11. Electric Circuits

Starter Quiz · 课前小测

AP Physics 2 Name: _____ Score: _____

1. 6 C of charge flows past a point in 3 s. What is the current, in amperes?

   _____ A

2. For current to flow in a circuit, the loop must be:

   ☐ open

   ☐ complete (closed)

   ☐ made only of copper

   ☐ very long

3. A resistor carries 0.5 A from a 6 V supply. What is its resistance, in Ω?

   _____ Ω

4. A bulb carries 0.5 A at 12 V. What power does it dissipate, in watts?

   _____ W

5. Two 6 Ω resistors are in **series**. What is the total resistance, in Ω?

   _____ Ω

6. A 9 V battery drives current through $R_1 = 2\ \Omega$ and $R_2 = 1\ \Omega$ in series. Using the loop rule, what is the current, in A?

   _____ A

7. Electric current is defined as:

   ☐ charge times time

   ☐ charge per unit time

   ☐ voltage per unit charge

   ☐ resistance times charge

8. The voltage a battery provides — its energy per unit charge — is called its _____.

   _____

9. Which expresses Ohm's law?

   ☐ $V = IR$

   ☐ $V = I/R$

   ☐ $V = I + R$

☐ $R = IV$

10. Kirchhoff's loop rule is a statement of the conservation of:

☐ charge

☐ energy

☐ momentum

☐ mass

AP Physics 2

1. **2 A**

   $I = Q/t = 6/3 = 2$ A.

2. **complete (closed)**

   A complete, closed loop is needed; any break stops the current.

3. **12 Ω**

   $R = V/I = 6/0.5 = 12\ \Omega$.

4. **6 W**

   $P = IV = 0.5 \times 12 = 6$ W.

5. **12 Ω**

   Series resistances add: $6 + 6 = 12\ \Omega$.

6. **3 A**

   $9 - 2I - I = 0 \Rightarrow 9 = 3I \Rightarrow I = 3$ A.

7. **charge per unit time**

   $I = Q/t$ — charge flowing per second.

8. **EMF**

   The electromotive force (EMF) is the battery's energy per unit charge.

9. $V = IR$

   $V = IR$ — voltage equals current times resistance.

10. **energy**

    Voltages sum to zero because energy per charge is conserved around a loop.