

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 21. **2 A**

$$I = Q/t = 6/3 = 2 \text{ A}.$$

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**

$$P = IV = 0.5 \times 12 = 6 \text{ W}.$$

5. **12 Ω**

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

6. **3 A**

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

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.