



1. State the difference between conventional current and electron current.

Conventional from "+" to "-", electrons in opposite direction

2. What is the difference between direct current and alternating current?

Direct doesn't change direction, alternating does.

3. A steady direct current of 2.5 A flows in a wire connected to a battery for 15 seconds. How much charge enters or leaves the battery in this time?

$$Q = I t = 2.5 \times 15 = 37.5 \text{ C}$$

4. Convert 45 mA to amperes.

$$0.045 \text{ A}$$

5. Convert  $2.3 \times 10^{-4}$  A to milliamperes.

$$0.23 \text{ mA}$$

6. Convert 450  $\mu\text{A}$  to amperes.

$$0.00045 \text{ A}$$

7. A car light globe has a current of 3.5 A flowing through it. How much charge passes through it in 20 minutes?

$$Q = I t = 3.5 \times 20 \times 60 = 4200 \text{ C}$$

8. What is the current flowing through an extension cord if 15 C of charge passes through it in 50 seconds?

$$I = \frac{Q}{t} = \frac{15}{50} = 0.3 \text{ A}$$

9. Find the unknown quantity:

a)  $I = 0.4 \text{ A}$

$Q = ?$

$t = 20 \text{ s}$

$$Q = 0.4 \times 20 = 8 \text{ C}$$

b)  $I = ?$

$Q = 240 \text{ C}$

$t = 300 \text{ s}$

$$I = \frac{Q}{t} = \frac{240}{300} = 0.8 \text{ A}$$

c)  $I = 2 \text{ A}$

$Q = 400 \text{ C}$

$t = ?$

$$t = \frac{400}{2} = 200 \text{ s}$$

d)  $I = ?$

$Q = 140 \text{ C}$

$t = 4 \text{ min}$

$$I = \frac{140}{4 \times 60} = 0.58 \text{ A}$$

e)  $I = 0.3 \text{ A}$   
 $Q = ?$   
 $t = 1.5 \text{ hours}$

$$Q = 0.3 \times 1.5 \times 3600 = 1620 \text{ C}$$

f)  $I = 0.9 \text{ A}$   
 $Q = ?$   
 $t = 3 \text{ min}$

$$Q = 0.9 \times 3 \times 60 = 162 \text{ A}$$

10. If there is a current of 10 amperes in a circuit for 10 minutes, what quantity of electric charge flows in through the circuit?

$$Q = 10 \times 10 \times 60 = 6000 \text{ C}$$

11. How much current must there be in a circuit if 100 coulombs flow past a point in the circuit in 4 seconds?

$$I = \frac{100}{4} = 25 \text{ A}$$

12. How much time is required for 10 coulombs of charge to flow past a point if the rate of flow (current) is 2 amperes?

$$t = \frac{10}{2} = 5 \text{ s}$$