

# MATHS AT WORK IN OUR WORLD

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Primary 5

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My mum is a Specialist Procurement Manager for the Business Services Organisation. They provide the purchasing service for the Health and Social Care in Northern Ireland. They are responsible for purchasing and delivering everything required to run the health service including food, medical and surgical supplies, uniforms, medicines, beds, chairs, laboratory supplies, electricity, gas and all equipment. Maths is used in procurement to calculate the amount of products / services to buy, how often to buy it and how much they will cost. These are all calculated based on what has been bought in the past.

In my mum's job because they are spending public money they have to ensure that they are getting value for money. All public money that is spent is audited by the department of health. Therefore my mum's job is to ensure that all services that are bought comply with the correct regulations and are bought within the rules of the European Union. As part of the job her team has to compare prices among a number of different organisations and calculate the costs of services over a number of years. These services frequently cost millions of pounds therefore it is essential that costs are analysed correctly to ensure that the Health and Social Care do not have to pay more for a service than they need to and to ensure that they can afford to buy what is required. If services cost too much money and the Health Trusts spend more than their allocated budgets, then they may not be able to provide care to people in need.

While maths is an important aspect of the job, ensuring that costs are calculated correctly and also ensuring that potential companies have sufficient money / capital within their organisations to allow them to work with the health service over long periods of time, it is only part of the job. The bulk of the job is ensuring that these services are fit for purpose and that the staff are trained correctly and are registered to provide the required care.

However as with all things in life, while the quality of the service is important it also has to be affordable to ensure that care can be provided to everyone who needs it within budget.



My Uncle Ciaran is a VAT Team Manager for Her Majesty's Revenue and Customs. (HMRC). He uses maths in a number of ways. He has to check business records to ensure that companies who buy and sell goods pay the government the correct Value Added Tax (VAT). Every three months companies have to complete a VAT return to the government and either pay the government tax or claim tax back. Ciaran's team examine the company's papers and check that they are paying the correct VAT. This is very complicated because different products have different VAT rates. For example adult clothing and shoes have a VAT rate of 20% however children's clothing and shoes have a 0% VAT rate. Similarly some foods have a 20% VAT rate and some have a 0% rate. Ciaran's team is responsible for checking oil companies within Northern Ireland and this is very complicated. Different oils have different VAT rates – some have 5% rate and some have 20% rate so therefore these have to be checked at all times.



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Ciaran is responsible for checking the calculations and formulae within the spreadsheets to ensure that there are no mistakes made. This is important because if the calculations are incorrect then companies may be made to pay more or less money than is required and if an error is found out at a later stage then this money will have to be paid back.

Ciaran explained that the VAT system is very difficult and there are numerous rates dependent on what is being bought or sold. For example when checking food companies / restaurants there are different rates of VAT dependent on whether the food is eaten inside the restaurant or taken away. Therefore companies charge

different rates dependent on where the food is eaten. This difference in payment has to be recorded and checked and this can be very complex.

Ciaran's team also visit company's premises and offices and they then have to submit travel claims at the end of each month to cover their costs for travel. Ciaran has to approve these claims and therefore he has to check each claim to ensure that staff have claimed the correct mileage and rate and that these have been added up correctly. This money is then deducted from his team's budget so therefore it is essential that this is done correctly.

Ciaran loves maths and is an accountant by profession and therefore he loves his job.



My dad works in a packaging factory. They make cardboard packaging that is used to package food and drink, medical supplies and fresh produce. Everything that is done is governed by numbers, the number of boxes, the size of each of the boxes, the machine speeds and settings that are used to manufacture each of the boxes. One machine, the corrugator makes nearly 160 kilometres of cardboard, 2 metres wide each day. That's enough to travel from Newry to Dublin and back. That is then cut into sizes and sent onto other machines that use millimetres to measure the accuracy of the boxes. Each of the papers used is a different weight and is measured in grammes per square metre, or gsm. The papers range from 80gsm right up to 280gsm.

Last year over 65,000,000 square metres of corrugated fibreboard (cardboard) was sent to customers all over Ireland from Warrenpoint. Without numbers his customers could not say what size, what strength and how many boxes they needed.



My godfather Paul is a bank manager. He explained that being good at mathematics is very important when working in a bank. Anyone who wants to work in a bank must have passed their GCSE in maths – many new staff joining the bank have studied accountancy in university.

Maths is really important for cashiers – they are the people who deal with counting our customers' money. They need to have good counting skills in order to count customers' money when people are lodging money into their bank accounts. They need to be able to add, subtract, multiply and divide. It is important that they are accurate otherwise a customer might not receive the correct amount of money they have asked and been charged for. They also need to balance their till at the end of the day to make sure they have the correct amount of cash once all the money has been paid in.

When customers save money in the bank they will expect to earn interest on their money so banks need to be able to work out how much interest they owe to their customers.

When customers want to borrow money, to buy a house or a new car or to go on holidays the bank will charge interest and need to be able to work out how much the customer needs to repay. If banks don't charge enough interest then they will not make any money.

Bank Managers need to have good maths skills to make sure that their branch is making a profit, that all money is accounted for and that they have met their targets (targets like new bank accounts opened).

