



# MATHS WEEK SCOTLAND 2022

26 September – 2 October 2022

**Practitioners Handbook**

# INTRODUCTION TO MATHS WEEK SCOTLAND 2022

Maths Week Scotland is an annual, week-long celebration of the importance of maths in our everyday lives. This year, Maths Week Scotland will run from **26 September - 2 October**.

This year's theme is the *Beauty of Maths* exploring the beauty and creativity in the world of maths. For some mathematicians that may be the elegance of a mathematical solution and to others the beautiful visual patterns created by their work.

We are working with our STEM Ambassadors and [Maths Week Scotland](#) to help you bring maths and numeracy to life in the classroom and to link to this year's theme.

Find out about the events, information sessions and resources we have available to support this week and how you can go about engaging with a STEM Ambassador to support Maths Week Scotland activities in your setting.

## Why?

In 2016 the Making Maths Count advisory group made recommendations in their [report](#) to transform Scotland into a maths-positive nation through raising the profile of maths, and encouraging enthusiasm for maths across Scotland. One of these recommendations was to establish an annual week of maths celebration to bring together events across the country with online and hands-on experiences

One year later the first Maths Week Scotland wowed all ages with talks, puzzle rooms and classroom games. It has been growing ever since with more events and ways to be involved.



# INTRODUCTION TO STEM AMBASSADORS

The STEM Ambassador Programme aims to connect young people with volunteers from a variety of STEM backgrounds, helping them to get excited about STEM subjects and to recognise the links between the school curriculum and possible future career pathways. It is a national, government-funded scheme, coordinated centrally by STEM Learning Ltd and managed locally by regional STEM Ambassador Hubs.

Volunteers from business, industry & academia, can sign up as STEM Ambassadors to share their expertise and experience with young people, encouraging them to consider whether STEM could be for them.

Teachers, youth leaders and other organisations can request support from these volunteers for the STEM, or careers-focused, lessons or activities they are running. To find out more about requesting support from a STEM Ambassador volunteer for your activities, [click here](#).



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## Maths Week Scotland Primary School Information Session

The aim of this session is to find out more about resources, activities, and opportunities available for primary schools for this year's Maths Week Scotland (26 Sept - 2 Oct).

During this session you will:

- Hear more about Maths Week Scotland and this year's theme The Beauty of Maths
- How schools can get STEM Ambassadors involved to help with their own MWS activities
- Learn what the STEM Ambassadors in Scotland Hub are doing for MWS
- Discover what resources are available.

This session is open to those working in primary education across Scotland.

**When:** Wednesday 24 August, 16:00 – 16:45

**Where:** Microsoft Teams

[Register](#)

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## Maths Week Scotland Secondary School Information session

The aim of this session is to find out more about resources, activities, and opportunities available for secondary schools for this year's Maths Week Scotland (26 Sept - 2 Oct).

During this session you will:

- Hear more about Maths Week Scotland and this years theme The Beauty of Maths
- How schools can get STEM Ambassadors involved to help with their own MWS activities
- Learn what the STEM Ambassadors in Scotland Hub are doing for MWS
- Discover what resources are available.

This session is open to those working in secondary education across Scotland.

**When:** Thursday 25 August, 16:00 – 16:45

**Where:** Microsoft Teams

[Register](#)

## Maths Week Scotland Careers Talks

Ideal for students wondering where the maths they are learning today will be used in the future. This series of talks aims to highlight the different and sometimes unexpected places maths can take you.

Perfectly linked to the aims of DYW the talks are suitable for upper primary and throughout secondary to highlight maths in the world of work.

All talks will be followed by the opportunity to put questions to the presenter.

### Maths and Art – Beethoven’s Metronome (suitable for age 11+)



Meet STEM Ambassador and student Carmela Silva Mason as she looks into Beethoven's music and the differences between written and performed versions.

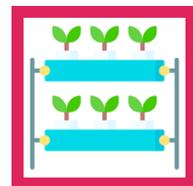
Find out how the invention of the metronome had an impact on music history.

**When:** Monday 26 Sept, 09:15 – 10:00

**Where:** Microsoft Teams

[Register](#)

### Maths in the Real World – Vertical Farming



Meet STEM Ambassador Cameron Williamson who has used maths in his career as an engineer to work on everything from submarines to vertical farms.

Find out how maths is helping to overcome technology challenges and allowing us to create indoor eco systems.

**When:** Monday 26 Sept, 13:30 – 14:15

**Where:** Microsoft Teams

[Register](#)

## Maths in the Real World – Displaying Data in Finance



Meet STEM Ambassador Alastair Robb a Finance Manager as he talks about how data can be turned into easily understood visual representation.

Highlighting how charts and graphs are used in the world of work.

