Answer on question #58084, Physics / Electromagnetism

Question   Two like charged balloons have a force of .420 if the force is increased by a factor of four and the distance is doubled, what is the charge?

Solution   Electrostatic force between two charges is

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

If the force is increase in 4 times and distance is doubled, you have to increase each charge in 4 times to make this equation correct:

$$4F = k\frac{4q_1 \cdot 4q_2}{(2r)^2}$$

Answer: increase each charge in 4 times.