



Name

Adarsh Andrea
Essurredeen

Job Title

Assistant Civil Engineer

Company

WSP

My job involves...

working alongside other engineers in the delivery of water and wastewater infrastructure and treatment projects. My responsibilities involve ensuring accurate and efficient delivery of high profile projects for different clients whilst exercising independent engineering judgement and having the opportunity to provide innovative solutions to engineering problems.

I use maths to....

estimate how long we can store the water for based on our estimates of how much water people are going to use (using mass, volume, area), the different pressures required to pump the water based on the different angles (Pythagoras theorem comes in handy here).

Keywords: Area, mass, volume



Name

Victoria Sauven

Job Title

Senior Test and
Development Engineer

Company

Oxford Flow

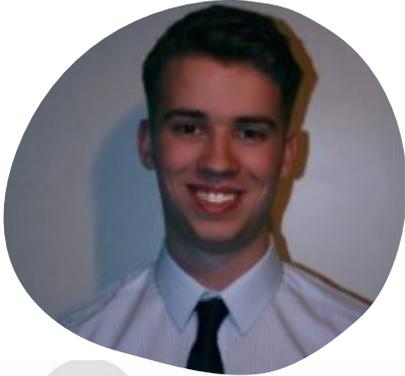
My job involves...

making products that ensure water gets around the country and into your home safely. I develop and run experiments to check how well our products perform. We must test them to ensure they work correctly and are safe.

I use maths to....

set performance criteria that each of our products must achieve in order to be acceptable. I use maths to carry out calculations on the data I receive from testing. This allows me to decide if the performance criteria has been met.

Keywords: Engineering, Utilities; Forces;
Testing; Product



Name

Josh Taylor

Job Title

Operations Associate

Company

Morgan Stanley

My job involves...

clearing and settling of financial transactions between Morgan Stanley and our clients. We work with our clients as a market maker, offering up new financial products and services to suit the investment needs of our clients around the world.

I use maths to....

help calculate potential returns and realised returns for our clients trading portfolios. We put together investment targets and work out a trading strategy to meet those needs.

Keywords: Financial services, Banking, Compound Interest, Algebra, Derivatives, Arithmetic, Ratios, Percentages, Maths



Name

Iona Christie

Job Title

Healthcare Scientist

Company

Public Health England

My job involves...

testing samples from patients, who doctors are either treating or think they could have HIV or HSV. I extract the DNA from the samples and send it off for genome sequencing to see if there is any resistance to antiviral drugs.

I use maths to....

work out the correct dilution of DNA that needs to be sent off. I also use maths to calculate the concentration and volume of reagents. I also use mental maths to work out how much volume I might need to top a sample up to the required volume.

Keywords: Dilutions, DNA, Genomics,
Calculations, Science



Name

Ceri Foster

Job Title

Chemical Synthesis
Placement Student

Company

Lubrizol

My job involves...

adding different chemicals together and heating them to make new chemical compounds. Then, I figure out their structures using different methods. These compounds are added into oils in cars, to make them work for longer, and they will replace chemicals which are not good for the environment.

I use maths to....

calculate how much of each chemical to add for each reaction, using ratios. I work out how much product I have made by subtracting the weight of the empty jar. I conduct testing on the products and plot graphs to see any trends in the data I have collected.

Keywords: Engine Oils, Cars, Graphs, Multiplication,
Ratios, Subtraction, Science



Name

Tim Gardiner

Job Title

Graduate Electrical
Engineer

Company

Network Rail

My job involves...

a variety of different placements across the company including signal system and level-crossing maintenance which allow me to get outside. Also, there is the design side which is more office based but equally rewarding as I get to help plan improvements across the railway for more enjoyable train journeys.

I use maths to....

calculate electrical characteristics using an equation known as 'Ohm's Law', which lets me find voltage and current values in signalling equipment. These calculations are important to detect faults early allowing the equipment to be replaced before it gets damaged and causes delays for passengers.

Keywords: Railway, Engineering, Electricity



Name

Susan Brittain

Job Title

Principal Chemist
(Inorganic Lead)

Company

Fugro GB Marine
Limited

My job involves...

running an inorganic analysis laboratory, analysing major and trace elements in marine sediments for the energy sector. I also check technical environmental reports to ensure the correct spelling, grammar, statistics and overall interpretation of the results.

I use maths to....

produce statistics to enable me to develop new analytical methods and to check the quality of our data. I check statistics generated by others to allow our data to be discussed and interpreted in analytical reports.

Keywords: Chemistry, statistics, energy,
environment, Science



Name

Sophie Ovens

Job Title

Senior Structural
Engineer

Company

Heyne Tillett Steel

My job involves...

designing the structural elements for new buildings in London. I use hand calculations and analytical software to build small scale models of my buildings. My time is split between working in the office, visiting the building sites and being part of coordination meetings with architects and quantity surveyors.

I use maths to....

solve problems in a building and construction environment. This involves using maths to work out how far a floor slab can span, how deep a beam needs to be, how much the building weighs and how many columns are needed.

Keywords: Engineering, Practical Maths, Construction, Area, Perimeter, Trigonometry, Quadratic Equations.



Name

Alanah Jonas

Job Title

Programmer/Analyst

Company

GSK

My job involves...

producing datasets, Tables, listings and Figures summarising the results from clinical trials. Some of the diseases that I have worked on include malaria and chronic kidney disease. All the work that we produce is double programmed, to ensure high quality and accuracy.

I use maths to....

for problem solving and use logic every day in my job, to help me decide what is the best way to program an output or if there is a quicker way something can be done. I also use statistics and formulas to summarize and make the data more presentable.

Keywords: Pharma, Problem solving, Statistics



Name

Alix Wilcock

Job Title

Lead Software
Engineer

Company

SOC.OS Cyber Security
Ltd.

My job involves...

writing computer code to make a cyber security tool. The tool takes information from lots of different sources and combines it together so that customers can understand where cyber criminals are attacking them, and which attacks are the most serious.

I use maths to....

display information about attacks to our customers, for example through graphs like pie charts and histograms. We also use simple addition and multiplication to rank attacks from highest to lowest priority. On top of this, all computer code uses Boolean algebra to decide what should happen in different situations.

