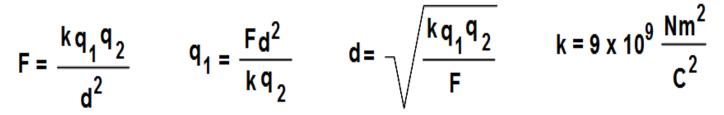
## **DO NOT WRITE ON THIS PAPER**

## Coulomb's Law – using the formula

<u>Directions</u>: show all work (GUESS method) on a separate sheet of paper. For these more complicated math problems, I am also grading you for an extra step to  $\underline{S}$  implify. Answers are given in bold so you can check your work. Practice the process until you understand the idea to come up with the right answer.



- Calculate the force between charges of 5.0 x 10<sup>-8</sup> C and 1.0 x 10<sup>-7</sup> C if they are 5 m apart. 1.8 x 10<sup>-6</sup> N
- 2) What is the electric force a 1.5 x 10<sup>-6</sup> C charge exerts on a 3.2 x 10<sup>-4</sup> C charge located 1.5 m away? **1.92** N
- 3) Two equal charges of 1.1 x 10<sup>-7</sup> C are placed 4.2 m apart. What is the force between them? 6.17 x 10<sup>-6</sup> N
- 4) A charge of -2.0 C and a positive charge of 3.0 C are separated by 80 m. What is the force between the 2 charges? -8437500 N
- 5) Charges of -4.0 x 10<sup>-5</sup> C and 7.0 x 10<sup>-5</sup> C are separated by 0.15 m. What is the force between the 2 charges?
  -1120 N
- 6) Two balloons are charged with an identical quantity and type of charge, -6.25 x 10<sup>-9</sup> C. They are held 0.617 m apart. Determine the magnitude of the electrical force of repulsion between them. 9.23 x 10<sup>-7</sup> N
- An object with a charge of 2.0 C is separated from a charge of the same size by 1.5 m. What is the electric force between them? 1.6 x 10<sup>10</sup> N
- 13) Two charges of -5.0 x 10<sup>-5</sup> C push each other apart with a force of 15 N. How far apart are the 2 charges?
  1.22 m
- 14) Two equal charges of  $1.1 \times 10^{-7}$  C experience an electrostatic force of  $4.2 \times 10^{-4}$  N. How far apart are the centers of the 2 charges? **0.51 m**
- 16) A negative charge of -0.0005 C exerts an attractive force of 9.0 N on a second charge 10 m away. What is the magnitude of the second charge? -2  $\times 10^{-4}$  C
- 17) Two equally charged spheres attract each other with a force of 0.492 N when placed 0.291 m apart. What is the charge of each sphere?  $\pm 2.15 \times 10^{-6} \text{ C each}$

- A 1.5 x 10<sup>-2</sup> C charge is separated from a second charge, 2.5 x 10<sup>-2</sup> C, by a distance of 0.5 m. Calculate the force between them. 1.35 x 10<sup>7</sup> N
- 9) An electron and proton each have the same amount of charge but opposite signs,  $\pm 1.6 \times 10^{-19}$  C. One of each are found to be 5.29 x  $10^{-29}$  m apart. Calculate the force between them. -8.23 x  $10^{28}$  N
- 10) A balloon with a charge of  $4.0 \ge 10^{-5}$  C is held a distance of 0.10 m from a second balloon having the same charge. Calculate the magnitude of the repulsive force. **1440** N
- 11) Calculate the electrical force between a balloon with a charge of  $-2.6 \times 10^{-6}$  C and a wool sweater with a charge of  $+3.8 \times 10^{-6}$  C. The distance between them is 0.75 m. **-0.15808 N**
- 12) A balloon rubbed with wool was given a charge of  $-1.0 \times 10^{-6}$  C. A plastic tube with a charge of  $4.0 \times 10^{-6}$  C is held a distance of 0.50 m above the balloon. What is the electrical force between them? **-0.144** N
- 15) Two balloons with charges of 3.37 x 10<sup>-6</sup> C and -8.21 x 10<sup>-6</sup> C attract each other with a force of 0.0626 N. Determine the separation distance between the two balloons. 2 m
- 18) Two spheres 0.04 m apart attract each other with a force of 1.2 x 10<sup>-9</sup> N. Determine the size of the charge on each if they are equal. What is the charge of each if one charge is twice as big as the other? 7.11 x 10<sup>-23</sup> C and 1.42 x 10<sup>-22</sup> C