

# CAREERS THROUGH MATHS: ELECTRICIAN



Electricians use mathematics to solve complex problems and drive innovation. (Image Source: Unsplash)

## JOB OVERVIEW

An electrician in the UK is a skilled professional responsible for installing, maintaining, and repairing electrical systems in a wide range of settings, from domestic homes and commercial properties to large-scale industrial plants and infrastructure projects. Their daily duties are diverse and governed by strict UK regulations, primarily the BS 7671 IET Wiring Regulations. A typical day might involve reading and interpreting technical diagrams and architectural blueprints, installing new circuit boards and wiring systems, testing existing installations for safety using specialised equipment, diagnosing faults, and ensuring all work is fully compliant with British safety standards.

## KEY MATHS APPLICATIONS

### Primary Areas:

- **Algebra and Formulae:** Electricians constantly use algebraic formulae to solve for unknown values, which is fundamental to circuit design and analysis.
- **Geometry and Trigonometry:** Spatial mathematics is crucial for planning cable routes, calculating lengths, and determining tray and trunking sizes.
- **Calculations for Cable Sizing:** This is a critical safety calculation mandated by the IET Wiring Regulations. It is not guesswork; it involves a multi-step mathematical process.

## ESSENTIAL SKILLS & TOOLS

| SKILL                                                  | APPLICATION                                                                 |
|--------------------------------------------------------|-----------------------------------------------------------------------------|
| Cable Calculation Software (e.g., IET Design Software) | UK-specific software that automates complex cable sizing calculations.      |
| Programmable Logic Controllers (PLCs)                  | In industrial automation, electricians work with engineers to program PLCs. |
| Thermal Imaging Camera                                 | Used for preventative maintenance.                                          |
| Compliance with BS 7671 Regulations                    | The entire regulatory framework is mathematical.                            |

## TYPICAL PATHWAY

The most common entry route in the UK is through an apprenticeship, typically requiring GCSEs at grades 9-4 (A\*-C) in Maths, English, and a Science (often Physics). Apprenticeships combine on-the-job training with a college course, leading to Level 3 qualifications such as the...

## INDUSTRY DEMAND

Demand for skilled electricians in the UK remains consistently high. According to the Office for National Statistics (ONS), there is a recognised skills shortage in the construction and trades sector.

## REAL-WORLD IMPACT

Electricians are vital to the UK's economy and societal safety. They power everything from homes and hospitals like the NHS trusts to iconic commercial projects like The Shard and critical national infrastructure.

## QUICK FACTS

- **Education:** apprenticeship, typically requiring GCSEs at grades 9-4 (A\*-C) in Maths, English, and a Science (often P)
- **Growth:** Demand for skilled electricians in the UK remains consistently high. According to the Office for National Statistics (ONS), there is a recognised skills shortage in the constru...