

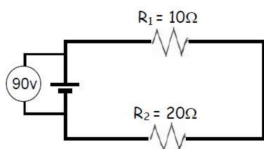
Name \_\_\_\_\_  
 Regents Physics

Unit 11: Electricity  
 Mr. Mellon

### SERIES CIRCUIT PRACTICE

Remember that in a series circuit:

- the **current** in every part of the circuit the same.
- the **voltage** supplied by the battery is the **TOTAL** voltage of the circuit, and the voltage drops across each resistor adds up to the total voltage.
- the total resistance (equivalent resistance) is equal to the sum of each of the resistors



$$R_T = 30\Omega \quad I_T = 3A$$

$$I_1 = 3A \quad I_2 = 3A$$

$$V_1 = 30V \quad V_2 = 60V$$

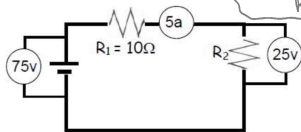
$$R = \frac{V}{I}$$

	V	I	R	P
1	30V	3A	10Ω	
2	60V	3A	20Ω	
T	90V	3A	30Ω	

$$R_T = R_1 + R_2 = 10\Omega + 20\Omega = 30\Omega$$

$$R = \frac{V}{I} \Rightarrow I_T = \frac{V_T}{R_T} = \frac{90V}{30\Omega} = 3A$$

$$R = \frac{V}{I} \Rightarrow V_1 = R_1 I_1 = (10\Omega)(3A) = 30V$$

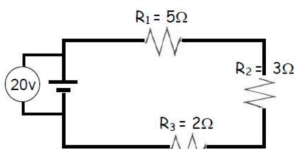


$$V_1 = 50V \quad I_2 = 5A \quad R_2 = 5\Omega$$

	V	I	R	P
1	50V	5A	10Ω	
2	25V	5A	5Ω	
T	75V	5A		

$$V_1 = I_1 R_1 = 5A(10\Omega) = 50V$$

$$R_2 = \frac{V_2}{I_2} = \frac{25V}{5A} = 5\Omega$$



$$R_T = 10\Omega \quad I_T = 2A$$

$$V_1 = 10V \quad V_2 = 6V \quad V_3 = 4V$$

	V	I	R	P
1	10V	2A	5Ω	
2	6V	2A	3Ω	
3	4V	2A	2Ω	
T	20V	2A	10Ω	

$$R_T = R_1 + R_2 + R_3$$

$$R_T = 5\Omega + 3\Omega + 2\Omega$$

$$R_T = 10\Omega$$

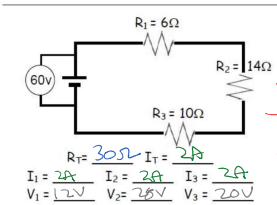
$$I_T = \frac{V_T}{R_T} = \frac{20V}{10\Omega} = 2A$$

$$V_1 = I_1 R_1 = (2A)(5\Omega) = 10V$$

$$V_2 = I_2 R_2 = (2A)(3\Omega) = 6V$$

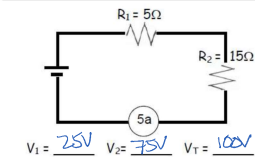
$$V_3 = I_3 R_3 = (2A)(2\Omega) = 4V$$

Unit 11 Work Packet: pg. 15



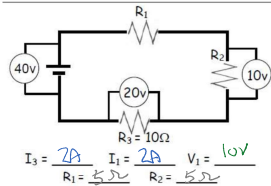
	V	I	R	P
1	12V	2A	6Ω	
2	28V	2A	14Ω	
3	20V	2A	10Ω	
T	60V	2A	30Ω	

$R_T = 6\Omega + 14\Omega + 10\Omega$   
 $R_T = 30\Omega$   
 $I_T = \frac{V_T}{R_T} = \frac{60V}{30\Omega} = 2A$   
 $V_1 = I_1 R_1 = (2A)(6\Omega) = 12V$



	V	I	R	P
1	25V	5A	5Ω	
2	75V	5A	15Ω	
T	100V	5A		

$V_1 = I_1 R_1 = (5A)(5\Omega) = 25V$   
 $V_2 = I_2 R_2 = (5A)(15\Omega) = 75V$   
 $V_T = V_1 + V_2 = 25V + 75V = 100V$



	V	I	R	P
1	10V	2A	5Ω	
2	10V	2A	5Ω	
3	20V	2A	10Ω	
T	40V	2A	20Ω	

$I_3 = \frac{V_3}{R_3} = \frac{20V}{10\Omega} = 2A$   
 $V_T = V_1 + V_2 + V_3$   
 $40V = V_1 + (10V) + (20V)$   
 $V_1 = 10V$   
 $R_1 = \frac{V_1}{I_1} = \frac{10V}{2A} = 5\Omega$   
 $R_2 = \frac{V_2}{I_2} = \frac{10V}{2A} = 5\Omega$