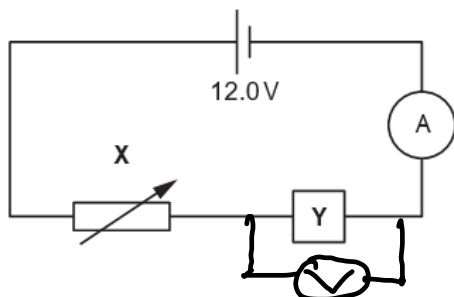


**GCSE Physics B (Twenty First Century Science)**  
**J259/01** Breadth in Physics (Foundation Tier)

**Question Set 9**

1 Sundip builds a circuit to investigate a mystery component.

(a) She builds this circuit. The mystery component is the box labelled Y.



(i) Add a voltmeter to the circuit to measure the potential difference across component Y. [1]

(ii) Describe how to use component X to vary the current in the circuit. [2]

It is a variable resistor so increase resistance to decrease current

(b) The table shows Sundip's results.

Potential difference (V)	Current (A)	Resistance ( $\Omega$ )
1.0	0.68	1.47
2.0	0.93	2.15
3.0	1.13	2.65
4.0	1.30	3.08
5.0	1.45	3.45
6.0	1.59	

(i) Calculate the resistance when the potential difference is 6.0V.

Give your answer to 3 significant figures.

$$R = \frac{V}{I} = \frac{6}{1.59} = 3.77 \Omega$$

Resistance = .....3.77.....  $\Omega$  [4]

(ii) Describe the relationship between current and resistance.

As current increases, resistance increases [1]

(iii) Suggest what component Y is.

Explain your answer.

Filament bulb as resistance increases as it heats up [2]

**Total Marks for Question Set 9: 10**

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