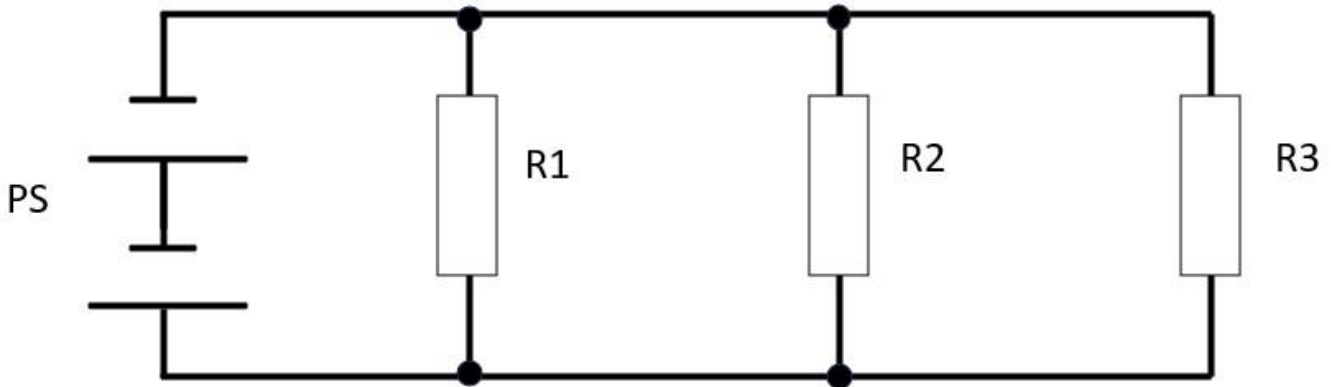


Lesson 4 - Answers

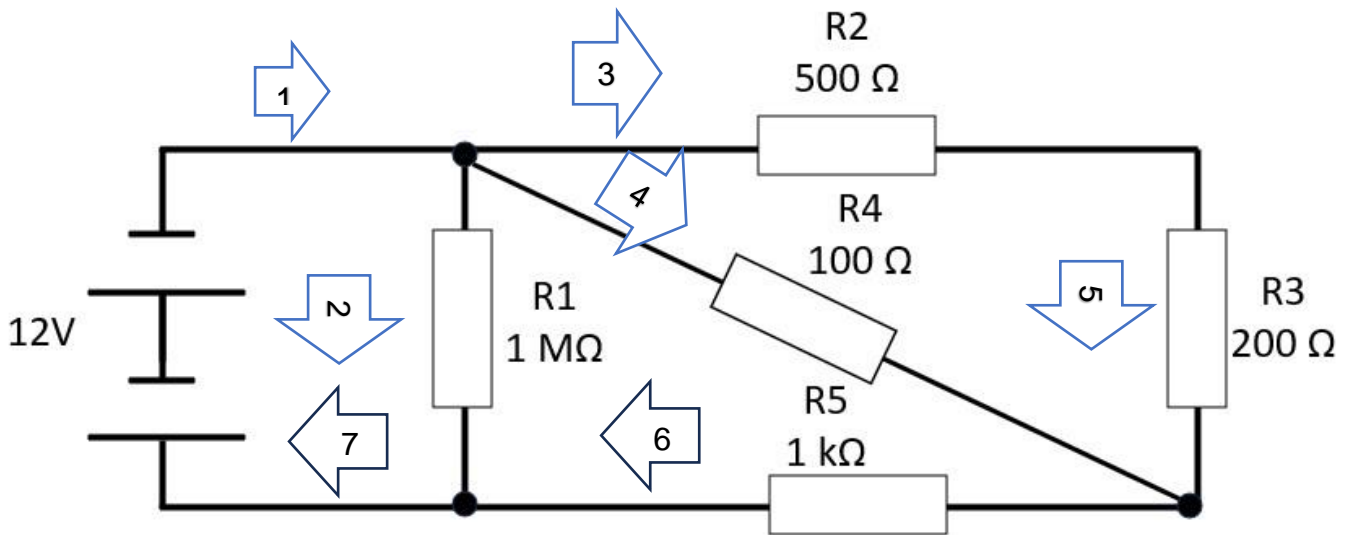
Q1. Refer to Figure 1 and calculate the currents and populate Table 1 with the results.



Question	PS	R1	R2	R3
1	10 V	100 Ω	100 Ω	100 Ω
2	15 V	10 M Ω	5 M Ω	1 M Ω
3	100 V	1 K Ω	20 Ω	1 k Ω

