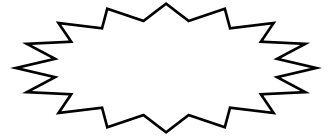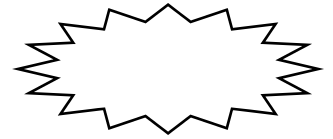1. Two BB's lie 1.5 meters apart on a table. They carry identical charges. How large is the charge on each BB if they each experience an electric force of 2.0 N?

2. A helium nucleus has a charge of +2 e and a neon nucleus has a charge of +10 e. (e = 1.6 E –19 C) Find the repulsion force exerted on one by the other when they are 3 nanometers apart (1 m = 1 E 9 nm).

3. Explain from an atomic viewpoint why charge is usually transferred by electrons.

4. If a metal object receives a positive (+) charge, what happens to its mass? What happens to the mass if the object is given a negative (-) charge? Explain!

5. A charged piece of plastic will often attract small bits of paper that fly away when they touch the plastic. Explain why they are attracted and why they fly away.

6. The electron and proton of a hydrogen atom are separated by a distance of about 5.3 E –11 meters. What is the electric force attracting the two particles? What is the gravitational force attracting the two particles?
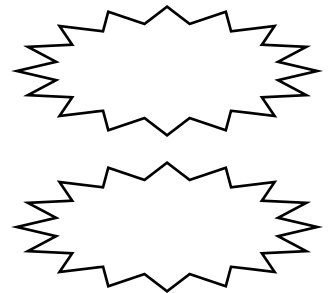
7. If the electric force felt by charged objects is so much more powerful than the gravitational force felt by the same objects, why are you more affected by the gravitational force?

7. Two electrostatic point charges of –13.0 µC and –16.0 µC exert repulsive forces on each other of 12.5 N. What is the distance between the two charges?
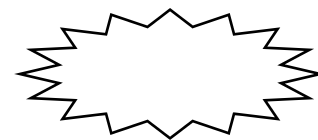
8. Two electrostatic point charges of –43.2 µC and 22.4 µC exert attractive forces on each other of –6.5 N. What is the distance between the two charges?
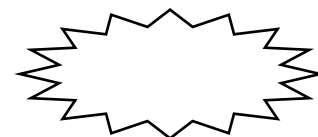
9. Suppose two equal charges are separated by 6.5 E –11 m. If the magnitude of the electric force between the charges is 9.92 E –4 N, what is the value of q?
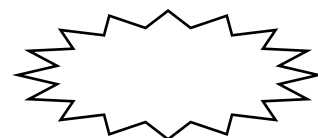
10. List and describe the three methods of transferring charge.