

Quiz 4: Current & Resistance

$$\Delta V = IR$$

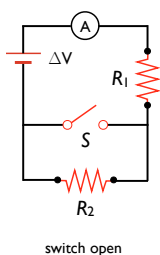
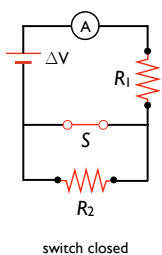
$$\mathcal{P} = I\Delta V = I^2R = \frac{(\Delta V)^2}{R}$$

$$R_{\text{eq,ser}} = R_1 + R_2 + \dots$$

$$R_{\text{eq,par}}^{-1} = R_1^{-1} + R_2^{-1} + \dots$$

1. If the current carried by a conductor is doubled, what happens to the average time between collisions?

- Nothing.
- It doubles.
- It decreases by two times.
- It increases by 4 times.
- It decreases by 4 times.



2. Refer to the figures at left. What happens to the reading on the ammeter when the switch S is opened?

- the reading goes up
- the reading goes down
- the reading does not change

3. When we power a light bulb, are we using up charges and converting them to light?

- Yes, moving charges produce “friction” which heats up the filament and produces light
- Yes, charges are emitted and observed as light
- No, charge is conserved. It is simply converted to another form such as heat and light.
- No, charge is conserved. Moving charges produce “friction” which heats up the filament and produces light.

4. An electric current of 1 mA flows through a conductor, which results in a 150 mV potential difference. The resistance of the conductor is:

- 150 Ω
- $6.7 \times 10^{-4} \Omega$
- $1.5 \times 10^{-6} \Omega$
- 6.7 Ω