

**YEAR 10**

Electricity and Circuits

Three sections. Use $V = I \times R$, $Q = I \times t$ and $P = V \times I$. Show the formula, then the numbers, then the answer with its unit.

Name: _____

Date: _____

Score: _____

A. Calculations

Rearrange the formula before you put any numbers in.

1 A supply of 12V drives a current of 3A. Find the resistance.

2 A supply of 24V drives a current of 8A. Find the resistance.

3 A supply of 230V drives a current of 10A. Find the resistance.

4 A supply of 9V drives a current of 3A. Find the resistance.

5 A supply of 6V drives a current of 2A. Find the resistance.

6 A current of 2A flows through a 6 ohm resistor. Find the voltage.

7 A current of 0.5A flows through a 20 ohm resistor. Find the voltage.

8 A current of 3A flows through a 4 ohm resistor. Find the voltage.

9 A charge of 20C passes in 5 seconds. Find the current.

- 10 A current of 4A flows for 30 seconds. Find the charge that passed.
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B. Series and parallel

Current is shared in parallel, voltage is shared in series.

- 1 In a series circuit, what is true about the current at every point?
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- 2 In a series circuit, what happens to the supply voltage?
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- 3 Two 4 ohm resistors are in series. Find the total resistance.
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- 4 Three 5 ohm resistors are in series. Find the total resistance.
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- 5 In a parallel circuit, what is true about the voltage across each branch?
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- 6 What happens to the total resistance when a second branch is added in parallel?
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- 7 How must an ammeter be connected?
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- 8 How must a voltmeter be connected?
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- 9 One lamp in a series circuit breaks. What happens to the others, and why?
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C. Power and energy

Power is in watts. Energy in joules is power times seconds.

- 1 A device runs at 12V and draws 2A. Find its power.
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- 2 A device runs at 230V and draws 9A. Find its power.
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- 3 A device runs at 5V and draws 0.4A. Find its power.
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- 4 A device runs at 240V and draws 13A. Find its power.
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- 5 A 60W bulb is on for 300 seconds. Find the energy transferred.
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- 6 A 2000W oven runs for 1800 seconds. Find the energy transferred.
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- 7 How many watts are there in 2.5 kilowatts?
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- 8 A 1200W microwave and a 500W television both run for one hour. Which uses more energy, and how many times more?
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