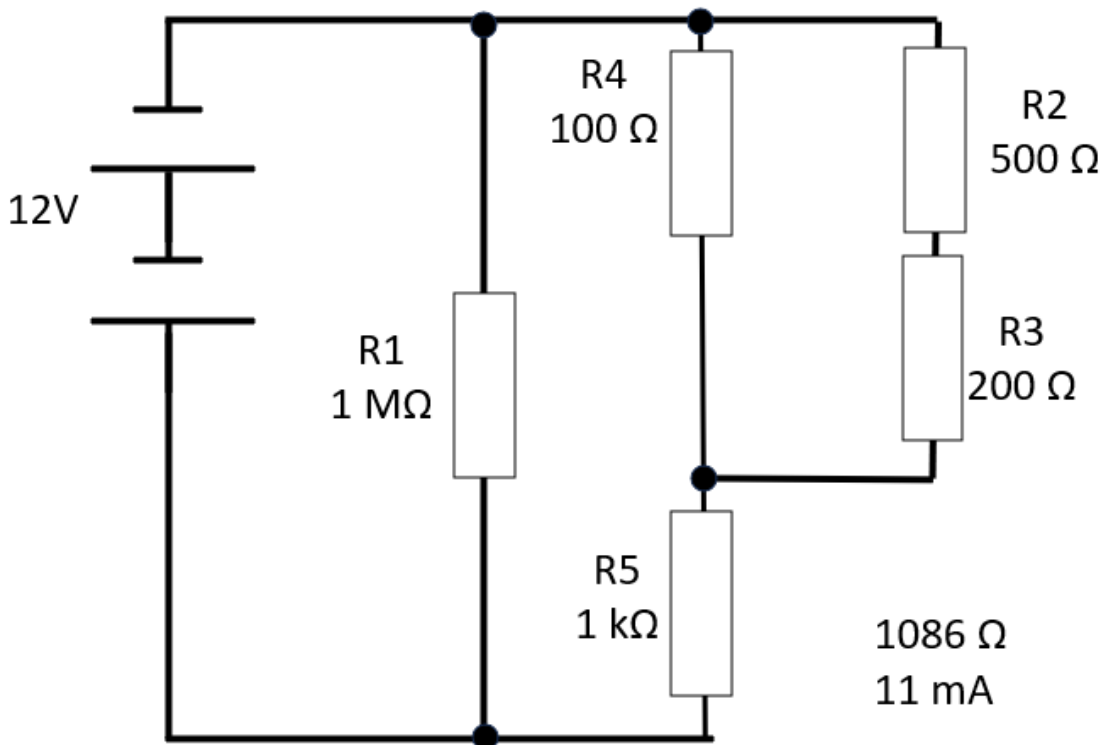
$I_{Total In}$	I_{R1}	I_{R2}	I_{R3}	$I_{Total Out}$
0.33 A	0.11 A	0.11 A	0.11 A	0.33 A
19 μA	1.5 μA	3 μA	15 μA	19.5 μA (Rounding)
5.2 A	0.1 A	5 A	0.1 A	5.2 A

Q2 Prove Kirchhoff's current law.

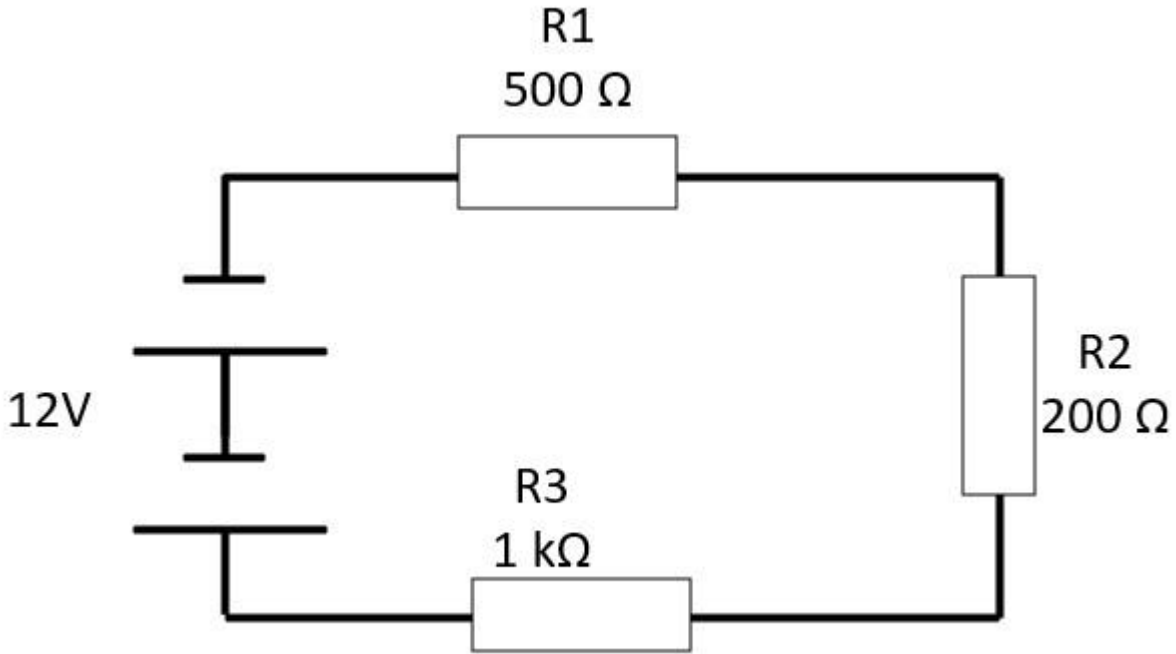


Hint: Redraw the equivalent circuit.

