The Accordion Method Name _____

Step 1:
Combine the resistors using the correct formula until you have a simple circuit.

| **Equivalent Resistance for a Series Circuit** | **Equivalent Resistance for a Parallel Circuit** |
|---|---|
| $R_s = R_1 + R_2 + R_3$ | $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ |

Step 2:
Solve the simple circuit.

Step 3:
Go upward to each complex circuit, one at a time. In each case, follow the rule for separating resistors.

| Rule for separating two resistors in series | Rule for separating two resistors in parallel. |
|---|---|
| Two resistors in series *always have the same current*. | Two resistors in parallel *always have the same voltage (potential difference)*. |

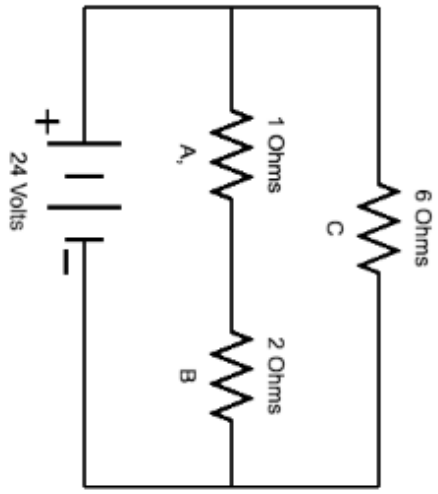
Step 4:
Solve each more complex circuit as you reach it.
Repeat.

Step 5:
Use the information you have compiled to answer the final question:

The Accordion Method Name _____

Problem 1:
Using the table below, find the power dissipated by each individual resistor and the total circuit:

Original Circuit




| | | | | |
|---|---|---|---|---|
| V | | | | |
| I | | | | |
| R | | | | |
| P | | | | |

Simpler Circuit

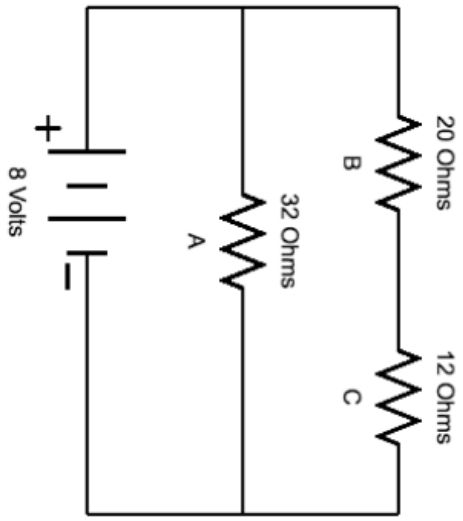
| | | | |
|---|---|---|---|
| V | | | |
| I | | | |
| R | | | |
| P | | | |

Final Answer:

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | | | | |

**Problem 2:** Using the table below, find the power dissipated by each individual resistor and the total circuit:

Original Circuit




| | | | | |
|---|---|---|---|---|
| V | | | | |
| I | | | | |
| R | | | | |
| P | | | | |

Simpler Circuit

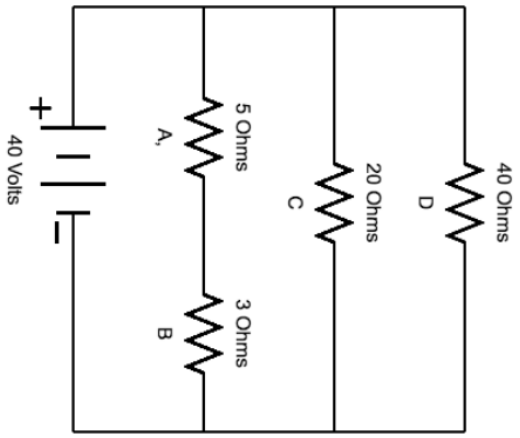
| | | | |
|---|---|---|---|
| V | | | |
| I | | | |
| R | | | |
| P | | | |

Final Answer:

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | | | | |

**Problem 3:** Using the table below, find the power dissipated by each individual resistor and the total circuit:

Original Circuit




| | | | | | | |
|---|---|---|---|---|---|---|
| V | | | | | | |
| I | | | | | | |
| R | | | | | | |
| P | | | | | | |

Simpler Circuit

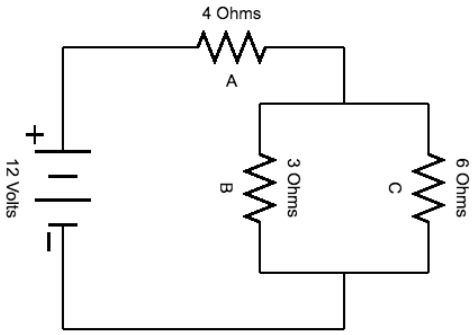
| | | | | |
|---|---|---|---|---|
| V | | | | |
| I | | | | |
| R | | | | |
| P | | | | |

Answer the final question

| | Resistor A | Resistor B | Resistor C | Resistor D | Total Circuit |
|---|---|---|---|---|---|
| Power (Watts) | | | | | |

**Problem 4:** Using the table below, find the power dissipated by each individual resistor and the total circuit:

Original Circuit




| | | | | |
|---|---|---|---|---|
| V | | | | |
| I | | | | |
| R | | | | |
| P | | | | |

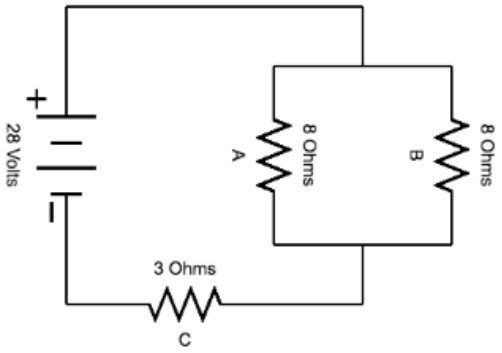
Simpler Circuit

| | | | |
|---|---|---|---|
| V | | | |
| I | | | |
| R | | | |
| P | | | |

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | | | | |

**Problem 4:**
Using the table below, find the power dissipated by each individual resistor and the total circuit:

Original Circuit




| | | | | | |
|---|---|---|---|---|---|
| V | | | | | |
| I | | | | | |
| R | | | | | |
| P | | | | | |

Simpler Circuit

| | | | | | |
|---|---|---|---|---|---|
| V | | | | | |
| I | | | | | |
| R | | | | | |
| P | | | | | |

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | | | | |

**Answers**

**1.**

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | 64 | 128 | 96 | 288 |

**2.**

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | 2 | 1.25 | 0.75 | 4 |

**3.**

| | Resistor A | Resistor B | Resistor C | Resistor D | Total Circuit |
|---|---|---|---|---|---|
| Power (Watts) | 125 | 75 | 80 | 40 | 320 |

**4.**

| | Resistor A | Resistor B | Resistor C | Total Circuit |
|---|---|---|---|---|
| Power (Watts) | 48 | 32 | 32 | 112 |