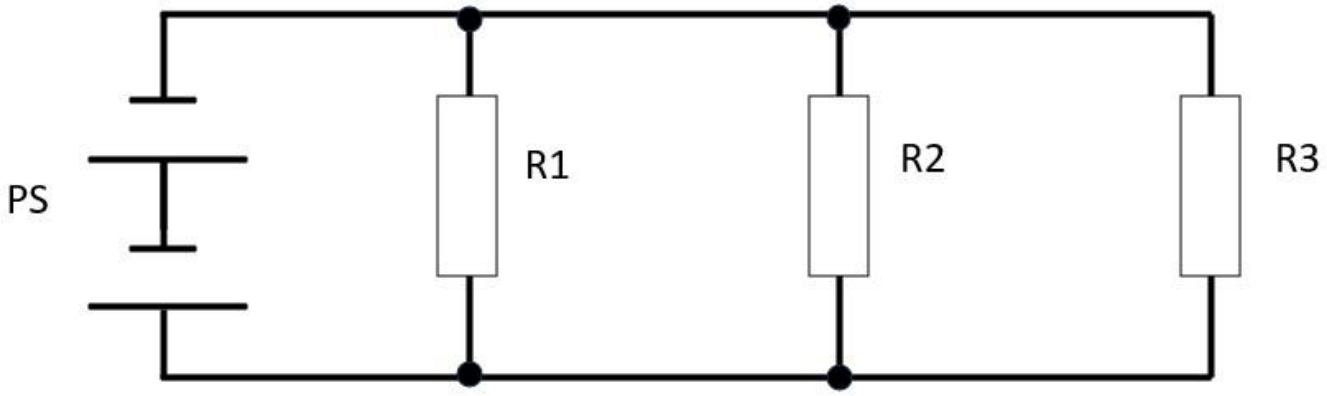
Standard

Lesson 4 - Answers

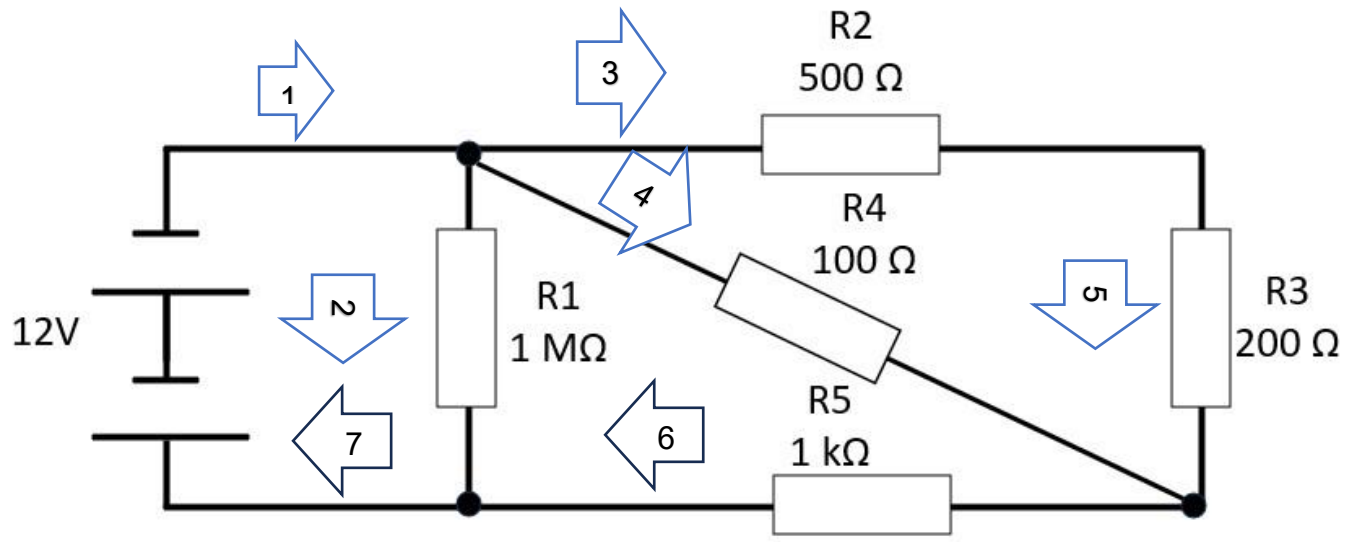
Q1. Refer to Figure 1 and calculate the currents and populate Table 1 with the results.



Question	PS	R1	R2	R3
1	10 V	100 Ω	100 Ω	100 Ω
2	15 V	10 MΩ	5 MΩ	1 MΩ
3	100 V	1 KΩ	20 Ω	1 kΩ

$I_{Total}\ In$	I_{R1}	I_{R2}	I_{R3}	$I_{Total}\ Out$
0.3A	**0.1 A**	**0.1 A**	**0.1 A**	**0.3A**
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.



