Name: Key

Period: ___ Subject: _____

Date: _____

Worksheet - Coulomb's Law

1. A negative charge of - 2.0 C and a positive charge of 3.0 C are separated by 80 m. What is the force between the two charges?

$$F_E = \frac{k(-2)(3)}{80^2} = 8,428,125\ N$$

2. A negative charge of - 0.0005 C exerts an attractive force of 9.0 N on a second charge that is 10 m away. What is the magnitude of the second charge?

$$-9 = \frac{(8.99 \times 10^9)(-0.0005)(q_2)}{10^2}$$

$$q_2 = 2.0 \times 10^{-5}\ C$$

3. Two negative charges that are both - 3.0 C push each other apart with a force of 19.2 N. How far apart are the two charges?

$$19.2\ N = \frac{8.99 \times 10^9 (-3)(-3)}{d^2}$$

$$d = 64915.8\ M$$

4. A negative charge of -4.0×10^{-5} C and a posivite charge of 7.0×10^{-5} C are separated by 0.15 m. What is the force between the two charges?

$$F_E = \frac{(8.99 \times 10^9)(-4 \times 10^{-5})(7 \times 10^{-5})}{(0.15)^2}$$

$$F_E = -1118.76 \text{ N}$$

5. A negative charge of -8.0×10^{-6} C exerts an attractive force of 12 N on a second charge that is 0.050 m away. What is the magnitude of the second charge?

$$-12N = \frac{(8.99 \times 10^9)(-8 \times 10^{-6})(q_2)}{(0.05^2)}$$

$$q_2 = 4.17 \times 10^{-7}$$

6. Two negative charges that are both -5.0×10^{-5} C push each other apart with a force of 15 N. How far apart are the two charges?

$$F_E = 15N = \frac{(8.99 \times 10^9)(-5 \times 10^{-5}\text{C})(-5 \times 10^{-5}\text{C})}{d^2}$$

$$d = 1.22 \text{ m}$$