



Top tips for mathematics exams

How to kick-start your revision and get the best grade

Using your predicted grade

What is your grade average in the more substantial tests you have completed in class, e.g. end of unit/module tests or end-of-year-1 exams? By year 2 of the IB Diploma you should have a good idea of what your final grade is going to be. Make sure your revision is targeted on performing in line with this expectation. The best way to exceed expectations is to ensure you are unfailingly consistent in meeting them:

- **Level 3/4:** to achieve a level 4 you should have a good knowledge of all syllabus items. Make sure you have no doubts what a binomial expansion is, how many laws of logarithms there are, what the values of the discriminant tell you about the quadratic graph, how to use the sine and cosine rules, arcs and sectors etc. The IB formula booklet provides a good summary and starting point.
- **Level 5:** you should practise problem-solving questions. Textbook exam-style questions and longer past exam paper questions (7 marks or more) offer good practice for problem solving and modelling.
- **Level 6:** you are comfortable with most of the syllabus (though there might be some subtopics that need targeting). Securing a level 6 requires fluency and experience of the harder problem-solving questions. Practising the longer-response exam questions, under exam conditions, can be effective preparation.
- **Level 7:** this requires error-free work on questions you know how to answer, despite the pressure of time, and excellent problem-solving skills. Mathematics challenge questions — e.g. American Mathematics Competitions (www.maa.org/math-competitions), UKMT (www.ukmt-resources.org.uk/index-tr.html), Canadian Kangaroo, Australian senior challenge etc. — are excellent resources for developing a flexible, conceptual and strategic approach to modelling and finding solutions to unfamiliar situations.

Little and often

Plan 10–20 minute sessions three to four times a week (increasing this as you get nearer to the final exams). Twenty minutes is enough time, under exam conditions, to complete one of the long-response exam questions or three short-response exam questions. Synthesise a subtopic you find difficult into a bite-sized, memorable overview covering one side of a revision card. In the next 20-minute session you could add a question and worked solution. In 10 minutes you can complete one short-response 6-mark question on a topic you feel you half understand and mark it using the official IB mark scheme. Precision is important for both SL and HL.

Mind map your syllabus on poster-sized concept maps. Try sticking or stapling A3 sheets together, or buy your own home whiteboard. You could also cover your bedroom walls in cheap pre-painting wallpaper from your local hardware store to draw all over. Use it to show the links between different topics and highlight certain skills that appear in a variety of different areas.

For the SL and HL courses, quadratic equation methods can be used to solve:

- standard $y = ax^2 + bx + c$ functions
- quadratic trig equations (e.g. $4\sin^2x + 4\sin x + 1 = 0$)
- the longest diagonal in a cuboid (Pythagoras)
- exponential equations ($3e^{2x} = e^x + 2$)

The aim here is that you use colours, highlighters, marker pens etc. to make a visual representation of the things you most need to remember. When you close your eyes, you should be able to visualise your concept maps and retrace the information you highlighted and emphasised. Remember the saying: 'A picture paints a thousand words.' Your room is thus transformed into a subliminal learning support centre.

Calculator fluency

If you are not fluent in using your calculator, you should be practising on your journey to or from school, for at least 2 to 5 minutes: sketching a graph, changing the window, finding maximums and minimums, using the equation solver, normal probabilities etc. This is essential for the studies course and for SL and HL paper 2, and HL paper 3.

Snapchat, Facetime, WhatsApp

Talk to friends with similar final grade targets to your own. Get together and form a group on some form of social media where you can:

- set each other challenge questions (then post your solution to the group 24 hours later)
- ask for help on a tricky question
- share photos of your favourite revision card, concept map, acronym, memory technique — there are many options

Video tutorials

There are a lot of videos and online resources available on more or less all the subjects you will encounter in your IB course. This is particularly true for mathematics and science subjects. Why not pool the best videos between a group of friends and create a video tutorial library for each topic of a given subject (or divide up the topics between you)?

Teacher feedback

Collate your teacher's feedback into a single list (by topic and across topics). Your teacher will have given you a wealth of feedback since you started the IB programme, but it is not uncommon that this is spread across a variety of locations: homework, coursework, reports etc. Pool them into a single, easily searchable list (e.g. using CTRL+F key-word searches). Prioritise, at the top of the list, those comments, hints and tips/guidance that appear most regularly. Maximise the impact of your resources.

One week to go...

The aim is not to scare yourself with the iceberg of content waiting to sink you. The amount we do not know always far outweighs the amount we do. The definition of a successful exam is one where you deliver faithfully everything you do know. Take some advice from top sports and performance psychologists and visualise how success, by your criteria, is going to look and feel.

In the final week before an exam you should review and practise everything you know so that, under the pressure of the exam hall, you deliver what you have worked so hard to acquire over the last 2 years. Maximise the marks from what you can do. Nobody walks into a boxing ring thinking about their weaknesses — visualise how you are going to win. You may find this brief exchange between Jim Carrey and Oprah Winfrey helpful: www.tinyurl.com/carreyoprah

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