Coulomb forces between charges can either be repulsive or attractive, and this makes vector problems with multiple charges confusing. The best way to approach such problems is as follows:

1. Write down an equation for the magnitude of the electric field from each charge (no signs!).
2. Determine conceptually the direction in which the individual Coulomb force vectors are pointing (are they toward or away from a charge?).
3. Break this vector into its $x$ and $y$ components using trigonometric relations.
4. Find the net force by adding all like components (i.e. $x$ with $x$, $y$ with $y$).

Try this sample problem. Three electric charges are distributed as follows:

\[ Q_A = +1 \mu C \]
\[ Q_B = -2 \mu C \]
\[ Q_C = +3 \mu C \]

1. Calculate the net Coulomb force (magnitude and direction) on charge A and charge B.

2. A fourth charge (+1 $\mu$C) is placed at point D. Without doing any calculations, deduce the likely direction of the net force on this charge. Describe your reasons for your choice, and sketch the associated force diagram.

3. Suppose the new charge at D has a mass of $10^4$ kg. Determine its net acceleration vector.