Keywords: Engineering, Cyber security, software, graphs, Boolean algebra, rank



Name

Dr Claire Hastie

Job Title

Lecturer in Public Health

Company

University of Glasgow

My job involves...

conducting experiments on very large datasets on the computer. I study millions of people at a time, most of whom live in Scotland. My aim is to find out what health behaviours, environmental factors, and other life circumstances make people healthy or not healthy.

I use maths to....

look for patterns in data. To do this I use powerful statistical programmes that perform complicated analysis. If I see the same pattern in enough people it is a sign that the exposure I am looking at, for example smoking, exercise, eating certain things, is good or bad for health.

Keywords: Science, Health, Wellbeing



Name

David Parsonage

Job Title

Licensed Aircraft
Engineer

Company

Draken Europe

My job involves...

ensuring that our aircraft are safe and legal to fly in order to meet our role of electronic warfare training for the UK and foreign air forces. I also carry out the day-to-day servicing of the aircraft to ensure the flying programme is met.

I use maths to....

calculate fuel loads and ensure engine performance meets the required levels. I also use maths for calculating the weight & balance of the aircraft and ensuring the control surfaces move through the required deflection.

Keywords: Engineering, Angles, moments, balance, mass, force, quantities



Name

Emma Wilson

Job Title

Neuroscientist
Meta-Researcher

Company

The University of
Edinburgh

My job involves...

analysing the hundreds of neuroscience (brain science) experiments carried out every year using a type of research called systematic review. Scientists can use the results of my systematic review to get an overview of all the research being done and make decisions about what experiments to do next.

I use maths to....

perform a type of statistics called meta-analysis. Meta-analysis combines the results of multiple experiments which all test the same thing, such as how good a new treatment is at treating a brain disease. The combined results from the meta-analysis are more accurate than the individual results from each experiment.

Keywords: Science



Name

Fatema Tariq
Mohamad

Job Title

Trainee Software
Engineer

Company

Go Compare

My job involves...

working in teams; designing websites; making changes to websites; coding and writing programs.

I use maths to....

solve problems using probability and statistics. I use maths to solve problems especially when I write and code programs. I use maths to figure out what is the best solution. Maths is the main language in coding.

Keywords: Engineering, Technology



Name

Hayley Greenfield

Job Title

PhD Researcher

Company

University of Sussex

My job involves...

being in a lab all day and carrying out experiments that contribute to a specific project/subject area! In a standard day I could go from being more microbiology based and streaking agar plates to working with lots of tiny tubes containing very small substances like DNA.

I use maths to....

calculate the amounts of several different compounds and substances I need to add to make particular solutions and ensure they are added to give a correct final concentration, a bit like baking a cake! I also use maths, like means, and standard deviations when processing scientific data!

Keywords: Science



Name

Jack Meiklejohn

Job Title

Mechanical Engineer

Company

Rolls-Royce
Submarines

My job involves...

helping to design and manufacture parts which go into the nuclear reactor on Royal Navy submarines. I work as part of a huge team of people with various different engineering backgrounds, whether they have got a degree at university or an apprenticeship.

I use maths to....

make sure that the nuclear reactor is able to power a submarine whilst also remaining completely safe. I use maths to make sure that all parts are manufactured correctly and I analyse the parts to make sure they will behave in the ways we want them to.

Keywords: Nuclear, Defence, Engineering,
Manufacturing, Science



Name

Jess Gallacher

Job Title

Environmental
Consultant

Company

Xodus Group

My job involves...

providing environmental support to oil companies to make sure they work in line with the law. I calculate potential negative impacts from an oil spill in the sea based on where winds and ocean currents transport the oil.

I use maths to....

calculate how long the oil will take to travel to any coastline after an offshore oil spill. I also work out the probability of it spill crossing into a part of the ocean owned by another country or reaching beaches.

Keywords: Environment; Oil; Energy; Oceans;
Statistics; Probability; Maths



Name

Joanne Rogers

Job Title

Senior Mechanical
Engineer

Company

BorgWarner

My job involves...

designing the mechanical components such as enclosures, seals, internal layout and connections of power electronics and inverters used in electric vehicles from controlling the electric motors.

I use maths to....

confirm the product design direction and help to make design decisions such as material selection, fastener clamping forces and seal compression rates. Calculations can help to understand whether the components will withstand the forces caused by changing temperatures, vibration or movement within the vehicle system.

Keywords: Automotive, Mechanical,
Design, Engineering



Name

Jugraj Dulai

Job Title

Chemical Engineer

Company

Rolls Royce -
nucleargraduate
scheme

My job involves...

drawing and designing small nuclear reactors for use in submarines that travel across the world. I am also involved with designing small nuclear reactors to provide electricity to your school and homes.

I use maths to....

work out how big the parts of the reactors should be as well as, how hot the reactor is and how much power it provides. This is done using complex equations, that help us to work out the best design for price and power.

Keywords: Nuclear, Equations,
Computer Modelling, Maths



Name

Katie McGrath

Job Title

Technical Accountant
(Finance Graduate
scheme)

Company

Sellafield

My job involves...

preparing the year end accounts for Sellafield so we can show to the public where money has been invested throughout the year. This is important as Sellafield receive It's funding from the taxpayers.

I use maths to....

calculate statistics such as how much profit we have made during the year as a %. I use the concept of 'Missing figures' and sometimes have to solve for 'X'. I also create visual data forms such as pie charts and graphs.

Keywords: Maths, Algebra, Fractions



Name

Kevin Smith

Job Title

Team Leader –
Roads Operations

Company

Angus Council

My job involves...

helping to look after 1800km of roads and any attached footpaths and infrastructure in Angus. This involves identifying and repairing potholes and dealing with any issues relating to road safety – affecting any and all road users.

I use maths to....

work out bills of quantities that allow us to price and estimate costs for any works we are planning. Keep tabs on costs for all of our works in spreadsheets and reports.

Keywords: Engineering, Roads Asset Management, Potholes, Drainage, Surface Water Flooding, Cost Estimates





Name

Kirsty Carlyle

Job Title

Researcher /
Biomedical Engineer

Company

University of
Strathclyde

My job involves...

researching robot hands for people who have lost their own hand. These are called 'prosthetics'. I want to find out how people use their prosthetics and what makes a design 'good' or 'bad'. I work with patients, computers, doctors, nurses, parents and more!

