

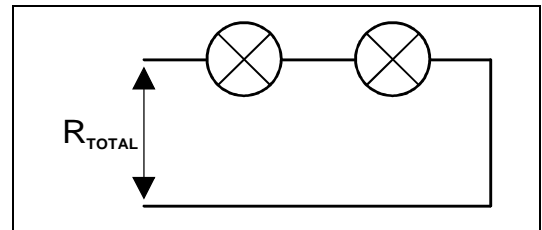
# RESISTORS in SERIES and PARALLEL

To work out resistances in series:  $R_T = R_1 + R_2 + \dots$

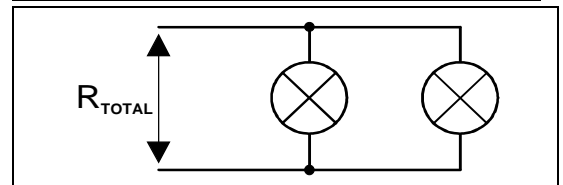
To work out resistances in parallel:  $R_T = \frac{R_1 \times R_2}{R_1 + R_2}$  or

when there are more than 2 in parallel:  $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots$

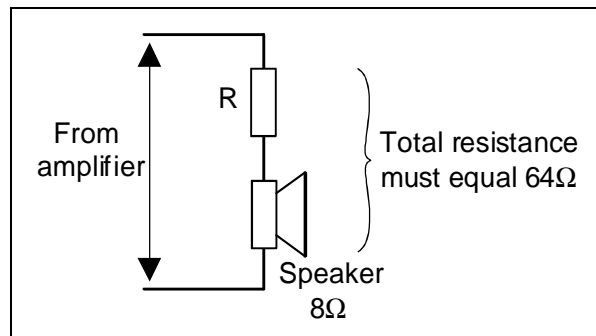
Q1/ The following light bulbs have a resistance of  $10\Omega$ . When they are wired together in series what is the total resistance  $R_{TOTAL}$  ?



If the bulbs are now wired in parallel, what will be the value of  $R_{TOTAL}$  ?

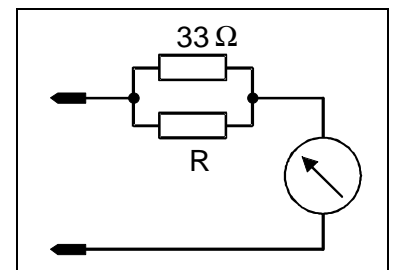
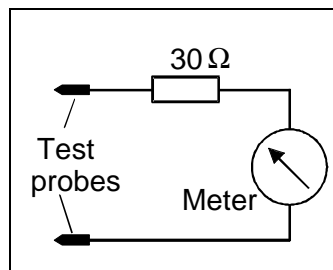


Q2/ In the diagram is a circuit to connect a speaker to an amplifier. The amplifier must have a load resistance of  $64\Omega$ , but the speaker is only  $8\Omega$ . What value must the resistor R be to produce a total of  $64\Omega$  ?

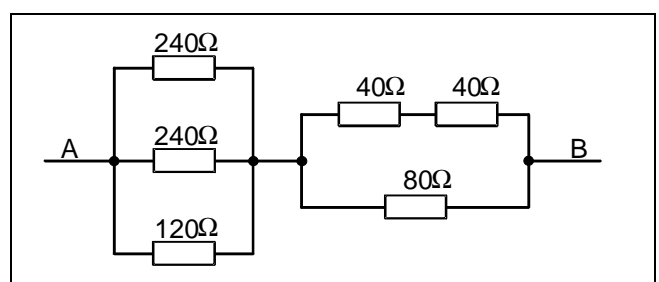


Q3/ A meter needs to have a  $30\Omega$  resistor in series with it. The nearest preferred value is  $33\Omega$ .

What value must resistor R equal when in parallel with the other, to produce a total resistance of  $30\Omega$  ?



Q4/ Try and work out the total resistance of this network between A & B ?



## **Answers**

Q1/ a) 20 ohms  
b) 5 ohms

Q2/ 56 ohms

Q3/ 330ohms

Q4/ 10 ohms