1	2	3	4	5	6	7
11 mA	12 μ A	9.6 mA	1.4 mA	9.6 mA	10 mA	11 mA



Q3



V in	V R1	V R2	V R3	V Total
12 V	3.53 V	1.4 V	7 V	11.93 V Rounding

7 mA

Q4 Now

PS = 100 V

R1 = 100 Ω

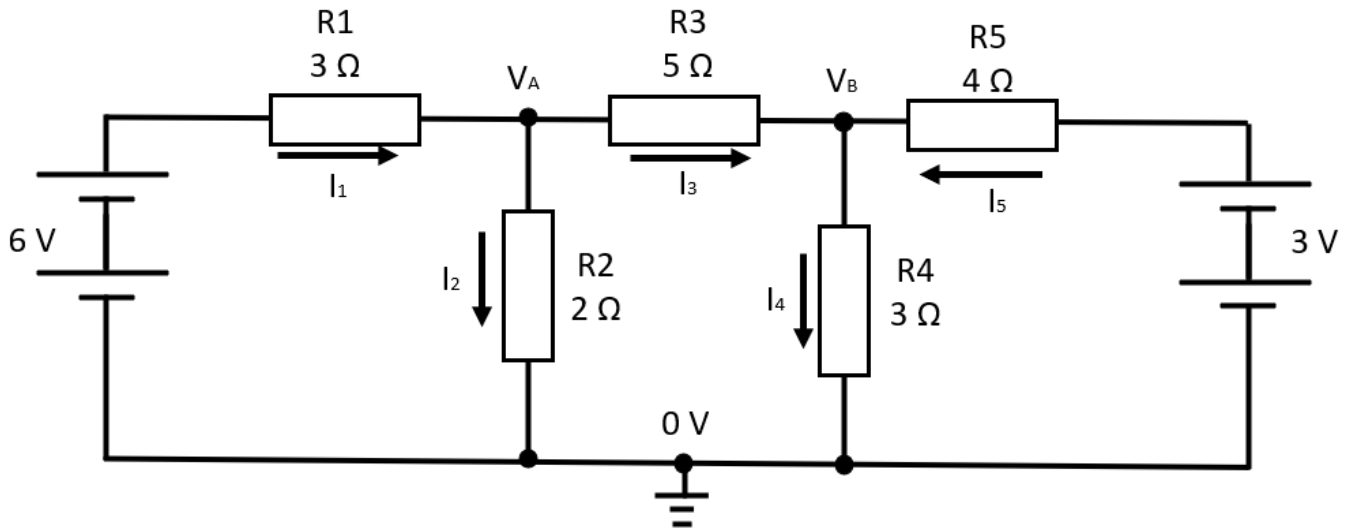
R2 = 1 kΩ

R3 = 500 Ω

V in	V R1	V R2	V R3	V Total
100 V	6.25 V	62.5 V	31.25	100 V
62.5 mA				

Q5 Solve for the following. (Nodal analysis is not required for the Advanced licence but try it anyway.)

VA	VB	I1	I2	I3	I4	I5

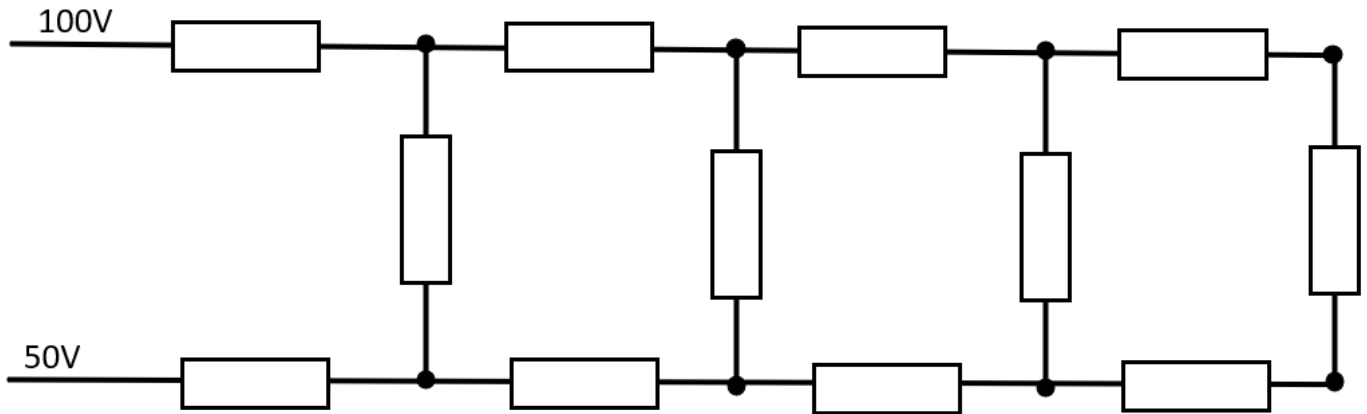


[Click on here to see the calculations](#)

Q6

Calculate R_{Total} and I_{Total}

All resistors are $1k\Omega$



$R_{total} = 2732.1 \Omega$

$I_{Total} = 18 \text{ mA}$