I use maths to....

calculate forces acting on fingers, angles of hand joints and speeds that prosthetic hands can move! I also use coding to analyse prosthetic handmotion. Maths is important when designing prosthetics as they have to be precise, strong, accurate and fast – just like a natural hand.

Keywords: Prosthetics, Bionics, Medical Robotics, Biomechanics, Coding, Biomedical, Engineering



Name

Laura Stables

Job Title

Account Delivery Lead

Company

DXC Technology

My job involves...

managing an IT service for the account FedEx for the UK and Ireland. I manage account figures, growth, revenue and profit and I ensure we are tight on all costs. I communicate all delivery operations with the team who help manage the IT service and communicate all updates with the client.

I use maths to....

analyze all growth, revenue, costs and cost control for the account and ensure the account is achieving a profitability of a certain %. I also manage all IT servers and use figures to manage these and a % of how well they are performing. I use excel sheets to report this everyday and use bar charts and graphs to show these results.

Keywords:

Graphs, Growth, Profit, Resourcing,
Excel, Communication, Figures,
Revenue, Costs, Profitability,
Percentages, Maths



Name

Mhairi Bowley

Job Title

Senior Engineer

Company

Natural Power

My job involves...

design work on wind farm projects. Looking at possible locations for a new wind farm site, then deciding where the tracks need to be to get turbines to the site, finally preparing the detailed design for the Contractor to build. Each phase becomes more detailed as the project develops.

I use maths to....

check there is space to transport large turbine blades to a remote location or checking steel reinforcement can fit without clashing in the foundation. Calculations ensure pipework is large enough to avoid flooding and bridges are strong enough for what they need to carry.

Keywords: Civil Engineer, Infrastructure design.



Name

Paddy Wemyss

Job Title

Structural Engineer

Company

David Narro
Associates

My job involves...

calculating loads acting on structures (e.g. building, bridges), and then determine what structure (e.g. walls, columns, beams) is required to resist these loads so that the structure can safely stand up. I work with new structures or alterations to existing structures. I use hand calculations and computer software.

I use maths to....

calculate building loads (e.g. self-weight, wind, weight of people/equipment) and then further to design the structure. This often involves complicated mathematical expressions and algebra, differentiation, integration, trigonometry, as well as statistics and probability. Maths is also used on sites to measure what has been built.

Keywords: Engineering, Structural,
construction, design, loads



Name

Richard Purdy

Job Title

Project Engineer

Company

Parker Hannifin
Manufacturing Ltd
(Bioscience Filtration
Division)

My job involves...

making design proposals for filtration equipment that is used in the manufacture of food, drinks and medicines. When a proposal is accepted, I work with the fabrication team to ensure the product is built to the customer's requirements and delivered on time.

I use maths to....

assist in the design of filtration products. However, maths is more than just sums and equations. In my job it includes being able to read and create drawings, collecting and analysing data and calculating product performance. Also, I use maths to ensure my company makes money on the products we sell.

Keywords: Engineering, Design, Calculations



Name

Robert Haynes

Job Title

Senior Naval Architect

Company

BMT

My job involves...

designing new ships and planning maintenance for current ships. I need to make sure that the ships have space for everything needed to do their job, and that they are safe to use.

I use maths to....

work out the weight and centre of gravity for ships, then use this information to make sure that they don't capsize. I also use maths to work out the size of equipment, like anchors and winches, and to make sure the ship is strong enough.

Keywords: Naval Architecture; Engineering



Name

Shayban Ali

Job Title

Mechanical Engineering
Placement Student

Company

Network Rail

My job involves...

learning about the company and working on projects to gain experience until I return to university. My work focuses on improving the system of equipment that provides electricity to the trains, so that trains can safely and efficiently travel across the UK railway network.

I use maths to....

manipulate data I receive. I use algebra and arithmetic to calculate the forces on rail support structures, and geometry to calculate required foundation sizes. I use maths to estimate how the overhead line would be damaged if a drone fails and falls onto it from height.

Keywords: Railway, Engineering, Electricity,
Algebra, Geometry, Mechanics



Name

Robert Eagles

Job Title

Regional Engineering
Manager

Company

MGF

My job involves...

managing a team of Regional Engineers nationwide. Planning, resourcing, and implementing strategies. Delivery of business initiatives to add efficiencies to internal and external customers. Solving problems to complex temporary works problems whilst offering advice, guidance, and recommendations. Delivering presentations on technical capabilities of the business I work within.

I use maths to....

calculate vertical stress, active earth pressures and horizontal loading onto temporary works equipment; working out factors of safety to determine suitability of a solution; understanding ground levels referring to construction drawings and site investigation; developing spreadsheets with mathematical calculations to solve problems.

Engineering, Vectors, Pythagoras Therom,
Keywords: Geometry, Calculations, Equations, Re-
arrangement of Equations, Maths



Name

Shivani Patel

Job Title

Flow Assurance
Engineer

Company

Xodus Group

My job involves...

providing design support to oil/gas companies to make sure the oil/gas can successfully travel from the start of a pipeline through to the end of the pipeline.

I use maths to....

work out if a fluid will move along the pipeline without getting stuck using oil characteristics (e.g. how sticky the liquid is or how heavy the fluid is). I also have to think about which design will give the client the cheapest design possible.

Keywords: Engineering, Oil & Gas, Consultancy



Name

Shamila Yaqub

Job Title

Product Analyst

Company

AND Digital

My job involves...

working with different companies to help them improve or develop websites and mobile apps. I help people in the company to look at what they want to design and then run workshops/create story pictures to document these in a clear way so the IT team know what to develop.

I use maths to....

analyse large amounts of data such as number of sales or people visiting the website. This work includes applying formulas and equations to make comparisons, and also creating graphs/pie charts. As part of my product research I also use investigation and statistics to show how good it will be.

Keywords: Digital Technology, Equations, Formulas, Investigation, Data Handling, Report writing, Technology



Name

Iain Ford

Job Title

Data Scientist

Company

Sparx

My job involves...

looking at data to understand how people use the product. Using this data, I can understand if people are having trouble using the product, or if people want new features. I share this data with others so we can make the best decisions to keep our customers happy.