**When:** Wednesday 28 Sept, 09:15 – 10:00

**Where:** Microsoft Teams

[Register](#)

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## Maths in the Real World – Science & Engineering



Meet STEM Ambassador Dean McLean an engineer who will talk about different aspects of maths are used in his role.

From speed/distance and time to area, volume, and statistics, find out why these skills could be important for your future.

**When:** Wednesday 28 Sept, 13:30 – 14:15

**Where:** Microsoft Teams

[Register](#)

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## Maths in the Real World – Construction Planning



Meet STEM Ambassador Anne Okafor a Construction Planner as she talks about how to gather and use data in construction planning.

Find out how maths is used to collect data and then used in the decision-making process during construction planning.

**When:** Thursday 29 Sept, 09:15 – 10:00

**Where:** Microsoft Teams

[Register](#)

## Maths in the Real World – Match statistics in Rugby

Meet STEM Ambassador Georgia Scott who is currently studying for a PhD in Data Analytics in Rugby Union.

Find out how maths is used to collect match data which is used to help coach teams to perform better, though maths didn't belong in sports? Think again.

**When:** Thursday 29 Sept, 13:30 – 14:15

**Where:** Microsoft Teams



[Register](#)

## Maths in the Real World – Using Percentages for community Benefit

Jane Elder is a Social Value Coordinator who helps to ensure the work that her construction company does also benefits the community.

Find out how maths is used monitor and report social impact and the skills that are used such as percentages and formulas to convey this information to others.

**When:** Friday 30 Sept, 09:15 – 10:00

**Where:** Microsoft Teams



[Register](#)



## Maths and the Arts Talks

These talks are specifically linked to this year's theme of The Beauty in Maths, looking at how maths is also used in art and music and are suitable for younger age groups.

### STEMAzing Structures (suitable for ages 5 – 10)

Anne Okafor, construction planner leads this session for learners age 5 - 10 all about picking the best shapes to build with.

Grab some paper and books and take part in the construction challenges.

**When:** Tuesday 27 Sep, 09:15 – 10:00

**Where:** Microsoft Teams

[Register](#)

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### Maths and Art – symmetry and shapes in art and nature (age 10 +)

Dr Elizabeth Dombi is a teaching fellow in Mathematics and leads this session looking at symmetries in art and nature.

She will demonstrate how to create beautiful symmetrical shapes and patterns using only straight lines.

**When:** Tuesday 27 Sept, 13:30 – 14:15

**Where:** Microsoft Teams

[Register](#)

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### Maths and Art – 3D Visualisation from the Glasgow School of Art (suitable for ages 8 – 12)

STEM Ambassador Daisy Abbot work for the Glasgow School of Art based in the School of Simulation and Visualisation.

Find out how maths and technology such as laser scanning can be used in art, anatomy and much more using 3D visualisation.

**When:** Thursday 29 Sept, 11:00 – 11:45

**Where:** Microsoft Teams

[Register](#)

## Maths Challenges

STEM Ambassadors have provided a variety of tried and tested maths challenges including Music Scramble and The Yes/No Game, find these on our [Maths Week Scotland Webpage](#).

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## STEM Learning Resources

We have gathered together some of STEM learnings best resources for this years theme of The Beauty in Maths linking art, maths and music.

### Maths and Art

#### Maths in Art (ages 7 – 16)

This resource from Cre8ate maths investigates the maths found in work by two artists. Both activities have an accessible starting point and both can be extended to provide a real challenge.

[View resource](#)

#### Maths and Art (ages 7 -14)

Curves of pursuit – This video demonstrates how to construct curves of pursuit. Beginning by drawing a square, students are taken through the required steps. The video ends by suggesting different shapes as starting points.

[View resource](#)

#### Shape Match (ages 5 – 11)

This game, aimed at primary level involves recognising and matching 2D shapes. The game consists of a track with a 'shopping list' of shapes for each player. Players start in the bottom left-hand corner and move a single counter around the board.

[View resource](#)

## Art of Mathematics (ages 5 – 11)

The Art of Mathematics focuses on Friedensreich Hundertwasser, an Austrian painter and architect. His buildings are colourful and rounded, trees are extremely tall, everything is inaccurate. He disliked edges and straight lines, so everything is rounded, wavy and different, as were his spirals which became an enduring feature of his work.

[View resource](#)

## Maths and Music

### Music Festival (ages 14 – 19+)

In this 'Music Festival' resource students use weather data to consider which month would be the best to hold an outdoor music festival.

[View resource](#)

### Music Sequences Activity (ages 5 – 11)

In this activity pupils will learn to follow a sequence of instructions, create an algorithm for other people to follow and to understand that the order of instructions are important.

