

# Circuits-Current

- What is the current through a wire if 240 coulombs of charge pass through the wire in 2.0 minutes?
  - 120 A
  - 2.0 A
  - 0.50 A
  - 0.0083 A

- A 1.5-volt, AAA cell supplies 750 milliamperes of current through a flashlight bulb for 5.0 minutes, while a 1.5-volt, C cell supplies 750 milliamperes of current through the same flashlight bulb for 20 minutes. Compared to the total charge transferred by the AAA cell through the bulb, the total charge transferred by the C cell through the bulb is
  - half as great
  - twice as great
  - the same
  - four times as great



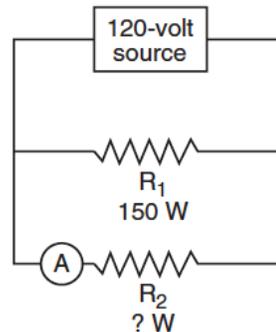
- The current traveling from the cathode to the screen in a television picture tube is  $5.0 \times 10^{-5}$  ampere. How many electrons strike the screen in 5.0 seconds?
  - $3.1 \times 10^{24}$  electrons
  - $6.3 \times 10^{18}$  electrons
  - $1.6 \times 10^{15}$  electrons
  - $1.0 \times 10^5$  electrons
- Charge flowing at the rate of  $2.50 \times 10^{16}$  elementary charges per second is equivalent to a current of
  - $2.50 \times 10^{13}$  A
  - $6.25 \times 10^5$  A
  - $4.00 \times 10^{-3}$  A
  - $2.50 \times 10^{-3}$  A

- The current through a lightbulb is 2.0 amperes. How many coulombs of electric charge pass through the lightbulb in one minute?
  - 60 C
  - 2.0 C
  - 120 C
  - 240 C



- If 10 coulombs of charge are transferred through an electric circuit in 5.0 seconds, then the current in the circuit is
  - 0.50 A
  - 2.0 A
  - 15 A
  - 50 A
- A charge of 30 coulombs passes through a 24-ohm resistor in 6.0 seconds. What is the current through the resistor?
  - 1.3 A
  - 5.0 A
  - 7.5 A
  - 4.0 A

- The diagram below shows two resistors,  $R_1$  and  $R_2$ , connected in parallel in a circuit having a 120-volt power source. Resistor  $R_1$  develops 150 watts and resistor  $R_2$  develops an unknown power. Ammeter A in the circuit reads 0.50 ampere.



Calculate the amount of charge passing through resistor  $R_2$  in 60 seconds. [Show all work, including the equation and substitution with units.]

- What is the current in a wire if  $3.4 \times 10^{19}$  electrons pass by a point in this wire every 60 seconds?
  - $1.8 \times 10^{-18}$  A
  - $3.1 \times 10^{-11}$  A
  - $9.1 \times 10^{-2}$  A
  - 11 A

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10. The current in a wire is 4.0 amperes. The time required for  $2.5 \times 10^{19}$  electrons to pass a certain point in the wire is
1. 1.0 s
  2. 0.25 s
  3. 0.50 s
  4. 4.0 s
11. An MP3 player draws a current of 0.120 ampere from a 3.00-volt battery. What is the total charge that passes through the player in 900 seconds?
1. 324 C
  2. 108 C
  3. 5.40 C
  4. 1.80 C
12. A net charge of 5.0 coulombs passes a point on a conductor in 0.050 second. The average current is
1.  $8.0 \times 10^{-8}$  A
  2.  $1.0 \times 10^{-2}$  A
  3.  $2.5 \times 10^{-1}$  A
  4.  $1.0 \times 10^2$  A