

N5 Engineering Science

Resistors in series and parallel

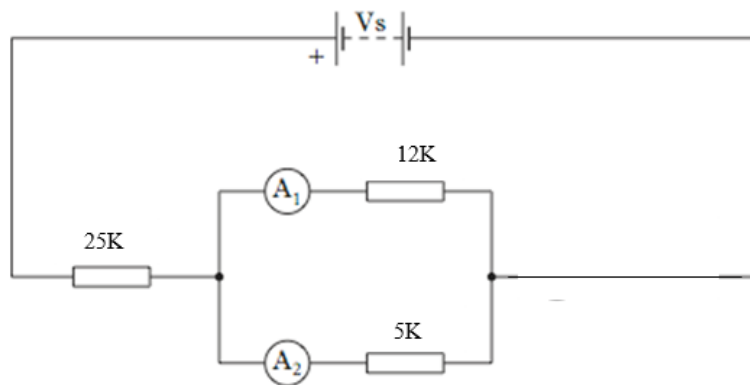
Example

Mark	
Grade	

Name:

Class:

Date :



Calculate the resistance of the parallel arrangement.

$$R_t = \frac{R_2 \times R_3}{R_2 + R_3}$$

$$R_t = \frac{12 \times 5}{12 + 5}$$

$$R_t = \frac{60}{17}$$

$$R_t = 3.5 \text{ K}\Omega$$

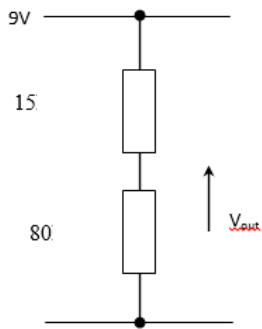
Calculate the total circuit resistance.

$$R_t = R_p + R_1$$

$$R_t = 3.5 + 25$$

$$R_t = 28.5 \text{ K}\Omega$$

2 This diagram shows a voltage divider used in a circuit.



Calculate the total resistance of the two resistors in series.

$$R_t = R_1 + R_2$$

$$R_t = 15 + 80$$

$$R_t = 95 \ \Omega$$

Use the total resistance and Ohm's Law to calculate the current through the resistors.

$$I = \frac{V}{R}$$

$$I = \frac{9}{95}$$

$$I = 94.7 \text{ mA}$$

Use Ohm's Law to calculate V_{out} .

$$V_2 = I \times R_2$$

$$V_2 = 0.0947 \times 80$$

$$V_2 = 7.6 \text{ V}$$