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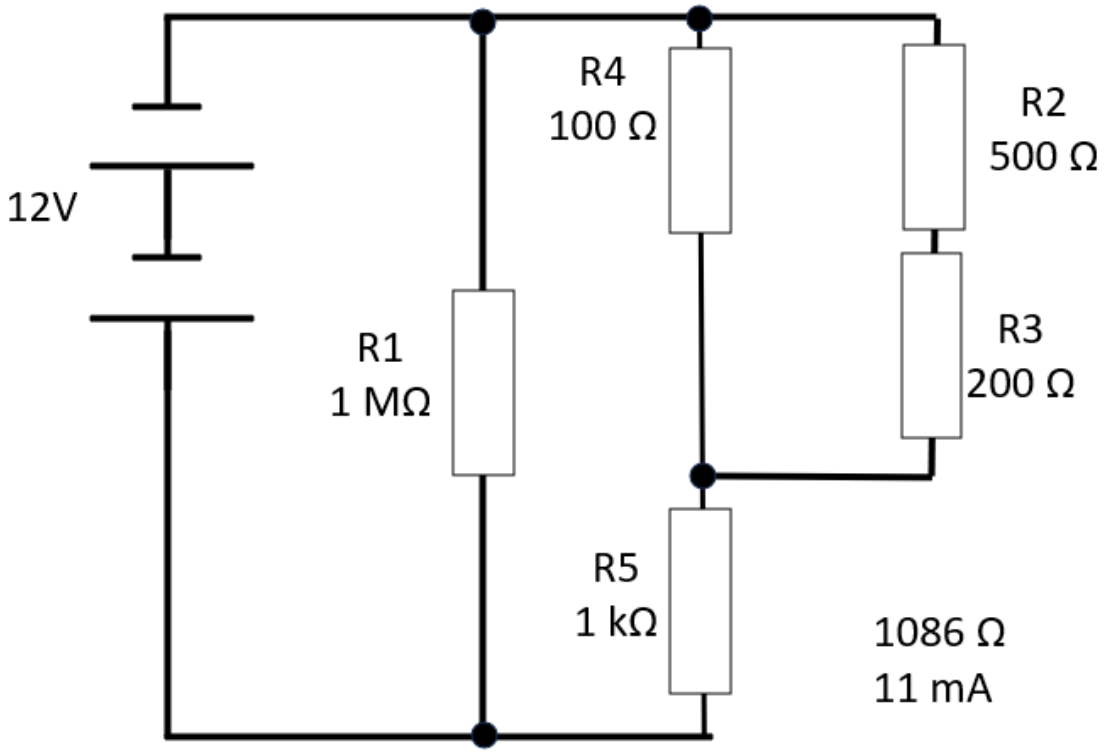
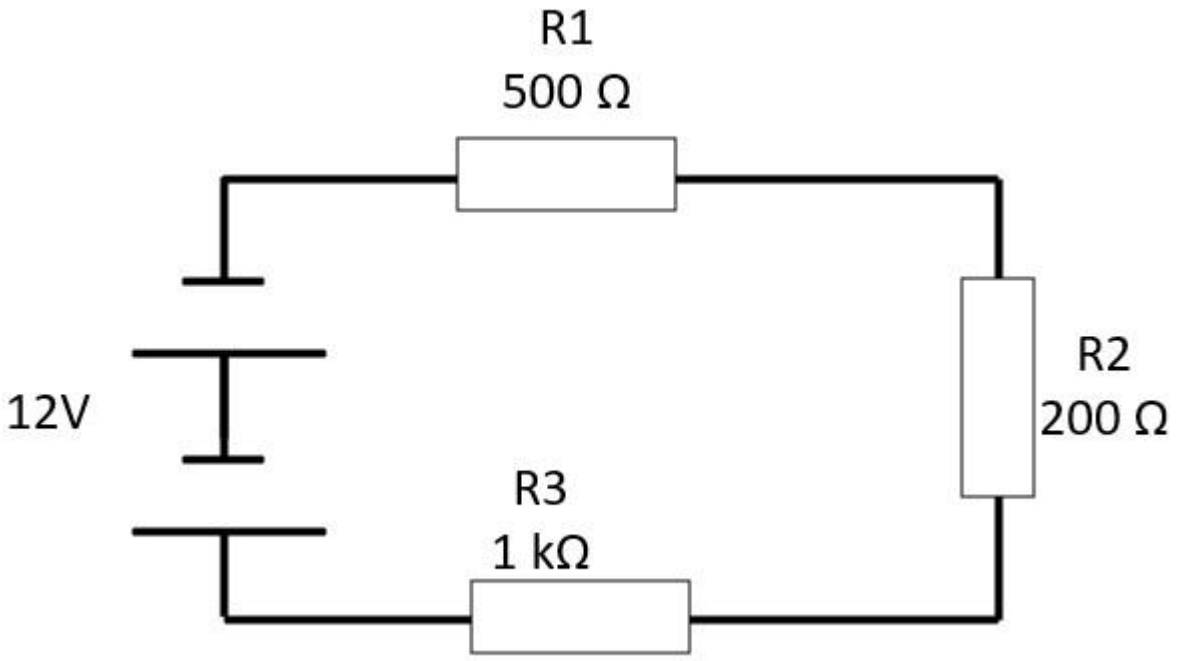
Hint: Redraw the equivalent circuit.

