How to Create a Family Maths Trail:
A Guide for Museums and Libraries

WHAT IS A MATHS TRAIL?

A maths trail is a fun way to help families explore your venue - spotting shapes and patterns, counting objects, solving puzzles, and engaging their problem solving skills as they go round. It's not about complicated sums - it's about noticing, comparing, estimating, and seeing that maths is all around us.

WHY OFFER A MATHS TRAIL?

- It's an engaging, low-cost activity for families and also school groups.
- It brings maths to life using your existing displays or space.
- It encourages observation and logical thinking.
- It's perfect for Maths Week Scotland, but can be used any time of year.

SUMMARY CHECKLIST

You don't need much to run a successful Maths Trail. We've given you a step-by-step guide below, with examples and templates, to help you. Here's a quick summary:

1. Choose a format (hanging signs, printed sheets or digital download).
2. Pick 5 to 10 objects or spots around your venue.
3. Use our question ideas to write questions linked to those objects or spots.
4. Design your trail using our editable templates.
5. If you can, test the trail with a small group (staff kids, local families, or schools).
6. Print, hang, or share your trail digitally - and you're ready to go!
7. Promote the trail on your website, social media, and visitor signage.

Remember: You don't need tech, time, or a big team. Just a few signs, a bit of enthusiasm, and the maths already in your space. Let's show families that maths is everywhere - and it's fun!

CHOOSING THE FORMAT THAT WORKS BEST FOR YOUR VENUE

Option 1: Hanging trail questions around your venue

Trail questions are printed onto signs or posters and hung around your venue for a scavenger hunt style trail, next to relevant objects/ displays or venue features. Visitors need to walk around and explore the venue to find them all.

TIP: Include a recognisable image for visitors to look out for. We have provided editable templates at the end, with our Maths Week Scotland mascot Finn Finity, for you to use.

Option 2: Printed trail sheet

Visitors pick up a trail sheet, with questions to answer as they walk around the venue.

Option 3: Downloadable trail sheet

Similar to Option 2, but visitors access the trail on their phone, tablet, or other handheld device. This could be a PDF to download, or a page on your venue's website showing the questions.

	Benefits	**Perfect for**
Option 1: Questions hanging up	Requires fewer resources, as questions just need printed once and not handed to every visitor. Easy to adapt if any of the questions need updated, as only relevant question reprinted and don't end up with a stack of outdated trail sheets.	Questions that don't require writing down an answer. Younger children and families who enjoy scavenger hunt style activities. Venues low on printing resources.
Option 2: Printed trail sheet	Can include space to write or draw. Can offer alternative versions for different ages.	Venues where hanging up signs/ posters is not an option. Questions which require a written answer.
Option 3: Downloadable trail sheet	Lower costs and more environmentally friendly as no printing required. Easy to adapt if any of the questions need updated, and you won't end up with a stack of outdated trail sheets.	Venues where hanging up signs/ posters is not an option but want to avoid printing lots of trail sheets. Tech-savvy families. Venues with WiFi and/ or good internet reception.

CREATING THE TRAIL

Decide your target audience
This will vary from venue to venue, depending on who your main audience is.

- For younger children (early years and lower primary): Focus on simple counting, spotting shapes and patterns
- For older children (mid to upper primary): Include measuring and estimating, problem-solving and reasoning
- For mixed-age groups: Consider a mix of both, and include bonus questions for older members of the group

How many questions?
This depends on your venue size and age of your target audience, but a trail doesn't have to be long. Even a small trail with around five questions can be fun and engaging.

- **Minimum:** 5 questions is a good minimum. Short trails are particularly accessible for young children and quick visits.
- **Maximum**: 10 questions is a good upper limit, to maintain attention.
- **Optional:** Offer two difficulty levels for different age groups, or include bonus questions for mixed age groups.

Writing the questions

- Avoid assumptions about prior knowledge.
- Include a variety of question types, e.g. counting things, spotting shapes, measuring something.
- Link the questions to something visible or physical, e.g. an object on display or an architectural feature of your space.
- Try including some open-ended questions to encourage discussion.
- Keep your audiences' age and ability in mind.
- And, of course, since it is a Maths Trail, make your questions maths related.

You don't need to be a maths expert to write a Maths Trail! Just take a walk around your venue and see what you can spot, then base your questions on what's around you.

Design & Layout

- Keep questions concise and instructions clear.
- Use age appropriate language for your target audience.
- Consider font size – e.g. digital trails will require a larger font, if people are expected to read the questions on a small screen such as their phone.

- For paper trails, remember to leave space to write/ draw answers, if required.

Practicalities

- Include an info sign/ poster at reception, promoting the trail. For trails hanging up around the venue, mention how many questions there are to find. For digital downloads, include a QR code that takes visitors directly to the trail.
- For questions hanging up around the venue, remember to hang them at a height where children can easily see/ read them.
- For paper trails, offer pencils, and optionally clipboards, for loan.
- For digital downloads, ensure Wi-Fi or signal is available in key areas.
- Brief staff on where the trail takes place and what questions involve.

QUESTION IDEAS

We've provided some example questions/ question starters to help if you are stuck for ideas.

Counting

- How many [e.g. windows/ shelves/ light switches] can you spot in this room?
- How many [e.g. type of object/shape] can you spot in this display?
- How many [e.g. legs on the animals] in this [case/ painting] can you count altogether?
- Can you add these together? number of [object A] + number of [object B] = ?

