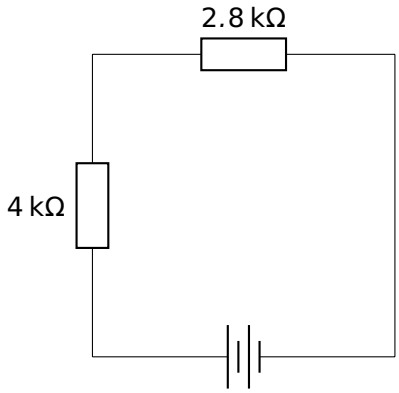
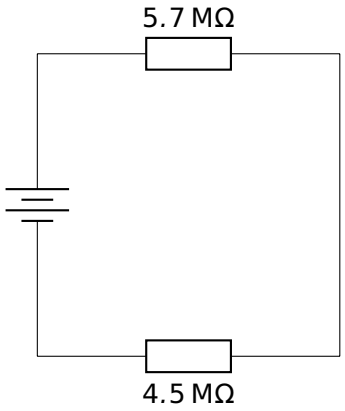
Calculate the total resistance in each of the following circuits;

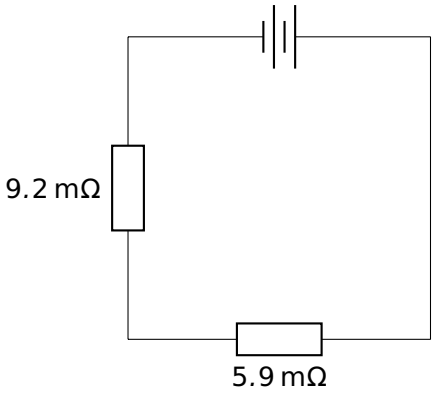
1)



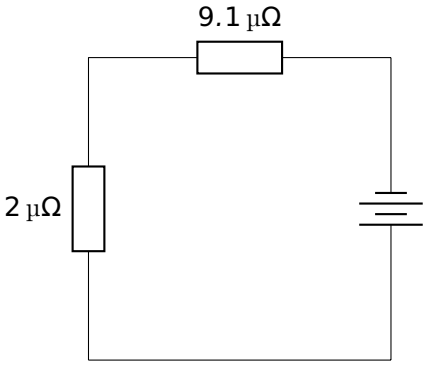
2)



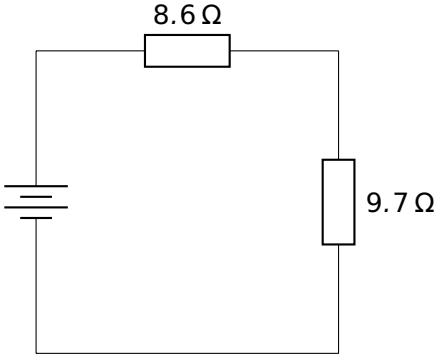
3)



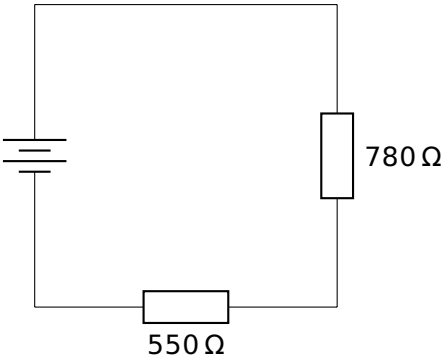
4)



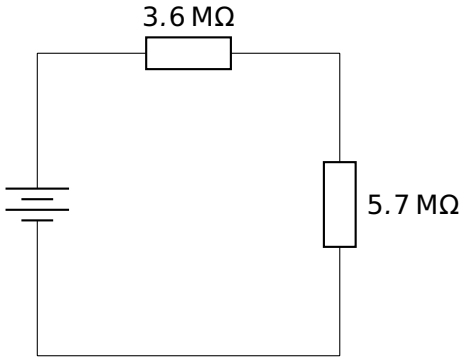
5)



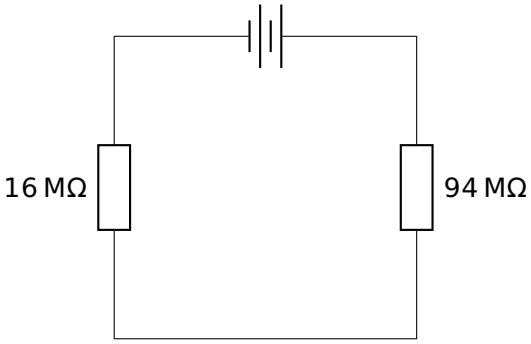
6)



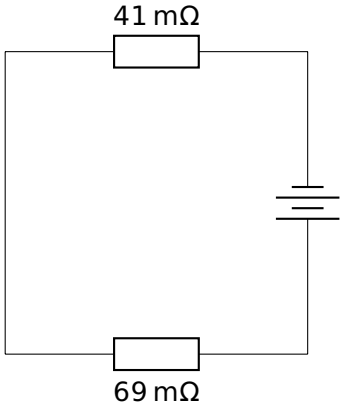
7)



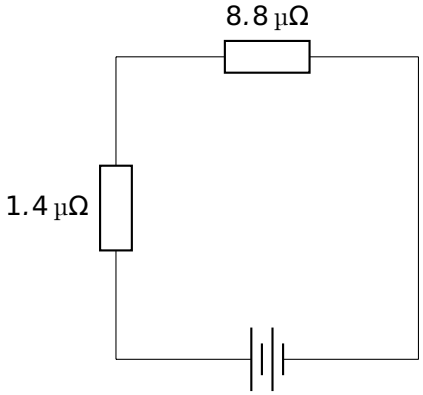
8)



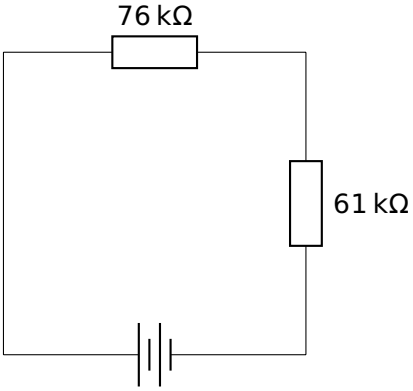
9)



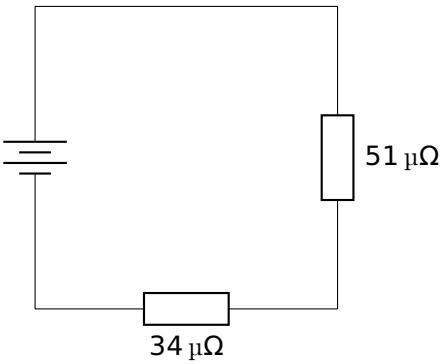
10)



11)



12)



Answers

1) $R = 6.8\,\text{k}\Omega$
2) $R = 10\,\text{M}\Omega$
3) $R = 15\,\text{m}\Omega$
4) $R = 11\,\mu\Omega$
5) $R = 18\,\Omega$
6) $R = 1.3\,\text{k}\Omega$
7) $R = 9.3\,\text{M}\Omega$
8) $R = 110\,\text{M}\Omega$
9) $R = 110\,\text{m}\Omega$
10) $R = 10\,\mu\Omega$
11) $R = 140\,\text{k}\Omega$
12) $R = 85\,\mu\Omega$