

Series & Parallel Resistance Exercises

Question 1

Calculate the total resistance of a 100Ω resistor and a 220Ω resistor in series

Question 2

Calculate the total resistance of a $1k2\Omega$ resistor and a 470Ω resistor in series

Question 3

Calculate the total resistance of a $10k\Omega$ resistor and a 33Ω resistor in series

Question 4

Calculate the total resistance of a 100Ω resistor and a 220Ω resistor in parallel

Question 5

Calculate the total resistance of a 560Ω resistor and a 560Ω resistor in parallel

Question 6

Calculate the total resistance of a $10k\Omega$ resistor and a 1000Ω resistor in parallel

Question 7

Calculate the total resistance of a $10k\Omega$ resistor and a 100Ω resistor in parallel

Question 8

Calculate the total resistance of a 22Ω resistor, a 12Ω resistor and a 4Ω in series

Question 9

Calculate the total resistance of a 22Ω resistor, a 12Ω resistor and a 4Ω in parallel

Question 10

Calculate the total resistance of three 330Ω resistors in parallel

Answers

Question 1

$$100\Omega + 220\Omega = 320\Omega$$

Question 2

$$1k2\Omega + 470\Omega = 1200\Omega + 470\Omega = 1670\Omega \approx 1700\Omega$$

Question 3

$$10,000\Omega + 33\Omega = 10,0330\Omega \approx 10,000\Omega = 10k\Omega \text{ because only 2 sig fig are relevant}$$

Question 4

$$1/100\Omega + 1/220\Omega = 1/R_t \therefore R_t = 69\Omega$$

Question 5

$$1/560\Omega + 1/560\Omega = 1/R_t \therefore R_t = 280\Omega \quad \text{for the same value resistors, } R_t \text{ is } 0.5 \times R$$

Question 6

$$1/10,000\Omega + 1/1000\Omega = 1/R_t \therefore R_t = 910\Omega \quad \text{the total is close to the lower value}$$

Question 7

$$1/10,000\Omega + 1/100\Omega = 1/R_t \therefore R_t = 99\Omega \quad \text{the lower value resistor is most significant}$$

Question 8

$$22\Omega + 12\Omega + 4\Omega = 36\Omega$$

Question 9

$$1/22\Omega + 1/12\Omega + 1/4\Omega = 1/R_t \therefore R_t = 2.6\Omega$$

Question 10

$$1/330\Omega + 1/330\Omega + 1/330\Omega = 1/R_t \therefore R_t = 110\Omega$$