[View resource](#)

### Sounds Amazing (ages 7 – 11)

There's sound and music all around us! This programme has pupils exploring the science of music and sound, creating music and instruments with a range of found objects, and even finding music in unlikely places.

[View resource](#)

## Request a STEM Ambassador

As well as the events we have organised with STEM Ambassadors, Maths Week Scotland is the perfect opportunity to place a request for a STEM Ambassador to work with your class or school doing whatever you would like them to do.

It's simple to get started, if you haven't already got an account you need to register on the [STEM Learning website](#) then you can add an activity.

We have created a guide to help you write an activity which you can find [here](#).

We've also provided some sample text you can simply copy and paste into the new activity form and just fill in the blanks. You can use these or fill in the activity request using your own wording.

### Careers Talk

Title

[**SECTOR**] Careers talk at [**SCHOOL NAME**] in [**LOCATION**]

Engineering Careers talk at Secondary Academy in Glasgow

We are looking for a STEM Ambassador who [**SECTOR DETAILS**] to talk to our pupils about their career to date and what's involved in their day-to-day job. The presentation should be around [**INSERT TIME**] with time for questions after. We'd like this talk to be [**IN PERSON/ONLINE**] and take place [**INSERT IDEAL DATES & TIMES**].

*Add information about your pupils, age, interests, and knowledge so far*

*Include any specific aims you want to achieve: e.g. 'we would like our pupils to have an understanding of civil engineering.' Include anything else the STEM Ambassador might need to know before volunteering.*

### Activity

Title

Deliver [**ACTIVITY**] at [**SCHOOL NAME**] in [**LOCATION**]

Deliver a coding workshop at Primary School in Glasgow

We are looking for a STEM Ambassador to deliver [**ACTIVITY**] to our pupils. The session should be around [**INSERT TIME**] in length. This will take place in our school [**ADD ANY INFO NEEDED TO ATTEND THE SCHOOL**] and take place [**INSERT IDEAL DATES & TIMES**]. Our pupils have been learning about [**SUBJECT**] in class and would like to hear from someone first-hand. Some things we'd like a STEM Ambassador to demonstrate include [**INSERT LIST**]

*Add information about your pupils, age, interests, and knowledge so far*

*Include any specific aims you want to achieve: e.g. 'we would like our pupils to have an understanding of civil engineering.' Include anything else the STEM Ambassador might need to know before volunteering.*

## Browse STEM Ambassador Offers

Our ambassadors are keen to help and offer their services, many have attained National Numeracy or other Maths-related training and we have been encouraging them to advertise what they have to offer on the database.

So if you are looking for some inspiration from STEM Ambassadors or need help planning a lesson you can browse through the STEM Ambassador offers to see what is available.

Sign in or register at [www.stem.org.uk](http://www.stem.org.uk) and visit <https://www.stem.org.uk/platform/offers/search/results> in order to access offers.

Highlighted below are some of the maths offers that are currently available, click on the link to express interest and start the conversation with the STEM Ambassador.

### Maths Anxiety Awareness (ages 7 – 19+)

As a National Numeracy Champion - I would be happy to talk with individuals or groups who may be suffering from or supporting people who are challenged with Maths Anxiety. I have my own experience of overcoming Maths Anxiety to pursue a career in construction and would like to help anyone else who may feel challenged when it comes to finding strategies for overcoming their own issues with Maths Anxiety. I can mentor or point you in the right direction of resources - this is not maths tutoring but helping to overcome the challenges around facing everyday maths.

[View offer](#)

### What's it Like to Study in STEM (ages 14 – 19+)

As senior-phase students start to think about what happens after they leave school, it may be useful for them to hear from (and have the chance to question) a current STEM undergraduate student. Many people go into STEM fields once they've left school and quickly have to re-evaluate their view of their chosen subject. As a final-year student, I've heard (and said) "I had no idea this/that was so important" so many times! To help with this, as schools may be struggling to organise large-scale visits for some time, I would be happy to help out in simply answering questions anyone interested in STEM study may have

[View offer](#)

## Careers in Maths (ages 11 – 19+)

This is a series of videos produced by the University of Edinburgh and Aarol films. Five Maths graduates, working in different sectors, explain how they use Mathematics in their job, and then challenge the audience with a puzzle related to their job

[View offer](#)

## Have Fun with Maths (ages 8 – 15)

This is a collection of resources for 8-15 years-old, produced by the University of Edinburgh.

[View offer](#)



## Loan Resources

The STEM Ambassadors in Scotland Team have several physical loan resources which are free to borrow and can be used in conjunction with a STEM Ambassador.

Here are just some of our Maths resources.

### Maths Week Scotland SSERC Meet Kit (early/first level)

These kits were funded by Maths Week Scotland in 2021 and produced by SSERC Primary.

