

Capacitors Connected in Series



Find the equivalent capacitance of two capacitors connected in series:

- Charge on capacitors: $Q_1 = Q_2 = Q$
- Voltage across capacitors: $V_1 + V_2 = V$
- Equivalent capacitance: $\frac{1}{C} \equiv \frac{V}{Q} = \frac{V_1 + V_2}{Q} = \frac{V_1}{Q_1} + \frac{V_2}{Q_2}$
- $\Rightarrow \frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$

