

CAREERS THROUGH MATHS: TECHNICAL WRITER



JOB DESCRIPTION

A Technical Writer, often known as a Technical Author in the UK, is a professional communicator who transforms complex, technical information into clear, concise, and accessible documentation for specific audiences. Their daily responsibilities involve collaborating closely with subject matter experts (SMEs), such as engineers, software developers, and scientists, to understand intricate products and processes. This role is central to sectors like aerospace (e.g., BAE Systems), fintech (e.g., Revolut, Wise), pharmaceuticals (e.g., GSK, AstraZeneca), and software development, where accurate documentation is critical for user safety, regulatory compliance, and product adoption. The work environment is typically a hybrid office setting, with time split between researching with development teams, writing, and using specialised publishing software.

Key duties include researching and outlining content, writing user manuals, API documentation, white papers, standard operating procedures (SOPs), and online help systems. For instance, a Technical Writer at Jaguar Land Rover might be tasked with creating the maintenance manual for a new electric vehicle's battery management system, requiring a deep understanding of electrical engineering concepts and safety protocols. Another at a company like ARM in Cambridge may produce developer guides for a new microprocessor architecture, explaining programming models and performance benchmarks. The core of the role is not just writing, but structuring information logically and ensuring technical accuracy, which inherently relies on a methodical, almost mathematical approach to information architecture.

Mathematics is central to this role as it provides the foundational logic for structuring information, analysing data for accuracy, and describing quantitative relationships. A Technical Writer doesn't just report that a system is "faster"; they use mathematical concepts to explain *by how much* and *under what conditions*. They must understand the underlying principles of what they are documenting to avoid ambiguity and ensure precision. This could involve calculating and presenting tolerance levels in engineering specs, interpreting statistical data in a clinical trial report for a pharmaceutical company, or explaining the algorithmic logic in a financial trading application. The ability to think logically and work with numerical data is therefore indispensable.

HOW MATHEMATICS IS USED

- **Logic and Set Theory:** This is the bedrock of organising complex information. Technical Writers use logical structures like conditional statements (if-then-else) to create decision trees for troubleshooting guides. Set theory helps categorise information; for example, documenting the features of a software application involves defining sets of features available in different subscription tiers (e.g., Free, Pro, Enterprise) and their intersections. When creating a knowledge base for a service like the NHS app, information must be perfectly categorised so users can find answers based on their specific circumstances, a process reliant on logical hierarchies and Boolean search principles (AND, OR, NOT).
- **Statistics and Probability:** Writers constantly interpret and present statistical data to support technical claims. For a pharmaceutical company like AstraZeneca, a writer might need to document the results of a clinical trial, which involves explaining p-values, confidence intervals, and efficacy rates to a regulatory audience like the MHRA (Medicines and Healthcare products Regulatory Agency). In a fintech context, documenting a risk assessment algorithm for a bank like Barclays requires explaining how probability models are used to calculate credit scores or fraud likelihood.
- **Algebra and Calculus:** Algebra is used to understand and describe formulas and relationships between variables. A writer creating a manual for an engineering simulation software, such as those developed by ANSYS UK, must explain how to input equations and interpret the results. Understanding calculus concepts like rates of change is crucial for documenting performance metrics. For example,

explaining the acceleration profile of an electric vehicle motor or the growth rate of a server's CPU utilisation under load requires a foundational grasp of these principles to describe them accurately.

- **Geometry and Trigonometry:** In manufacturing and CAD (Computer-Aided Design) software documentation, precise geometric principles are essential. A Technical Writer at a company like Rolls-Royce Aerospace creating installation manuals for engine components must understand and describe spatial relationships, angles of rotation, torque values, and tolerances. Documenting architectural software used by firms like Foster + Partners involves explaining how the software calculates areas, volumes, and perspectives using geometric and trigonometric functions.
- **Statistical and Analytical Methods:** Beyond basic statistics, Technical Writers employ data analysis to improve their own content. They use analytics from platforms like Google Analytics to mathematically model user behaviour—e.g., identifying which help articles have the highest bounce rate (a calculated percentage) and A/B testing different solutions to improve user engagement. They also use mathematical modelling to create visual representations of data, such as charts and graphs that illustrate performance benchmarks or market research findings for white papers aimed at UK business stakeholders.

