If the distance between two charges is doubled the force between them will become?

Coulomb's law states that the electrical force between two charged objects is directly proportional to the product of their charges and inversely proportional to the square of the distance between them:

$$F(r) = k\frac{Q_1 Q_2}{r^2}$$

If the distance between two charges is doubled:

$$F(2r) = k\frac{Q_1 Q_2}{(2r)^2} = k\frac{Q_1 Q_2}{4\,r^2} = \frac{1}{4}k\frac{Q_1 Q_2}{r^2} = \frac{1}{4}F(r)$$

Therefore:

$$\frac{F(2r)}{F(r)} = \frac{1}{4}$$

The force will decrease in 4 times.

Answer: The force will decrease in 4 times.