

COULOMB'S LAW PRACTICE

$$2) q_1 = 3 \times 10^{-6} \text{ C} \quad r = 0.12 \text{ m}$$

$$q_2 = 4 \times 10^{-6} \text{ C}$$

$$F = \frac{k q_1 q_2}{r^2}$$
$$= 7.5 \text{ N}$$

$$3) q_1 = 1.6 \times 10^{-19} \text{ C}$$

$$q_2 = 1.6 \times 10^{-19} \text{ C}$$

$$r = 3 \times 10^{-7} \text{ m}$$

$$F = \frac{k q_1 q_2}{r^2}$$
$$= 2.56 \times 10^{-15} \text{ N}$$

$$5. \quad F = 4 \text{ E-}5 \text{ N}$$

$$r = 0.03 \text{ m}$$

$$a) \quad F = \frac{k q_1 q_2}{r^2} \quad \text{constant for this problem}$$

$$F_{\text{new}} = \frac{k q_1 q_2}{(2r)^2} = \frac{k q_1 q_2}{4r^2} = \frac{1}{4} F$$

$$= 1 \text{ E-}5 \text{ N}$$

$$b) \quad F = \frac{k q_1 q_2}{(4r)^2} = \frac{k q_1 q_2}{16r^2} = \frac{1}{16} F$$

$$= \left(\frac{1}{16}\right)(4 \text{ E-}5 \text{ N})$$

$$= 2.5 \text{ E-}6 \text{ N}$$

$$c) \quad F = \frac{k q_1 q_2}{\left(\frac{1}{5}r\right)^2} = \frac{k q_1 q_2}{\frac{1}{25}r^2} = 25 F$$

$$= (25)(4 \text{ E-}5 \text{ N})$$

$$= 1 \text{ E-}3 \text{ N}$$