I use maths to....

work with statistics, including working out the mean and median of different sets of data, and creating different graphs to represent the data. I use my knowledge of maths to explain the meanings of the graphs to others.

Keywords: Statistics, Education, Data, Product Development, Science



Name

Cara McKay

Job Title

Graduate Engineer Total
Vehicle Validation and
Integration

Company

Rolls-Royce Motor
Cars

My job involves...

working in different teams on 3-month placements to learn about the business during my two-year programme. My home department focus on introducing new models to the assembly line (integration) and validating the size and shape of parts and completed vehicles (geometric validation). We do this through problem-solving.

I use maths to....

measure gaps on the outside and inside of cars. Metrology is the scientific study of measurement. Every gap has a specification that can include gap size, flushness and parallelism. These can have tolerances which e.g. ± 1 mm and we use these in calculations.

Keywords: Engineering, Measurement, Automotive,
Luxury, Validation, Integration,



Name

Chelsea Morison

Job Title

Project Manager

Company

Leonardo UK

My job involves...

keeping a team of people on track to deliver parts and assemblies to our customers by specific deadlines agreed between us and the customers. Keeping on track includes scheduling, financing and keeping the team on the same page!

I use maths to....

count a lot! Dates and times in schedules are very important as a Project Manager. I also use maths to finance and budget the projects correctly to make sure no over-spending happens. Stock counts are very important too, checking how much we have, are going to have and what we need.

Keywords: Counting, Finance, Budgets, Stock, Maths



Name

Lucy Sutcliffe

Job Title

Structural Engineer

Company

Arup

My job involves...

designing buildings. I work with architects who decide what buildings will look like, and I am the one who makes sure that the building stands up! I work on all sorts of buildings including train stations, tall towers, offices and schools.

I use maths to....

decide how big to make columns, beams and floors. I also use it to work out how much steel, concrete and timber needs to be used so that the building stands up.

Keywords:

Engineering, Buildings, Shapes and geometry, addition, subtraction, multiplication and division, algebra, coding



Name

Kit Wolverson

Job Title

Civil Engineer

Company

Mott MacDonald

My job involves...

designing bridges for cars (road), trains and trams (rail) which may pass over water, train lines or roads to get people where they need to be. I also assess and check old bridges to see if they are still safe to use and if they need any repairs to keep them working.

I use maths to....

check the distance between a bridge and the railway to ensure train can pass beneath the bridge and there are no crashes. Calculate whether a wall is large and strong enough to retain water and protect people and their houses when it floods, determine if a masonry (brick) bridge is large enough to carry lorries over it.

Keywords:

Civil Engineering, Physics, Load Paths, Laws of Gravity, Balancing Equations, Bridges Optimisation, Angles, Trigonometry, Pythagoras, Problem Solving





Name

Jenni Banks

Job Title

Statistician 1

Company

NHS Blood and
Transplant

My job involves...

analysing different statistics of liver, heart and lung transplantation in the UK. I help to implement how organs are offered to patients across the UK and produce regular reports to monitor performance. I also produce data and statistics as requested from surgeons.

I use maths to....

produce lots of bar charts and line graphs comparing different things like the number of the organs transplanted this year to previous years. I also calculate the how well the organ and patient is doing once it has been transplanted using an area of maths called survival analysis.

Keywords: Health care, organ donation and transplantation, patients, statistics, analysis, graphs, programming, Science





Name

Hannah Norman

Job Title

Senior Transport
Modeller

Company

Arup

My job involves...

develop computer models to represent how people travel on our transport network, including mode and destination choice. Forecast how demand might change in the future and assess transport needs and improvement schemes on behalf of clients Economic assessments Data Analysis Research and discussion into modelling best practice.

I use maths to....

analyse and process data – including statistics/probability Mathematical modelling to represent transport systems, develop forecasts, sense checking model behaviour to changes such as fare increases. Analysing mode choice models to determine the key drivers for people's behaviour. Developing code to analyse information and automate repetitive tasks

Keywords: Transport modelling, Data analysis,
Transport planning, Statistics, Maths,
Analysis, Coding



Name

Emma Farquharson

Job Title

Chemical & Process
Engineering Graduate

Company

BP

My job involves...

working to solve real world process engineering problems to maintain safe and reliable operations on our North Sea offshore assets. My work is varied and involves things like assessing and managing risk, sizing equipment, optimising processes, performance monitoring and reporting. Problem solving is a key component, as is team work.

I use maths to....

help me complete all sorts of tasks including: evaluating safety barriers in process systems; calculating likelihoods of hazardous events occurring and ensuring appropriate protective measures are in place; completing sizing calculations for equipment, e.g. to establish if a valve is correctly sized to allow a specified flowrate through it.

Keywords:

Engineering, Maths, Energy, process, problem solving, analysis, equations, likelihood, algebra, scale-up, trends, graph work, optimisation.



Name

Jayne Roberts

Job Title

Environmental Safety
Scientist

Company

Joe Bloggs

My job involves...

making sure that ingredients used in Unilever products such as shampoos, shower gels and laundry products are washed down the drain that they will not cause damage to the environment.

I use maths to....

calculate the amount of a chemical entering the environment, to determine what concentration of chemical is likely to cause harm and to predict different properties of a chemical so we can model how it will behave in the environment.

Keywords:

ecotoxicology, environment,
multiplication, division, addition,
subtraction, graphs, Maths





Name

Simon Hunt

Job Title

Geotechnical Engineer

Company

CGL (Card
Geotechnics Ltd)

My job involves...

finding out what is in the ground before new structures are built or what might be causing old structures to fail. I describe and test the soils and rocks we find to identify what problems there might be and suggest ways to overcome them.

I use maths to....

understand scale on maps and drawings, I have to take measurements and convert between different types of units. I use areas, volumes, trigonometry and algebraic expressions to work out the forces that work underground and on structures and calculate if our solutions will work.

Keywords:

Geology, Rock, Soil, Construction, Forces, Pressures,
Area, Volume, Trigonometry, Algebra, Maps and Scales,
Measurements and Units, Maths





Name

Nisreen Al-Namnam

Job Title

Dentist

Company

Dental clinic

My job involves...

