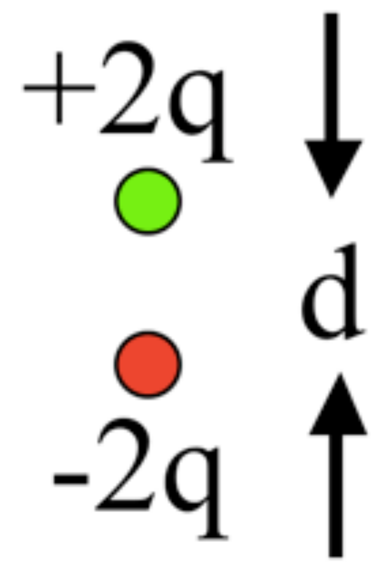
$$\mathbf{p} = \sum_i q_i \mathbf{r}_i$$

What is the magnitude of the dipole moment of this charge distribution?

A. qd
B. 2qd
C. 3qd
D. 4qd
E. It's not determined

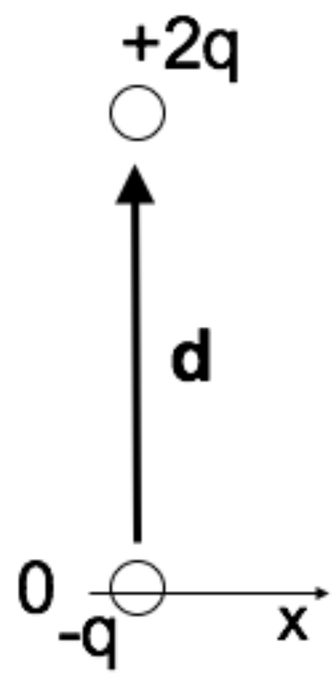


$$\mathbf{p} = \sum_i q_i \mathbf{r}_i$$

What is the dipole moment of this system?

(BTW, it is NOT overall neutral!)

A. $q\mathbf{d}$
B. $2q\mathbf{d}$
C. $\frac{3}{2}q\mathbf{d}$
D. $3q\mathbf{d}$
E. Someting else (or not defined)

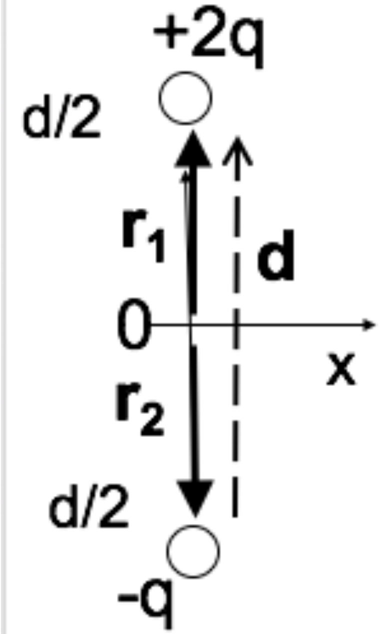


$$\mathbf{p} = \sum_i q_i \mathbf{r}_i$$

What is the dipole moment of this system?

(Same as last question, just shifted in z.)

A. $q\mathbf{d}$
B. $2q\mathbf{d}$
C. $\frac{3}{2}q\mathbf{d}$
D. $3q\mathbf{d}$
E. Someting else (or not defined)



You have a physical dipole, $+q$ and $-q$ a finite distance d apart. When can you use the expression:

$$V(\mathbf{r}) = \frac{1}{4\pi\varepsilon_0}\frac{\mathbf{p}\cdot\hat{\mathbf{r}}}{r^2}$$

