

Name _____
Honors Physics
Period _____

Date _____
Electrostatics WS #10H
Mrs. Nadworny

Review

Directions: Solve the following problems using the GUESS method, dimensional analysis (when necessary) and proper significant figures. Be sure to show ALL work.

- A negatively charged plastic comb is brought close to, but does not touch, a small piece of paper. If the comb and paper are attracted to each other, the charge on the paper
 - must be positive
 - must be negative
 - may be positive or neutral
 - may be negative or neutral
- 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
 - -2 units
 - -3 units
 - 0 units
 - $+4$ units
- An object cannot have a charge of
 - $3.2 \times 10^{-19}\text{C}$
 - $4.5 \times 10^{-19}\text{C}$
 - $8.0 \times 10^{-19}\text{C}$
 - $9.6 \times 10^{-19}\text{C}$
- The charge to mass ratio of an electron is
 - $1.76 \times 10^{-11}\text{C/kg}$
 - $5.69 \times 10^{-12}\text{C/kg}$
 - $1.76 \times 10^{11}\text{C/kg}$
 - $5.69 \times 10^{12}\text{C/kg}$
- An electron of mass m_e orbits an alpha particle of mass m_α in a circular orbit of radius r . Which expression gives the speed of the electron?
 - $\sqrt{\frac{2ke^2}{m_e r}}$
 - $\sqrt{\frac{2ke^2}{m_\alpha r}}$
 - $\sqrt{\frac{4ke^2}{m_e r}}$
 - $\sqrt{\frac{4ke^2}{m_\alpha r}}$
- The energy of $3.0 \times 10^3\text{ eV}$ is equivalent to how many Joules?
- How many excess electrons are on a sphere with a charge of $-8.72 \times 10^{-17}\text{ C}$?
- A capacitor has a capacitance of 3.00×10^{-12} farads. Calculate the potential difference required to store 2.10×10^{-11} Coulombs.

9. Two negative charges of $-24 \mu\text{C}$ each are separated by 4.0 cm. What force exists between the charges?
10. A positive charge of $4.3 \times 10^{-7} \text{ C}$ exerts a repulsive force of 8.0 N on a second charge 5.0 centimeters away. Determine the second charge.
11. What is the strength of the electric field at a distance of 5.6×10^{-12} meter away from a proton?
12. An electric field with an intensity of $2.5 \times 10^4 \text{ N/C}$ exerts a force of $7.6 \times 10^{-3} \text{ N}$ on a positive charge. What is the magnitude of the charge?
13. How much work is required to move a charge of $5.5 \times 10^{-8} \text{ C}$ between two points that have a potential difference of 84.3 V?
14. Two charged plates are separated by a distance of 4.5 cm. There is an electric potential difference of 650 V between the plates. Calculate the magnitude of the electric field in the middle of the plates.