

# How to Run a Maths Circle

## What is the Edinburgh Maths Circle?

Four times a year the University of Edinburgh runs an event called the "*Edinburgh Maths Circle*". This is based on a similar event held in Cambridge and the materials mainly come from the NRICH Maths Project.

The aim of the Maths Circle is to help children learn about mathematics through engaging and challenging activities. The problems are designed to encourage students to **explore, discuss, conjecture, explain and convince**. There are no puzzles, and the aim is not to solve questions quickly. Rather, the Maths Circle attempts to present children with new and exciting questions through which they can develop their mathematical thinking and problem-solving skills.

Solutions are *not* provided and children are encouraged to discuss with and convince each other why they think something is true. Furthermore the problems are spread out on tables and the event has a totally **free structure**, meaning children can try whatever problem they like for however long they wish.

NRICH website: <https://nrich.maths.org/>

Edinburgh Maths Circle website: <http://tinyurl.com/edmathscircle>

## The Maths Circle Problems

We are grateful to NRICH for providing us with the majority of our problems and we strongly encourage you to have a look at their website. Each Maths Circle problem has a **Stage number (1 to 5) and a difficulty rating (\* to \*\*\*)**.

Stage 1, lower primary, ages 5-7

Stage 2, upper primary, ages 7-11

Stage 3, lower secondary, ages 11-14

Stages 4 and 5, upper secondary, ages 14-18

These should serve as a rough guideline for problems to start on first, but we always suggest starting at a lower stage and working upwards. It is also better to refer to the Stage numbers rather than making explicit references to the age range guide.

Each problem comes in a plastic pocket containing two A4 laminated copies of the problem and any required resources (eg, dice). Some problems come in multiple parts.

## Tips for running a Maths Circle

We suggest allocating 1-2 hours for the Circle, to give students enough time to try a few problems and really get stuck into making conjectures and proofs. If possible, try to hold the Circle in one large room with large tables, or smaller tables grouped together. If this is not possible and the Circle has to be spread over a few rooms, then we suggest you ensure each room has problems at a mixture of Stages. We have found having a "room per stage" discourages students from trying out a new problem that either pushes them out of their comfort zone or suits their abilities better.

On each large table aim to have 3-4 problems, again of a reasonable mixture. For example a table could have: Stage 1 (\*), Stage 1 (\*\*), Stage 1 (\*\*\*) and Stage 2 (\*). Do not have a table of the same category (eg, all Stage 2 \*), but rather try to mix it up a bit. Children are most likely to pick up a new problem to try from those already on their table, so this mixing helps them try something new.

## Like to run a Maths Circle in your school?

If you would like to borrow our resources to run a Maths Circle in your school please get in contact with the Engagement Officer Dr Francesca Iezzi ([francesca.iezzi@ed.ac.uk](mailto:francesca.iezzi@ed.ac.uk)).

We only have a limited set of Maths Circle resources to loan, so in the meantime we encourage you to tell your pupils and their parents about the Maths Circles held at Edinburgh University. To be added to the Maths Circle mailing list please email [francesca.iezzi@ed.ac.uk](mailto:francesca.iezzi@ed.ac.uk).

There are also a range of other mathematics outreach events organised by the Mathematics Department. To be added to the mailing list for upcoming maths events happening in and around Edinburgh, send an email from your desired address to [sympa@mlist.is.ed.ac.uk](mailto:sympa@mlist.is.ed.ac.uk) with subject line "subscribe edinburgh-maths-outreach Firstname Surname" and leave the message body blank.

## Workshop, 10<sup>th</sup> March 2017, 10:50-11:55, JCMB 3217

10:50-11:00: Introduction

Rotate between three stations looking at Maths Circle 'objectives': Conjecturing, Representing Mathematical Ideas, Strategy

11:00-11:15: Station 1

11:15-11:30: Station 2

11:30-11:45: Station 3

11:45-11:55: Conclusion

## Thanks to...

The Edinburgh Maths Circle is kindly sponsored by Rathbones Investment Management, Edinburgh University School of Mathematics and the Glasgow Mathematical Journal Trust. Thanks to their contribution, we have an improved collection of resources, better refreshments and the ability to host training workshops for teachers to help spread the Maths Circle initiative.



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