Taking care of the teeth and gums and on diet choices that affect oral health, remove tooth decay, fill cavities, and repair fractured teeth. Also diagnose and treat problems with patients' teeth, gums, and related parts of the mouth. They provide advice and instruction and prescribe medicine if its needed.

I use maths to....

convert numbers, calculate doses of anesthetics and doses of medicines when giving out, counting teeth to find any missed tooth, measuring teeth for root canals. How long each appointment is. Maintaining a budget (for how much I pay for dental equipment and material and money earn).

Keywords: Dental, teeth counting, prescription, spent and income, Science, Maths



Name

James Colley

Job Title

Civil Engineer

Company

Morgan Sindall
Infrastructure

My job involves...

working on large construction projects like railways and motorways. I work on-site using information given to me by designers to make sure everything is built correctly and safely. On-site, every day is different, which is what makes the job so fun!

I use maths to....

check levels every day and even to plan new tasks. For example, if we need to dig foundations for a new bridge, I need to calculate how much soil we need to move so I can choose which digger we need to use.

Sector: construction, infrastructure,

Keywords: highways, railways. Maths: areas, volumes, addition, subtraction.



Name

Holly Holding

Job Title

Aerospace Engineering
Apprentice

Company

Airbus

My job involves...

designing and making wings for aircraft, with a specific focus on future projects (planes that do not exist yet but might in 20-30 years).

I use maths to....

calculate whether an aircraft is able to take off and to understand if it is safe to be flying. I use geometry when modelling the wing in CAD software to help with visualisation and to ensure all of the internal structure fits together.

Keywords: Aerospace, Engineering,
CAD – Computer Aided Design



Name

Steve Mearns

Job Title

Engineering
Maintenance Manager
(Retired)

Company

Robinson Healthcare
Ltd

My job involves...

making sure all the buildings and equipment in the buildings are kept in the safest and best condition possible keeping production running. I have a team of Engineers who help me I have to give reports to the company owners showing that we are efficient and constantly improving.

I use maths to....

work out how much we spend on maintenance, I have to calculate how much engineers time is spent doing the maintenance and compare it to last months to show we are getting better. Using maths I know how many repairs over how many days as a percentage.

Keywords: Maths, Spreadsheets, Percentages, Addition, Formulas & Calculations, Trigonometry



Name

Julia Tan

Job Title

Graduate Materials
and Corrosion
Engineer

Company

Wood Plc

My job involves...

using my knowledge to choose materials for pipelines and protect the pipelines.

I use maths to....

calculate how many metals are needed to prevent the pipelines from corroding.

Keywords: Engineering, Corrosion, Materials,
Pipelines, Algebra and Maths



Name

Kerry Clunie

Job Title

Senior Configuration
Engineer

Company

Dover Fueling
Solutions (DFS)

My job involves...

preparing and maintaining a database management system that generates a customisable Bill of Materials (BOMS) used to build Fuel Dispensers. Data, supplied in varied formats (Engineering drawings, Tables, Matrices, etc) is interpreted and used in the system to configure parameters (Products, options, models etc) and create rules enabling the system to understand which BOM parts are required to generate a unique BOM for each order.

I use maths to....

understand design changes by referring to Design Definition Reports, Pipe Routings, Schematic drawings, Engineering matrices and Design Assembly Part models. Implement the design change into the Configurator using itemised guides and incorporating the same Product Data Management and Definitions in customer tools. Rules written within database with the aid of Boolean, SQL statements, multipliers etc

Keywords: Engineering, Maths, ALGEBRA- Boolean, SQL, (IF, AND, OR, NOR, NAND, <>, <,>) etc, Multipliers, Calculations, Database





Name

Kaylie Smith

Job Title

Staff Engineer - New Product Development

Company

TE Connectivity

My job involves...

leading a team of engineers to develop new products which protect electrical wires in vehicles. We have an idea for something new, develop a design and a special material, and produce the new products in our factory. We work with our customers to find out what is important to them.

I use maths to....

work out the recipe to make special materials, analyse test data to make sure the products work well; Calculate how much it costs to make the new products in our factory; Understand how much profit the company will make when the products are sold.

Electrical components, Materials

Keywords: science, Engineering, Analysis, Statistics, Testing, Profit



Name

Fergus O'Connor

Job Title

Civil Engineer

Company

Ross-Shire Engineering

My job involves...

designing treatment works for Scottish Water, some of which clean water so it's safe for you to drink and others which clean what you flush down the toilet so it's safe to put back into rivers and the sea without killing fish and plants.

I use maths to....

make sure that enough water can flow through the big pipes and tanks at these works, that any buildings or walls we're going to build are strong enough that they won't collapse or break and to work out how much all these things are going to cost to build.

Keywords: Engineering; Water; Environment;
Algebra; Geometry; Graphs; Tables;
Probability



STEM AMBASSADORS IN SCOTLAND



Name

Effie Parisi-Legget

Job Title

Senior Civil Engineer

Company

Amey Consulting

My job involves...

the design of improvement works for highway and rail structures, carrying out project management activities, carrying out structural calculations, developing and reviewing health & safety documentation, monitoring budgets, carrying out bridge inspections, coordinating sub-contractors, designers and other stakeholders, supervising works on site, producing feasibility options reports, and bridge management plans.

I use maths to....

carry out structural calculations. For example, to calculate the loading imposed on a structure and whether the structure can take this loading. I also use maths to calculate the cost for the works I am designing. I use maths when drawing bridges or roads to make sure that the dimensions are correct.

Keywords: Engineering



Name

Colin Kerr

Job Title

Retired actuary

Company

A large life assurance and savings company

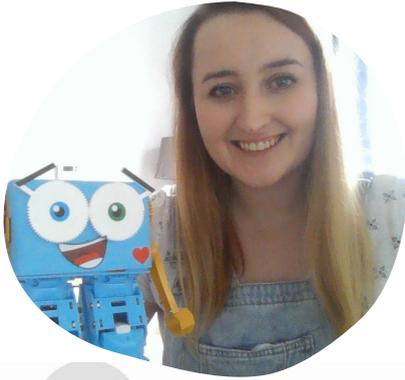
My job involves...

predicting future trends in inflation, interest rates, marriage, birth and death rates and model the implications. Using a computer to run the model. Keeping up to date with financial legislation. Devise saving and investment plans to help people save for the future.

