



STEM
AMBASSADOR HUB

STEM AMBASSADORS IN SCOTLAND

GUIDE TO MATHS WEEK SCOTLAND 2021

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“BUT WHEN WILL I EVER USE THIS?”

Funded by



Second Level

National 5

Higher

“But when will I ever use this” is a maths careers resource where we take the maths topics that learners find hard to contextualise and ask STEM Ambassadors show how they use it in the workplace. Each topic also has linked maths activities for the learner to try which has designed by each STEM Ambassador linked to their job and reviewed by a teacher to make sure it is appropriate for the level.

Each topic can be viewed on our website or downloaded as a PDF.

Second Level

- Algebra
- Fractions, decimals and percentages
- Shapes, area and volume

National 5

- Algebra
- Trigonometry
- Fractions, decimals and percentages

Higher

- Logarithms and exponentials
- Vectors
- Trigonometry

Access this resource [here](#).



“I really love the profiles and could see myself using these in class as additional challenge or extension tasks alongside being a great tool for exploring the Inspire and Discover badges of the Young STEM Leader Program, a tremendous tool for the age-old question of 'When will I ever use this?'”

Paul Malcolm, Principal Teacher at Kilcreggan Primary School

MARVELLOUS MATHS

Second Level

Third Level

Marvellous Maths is a collection of STEM Ambassador created 3-5 minute videos all about themselves, their job and how they use maths every day. All videos will be permanently available anytime on our website or on Youtube.

Videos include:

Lorna Bennet, Project Engineer in Renewable Energy

Veronica Garcia, Graduate Teaching Assistant in Education

Alan Walker, Senior Lecturer in Mathematics

Amanda Berg, PhD Student in Medical Sciences

Joe Wightman, Drilling Engineer in Oil and Gas

Gavin Little, Assistant Civil Engineer in Transportation and Storage

Alex Combes, Wastewater Specialist in the Water Industry

Helen Baron, Hydrological Modeller in Ecology and Hydrology

Ailsa Robertson, Software Engineer in Professional Business Services

Tanya Howden, Digital Education Consultant in Technology/Education

Stephen Nand-Lal, Graduate Consultant in Engineering Consultancy

Aileen Aitken, Project Manager in Technology

Access the videos [here](#).

Q&A

Once you've watched a video with your class, learners have an opportunity to submit question to the STEM Ambassador via a [Padlet](#). STEM Ambassadors will be available to answer questions between 27 September – 8 October. Once you've submitted your question, check back to see the answer later in the week and additional guidance is available on the [Padlet](#).

CAREERS CARDS

Second Level

Third Level

National 5

Higher

A deck of over 80 STEM Ambassador profile cards which can be downloaded and printed or viewed on a screen. Each card showcases a STEM Ambassador, their job, how they use maths in their jobs and keywords to help you identify different sectors.

The deck also comes with some suggested activities to use the cards with.



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 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 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 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.



Download the Careers Cards [here](#).

BREAKOUT MATHS CHALLENGES



Second Level

Have a go at two print and play maths challenges where learners are set the challenge to find a secret code.

Each challenge requires learners to work through a set of problems resulting in a 4-digit number. Each challenge comes with leader/teacher instructions, learner instructions, and materials to complete the challenge.

THE MAGICIAN'S SECRET

Use algebra to learn the new value of playing cards.

RETURN OF THE CRYSTAL

The Science Museum in London urgently need their crystal back, figure out the quickest route from Arbroath back to London.

Developed by STEM Ambassadors in collaboration with Maths Week Scotland (2020).

 THE MAGICIAN'S SECRET	 RETURN OF THE CRYSTAL
<p>Background</p> <p>The Magician has gone missing and the secret to his greatest trick is locked away in a safe. Solve the equations using the playing cards to discover the secret number to unlock the padlock.</p> <p>In the box you'll find:</p> <ul style="list-style-type: none">• Two numbered playing mats• Laminated playing cards• Dry-wipe markers  <p>Instructions</p> <p>Figure out what number the playing cards are equal to by solving the maths problems. When you have figured out what number a card equals, write that number on the card and place it on the mat.</p> <p>Start at the top of playing mat 1 and work your way down solving the problems.</p> <p>When you have solved all the problems, open the folder titled 'final puzzle' and write your solution in the boxes. This will reveal the padlock number.</p>	<p>Background</p> <p>The Science Museum in London sent its crystal, from their high-powered laser, to Arbroath to be calibrated. The crystal is urgently needed back in London and the Science Museum has asked you to return it to them as quickly as possible.</p> <p>In the box you'll find:</p> <ul style="list-style-type: none">• A map with 7 train stations• A collection of tickets  <p>Instructions</p> <p>Arrange the tickets to find the quickest route to London.</p> <p>In the bottom right-hand corner of each tickets you'll find a number. Once you have agreed on your journey use these numbers to open the next padlock.</p>

