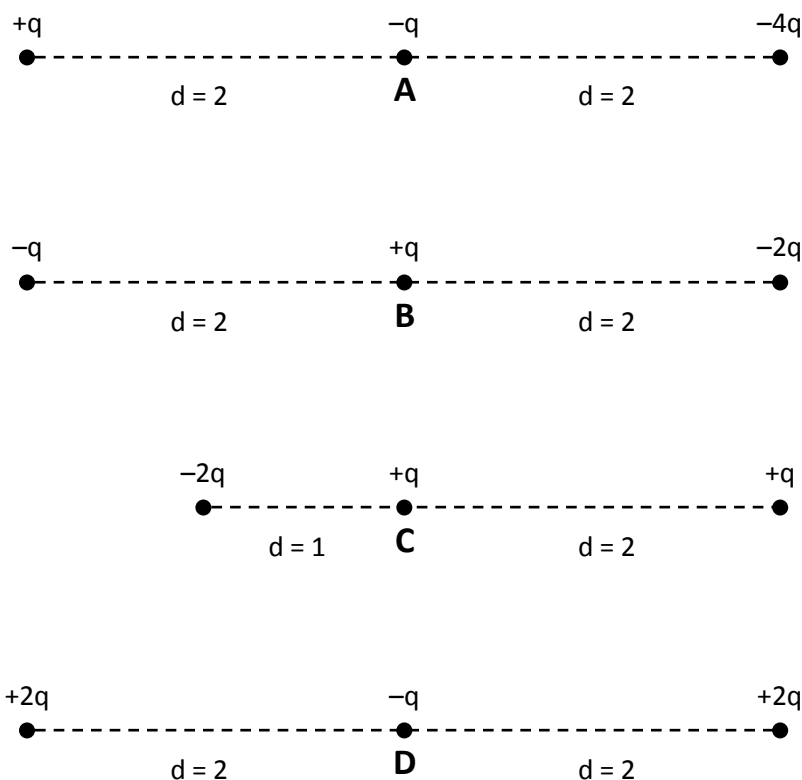


## Astronomy Ranking Task: Coulomb's Law

### Exercise #2

**Description:** The figures below (A – D) each show a central charge along with two other charges in a line, one on the left of the central charge and one on the right. The amounts of charge are expressed in arbitrary units ( $q$ ). The distances of the left and right charges from their respective center charges ( $d$ ) are also expressed in arbitrary units. All of the charges have the same mass.



**A. Ranking instructions:** Rank the strengths of the net electrical forces exerted on the central charges of each pair.

Ranking Order: Greatest 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ Least

Or, the strength of the net electrical force exerted on each central charge is the same. \_\_\_\_\_ (indicate with a check mark)

**Carefully explain** your reasoning for ranking this way:

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**B. Ranking instructions:** Using Newton's second law, rank the accelerations that the central charges experience as a result of the net electrical force exerted on each.

Ranking Order: Greatest 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ Least

Or, each central charge experiences the same acceleration. \_\_\_\_\_ (indicate with a check mark)

**Carefully explain** your reasoning for ranking this way:

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**C. Ranking instructions:** Rank the strengths of the net electrical forces exerted on the central charges of each pair *from greatest towards the left to greatest towards the right*.

Ranking Order: Leftward Greatest 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ Rightward Greatest

Or, all central charges experience net leftward forces. \_\_\_\_\_ (indicate with a check mark)

Or, all central charges experience net rightward forces. \_\_\_\_\_ (indicate with a check mark)

**Carefully explain** your reasoning for ranking this way:

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