I use maths to....

calculate the effects of the predicted future trends in various rates. Summarise the meaning of large sets of data. Work out rates from large sets of data. Create diagrams which illustrate and explain the data.

Keywords: Maths, statistics, data analysis, computer modelling



Name

Tanya Howden

Job Title

Digital Education
Programme Manager

Company

Heart of Midlothian FC

My job involves...

teaching young people about how we use technology in sport and football and how they can get involved and explore this further. An example of this may be running workshops to build and code our own fitness trackers like the ones that athletes wear to track data about their performance.

I use maths to....

explain how data from fitness trackers can be used to check a player's fitness levels and make decisions about future games. I also use maths in my daily role to make sure we stick to our funding budget or calculate how many volunteers I need for each workshop.

Keywords: Sport, Football, Statistics, Data



Name

Sophie Beckingham

Job Title

Graduate Research &
Development Engineer

Company

Siemens Mobility – Rail
Infrastructure

My job involves...

developing railway signalling software that makes sure the trains run on time and safely. As a Graduate Engineer I get stuck into lots of different things; some days I write the code for the signalling software and some days I help manage the projects in my department.

I use maths to....

help me decide the rules that the software needs to follow to make sure the trains don't crash and get to their destination as quickly as possible. For project management I use statistics to monitor the progress, resources and finances of all the projects.

Keywords:

Railway Signalling, Software Engineering, Coding,
Project Management





Name

Matthew Fisher

Job Title

Senior Air Craftsman
(Technician)

Company

Royal Air Force

My job involves...

maintenance, Management, and servicing of air defence Radar in the North of Scotland. Making sure that the radar picture and the communication equipment is in working order for the aircraft that defend Us and our Allies.

I use maths to....

ensure that Radio Frequencies are banded correctly as they can't be too close together; Make sure that electrical, radio and fibre signals are working correctly in a variety of signal equipment; Ensure cables that carry signals cross as little as possible and, when necessary, in as small an area as possible to prevent cross talk and interference; Make sure that Power, resistance and wattage are correct in equipment using equations like Ohms Law; Conversion of Binary and Hex to decimal.

Keywords: Defence, Air, military, MOD, Radar, Binary, hexadecimal, frequency, power/resistance/ampere





Name

Yumi Stow

Job Title

Graduate Process
Engineer

Company

Xodus Group

My job involves...

working in a team to deliver solutions for our clients in the energy sector. I am a graduate process engineer at an engineering consultancy called Xodus Group. Each job that Xodus win is different meaning that work is always different and varied - and that's what's great about it.

I use maths to....

help deliver calculations, simulations and projects to clients. As a graduate in the Process & Facilities department, I use maths daily in a range of ways. This can include designing and sizing plant equipment, creating cost estimates on Excel tools, running plant-copy simulations and summarising everything in written reports.

Engineering, consultancy, energy,
Keywords: renewables, oil, simulation, Excel,
Python



Name

Steve Markham

Job Title

Director & Contract
Quality Engineer

Company

STM Quality Limited

My job involves...

helping manufacturers in the automotive industry develop new products and improve existing ones. We also focus on implementing management systems that help them improve product quality, ensure occupational health and safety and be kinder to the environment.

I use maths to....

measure all of the parts of a vehicle to make sure they all fit together safely. Every part has maximum and minimum dimensions that are safe, this is called its "tolerance", and when I design parts I use measurements on engineering drawings using a system called geometric dimensioning to get all of the maths correct.

Automotive, manufacturing,

Keywords: measurement, design, geometric dimensioning and tolerancing, GD&T





Name

Josh Williams

Job Title

Engineering PhD
Researcher

Company

Heriot-Watt University

My job involves...

using computers to improve inhalers for patients with breathing diseases such as asthma. I use computer simulations to predict where in the lung the inhaler drug goes, based on lung shapes from patient X-rays. This can be used to choose the best inhaler for a specific patient.

I use maths to....

tell the computer which parts of an X-ray show the patient's lungs. I program the computer to calculate the speed and movement of drug and air in patient lungs, using the maths describing how air and drugs move.

Keywords: Biomedical engineering, computer programming, healthcare.



Name

Dogie Richardson

Job Title

Warrant Officer
Avionics Technician

Company

British Army
(Corps of Royal Electrical
and Mechanical Engineers)

My job involves...

maintaining and repairing electrical, optical, radio, radar, control and weapon systems on British Army helicopters. Most of my career has been on Mk 1 Apache Attack Helicopter. I work without supervision, reliant on my own calculations, frequently in other countries under tight time constraints.

I use maths to....

work with volumes and areas (replenishing oil systems), vectors (used in weapons and optical system calculations), converting between units (metric and imperial, radians and degrees, and hours and minutes), use formula, read instruments and make accurate adjustments, Fourier analysis (calculating compass swings), calculus (rate of change and deltas with radar systems).

Keywords: Algebra, volumes, measurement, analysis, Fourier, calculus, Defence, engineering, electronics, optics.



Name

Natalie Moore

Job Title

Graduate Highways
Engineer

Company

Jacobs UK Ltd

My job involves...

designing and constructing new roads and other infrastructure such as footways and cycleways, as well as improving existing roads and infrastructure.

I use maths to....

work with calculations to create the shape of the road to make sure that it is safe for everyone to drive on.

I also use maths to find the volume of material required to construct roads, footways or cycleways using simple area and volume calculations.

Keywords: Road, Footway, Cycleway, Highway,
Safety, Civil Engineering, Engineering,
Area, Volume, Shapes



Name

Rachel Hayden

Job Title

Final Year Civil
Engineering Student

Company

University of Bath

My job involves...

solving problems to find solutions to make the world a better place. As a civil engineer I could be part of teams designing, building or maintaining bridges, roads, railways, stadiums, hospitals or even schools.

I use maths to....

ensure that what we are designing is safe and will work as it should do. I could be using maths to make sure that a material is strong enough to support a bridge, or to check that the foundations are strong enough so a building won't sink into the ground.

Keywords: Engineering, Civil Engineering,
Construction



Name Heather Walton

Job Title Formulation Chemist

Company NextPharma

My job involves...

developing medicines from an isolated drug (typically a white powder, often poorly absorbed by the body) into useful dose forms which can be used by patients. Specifically I design and manufacture capsules filled with liquid mixes, which can allow drugs normally delivered by injection to be taken by mouth.

