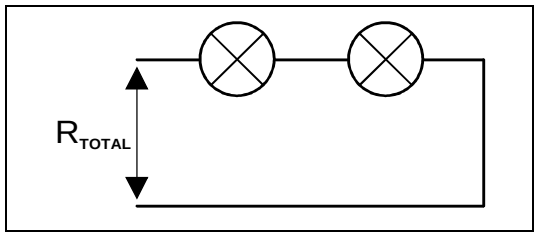
# RESISTORS in SERIES and PARALLEL

To work out resistances in series: $R_T = R1 + R2 + .....$

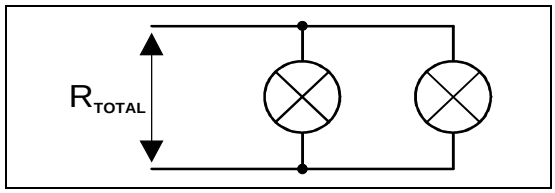
To work out resistances in parallel: $R_T = \frac{R1 \times R2}{R1 + R2}$ or

when there are more than 2 in parallel: $\frac{1}{R_T} = \frac{1}{R1} + \frac{1}{R2} + \frac{1}{R3} .....$

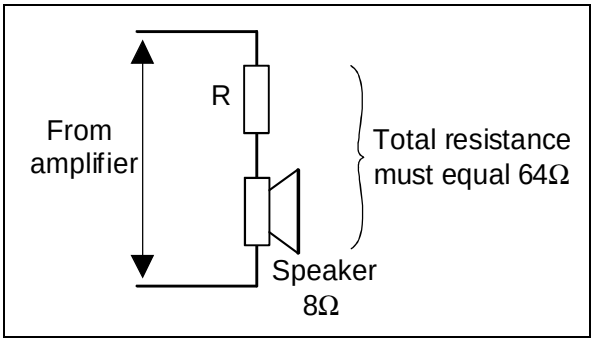
Q1/ The following light bulbs have a resistance of 10Ω. When they are wired together in series what is the total resistance $R_{TOTAL}$ ?




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

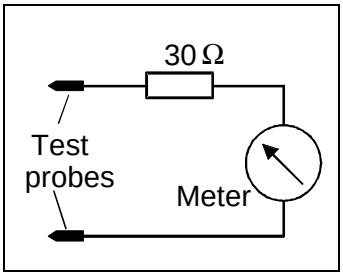


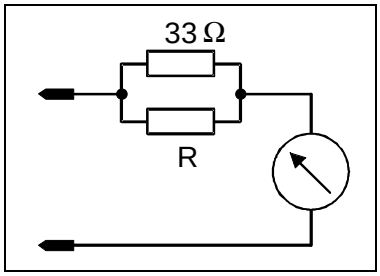

Q2/ In the diagram is a circuit to connect a speaker to an amplifier.
The amplifier must have a load resistance of 64Ω, but the speaker is only 8Ω.
What value must the resistor R be to produce a total of 64Ω ?



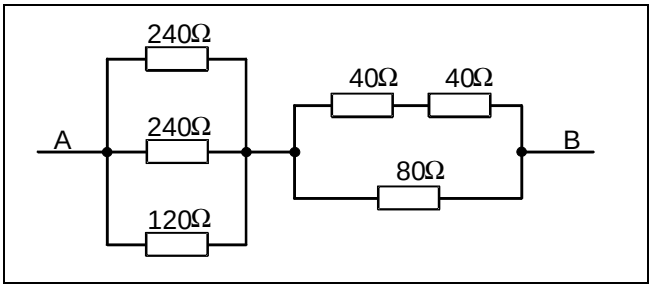

Q3/ A meter needs to have a 30Ω resistor in series with it. The nearest preferred value is 33Ω.

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




Q4/ Try and work out the total resistance of this network between A & B? (Tip: Pair similar values)



## Answers

Q1/ a) 20 ohms
b) 5 ohms

Q2/ 56 ohms

Q3/ 330ohms

Q4/ 100 ohms