magnitude, but some are + and some are -. All distances are to the same scale.
In which would the magnitude of the force felt by a positive test charge placed at P be the largest?

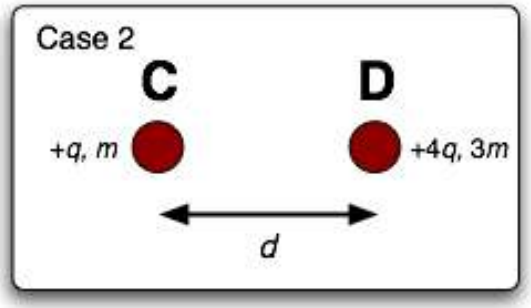
1. A
2. B
3. C
4. D
5. You can't tell.

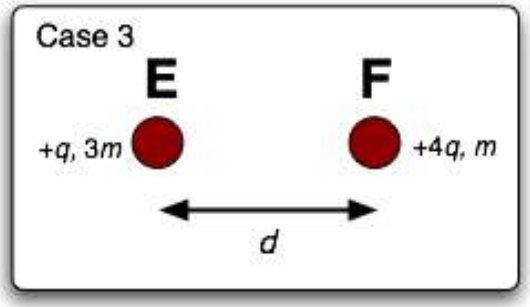


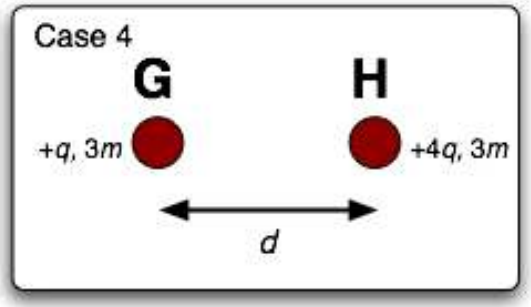
In each of the four cases shown below, a particle of charge +q is placed a distance d from a particle of charge +4q. The particles are then released simultaneously. The masses of the particles are indicated in the diagram. Rank the magnitude of the acceleration of each particle just after it is released.

1. Choice One
2. Choice Two
3. Choice Three
4. Choice Four





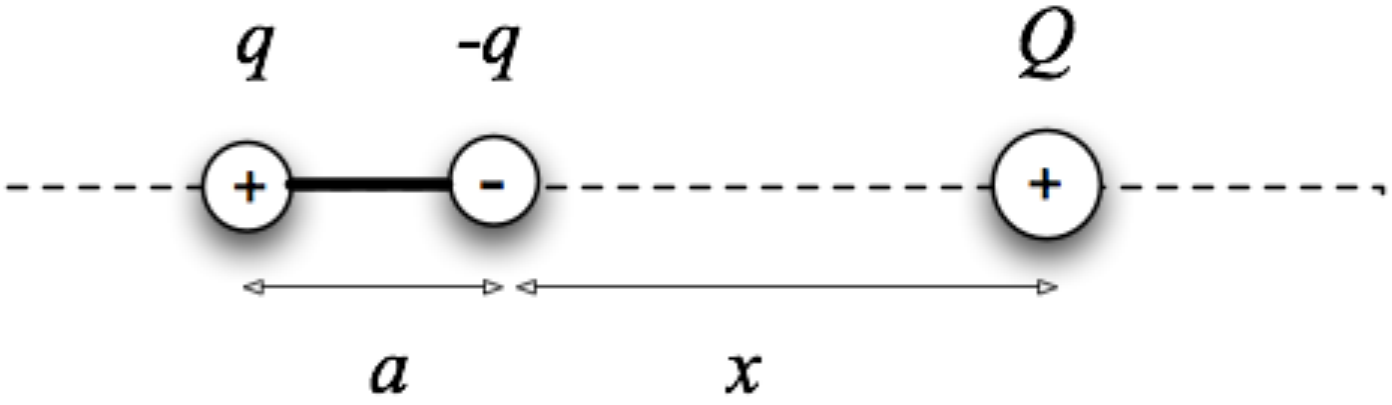




Find the magnitude and direction of the force the charge Q exerts on the dipole.

$q = 1\ \mu C$ $\quad a = 0.1\ m$ $\quad k_C = 9 \times 10^9\ \text{N-C}^2/\text{m}^2$

$Q = 1\ \mu C$ $\quad x = 0.2\ m$



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