I use maths to....

calculate quantities of materials to be used in manufacturing, and create expressions to allow the quantities required to be calculated for any scale. I look for and model trends in data, and extrapolate to gain new information. I evaluate whether the new medicines we create have statistically significant benefits over existing products.

Pharmaceuticals, chemistry, science,

Keywords: research and development, manufacturing, statistics, mathematical modelling





Name

Sara Aitken

Job Title

Design Engineer

Company

Scottish Power Energy Networks

My job involves...

the main plant design for Scottish power transmission substation projects. Transmission substations transmit electricity at high voltages across Scotland's electrical network so that electricity can get from the generation source to our homes and industry properties.

I use maths to....

carry out electrical calculations when choosing the size of power cables. I use different formulas to help make decisions about the cables that are used. I also use maths for mechanical calculations to specify the size and length of busbars which conduct the electricity from one piece of apparatus to another.

Keywords: Electricity, Substations , Utilities,
Engineering, Ohms Law, Newtons
Law



Name Stephen Raggett-Batchen

Job Title Principal Engineer

Company Fairhurst

My job involves...

designing and inspecting lots of bridges, tunnels and other things that we all use without knowing. If they need work to improve them, my team need to come up with solutions to help.

I use maths to....

design new bridges and ensure everything is safe to use – we use lots of calculations to make sure everything isn't working too hard and is able to continue to be used in the future. If there is a problem, how we fix it to make it better and stronger.

Keywords: Civil engineering, structural engineer, engineering, engineer, calculations, formulas, percentages, fractions, trigonometry, bridge, tunnel.



Name

Samantha Fontaine

Job Title

Registered Veterinary Nurse and Lecturer in Small Animal Clinical Sciences

Company

University of Glasgow

My job involves...

working as a registered veterinary nurse in a clinic as part of a vet-led team to provide care and administer medicines and treatments to sick or injured animals. This is done under the direction of the veterinary surgeon. I also educate pet-owners on a range of health-prevention topics.

I use maths to....

complete common calculations to support patient care including:

- Medication dosages/volumes based on drug strength/concentration, dose rate and patient weight
- Rate of intravenous fluids to be administered
- Rate of oxygen to be administered to anaesthetised patients
- Daily calorie requirements to support nutrition or weight loss
- Volume of hourly urine production by a patient

Keywords: Veterinary, veterinary nursing, medical calculations, patient care



Name

Alice Graham

Job Title

Quantity Surveyor
(someone who manages
the costs of construction
projects)

Company

Faithful+Gould
(ATKINS)

My job involves...

keeping track of costs on construction projects to stay on budget. As part of our job, we help our clients to find out how much it will cost to build what they want. We also help the client to pay the people doing the work.

I use maths to....

do all the basics – adding, subtracting, multiplying percentages, proportions.

I typically use my maths skills in spreadsheets to create and review project budgets, check costs that have been submitted by contractors, to calculate how much they need to be paid and advise my client how much money they have spent.

Keywords: Numeracy, graphs, spreadsheets, cost reporting, budgets, construction



Name Elizabeth Cadger
Job Title Applications Developer
Company Atos

My job involves...

creating software for NHS Scotland. The software I create is mainly related to staff rosters and recording time worked. This information is then sent onto the payroll team.

I use maths to....

estimate the length of time it will take to create a piece of software. This is used to determine how much a piece of work will cost and how long it will take. I also create algorithms for calculating the number of hours worked and for working out which staff are available to fill particular shifts.

Keywords: software development, algebra, .net, sql server



Name

Lisa Alford

Job Title

Senior Chemistry
Technician

Company

Tonbridge School

My job involves...

preparing and setting up practical experiments for secondary aged school children. I make up solutions, maintain laboratory equipment, order supplies, manage invoices and budgets, write risk assessments, follow GOSH regulations and CLEAPPS guidance, test new practicals and/or demos, help with Science outreach programmes and run a research project club.

I use maths to....

calculate how much chemical I need to make up a solution, the number of moles in a substance, an unknown concentration of a solution, converting w/w into molar, carrying out a dilution, ratios of mixtures, the results of a titration. When placing and order, adding VAT, when checking invoices and the budget.

Keywords: Chemistry, ratios, algebra,
adding, calculation, budget



Name

Rachel Alexander

Job Title

Process Engineer

Company

Petroineos Crude Oil Refinery

My job involves...

monitoring the plant to check it is operating correctly and make changes to the process to help make the process safer or to help make the company more money. I often have to problem solve if something is wrong and work with my team to find a solution.

I use maths to....

calculate the flowrates of all the product streams and ensure it adds up correctly. I use graphs every day to look at the trends of the process temperature, flows and pressure. I use lots of different maths equations when trying to design new equipment for the sit.

Keywords: Arithmetic, Algebra, Geometry



Name

Daniel Friedrich

Job Title

Senior lecturer in
Mathematics for
Engineering Applications

Company

University of Edinburgh

My job involves...

teaching undergraduate and postgraduate students to use mathematical methods to simulate and optimise the behaviour of engineering systems ranging from simple mass-spring-damper systems to complex gas separation systems. I also research in the area of thermal energy storage and renewable energy systems.

I use maths to....

design and optimise renewable energy systems and their integration with energy storage. I develop mathematical models which describe the behaviour of these systems and are used to design cheaper or more environmentally friendly systems.

Keywords: Academia, applied mathematics and optimisation, renewable energy systems





Name

Angela Newlands

Job Title

Community Business
Partner

Company

Farrans Construction

My job involves...

working with community groups, schools, colleges and universities, to help young people learn more about the construction industry and the variety of careers that the industry has to offer. I also help keep the people that live close to construction projects aware of what is happening every step of the way, and support the delivery of community benefits which leave a lasting legacy after construction is complete.

I use maths to....

work out how much time construction will take, to allocate enough time each day for certain tasks, consider distances I need to travel, journey times, the numbers of people that can fit in a venue, and how many information packs I need.

Engineers work out how much material will be needed for each part of construction, thinking about volumes, areas, lengths, widths, and angles.

