

Answer on Question #61082, Physics / Electromagnetism

If the electrical force of repulsion between two 1-C charges is 10 N. How far apart are they?

Find: r – ?

Given:

$$|q_1| = |q_2| = 1\text{C}$$

$$F=10\text{ N}$$

$$\epsilon_0=8.85\times 10^{-12}\text{ F}\times\text{m}^{-1}$$

$$\epsilon=1$$

Solution:

Coulomb's law:

$$F = \frac{1}{4\pi\epsilon_0} \times \frac{|q_1||q_2|}{\epsilon r^2} \quad (1)$$

$$\text{Of (1)} \quad r = \frac{\sqrt{|q_1||q_2|}}{4\pi\epsilon_0\epsilon F} \quad (2)$$

$$\text{Of (2)} \Rightarrow r=0.03\times 10^6$$

m **Answer:** $0.03\times 10^6\text{ m}$