

Intermediate Science 9
Unit 3: CURRENT ELECTRICITY
WORKSHEET 5: PARALLEL AND SERIES CIRCUITS



Series Circuit	Parallel Circuit
Provides a single pathway for the current to flow. If the circuit breaks, all devices using the circuit will fail	Has multiple pathways for the current to flow. If the circuit is broken the current may pass through other pathways and other devices will continue to work
The sum of the voltage lost in the loads or resistors in the entire circuit equals the total voltage supplied by the battery	The sum of the voltage lost in the loads or resistors in each branch of the circuit equals the total voltage supplied by the battery.
The current is the same throughout the circuit.	The total current entering or leaving a junction point is equal to the sum of the current in the individual paths
The total resistance of the circuit is increased when resistors or loads are added in series, since the total resistance is the sum of the resistances of each of the resistors or loads.	The total resistance of the circuit is decreased when resistors or loads are placed in parallel.

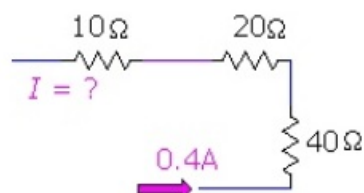
PART A: MULTIPLE CHOICE

- In series circuit, which of the following quantity remains same through out the circuit:
 - Current
 - Current and Voltage
 - Resistance
 - Voltage

- You have built a circuit with two lights. The lights burn very brightly, and when one of the light bulbs is removed, the other light continues to burn. What type of circuit do you have?
 - Closed Circuit
 - Series Circuit
 - Parallel Circuit
 - Practical Circuit

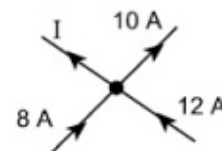
3. Which of the following remains constant in a parallel circuit?
- (A) Current and Voltage
 (B) Voltage
 (C) Resistance
 (D) Current
4. In a parallel circuit containing set of bulbs, if one of the bulb blew up the effective resistance offered will:
- (A) Remains same
 (B) Fluctuate
 (C) Increase
 (D) Decrease
5. A string of lights on a Christmas tree are in series. What happens if one of the lights blows its filament?
- (A) The remaining lights increase brightness
 (B) The other lights continue to shine as before
 (C) All the lights go out
 (D) The remaining lights decrease brightness
6. A bulb in a series circuit can be made dimmer by increasing...
- (A) the current in the circuit
 (B) the resistance of the circuit
 (C) the voltage of the battery
 (D) the voltage of the cell
7. When three 1.5 V cells are connected in series, what is the total voltage?
- (A) 0.5 V
 (B) 1.5 V
 (C) 3.0 V
 (D) 4.5 V

8. For the circuit portion shown below the current through the $40\ \Omega$ resistor is 0.4A . What is the current through the $10\ \Omega$ resistor?



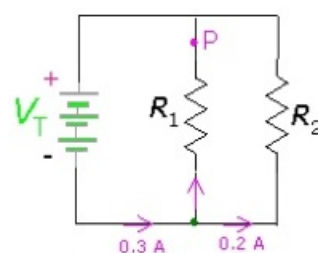
9. What is the value of I in the circuit junction below?

- (A) 6 A
 (B) 10 A
 (C) 14 A
 (D) 30 A



10. Which statement correctly describes the current at point P?

- (A) 0.1A away from the battery
 (B) 0.1A towards the battery
 (C) 0.5A away from the battery
 (D) 0.5A towards the battery



PART B: WRITTEN RESPONSE

1. Draw a series circuit, using the correct symbols, that consists of:

- i) a three cell battery
- ii) a bulb
- iii) a switch
- iv) a resistor

2. Draw a parallel circuit, using the correct symbols, that consists of:

- i) a three cell battery
- ii) three bulbs
- iii) a switch to turn off all bulbs

3. Distinguish between a series circuit and a parallel circuit.
