

Coulombs Law Application example 4

3 Balls have charges :

A = 12 nC
 B = 4 nC
 C = 8 nC

① A touches B, and then B touches C. What will the final charges be on each?
 What will the # of electrons be on each finally?

①

Initial charges: A (+12 nC), B (-4 nC), C (+8 nC)

Step 1: A (+12 nC) and B (-4 nC) touch. Final charges: A (+4 nC), B (+4 nC)

Step 2: B (+4 nC) and C (+8 nC) touch. Final charges: B (+6 nC), C (+6 nC)

Step 3: A (+4 nC) and B (+6 nC) touch. Final charges: A (+6 nC), B (+6 nC)

Final charges: A (+6 nC), B (+6 nC), C (+6 nC)

Calculations for number of electrons:

$$N = \frac{Q}{e} = \frac{-1.6 \times 10^{-19} \text{ C}}{1.602 \times 10^{-19} \text{ C}} = 3.4 \times 10^{18} \text{ e} \text{ Deficit}$$

$$N = \frac{Q}{e} = \frac{+5 \times 10^{-19} \text{ C}}{1.602 \times 10^{-19} \text{ C}} = 3.12 \times 10^{18} \text{ e}$$

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