

Electrical Voltage and Current

Voltage is the force that makes current flow through a wire while resistance in the wire reduces the current flow. Voltage is measured in volts (v); current is measured in amperes (a); resistance is measured in ohms (Ω). Resistance increases as the length of a wire increases

The table below lists some voltages and currents through the same wire.

Voltage	Current
6 v	3 a
12 v	6 a
24 v	12 a
36 v	18 a

1. What happens to the current as the voltage gets larger?
2. What happens to the current when the voltage is multiplied by 2?
3. What happens to the current when the voltage is multiplied by 4?
4. On the basis of your answers to questions 2 and 3, what do you think would happen to the current if the voltage is multiplied by 3?
5. What do you think the current would be when the voltage is 3 volts?
6. What do you think the current would be when the voltage is 20 volts?
7. Make as many rules as you can about the relationship between the current and the voltage.

Rules

8. Write an equation that expresses the relationship between the current and voltage.

Voltage	Resistance	Current
6 v	2 Ω	3 a
12 v	4 Ω	3 a
16 v	4 Ω	4 a
24 v	6 Ω	4 a

9. Make as many rules as you can about the relationship between the current, resistance and the voltage.

Rules

10. Write an equation that expresses the relationship between the current, resistance and voltage.

Extension:

Resistance	Current
2 Ω	6 a
4 Ω	3 a
6 Ω	2 a
8 Ω	1.5 a

11. What happens to the current as the resistance gets larger?
12. What happens to the current when the resistance is multiplied by 2?
13. What happens to the current when the resistance is multiplied by 4?
14. On the basis of your answers to questions 2 and 3, what do you think would happen to the current if the resistance is multiplied by 3?
15. What do you think the current would be when the resistance is 1 Ω ?
16. What do you think the current would be when the resistance is 10 Ω ?

Write an equation that expresses the relationship between the current and resistance.