Series Circuits

Objectives:

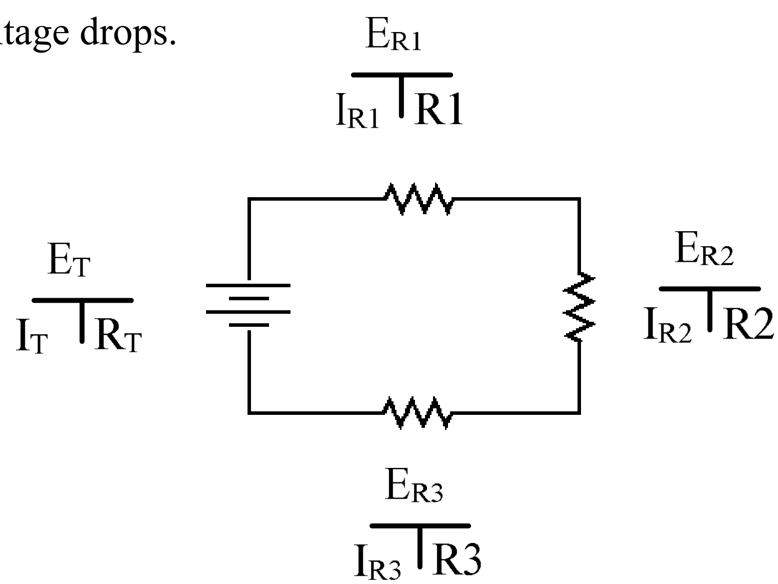
Identify a series circuit.
Calculate total resistance in a series circuit.
Calculate current in a series circuit.
Calculate voltage drops across resistance.
Measure current values in a series circuit.
Measure voltage drops in a series circuit.

Series Circuit: Circuit with only one path for current to flow.

Total Resistance: Sum of all resistors.
$R_T = R1 + R2 + R3 + ...$

Total Current: Same throughout the circuit path.
$I_T = I_{R1} = I_{R2} = I_{R3} = ...$

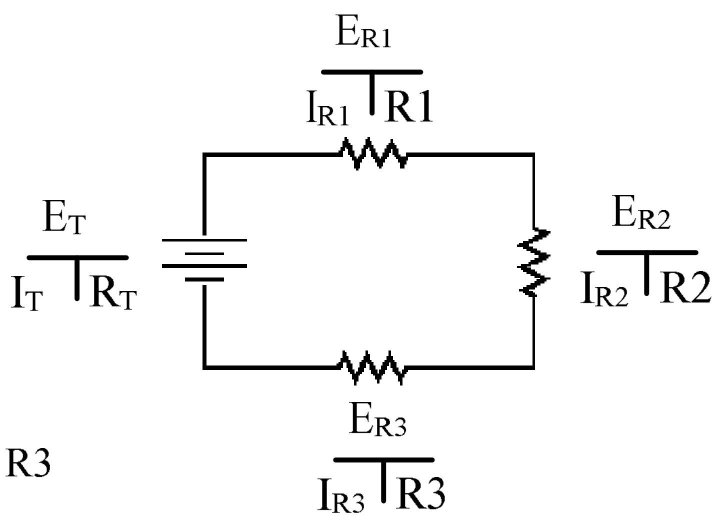
Total Voltage: Sum of all voltage drops.
$V_T = V_{R1} + V_{R2} + V_{R3} + ...$