KEY SKILLS & TOOLS

Skill/Tool	Application
XML-based Authoring (DITA)	Using a standardised XML framework like the Darwin Information Typing Architecture (DITA) to create structured, reusable content modules. This is mathematically logical, treating content as structured data. A writer at IBM UK might use DITA to manage thousands of topics for their software documentation, ensuring consistency and enabling single-sourcing.
MadCap Flare	A leading UK-authoring tool used to create and publish technical documentation. Writers use its project management features to handle complex conditional text logic (e.g., publishing different content for Windows vs. macOS users) and its robust linking to

	maintain a web of interconnected information, a concept akin to graph theory.
Data Analysis Tools (Excel, SQL)	Using Microsoft Excel with advanced functions (VLOOKUP, pivot tables) to analyse user feedback data or product metrics. Using SQL to query databases for specific information needed for documentation, such as extracting a list of all error codes and their triggers from a software application's database.
Programming Languages (Python, JavaScript)	Using Python scripts to automate repetitive tasks, such as batch-processing image files or scraping API documentation for standardised data inputs. Using JavaScript to create interactive elements in web-based documentation, such as calculators for configuration settings or dynamic forms.
Version Control (Git)	Using Git for documentation versioning is a mathematical process of managing branches, merges, and diffs (differences between file versions). This is essential for collaborating on documents with multiple contributors in UK tech firms, ensuring change tracking and auditability.
Communication and Visualisation	Using tools like Microsoft Visio or draw.io to create precise technical diagrams, flowcharts (which are logical maps), and graphs. Transforming mathematical data into clear visualisations for stakeholders, such as plotting performance graphs for a new feature in a software release.
Quality Control and Review	Employing mathematical rigour in proofreading to check numerical values, units of measurement, and calculations for errors. Using style guide metrics (e.g., Flesch-Kincaid readability scores) to quantitatively assess the clarity and accessibility of the documentation for its intended audience.

Typical Pathway: The most common entry route is through a bachelor's degree. While a specific degree is not always mandatory, highly relevant subjects include English, Communications, Journalism, or a STEM (Science, Technology, Engineering, and Mathematics) subject. Strong GCSEs (especially in English and Maths) and A-levels are necessary for university entrance. Many successful Technical Writers have transitioned from other roles, such as engineering, IT support, or software development, leveraging their deep technical knowledge. Entry-level positions like Junior Technical Author or Documentation Assistant are common in large UK tech hubs like London, Cambridge, and Manchester. Career progression leads to Senior

Technical Writer, Team Lead, and eventually Documentation or Content Strategy Manager. Key UK qualifications include professional certifications from the Institute of Scientific and Technical Communicators (ISTC), which offers membership grades (Member, Fellow) that signify professional standing. Continuous professional development (CPD) through ISTC workshops and courses is vital for staying current.

Industry Demand: The demand for Technical Writers in the UK is strong and growing, particularly in the technology, engineering, and financial services sectors. According to the UK Government's official job growth statistics, roles in this area are projected to remain stable. The drive towards complex software, stringent safety regulations (e.g., in aerospace and medical devices), and the need for excellent user experience (UX) are key factors. The ability to handle technical and mathematical concepts is increasingly valued as products become more data-driven and sophisticated.

Real-World Impact: Technical Writers are enablers of innovation and safety in the UK. They play a crucial role in ensuring the safe operation of machinery in Scottish offshore wind farms, the correct use of medical devices in NHS hospitals, and the successful adoption of cutting-edge fintech apps that drive the UK's financial sector. By accurately translating complex mathematics and engineering into actionable instructions, they reduce errors, support compliance with UK regulations, and help bring British technological advancements to a global market, directly contributing to the country's economic productivity and reputation for quality.