

# Edexcel GCSE Physics

## Topic 10.12-10.21 - Resistance

### Flashcards

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# How does resistance affect current in a circuit?



How does resistance affect current in a circuit?

As the total resistance of a circuit increases, the current flowing through the circuit decreases.



# How can the current in a circuit be varied?



# How can the current in a circuit be varied?

## Using a variable resistor.



Give the equation linking current with resistance



Give the equation linking current with resistance

p.d. (V) = current (A) x resistance ( $\Omega$ )

$$V = IR$$



How is total resistance affected by two resistors in series?





How is total resistance affected by two resistors in series?

The total resistance increases; it is equal to the sum of the two resistors.



How is total resistance affected by two resistors in parallel?



How is total resistance affected by two resistors in parallel?

The total resistance decreases; it is less than the resistance of the resistor with the lowest resistance.



What is an 'Ohmic Conductor'? State the condition required.



What is an 'Ohmic Conductor'? State the condition required.

- A conductor for which current and potential difference are directly proportional
- Resistance remains constant as current changes
- Temperature must be constant



List **four** components for which resistance is not constant as current changes.



List **four** components for which resistance is not constant as current changes.

1. Filament lamps
2. Diodes
3. Thermistors
4. Light Dependant Resistors (LDRs)



What happens to the resistance of a filament lamp as the temperature increases? Why?





What happens to the resistance of a filament lamp as the temperature increases? Why?

- Resistance increases
- Metal ions have more kinetic energy, so vibrate more, colliding more frequently with electrons as they flow through the metal
- This creates more resistance to current flow



What is different about current flow through a diode?



# What is different about current flow through a diode?

- The current only flows in one direction
- Resistance is very high in the other direction, preventing current flow



State what happens to the resistance of a thermistor as temperature increases.



State what happens to the resistance of a thermistor as temperature increases.

The thermistor's resistance decreases.



Give **two** examples of when a thermistor may be used.



Give **two** examples of when a thermistor may be used.

1. In a thermostat to turn a heater on below a certain temperature
2. In a freezer to turn on a cooler when the temperature becomes too high



State what happens to the resistance of an LDR as light intensity decreases.





State what happens to the resistance of an LDR as light intensity decreases.

The LDR's resistance increases.



Give an application for a LDR.



# Give an application for a LDR.

- Street lamps or night lights
- When light levels drop (at night), resistance increases and the light gains sufficient current to turn on



# How do diodes work?

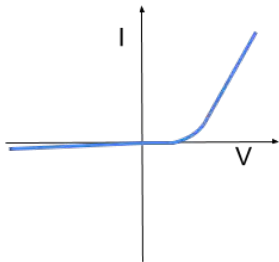


## How do diodes work?

A diode only allows current to flow in one direction. If current is flowing the right way, the resistance is large for small voltages (up until about  $0.6\text{V}$ ), but then at higher voltages becomes very small.



# What electrical component does this graph represent?



What electrical component does this graph represent?

Diode

