

Name: _____ Section: _____ Score: _____/20

1. Very small and identical metal spheres A and B are with glass handles as in Fig. 1. Initially, A has no net charge and B has a net charge Q . After the metal spheres are connected, they are separated and placed as in the right-lower figure.

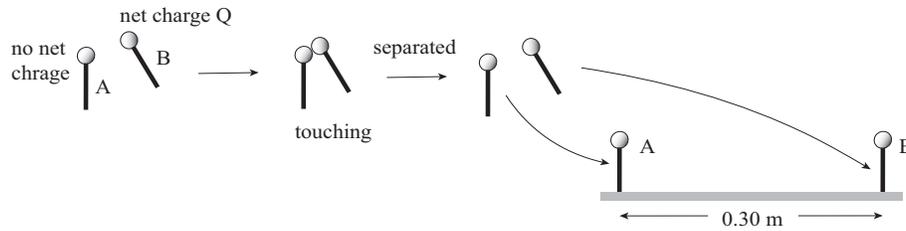


Figure 1:

(a) The magnitude of the force acting on charge at A is 10 N. What is the original net charge Q on B before touching with A? [5]

(b) If the above experiment is repeated with a doubled Q , what is the magnitude of the force acting on A? [5]

3. Look at the configuration of three charges in the figure 2. A and C have $-2 \mu\text{C}$ and B $-3 \mu\text{C}$.

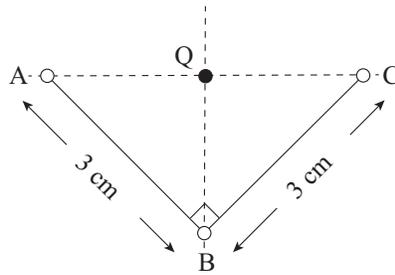


Figure 2:

(a) What is the total force acting on B from the other charges A and C? Compute its magnitude and indicate its direction in the figure 2. [5]

(b) Q is the point equidistant from all three points A-C and on the line connecting A and C. What is the total force acting on a $2 \mu\text{C}$ charge placed at Q? Compute its magnitude and indicate its direction in the figure 2. [5]