EXETER MATHS SCHOOL
FREEDOM FOR THINKERS

Year 6 Mathematics Poster Competition

Exeter Maths School (EMS) is challenging your year 6 students to take part in our annual Mathematics Poster Competition.

The Mathematics Poster Competition is intended to stimulate and motivate students and offers young mathematicians the opportunity to share their love of the subject in an interesting and engaging manner. By taking part, students will develop their ability to communicate and explain mathematics whilst expressing their creativity and developing their mathematical understanding.

The theme for this year's competition is: **How To Win At Battleships**

Further details with specific requirements can be found overleaf.

The competition is open to students in Year 6. Students may enter as individuals or as part of a small team (maximum of 4 students per team). Schools may enter as many teams as they like. The winner of the Mathematics Poster Competition will receive a mathematical prize.

To take part, please send in completed posters, along with the attached entrance form (one per poster) by **Wednesday, 26th June.** Schools will be notified of the result before the end of the summer term.

Completed posters should be sent for the attention of: Poster Competition, Exeter Maths School, Rougemont House, Castle Street, EXETER EX4 3PU. Alternatively, if you are able to send good quality images, these can be emailed to events@exeterms.ac.uk along with the entrance form.

We hope that you will encourage your students to take part – we are certainly looking forward to seeing their work!

Axiom Maths Circles

Please also find enclosed details of our Axiom Maths Circles programme for Year 7 students in the 2024-25 academic year.

We would be grateful if you could please share this information with the parents and carers of students who may be interested in taking part and encourage them to complete the linked 'Expression of Interest' form.

The questions, tasks, and explorations in MESME Maths Circles have been carefully created to support, challenge, and develop students with an aptitude and passion for mathematics. Therefore, we recommend children who:

- Achieved "Greater Depth" in their KS2 Maths SATS. In the 2023-24 academic year, this corresponds to a score of 111 and above for disadvantaged students, and 113 and above for other students
- Are showing you that they are enthusiastic mathematicians, for example by their engagement in lessons, their interest in maths puzzles, or by their participation in UKMT maths challenges

If you have any questions concerning the Poster Competition or MESME Maths Circles, please contact the Outreach Team via: events@exeterms.ac.uk

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Year 6 Mathematics Poster Competition
How To Win At Battleships

Teachers!

It's up to you to decide how you present this to your students, however, we have some suggestions of things you could try when you introduce it, and ways students might collect data to reach conclusions about how to win the game.

Introducing the game

A quick explanation of the game is a good place to start as not all students will have played Battleships before. You might consider checking YouTube for short explanatory videos, or demonstrate a practice game on the board, before getting students to play a game in pairs.

You could collect some early data from the whole class by asking them where they would aim first, and marking all their points on a large grid on the board. Then question them regarding their strategy: Where had they put their ships in the game they just played? What do they think of their ship placement now? You could use a show of hands to complete a table of how many students had different layouts and whether they won or lost the game. For example:

	No ships touching an edge	Any ship touching an edge	Any ship in a corner
Won the game			
Lost the game			

Further questions could be: What do they think of their first shots now? Would they still aim in the same place now they can see where everyone else placed their ships? This should get them thinking more deeply about strategy.

Playing the game and collecting data

Whatever questions your students decide to explore, it's a good idea to encourage them to make predictions first. Get them to consider what they think they might discover, and why?

Here are some headings they might want to use in tables for collecting data:

First ship destroyed: Type of ship, Size of ship, Placement of ship (e.g., In a corner, along an edge, touching an edge, in the middle)
Surviving ships: As above
Winning Player: Player who scores the first hit, Player who sinks the first ship, Winning player – In this example, they could also record how many shots had been fired at the point of the first hit, first ship sunk, and total for the game.

Students who investigate different firing patterns might want to think about how they make their testing "fair".

As much as possible we'd love to see them coming up with their own questions as well as ways of collecting data and presenting their conclusions.

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Year 6 Mathematics Poster Competition

Produce an A3 poster with the title:

How To Win At Battleships

(or similar)

Background:

The game Battleships has existed in one form or another for a hundred years or so, but what is the best way to win? How do people play the game? Which ship is the best?

Task:

Explore how games of Battleships play out, and the strategies people use.

Look at the questions below and decide which ones you'd like to try to answer. Try to predict what you think the answers might be before you start. Ask your friends what they think.

Make a table to record your results, then play lots and lots of games and fill in your table as you go. What happens? Is it what you expected?

Ideas you might like to explore:

- Which ships are the best? Which ships are often destroyed first? Which ships are most likely to survive at the end of the game?
- Where should you place your ships?
- Where should you aim first?
- Is it better to take random shots or make a pattern? What patterns work well?
- Does the player who scores the first hit usually win?
- How many turns does it take to achieve the first hit/sink the first ship/win?
- Any other questions you have about the game!

Lastly, how will you show what you've found in the form of diagrams?

Your poster will be given marks for:

- Mathematical content
- Creativity
- Overall presentation