Circuit Notes  
[What is a Circuit?](https://www.youtube.com/watch?v=VnnpLaKsqGU)

What is a circuit? A route through which an electrical current can flow.

What is a closed circuit? A complete, unbroken path in which electrons can flow.

What is a short circuit? When there is a break in the circuit and electrons take a path short of the complete circuit. Electricity will follow the path of least resistance.

[Types of Electrical Circuits:](https://www.youtube.com/watch?v=RQ3djos_LY8)

What is a series circuit? When lights (resistors) are lined up one after another on a circuit. When one light goes out, all lights go out because there is only one path for electrons to flow.

What is a parallel circuit? The wires and light bulbs (resistors) run parallel to each other rather than having all the bulbs in a row. This creates multiple pathways for the electrons to flow. If one light bulb goes out, the others will stay on since the electrons can continue to flow.

[Solving for a Series circuit:](https://www.youtube.com/watch?v=LECvF5VCz1w&t=55s)

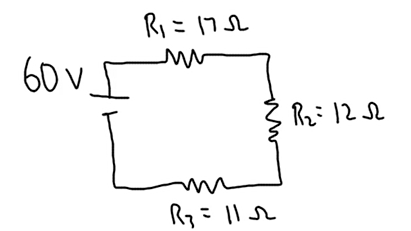
Rules when solving for Series circuits:

Resistance: Add up all of the resistors. RT = R1 + R2 + R3…

Current: Current stays the same at each resistor IT = I1 = I2 = I3…

Voltage: Add up to get total voltage ΔVT =ΔV1+ ΔV2 + ΔV3…

Ohm’s Law is V=IR



Be able to fill in chart and solve for each missing piece of the circuit:

Given information in diagram is in Green  
Solved information is diagram is in Blue

|  |  |  |
| --- | --- | --- |
| RT= 40 Ω | IT= 1.5 A | VT= 60 V |
| R1= 17 Ω | I1= 1.5 A | V1= 25.5 V |
| R2= 12 Ω | I2= 1.5 A | V2= 18 V |
| R3= 11 Ω | I3= 1.5 A | V3=16.5 V |

To solve for RT, add 17 Ω +12 Ω +11 Ω = 40 Ω

To solve for total current:

V=IR

60V = I (40 Ω)

I = 1.5A

In a series circuit, current is the same at each location.

To solve for Voltage drop at each resistor:

To solve for voltage drop at resistor 1:

V1 = I1R1

V1 = (1.5A)(17 Ω)

V1 = 25.25 V

To solve for voltage drop at resistor 2:

V2 = I2R2

V2 = (1.5A)(12 Ω)

V2 = 18 V

To solve for voltage drop at resistor 3:

V3 = I3R3

V3 = (1.5A)(12 Ω)

V3 = 16.5 V