Name: _____

Electric Force and Charge: Quick Review #2
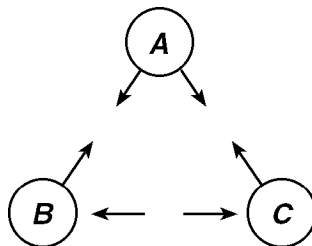
1) Two small identical metal spheres, A and B, on insulated stands, are each given a charge of $+2.0 \times 10^{-6}$ coulomb. The distance between the spheres is 2.0×10^{-1} meter. Calculate the magnitude of the electrostatic force that the charge on sphere A exerts on the charge on sphere B. [*Show all work, including the equation and substitution with units.*]

2) The centers of two small charged particles are separated by a distance of 1.2×10^{-4} meter. The charges on the particles are $+8.0 \times 10^{-19}$ coulomb and $+4.8 \times 10^{-19}$ coulomb, respectively.

On the diagram provided below, draw *at least* four electric field lines in the region between the two positively charged particles.

8.0×10^{-19} C $(+)$ $(+)$ 4.8×10^{-19} C

3) Metal sphere A has a charge of -2 units and an identical metal sphere, B, has a charge of -4 units. If the spheres are brought into contact with each other and then separated, the charge on sphere B will be

4) The diagram below shows the arrangement of three charged hollow metal spheres, A, B, and C. The arrows indicate the direction of the electric forces acting between the spheres. At least two of the spheres are positively charged.

Which sphere, if any, could be negatively charged?

A) sphere A B) sphere B C) sphere C D) no sphere

5) When a neutral metal sphere is charged by contact with a positively charged glass rod, the sphere

A) gains electrons   B) gains protons   C) loses protons   D) loses electrons

6) What is the net electrical charge on a magnesium ion that is formed when a neutral magnesium atom loses two electrons?

7) A negatively charged plastic comb is brought close to, but does not touch, a small piece of paper. If the comb and the paper are attracted to each other, the charge on the paper

A) must be positive
B) must be negative

C) may be positive or neutral
D) may be negative or neutral

8) A positively charged glass rod attracts object X. The net charge of object X

A) must be positive
B) must be negative

C) may be zero or negative
D) may be zero or positive