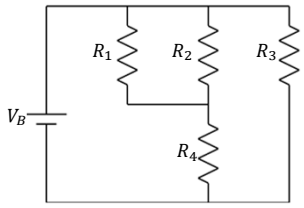
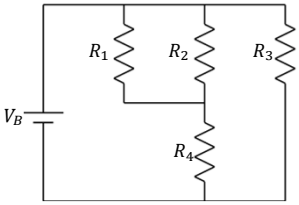
Example: Consider the given circuit.
(a) Determine the total (equivalent) resistance.
(b) Determine the total current.
(b) Determine the potential difference across each resistor.
(c) Determine the current through each resistor.



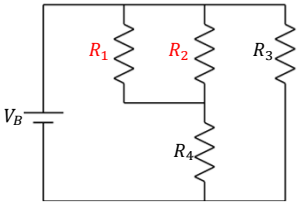
$R_1 = 75\Omega$
$R_2 = 50\Omega$
$R_3 = 80\Omega$
$R_4 = 90\Omega$
$V_B = 24\text{V}$

Example



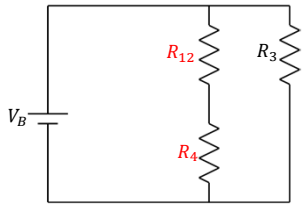
	I (A)	R (Ω)	V (V)
1		75	
2		50	
3		80	
4		90	
Total			24

Example



	I (A)	R (Ω)	V (V)
1		75	
2		50	
3		80	
4		90	
Total			24

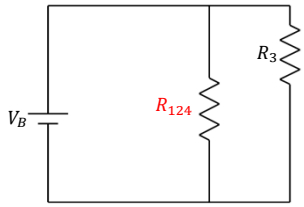
Example



	I (A)	R (Ω)	V (V)
1		75	
2		50	
3		80	
4		90	
Total			24

$R_{12} = 30\Omega$

Example

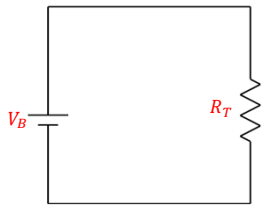


	I (A)	R (Ω)	V (V)
1		75	
2		50	
3		80	
4		90	
Total			24

$R_{12} = 30\Omega$

$R_{124} = 120\Omega$

Example

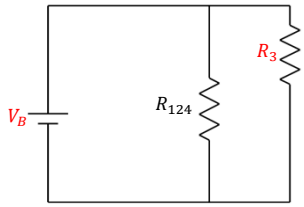


	I (A)	R (Ω)	V (V)
1		75	
2		50	
3		80	
4		90	
Total		48	24

$R_{12} = 30\Omega$

$R_{124} = 120\Omega$

Example

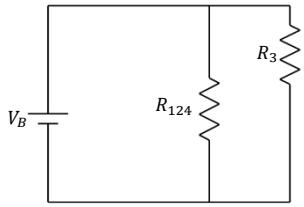


	I (A)	R (Ω)	V (V)
1		75	
2		50	
3		80	
4		90	
Total	0.5	48	24

$R_{12} = 30\Omega$

$R_{124} = 120\Omega$

Example

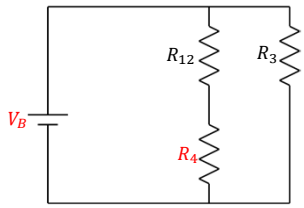


	I (A)	R (Ω)	V (V)
1		75	
2		50	
3	0.3	80	24
4		90	
Total	0.5	48	24

$R_{12} = 30\Omega$

$R_{124} = 120\Omega$

Example



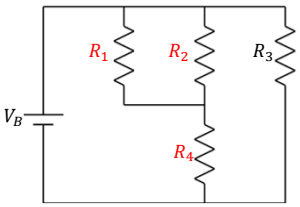
	I (A)	R (Ω)	V (V)
1		75	
2		50	
3	0.3	80	24
4	0.2	90	18
Total	0.5	48	24

$R_{12} = 30\Omega$

$R_{124} = 120\Omega$

$I_{124} = 0.2\text{A}$

Example

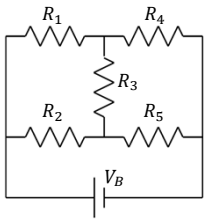


	I (A)	R (Ω)	V (V)
1	0.08	75	6
2	0.12	50	6
3	0.3	80	24
4	0.2	90	18
Total	0.5	48	24

$R_{12} = 30\Omega$

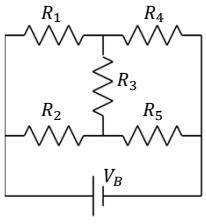
$R_{124} = 120\Omega$

Example: Consider the given circuit.
(a) Determine the total (equivalent) resistance.
(b) Determine the total current.
(b) Determine the potential difference across each resistor.
(c) Determine the current through each resistor.

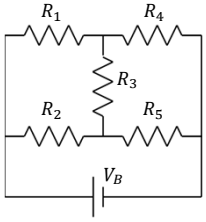


$V_B = 50\text{V}$
$R_1 = 30\Omega$
$R_2 = 90\Omega$
$R_3 = 40\Omega$
$R_4 = 52\Omega$
$R_5 = 20\Omega$

Example



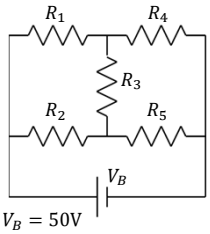
Example



Resistors are neither connected in series nor parallel. Apply Kirchhoff's rules.

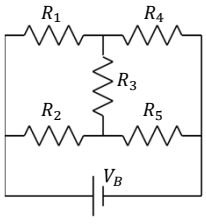
- Loop Rule: $\sum \Delta V = 0$
- Junction Rule: $\sum I = 0$ or $\sum I_{in} = \sum I_{out}$

Example



$V_B = 50\text{V}$
$R_1 = 30\Omega$
$R_2 = 90\Omega$
$R_3 = 40\Omega$
$R_4 = 52\Omega$
$R_5 = 20\Omega$

Example



$I_1 = 0.8\text{A}$
$I_2 = 0.4\text{A}$
$I_3 = 0.3\text{A}$
$I_4 = 0.5\text{A}$
$I_5 = 0.7\text{A}$
$I_T = 1.2\text{A}$

$R_1 = 30\Omega$
$R_2 = 90\Omega$
$R_3 = 40\Omega$
$R_4 = 52\Omega$
$R_5 = 20\Omega$
$R_T = 42\Omega$

$V_1 = 24\text{V}$
$V_2 = 36\text{V}$
$V_3 = 12\text{V}$
$V_4 = 26\text{V}$
$V_5 = 14\text{V}$
$V_B = 50\text{V}$