49. In experiment 1, sphere C first touches sphere A, and they divided up their total charge ($Q/2$ plus Q) equally between them. Thus, sphere A and sphere C each acquired charge $3Q/4$. Then, sphere C touches B and those spheres split up their total charge ($3Q/4$ plus $-Q/4$) so that B ends up with charge equal to $Q/4$. The force of repulsion between A and B is therefore

$$F_1 = k\,\frac{\left(\frac{3Q}{4}\right)\left(\frac{Q}{4}\right)}{d^2}$$

at the end of experiment 1. Now, in experiment 2, sphere C first touches B which leaves each of them with charge $Q/8$. When C next touches A, sphere A is left with charge $9Q/16$. Consequently, the force of repulsion between A and B is

$$F_2 = k\,\frac{\left(\frac{9Q}{16}\right)\left(\frac{Q}{8}\right)}{d^2}$$

at the end of experiment 2. The ratio is

$$\frac{F_2}{F_1} = \frac{\left(\frac{9}{16}\right)\left(\frac{1}{8}\right)}{\left(\frac{3}{4}\right)\left(\frac{1}{4}\right)} = 0.375 \quad .$$