Electric Forces and Fields Review

- Two types of electric charge (+) and (-)
- Charge is conserved
- Typically only the negative charge moves (q_e = -1.60 x 10^{-19} C, q_p = +1.60 x 10^{-19} C)
- Three methods of charging (friction, conduction, and induction)
- Electric forces can be attractive (opposite charges) or repulsive (like charges)
- The magnitude of the electric force between two point charges is given by

  $F_e = k\frac{|q_1 q_2|}{r^2}$ (Coulomb's Law—Force F, between charges q_1 and q_2, separated by distance r)

  k = 8.99 x 10^9 Nm^2/C^2
- Remember electric force is a vector and the net electric force on a charge can be found by adding the force vectors as appropriate
- The electric force is "transmitted" via an electric field
- The electric field is a vector and must be treated as such when finding the net electric field
- The electric field provides a quick way of calculating the electric force on a charge

  $\vec{F} = q\vec{E}$ (Force F, on a charge q, in an external field E)
- Electric fields point away from positive charges and toward negative charges
- The magnitude of an electric field generated by a charge depends on the charge and the distance from the charge

  $E = \frac{k|q|}{r^2}$ (Electric field E, created by charge q, at a distance r)

Study Strategies

- Make sure you've watched and listened to all videos.
- Try copying the above summary into your notes as a simple way to slow down and review important ideas.
- Make sure you have all relevant constants and formulae added to your formula card.
- Look at learning targets for the unit and find examples of questions on our classwork corresponding to each learning target.
- Practice resolving some of those questions.
- Try some review on the Physics Classroom website— www.physicsclassroom.com/class/estatics
  - Link also on www.mrbryant.net .