1	2	3	4	5	6	7
11 mA	**12 µA**	**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**

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7 mA

Q4 Now

PS = 100 V

R1 = 100 Ω

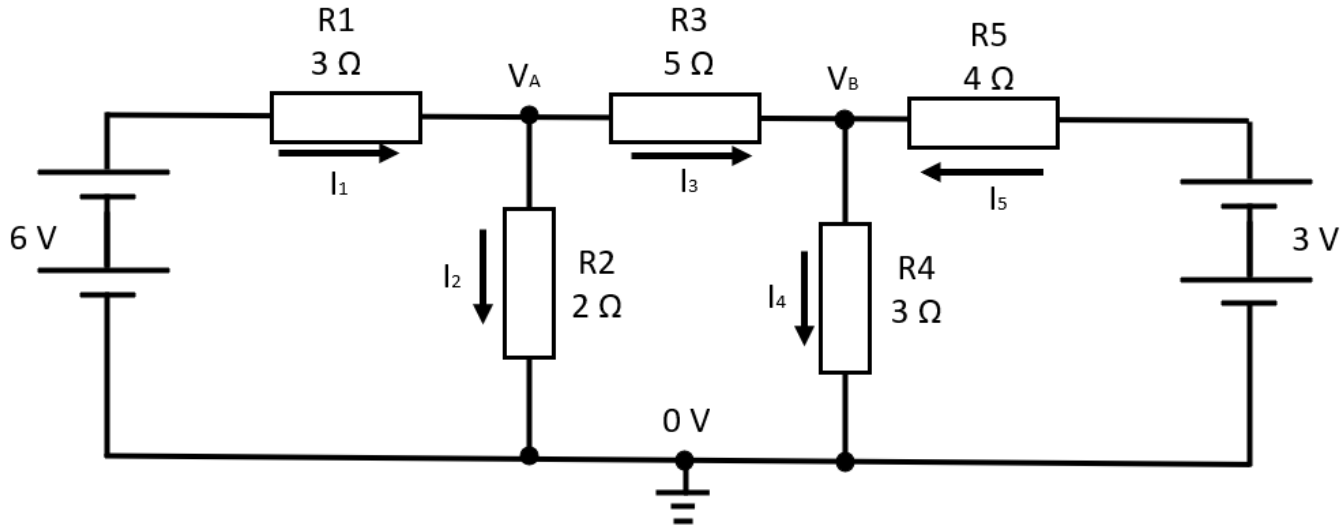
R2 = 1 kΩ

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**



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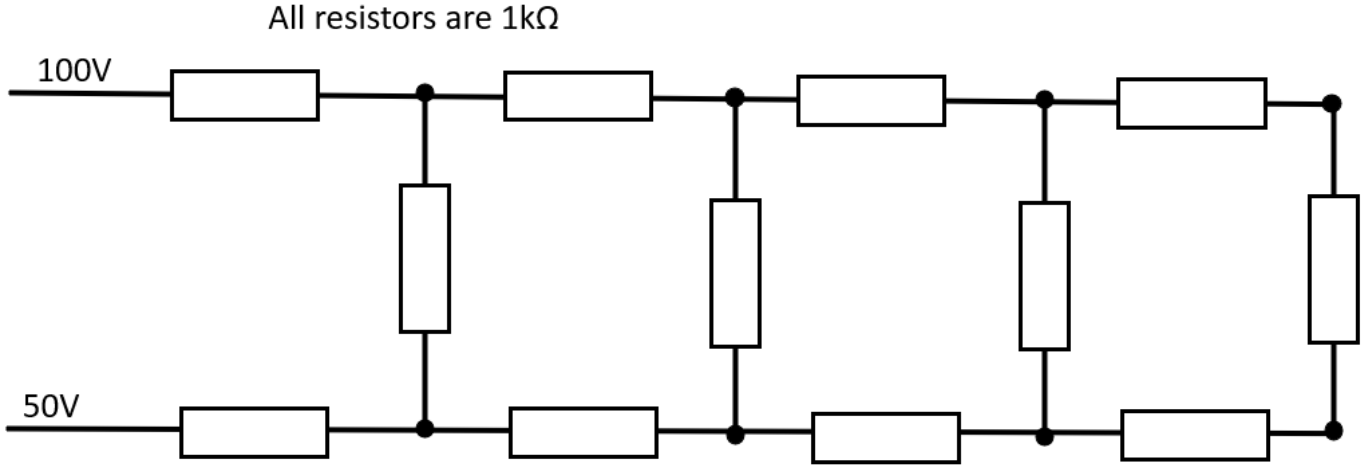
Q6

Calculate RTotal and I_{Total}



R total = 2732.1 Ω

I Total = 18 mA

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