Shapes & Patterns

- What shapes can you find in this room/ display?
- Find a triangle/circle/square in this room/display. What is it part of?
- Can you find [three] different triangles/rectangles in this room/ display?
- What patterns can you see on the floor/on the wall/in this display?
- Can you spot something symmetrical? What makes it symmetrical?

For paper trails with written answers you could: Ask them to draw and name the shapes; Draw the pattern and continue it; Draw their own pattern; Draw the symmetrical object they spot.

- Can you make the shape of [an object from your venue, e.g. a box or globe] with your hands or body? Can you make a bigger one if you work as a team with the people you are with?

Measuring & Estimating

- Can you find something longer than your arm? Shorter than your finger?
- Which is the biggest/tallest/longest/ smallest/shortest [e.g. object or architectural feature] in this display/area/room/gallery?

- Which object looks the heaviest/lightest? Why do you think that?
- Count how long the [large object/space] is using your steps. Ask the people with you to do it too. Are your answers different or the same? Why do you think that is?
- Estimate how high the [object] is using your hand span. Ask the people with you to do it too. Are your answers different or the same? Why do you think that is?

Note: For measuring questions, make sure to pick objects at child height! For objects not in cases, only choose objects that are allowed to be touched.

Time Related

For a venue with a clock, or with other time pieces, on display:

- Find the [clock]. Ask your adult to time you for 15 seconds using their phone or watch. How many star jumps can you do in that time?

For venues without a clock and/ or to make a connection between two objects or spaces:

- Ask your adult to time you using their phone or watch - how long does it take you to walk from [A] to [B]?

LINKING QUESTIONS TO OBJECTS ON DISPLAY

Here are some examples from the National Museum of Scotland, to show how you could link questions to specific objects on display:

"These tools were used for measuring and building pyramids. The shape of a pyramid is made up of triangles pointing upwards. Can you make the shape of a triangle with your hands or body? Can you make a bigger one if you work as a team with the people you're with?"

"Below this balcony you can see the Ritchie Clock. It has Roman numerals around its face. These were numbers used in ancient Rome made from combinations of letters from the Latin alphabet. Ask your adult to time you for 15 seconds using their phone or watch. How many star jumps can you do in that time?"

ADDITIONAL TIPS FOR OUTDOOR TRAILS

Some additional tips for venues with outdoor spaces that could be included in a Maths Trail:

Include both natural and built features

- Trees, benches, paving stones, fences, statues, garden beds, can all become part of the trail, e.g. spotting, counting, or comparing natural objects.

Weather-proofing

- For hung up questions, laminate your signs or put them in plastic wallets.
- If using printed trails, offer clipboards or firm backing.

Make It Active

- Encourage walking, pacing, or measuring using body parts.
- Add simple movement tasks (e.g. walk in a square, jump 3 times).

Wildlife & Plants

- Encourage children to use what they *can* see (don't rely on natural features that may change with the seasons).
- Encourage nature-safe maths – avoid asking children to pick up or move natural items.

TEMPLATES

We have created some editable templates for you, featuring Finn Finity, our Maths Week Scotland mascot. These templates are suitable for trails where you print out questions to hang around your venue.

We ask that you please do not remove the Maths Week Scotland logo from the templates. The image of the Maths Week Scotland mascot Finn Finity should only be used in conjunction with the Maths Week Scotland logo.

CANVA TEMPLATE

You will need a free Canva account to access this template (https://www.canva.com/).

Download Canva template here >> http://bit.ly/MathsTrailCanvaTemplate

- Save a copy of the template to your Canva account
- Add your venue's logo where indicated
- Keep the "Family Maths Trail" default title OR edit to replace with your own title
- Add your question where indicated
- In Canva, click on "Share" in the top right, then "Download". Make sure the "File Type" is set to PDF, then click download again and save to your computer.
- Repeat for each question you need.

WORD DOC TEMPLATE

There are two Word Doc templates to choose from, one with the "Family Maths Trail" default trail title, and one where you can add your own title.

Download DOC template **without** default title here >> https://bit.ly/MathsTrailDocTemplate1
Download DOC template **with** default title here >> https://bit.ly/MathsTrailDocTemplate2

- Download the relevant template
- Add your venue's logo next to the Maths Week Scotland logo (click next to it, insert image, resize if necessary).
- If relevant, replace "ADD TRAIL TITLE" by clicking in the text box to edit it.
- Add your question where indicated by clicking in the text box to edit it.
- Save and print.
- Repeat for each question you need.

PDF TEMPLATE

If for any reason you can't access or edit the Canva or Word Doc templates, we also have two PDF templates, which you can print off and then add your questions to either by writing them in or printing them out separately and sticking them on. One template includes the default trail title, the other is blank to add your own.

Download PDF template **without** default title here >> https://bit.ly/MathsTrailPdfTemplate1
Download PDF template **with** default title here >> https://bit.ly/MathsTrailPdfTemplate2

NEED HELP OR INSPIRATION?

We're here to support you.

If you'd like help designing your trail, adapting questions to your venue, or sharing your finished work, get in touch with the Maths Week Scotland team.

Email: **mathsweek.scot@nms.ac.uk**
Website: **www.mathsweek.scot/contact**

For help promoting your trail, submit your trail to the Maths Week Scotland events directory https://mathsweek.scot/events/submit-your-event