

# CAREERS THROUGH MATHS: ELECTRICIAN



## JOB OVERVIEW

Electricians install, maintain, and repair electrical systems in residential, commercial, and industrial settings. Their work is governed by strict regulations and requires precise calculations to...

## KEY MATHS APPLICATIONS

**Primary Areas:**

- **Ohm's Law & Circuit Calculations:** Essential for determining voltage, current, and resistance in circuits. For example, calculating the correct fuse rating for a circuit protecting a 920W appliance on a 230V supply:  $I = P/V \rightarrow 920/230 = 4A$ , thus a 5A fuse.
- **Power Calculations:** Calculating total load (in watts or kilowatts) to ensure circuits are not overloaded and selecting appropriately sized cables and protective devices.
- **Voltage Drop Calculations:** Ensuring voltage at the end of a circuit is within permissible limits (e.g., 3% for lighting) by applying formulae that account for cable length, material, and cross-sectional area.
- **Geometry & Trigonometry:** Used for planning cable runs, calculating lengths, determining bending radii for conduits, and working with three-phase systems which involve trigonometric functions like calculating  $\sqrt{3}$  for power.
- **Percentage & Ratio:** Applying diversity factors to calculate realistic maximum demand in installations, ensuring the main supply and distribution boards are correctly sized.

## ESSENTIAL SKILLS & TOOLS

SKILL	APPLICATION
0	Array
1	Array
2	Array
3	Array

TYPICAL PATHWAY

The most common pathway is completing an Level 3 Electrotechnical Qualification (5357) or a recognised apprenticeship, which combines on-the-job...

INDUSTRY DEMAND

Demand for skilled electricians in the UK remains consistently high due to a national skills shortage, new housing projects, and the retrofitting of...

REAL-WORLD IMPACT

Electricians are fundamental to modern society, ensuring the safe and reliable distribution of power that homes, businesses, and critical...

QUICK FACTS

MATH EXAMPLES

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