$R_T = R1 + R2 + R3 + \ldots$

$I_T = I_{R1} = I_{R2} = I_{R3} = \ldots$

$V_T = V_{R1} + V_{R2} + V_{R3} + \ldots$



Step 1. Find $R_T = R1 + R2 + R3$

Step 2. Find $I_T = \dfrac{E_T}{R_T}$

Step 3. Find Voltage Drops

$E_{R1} = I_{R1} \text{ X } R1$

$E_{R2} = I_{R2} \text{ X } R2$

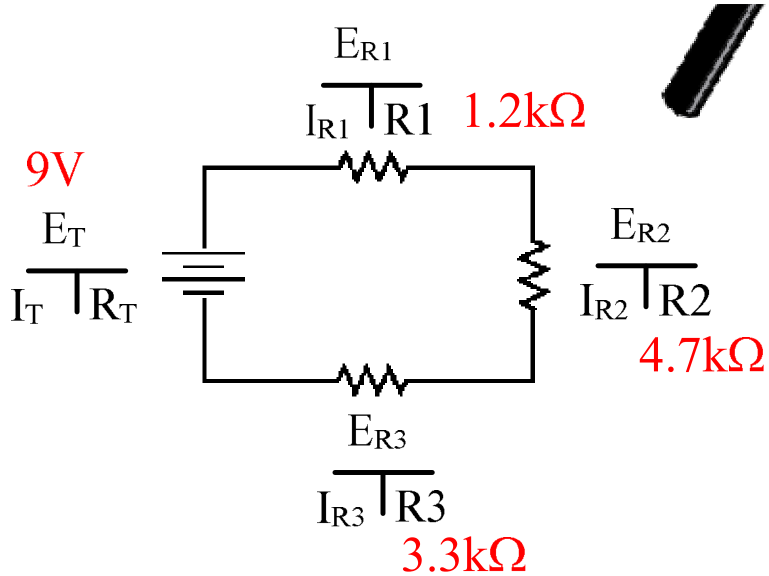
$E_{R3} = I_{R3} \text{ X } R3$

	V	I	R
Short	0V	Max	0Ω
Open	Max	0A	∞

$R_T = R1 + R2 + R3 + \ldots$

$I_T = I_{R1} = I_{R2} = I_{R3} = \ldots$

$V_T = V_{R1} + V_{R2} + V_{R3} + \ldots$



Step 1. Find R_T =

Step 2. Find I_T =

Step 3. Find Voltage Drops

E_{R1} =

E_{R2} =

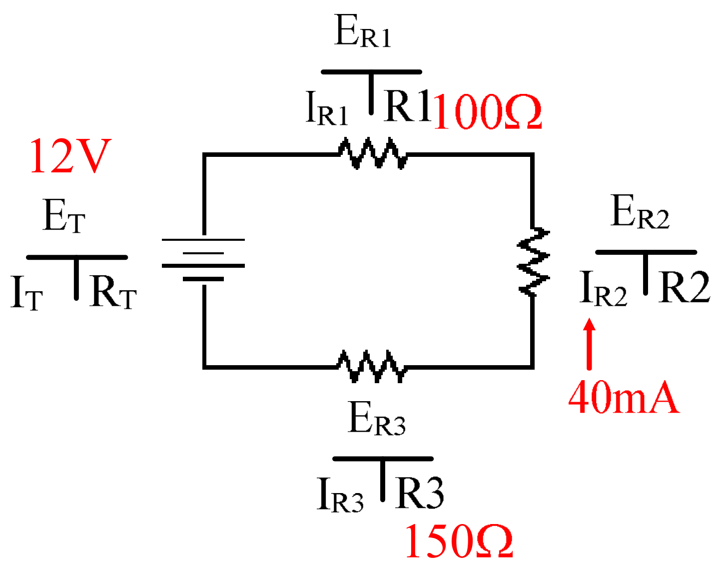
E_{R3} =

	V	I	R
Short	0V	Max	0Ω
Open	Max	0A	∞

$R_T = R1 + R2 + R3 + \ldots$

$I_T = I_{R1} = I_{R2} = I_{R3} = \ldots$

$V_T = V_{R1} + V_{R2} + V_{R3} + \ldots$



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Step 2. Find I_T =

Step 3. Find Voltage Drops

E_{R1} =

E_{R2} =

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	V	I	R
Short	0V	Max	0Ω
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