

HMC Projects in Central & Eastern Europe

Guidance for international applicants taking the HMC Projects Maths Scholarship test

1. What is the Password Pupil Maths test?

You will take an online maths test as part of your scholarship application. The test becomes harder as you go, and **you are NOT expected to answer every question correctly**.

The test checks:

- your maths skills,
- how well you can use methods you already know,
- and how confident you are when a problem looks a little unfamiliar.

It does **not** test your English comprehension skills.

2. Why some students find parts of the test hard

Students from different countries study maths in different orders.

Some topics in the UK curriculum may not have appeared in your school yet.

This does **not** mean you are weak at maths — only that you have not seen that topic before.

This guide explains a few topics you should review so you can show your *real* ability.

3. The most helpful topics to revise before the test

These six areas were the ones that many international students found unfamiliar.

If you prepare these, your score will improve.

Topic 1 – Transformations of graphs

Topic 2 – Sequences (nth terms)

Topic 3 – Cumulative frequency graphs

Topic 4 – Circle theorems

Topic 5 – Straight line graphs (advanced)

Topic 6 – Algebraic fractions

4. Tips for test day

- Don't spend too long on one question or section
- Work carefully through questions, early ones will be easier – but don't rush these.
- Hard questions at the end are meant to be difficult. Don't worry if you cannot finish them.
- Read the short instructions carefully.

5. Free places to practise

These websites are excellent and free:

- **Khan Academy** – videos and practice
- **Corbettmaths** – short lessons and worksheets
- **BBC Bitesize GCSE Maths** – clear examples
- **Dr Frost Maths** – lots of practice questions

Appendix

HMC Projects Maths Scholarship test: key words guide

- **Area:** Space inside a flat shape.
- **Centre (circle):** The exact middle of a circle.
- **Composite function:** A function inside another, written as $f(g(x))$.
- **Decimal:** A number with a decimal point.
- **Expand:** Remove brackets by multiplying.
- **Factorise:** Rewrite an expression using brackets.
- **Fraction (simplest form):** A number written as a/b ; simplest form means fully reduced.
- **Frequency / Cumulative frequency:** Frequency = how many times something appears.
Cumulative frequency = running total.
- **Gradient:** How steep a straight line is on a graph.
- **HCF (Highest Common Factor):** The biggest number that divides two numbers exactly.
- **Intercept / y-intercept:** Where a line crosses an axis.
- **LCM (Lowest Common Multiple):** The smallest multiple shared by two numbers.
- **Mean:** The average: add all numbers and divide by how many there are.
- **Median:** The middle value when numbers are put in order.
- **Mode:** The number that appears most often.
- **Parallel:** Lines that never meet.
- **Percentage increase:** How much something grows, shown as a percent.
- **Perimeter:** Distance around a shape.
- **Probability:** How likely something is to happen.
- **Range:** Difference between the biggest and smallest number.
- **Recurring decimal:** A decimal where digits repeat forever.
- **Regular polygon:** A shape with all sides and angles equal.
- **Sequence / nth term:** A list of numbers following a rule; nth term is the rule.
- **Simplify:** Make an expression shorter or easier.
- **Simultaneous equations:** Two equations solved at the same time.
- **Solve:** Find the value of the unknown.
- **Subject of the formula:** The letter you rearrange the formula to make it about.
- **Tangent:** A line touching a circle at one point only.
- **Transformation / scale factor:** How a shape changes size or position.
- **Volume:** Space inside a 3D shape.