SERIES AND PARALLEL CIRCUITS

Two or more elements are in series if they exclusively share a single node and consequently carry the same current.

Two or more elements are in parallel if they are connected to the ame two nodes and consequently have the same voltage across them.

**SERIES RESISTORS AND VOLTAGE DIVISION**

Characteristics of resistors in series

1. The same current flows through them

2. The total voltage is equal to the sum of voltages across a resistor

The equivalent resistance of any number of resistors connected in series is the sum of individual resistances

To determine the voltage across each resistor

**PARALLEL RESISTORS AND CURRENT DIVISION**

Characteristics of resistors in parallel

1. They have the same voltage across them

2. The total current is equal to the sum of currents

3. Two items are in parallel if both branches/elements are connected to the same two nodes

For two resistors,

For conductances, Conductances in parallel behave as a single conductance whose value is equal to the sum of the individual conductances.

For resistors in series,

Principle of current division for resistors in parallel

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