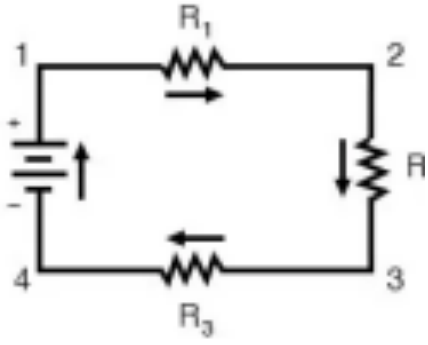
Series

In a series circuit there is only one path for the current to flow.

The current is the same everywhere in the path.



$$I_0 = I_1 = I_2 = I_3$$

The total resistance of the circuit is the sum of all the resistances.

$$R_T = R_1 + R_2 + R_3$$

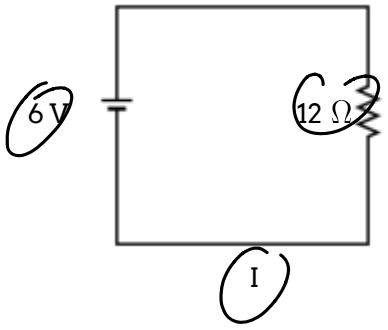
The total voltage drop equals the voltage supplied by the power source.

$$V_T = V_1 + V_2 + V_3$$

Determine I if the power supply is set to 6 V and the resistance is

$V = IR$

$P = IV$



$6 = I\,12$

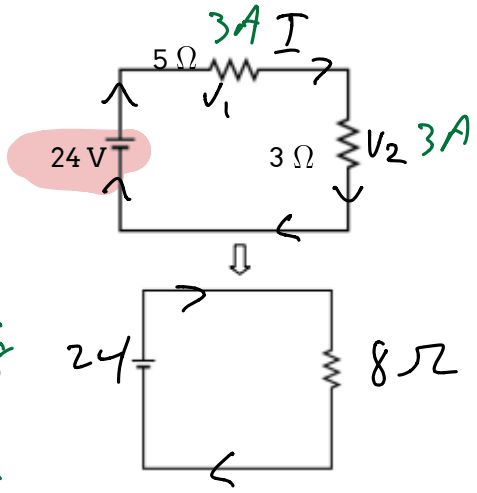
$\frac{6}{12} = I$

$.5A = I$

Determine I, V_1 and V_2 if the power supply is set to 24 V and R_1 is 5 Ω

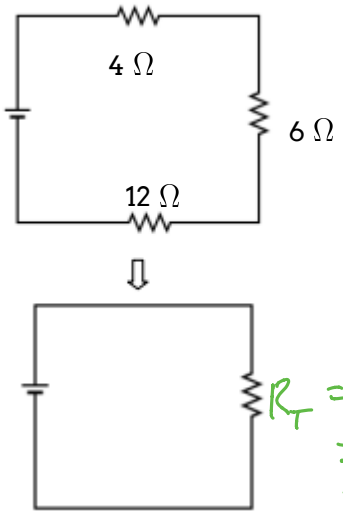
$V_1 = IR$
$= 3(5)$
$= 15\ V$

$V_2 = IR$
$= 3(3)$
$= 9\ V$



$V = IR$
$24 = I\,8$
$\frac{24}{8} = I$
$3A = I$

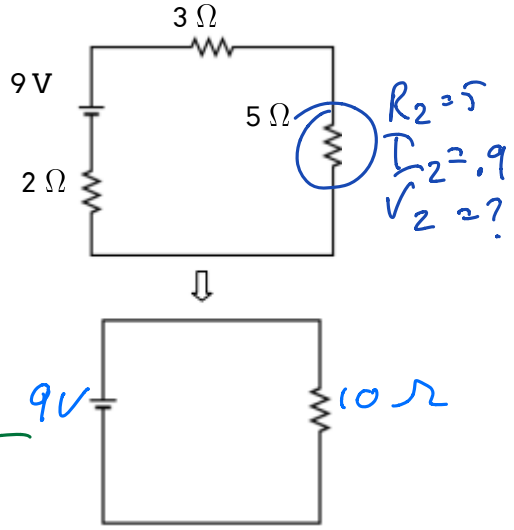
Determine the total voltage if the current is 2 A and R_1 is 4 Ω, R_2 is 6 Ω and R_3 is 12 Ω.



$V = IR$
$= 2(22)$
$= 44\ V.$

$R_T = 4 + 6 + 12$
$= 10 + 12$
$= 10 + 10 + 2$
$= 20 + 2$
$= 22\ \Omega$

Determine the Power in R_2.
$R_1 = 3\ \Omega, R_2 = 5\ \Omega, R_3 = 2\ \Omega$, Battery = 9 V



$P = IV$ $\quad V = IR$
$9 = I\,10$
$\frac{9}{10} = I$
$.9A = I$

$P = .9(9)$
$= 8.1\ W$

P in R_T

$V = IR$
$= .9(5)$
$V_2 = 4.5$

$P = IV$
$= .9(4.5)$
$= 4.05\ W$