Looking at floating and sinking and how to apply numeracy skills into the world of work we have 3 kits available, supporting documents and videos will also be provided.

### Fun Maths Road Show

The FunMaths Roadshow for primary consists of five 'boxes'. Each box contains 25 mathematical activities displayed on coloured laminated A3 card, with associated equipment.

The activity is designed for group sizes up to 60 students are appropriate. The puzzles are laid out on tables in a hall or other large space.

Children move around the room tackling the puzzles in any order they choose. Each pupil has a customised response sheet to be initialled by a helper when each activity is successfully completed. Helpers could be staff or older pupils from the school. In a typical session of 60 - 75 minutes, with pupils working singly or in pairs, most pupils will complete well over a dozen activities.

We have 1 set of boxes available and ambassadors who have experience in delivering the activity.

This resource is already reserved for Maths week Scotland but is available throughout the year.

## Edinburgh Maths Circle

The Edinburgh Maths Circle is a workshop designed by The University of Edinburgh School of Mathematics who have also produced hands on resources so you can run your own.

We have 3 primary kits consisting of around 30 problems, resources and instructions which can be borrowed, we also have STEM Ambassadors trained in using these kits.

**To view all resources available to borrow [click here](#).**

**To arrange to borrow a resource contact us at [stemambassadors@sserc.scot](mailto:stemambassadors@sserc.scot).**



## STEM Ambassador Blogs – using numeracy in the workplace

Throughout Maths week Scotland we will be sharing blogs on our website from ambassadors talking about how they use maths and numeracy in the workplace.

Here is an introduction to some of our ambassadors who will be sharing their stories.



### Catherine Young

My name is Catherine, and I study Civil Engineering with Architecture at Glasgow University and Glasgow School of Art. This unique joint degree has allowed me to combine my passion for mathematics and art. Creative design solutions are essential to engineering, hence why engineering needs more individuals with artistic qualities.



### Buddila Wijeyesekera

My name is Buddila Wijeyesekera. I am a Mechanical and a Renewable Energy Engineer. I currently work as an engineer on energy and sustainability projects. Maths is used in different context during my day-to-day job from simple calculations to complex design calculations involved in designing a variety of energy systems.

Through this blog I intend to share how I use Maths in designing engineering systems focused on mechanical and renewable energy systems.



## **Anne Okafor**

Anne is a Construction Planner. She comes from a background in hospitality and retail management but has been in the Construction Industry for 7 years.

Anne has worked with young and new professionals in built environment disciplines, since 2015, to support them upon entering the industry and acting as a signpost to personal and professional development opportunities.

Recently, her focus is towards talking to children at younger age groups through STEM engagements and workshops in Primary Schools and Libraries. She is a Girlguiding Leader for a Brownies group.

She also hosts her own podcast, The Everyday Determinator.

She will share the following blog.

### **Where Maths Can Take you**

In this Blog, Anne shares her journey through challenging Maths Anxiety to working as a Construction Planner, a role that uses lots of Maths.



## **Matthew Stewart**

My name is Matthew Stewart. I am about to start 4th year of a 5-year MEng Civil and Environmental Engineering degree at Strathclyde University. I am also currently doing work placement with Tony Gee and Partners, Engineering Consultants, with whom I have a scholarship through the Institution of Civil Engineers.

In my blog The Beauty of Bridges I will look at maths in civil engineering with an emphasis on the aesthetic importance of bridge design.



We work with many other organisations to help train our ambassadors and provide resources for educators including the team at National Numeracy.

National Numeracy is an independent charity established in 2012 to help raise low levels of numeracy among both adults and children and to promote the importance of everyday maths skills. We aim to challenge negative attitudes, influence public policy and offer practical ways of helping adults and children improve their numeracy – in the community, the workplace and formal education.

National Numeracy's resources for schools include the Family Maths Toolkit – a set of activities to support schools and families in developing maths confidence amongst children. The activity packs are available free of charge, with resources for all year groups from Primary 1 to Primary 7. The set includes short, fun activities for children and families to do together, exploring maths in creative ways and real-life contexts. Some top tips for parents and carers are included too! The activities support the maths curriculum and are a great way to engage parents in their children's maths learning, as they're designed for children to complete with their families. To download the full set of free resources and use them with your classes, sign up on [National Numeracy's website](#).

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## Get in Touch

Our social media channels will be busy all week!

We will share resources, events and updates.

Follow us on   

Keep an eye on our [Maths Week Scotland Webpage](#).

If you have any questions or would like to know more about engaging with STEM Ambassadors, you can contact us at [stemambassadors@sserc.scot](mailto:stemambassadors@sserc.scot).