

# Ohm's Law

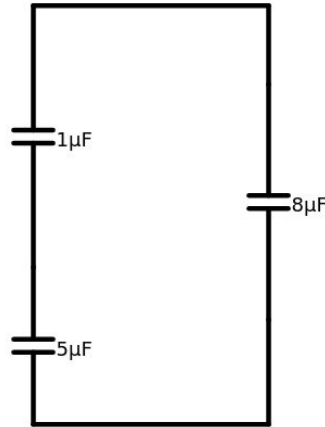
1. A 12 V car battery delivers 2.5 A through a vehicle's headlights. What is the resistance of the bulb?

## Capacitors in series

2. Three capacitors ( $1\ \mu\text{F}$ ,  $5\ \mu\text{F}$ , and  $8\ \mu\text{F}$ ) are connected in series. Find the equivalent capacitance.

# Equivalent capacitance

3. Find the equivalent capacitance for the circuit below.



# Drift velocity

4. Calculate the drift velocity of electrons in a copper wire with thickness  $d = 2.053 \text{ mm}$  carrying  $20 \text{ A}$  of current. There is  $1 \text{ e}^-$  per Cu atom. The density of copper is  $8800 \text{ kg m}^{-3}$  and copper has an atomic mass of  $63.54 \text{ g mol}^{-1}$ . Avogadro's number is  $6.022 \times 10^{23} \text{ atoms mol}^{-1}$ .