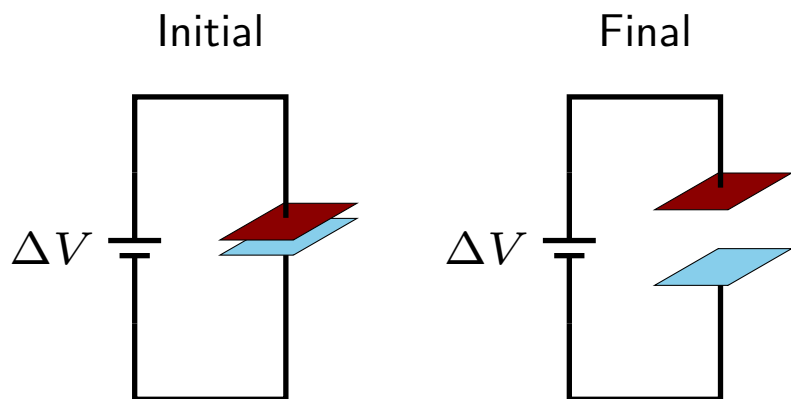


## Question 1

A parallel plate capacitor is connected to a battery. The distance between the plates is increased.

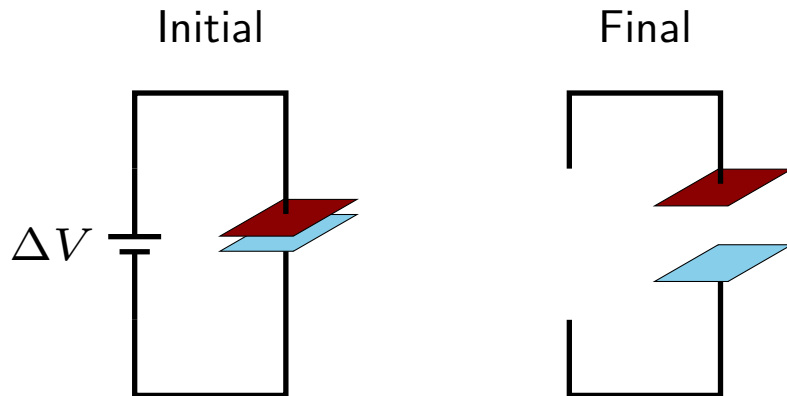


Which of the following is true?

1. The charge on the capacitor decreases.
2. The charge on the capacitor increases.
3. The charge on the capacitor stays the same.

## Question 2

A parallel plate capacitor is connected to a battery and allowed to charge. The capacitor is then disconnected, without any charge leaking from the capacitor, and the distance between the plates is doubled.

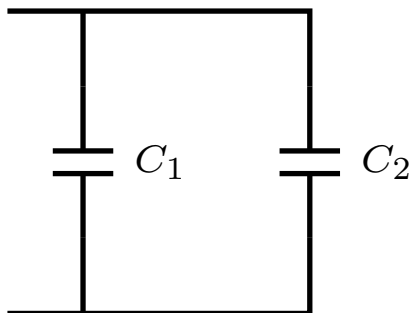


Which of the following is true regarding the potential difference across the plates?

1.  $\Delta V_{\text{after}} = 4\Delta V_{\text{before}}$
2.  $\Delta V_{\text{after}} = 2\Delta V_{\text{before}}$
3.  $\Delta V_{\text{after}} = \Delta V_{\text{before}}$
4.  $\Delta V_{\text{after}} = \frac{1}{2} \Delta V_{\text{before}}$
5.  $\Delta V_{\text{after}} = \frac{1}{4} \Delta V_{\text{before}}$

## Question 3

Two capacitors are connected in parallel as illustrated.



Let  $\Delta V_1$  and  $Q_1$  be the potential difference across and the charge on capacitor 1. Let  $\Delta V_2$  and  $Q_2$  be the potential difference across and the charge on capacitor 2.

Suppose that  $C_1 = 5C_2$ . Which of the following is true?

1.  $\Delta V_1 = \Delta V_2$  and  $Q_1 = Q_2$
2.  $\Delta V_1 = \Delta V_2$  and  $Q_1 = 5Q_2$
3.  $\Delta V_1 = \Delta V_2$  and  $Q_2 = 5Q_1$
4.  $\Delta V_1 = 5\Delta V_2$  and  $Q_1 = Q_2$
5.  $\Delta V_1 = 5\Delta V_2$  and  $Q_1 = 5Q_2$
6.  $\Delta V_1 = 5\Delta V_2$  and  $Q_2 = 5Q_1$