

Answer on question #68226, Physics / Other

Question Two charged objects have an attracting force of -32 N. If both of the charges are doubled and the distance is increased by a factor of 4, what is the new force?

Solution The force depends on charges and distance as

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

When we double both charge and increase distance in 4 times we will have

$$F = k \frac{2q_1 \cdot 2q_2}{4^2 r^2} = \frac{1}{4} k \frac{q_1 q_2}{r^2}$$

Hence, force will be 4 times smaller, that is 8 N.