Keywords: Community Engagement, Construction, Civil Engineering, Trigonometry, estimating, algebra, statistics





Name

Anne Okafor

Job Title

Construction Planner

Company

Cruden Building (West)

My job involves...

combining lots of information about the construction project into a gantt chart which shows activities and the time it takes to do them.

I monitor progress on this and report on this to the business stakeholders. I monitor and analyse data to understand what the data is telling us so we can make better more informed decisions.

I use maths to....

estimate durations of tasks based on multiple factors: type of materials, how many people needed; calculate how long things will take to do.; measure progress – How much have we done? How much is left?; solve problems; present information using graphs, pie charts; read and understand information from graphs.

Keywords:

Construction, Planner, Estimating, Data,
Data Analysis, Project Controls, Duration,
Graphical representation, Problem Solving,
Numeracy, Measurement, Scheduling,
Programmes





Name

Claire Hart

Job Title

Communications Lead

Company

Lockheed Martin UK

My job involves...

creating communications for all employees ensuring they have all the information they need to help them do their jobs effectively. I also organise staff engagement events and community outreach.

I use maths to....

examine statistics, percentage of communications which are being received and engaged with from staff; conduct quantifiable surveys to measure improvement in identified areas; look at numbers of attendees to events; manage budgets to ensure I can balance costs, ensuring enough resources and supplies for attendees against money available. For charity events I look at profit after costs of any events.

Keywords: Arithmetic, percentages, statistics



Name

David Ewing

Job Title

Statistical Scientist

Company

Biomathematics and
Statistics Scotland
(BioSS)

My job involves...

using maths and stats to analyse data from studies and experiments in veterinary science, ecology and epidemiology. There's a lot of computer coding, lots of working with biologists and ecologists and I even sit on ethical review panels for animal experiments.

I use maths to....

develop mathematical and statistical models which answer a wide range of questions including: What is the distribution of seabirds in the North Sea? How effective is a new treatment for a livestock disease? And will climate change bring mosquito-borne diseases to the UK?

Keywords: Ecology; Epidemiology; Veterinary Medicine;
Animal Health; Mathematical
Modelling; Statistics



Name

Lorna Bennet

Job Title

Project Engineer

Company

Offshore Renewable
Energy Catapult

My job involves...

both research and design projects in a wide variety of exciting projects in wind and tidal power. I work with project partners to address industry challenges through innovation, product development and testing. I'm also leading projects on energy transition to transform the energy sector, accelerating our transition to net-zero.

I use maths to...

help with a variety of different tasks. I could be using geometry to design test rigs for new technologies, which may also require structural analysis with algebra or calculus. I also regularly use spreadsheets to capture data for assessment and generate graphs and charts to represent results in a way that is much easier to understand.

Keywords:

Renewable energy, offshore wind power, wave power, tidal power, Mechanical Engineer, Innovation, geometry, trigonometry, algebra



Name

Sophie Davison

Job Title

Nuclear Operations
Technician

Company

EDF

My job involves...

refuelling the two nuclear reactors on site, keeping them running and replacing them when their power has depleted. I trained as a Mechanical Technician; we worked on maintaining pumps, valves and motors. Now I operate this plant, making sure it works correctly and safely.

I use maths to....

make sure the plant is running at the right state, checking, recording and comparing temperatures, pressures, or levels.

I am an Emergency Responder so we may also be required to use maths to ensure our firefighting equipment is correct and safe to use.

Keywords: Engineering, Nuclear, Fuel, EDF,
Technician, Operations, Maintenance



Name

Lauren Lawson

Job Title

Technical Graduate
Apprentice

Company

Leidos

My job involves...

designing, developing, testing, documenting and maintaining software systems with a team.

I use maths to....

solve problems in my code. I use mathematical operations, such as addition or subtraction, to find the solution to these problems. I also use Boolean logical operations to meet true or false conditions; for example, I can use a greater than symbol in my code to compare two numbers.

Keywords:

Computational Mathematics, Arithmetic, Statistics, Probability, Logarithm, Algebra, Public Sector, Problem Solving, Logic, Binary (0's and 1's), Integers, Rational Numbers, Algorithms, Coding



STEM AMBASSADORS IN SCOTLAND



Name

Maria Eftimova

Job Title

Civil Structural
Engineer

Company

Costain

My job involves...

designing various types of structures like buildings, bridges, roads, railways, airports and any other type of infrastructure out there.

I use maths to....

design structures to calculate the way that loads are transferred around a building and choose appropriate building elements that can sustain the loads.

Keywords: Engineering, structures, infrastructure, forces, maths, geometry, physics



Name

Emma Hamilton

Job Title

Project Controller

Company

British Marine
Technology (BMT)

My job involves...

very simply, ensuring that our Marine Engineering projects stay on track! I look after project budgets by monitoring spend and schedule and use data to predict what the final project cost will be. With this information, I can make recommendations to the Project Manager on how to improve progress.

I use maths to....

analyse the performance of projects. I use simple statistical techniques, such as measuring percentages of project completion or budget spent, then creating metrics from this data to check if the project is on track. Often I present my results in graphs and charts to make the data easier to understand.

Keywords: Marine Industry, progress
measurement, statistics, Engineering,





Name

Caroline Roche

Job Title

Control Systems
Engineer

Company

Capula Ltd.

My job involves...

programming industrial computers (PLCs) that control physical machinery using electrical signals and displaying the information on screens within the control room. Places I have worked include power stations and chemical plants.

I use maths to....

convert the electrical signals (4-20mA) into more useful readings such as temperatures, pressures and volumes. These are sometimes displayed as graphs and charts to help make decisions.

Keywords: Engineering, Energy, Utilities,
fractions, equations, percentages



Name

Debbie Soames

Job Title

Senior Systems
Engineer

Company

BAE Systems

My job involves...

looking after several computer systems that my project uses to hold the tools for Model Based Systems Engineering. In previous roles, I have been responsible for the Acoustics (Sound) system on the RAFs Nimrod Aircraft. This included liaison with the RAF and Flight Trials

I use maths to....

to track usage and costs of various tools. Previously I needed to use Maths to a) Understand the use of sound in an underwater environment to find sub-merged submarines b) Analyse the results of Flight Trials c) Analyse issues reported by the RAF operators.

Keywords: Engineering