A. This is an exact expression everywhere.
B. It's valid for large r
C. It's valid for small r
D. No idea...

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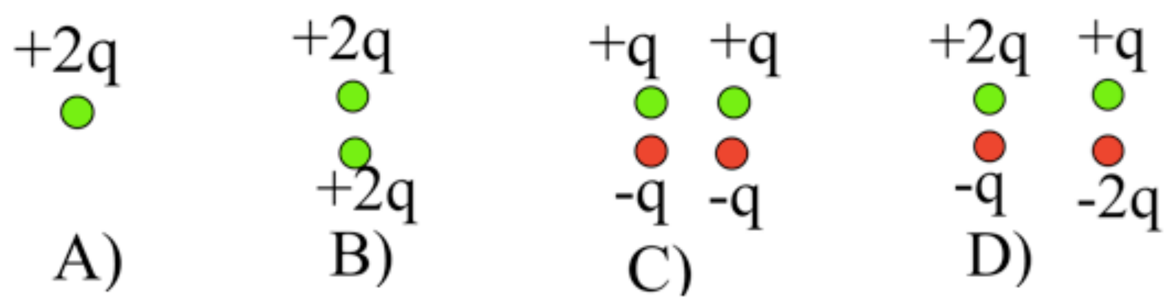
Which charge distributions below produce a potential that looks like $\frac{C}{r^2}$ when you are far away?



E) None of these, or more than one of these!

(For any which you did not select, how DO they behave at large r?)

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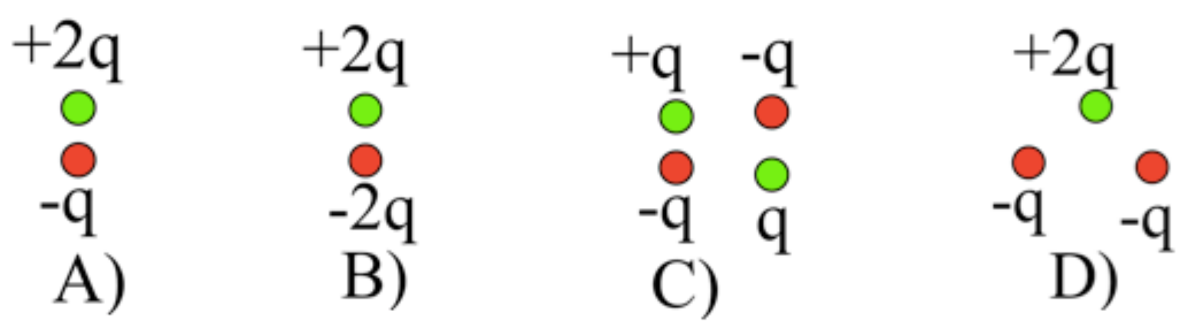
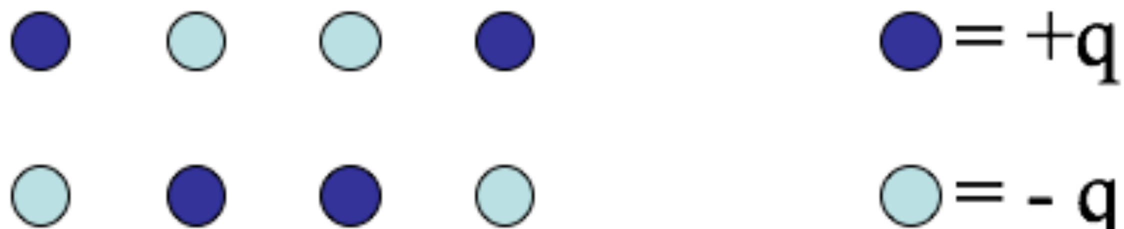


E) None of these, or more than one of these!

(For any which you did not select, how DO they behave at large r?)

In terms of the multipole expansion $V(r) = V(mono) + V(dip) + V(quad) + \ldots$, the following charge distribution has the form:



A. $V(r) = V(mono) + V(dip) +$ higher order terms
B. $V(r) = V(dip) +$ higher order terms
C. $V(r) = V(dip)$
D. $V(r) =$ only higher order terms than dipole
E. No higher terms, $V(r) = 0$ for this one.