Access the Breakout Maths Challenges [here](#).

GENERAL INFORMATION

STEM Ambassadors are available all year round to support the delivery of fun, interesting and engaging STEM topics. Our STEM Ambassadors are people working or studying in a STEM field, that are PVG-checked by STEM Learning, who give up their time to help demonstrate the value of STEM subjects and careers.

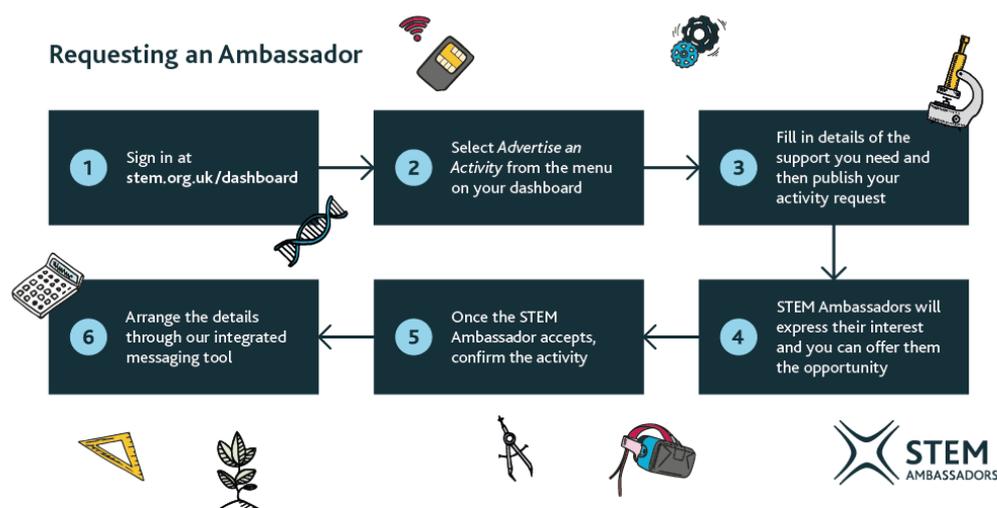
STEM Ambassadors can join STEM events and activities with young people in person or virtually. They can also support you with activity ideas, creating resources, or increasing your confidence and understanding of a topic.

Accessing the programme

Whatever kind of support you're looking for, making use of STEM Ambassadors happens through the STEM Learning website. You can advertise your own activity/support ideas for STEM Ambassadors to express their interest in, or browse the Offers of activities they are advertising to you.

Registering is simple:

1. Visit the STEM Learning website: www.stem.org.uk/register
2. Register for a new teacher account
3. Complete the registration form
4. Registration complete! Place and activity or browse offers



Download the [activity guide](#) to help you create your first activity.

For more resources to help you make the most of the STEM Ambassador programme, including a visit checklist and a guide to Offers, view our [Schools Information Pack](#).

MATHS WEEK SCOTLAND



27 September - 3 October 2021

Maths Week Scotland is a celebration of the importance of maths in our everyday lives. For 2021 the theme is 'Our World' providing an opportunity to explore the climate emergency and the world around us.

Enjoy events and activities across Scotland and find out about the maths in everything from solar flares to robots.

There will be a series of special events throughout the year so follow the hashtag **#MathsWeekScot** and also the [Twitter](#) to keep up to date with the latest news.

Visit the Maths Week Scotland [website](#) to access:

- Activity packs
- Resources
- Upcoming events
- Challenges

Don't forget to [pin your school on the Maths Week Scotland map](#) to let everyone know that you're involved in Maths Week Scotland.

