EXAMINER TIPS for OL Mathematics 4024

General Advice

- Know what to expect in the examination. Any of the syllabus content can appear on either paper 1 or paper 2 – they aim to cover the content between them. Here are the differences between the two papers:

  Paper 1
  Has about 25 short questions in it, so it tests many topics.

  - You answer on the question paper
  - You are not allowed to use a calculator in paper 1
  - This paper has 80 marks and lasts for 2 hours

  Paper 2
  Has 11 longer questions. You have to do 10 of them.

  - In section A, you have to do all of the 6 questions
  - In section B, there is a choice – you have to do 4 of the 5 questions, so you can choose which question to leave out
  - You answer this paper on lined answer paper, with graph questions done on graph paper
  - You need a calculator (or logarithm tables) for paper 2
  - This paper has 100 marks and lasts for 2 ½ hours

- Write in dark blue or black pen. This helps examiners to see your work clearly. Don't use red or green pen at all, since these are colours that examiners use when marking. Use a pencil for constructions, diagrams and graphs

- If you get the answer to a question wrong, you can earn part marks for some correct method, if the question earns more than one mark. So always show enough working to make your methods clear. The syllabus warns that omission of essential working will result in loss of marks.

- Make sure you have your compasses, ruler and protractor with you for both examinations. Have a sharp pencil for accurate drawings of graphs and constructions.

- In construction questions, if you are told to use a ruler and compasses only, then evidence that you have done so (construction arcs) are necessary to earn all the marks, for instance when constructing a triangle given the length of all three sides.

- Look carefully at the scales when you are reading off a graph or plotting points.

- When you draw a graph, take care to plot points accurately. If it is a straight line graph, use a ruler to join the points. If it is a curve, aim for a single, smooth curve through the points. If one point spoils the shape of a graph, go back and check that point – don't try to make the graph fit a peculiar point!

- Remember to round non-exact answers to the accuracy stated on the front of the question paper – 3 significant figures unless the question says otherwise. That means you need to use 4 or 5 figures in your working, if you use the answers to stages in your working. For money questions, you need to give the answers correct to 2 decimal places. For angles found from trigonometry, the answer is expected correct to 1 decimal place. In many questions, a range of answers is given credit, so that if you forget to round, you do not keep on losing marks.

- Keep an eye on the time and don't spend too long on one question on your first working through. Question papers are designed to give you time to answer the questions and check your work.

- When you are settling down at the beginning of an exam, it is easy to make errors in simple questions, so pay particular attention to the first few questions when you check through your working in any spare time at the end of an exam.

- When you work through questions again, check your answers by using some different methods.

- Be careful with questions about time.

  a. If using the 24 hour clock, you cannot give an answer such as 2405 – this should be 0005.
  b. If using the 12 hour clock, you need to include am or pm in your answer.
  c. Remember that there are 60 seconds in a minute and 60 minutes in an hour, so if you get an answer such as 1.35 minutes, this is not 1 minute 35 seconds, but 1 minute 21 seconds, since $0.35 \times 60 = 21$.

- Take care when writing or working out expressions with fractions, using numbers or letters. For example $\frac{8+4}{2}$ is not the same as $8 + \frac{4}{2}$. Remember that you can use brackets (8+4)/2. When writing a fraction such as $\frac{a+b}{2}$, make sure the fraction line extends below everything that needs to be divided.

- Remember the correct order of operations. The answer to $6 + 4 \times 2$ is not 20 but 14, since you need to do multiplication before addition. Take care that you know how to use your calculator to work out an expression such as $\sqrt{3.6^2 + 4.8^2}$. Try it out. The answer to that calculation is 6, not 26.64, since you need the square root of the whole expression $3.6^2 + 4.8^2$.

- Read questions carefully. In geometry, don't assume from a 'not to scale' diagram that a triangle is isosceles, for instance – the question should tell you if it is.

- Know the meaning of the different demand words used in examination papers.

  - Write down   This is a hint that no working is needed
  - Find   You can use whatever method you like
  - Calculate   You will get no credit for scale drawing etc
  - Explain /show   Working is needed, or informal reasons
  - Prove   More formal reasons are needed, particularly in geometry

- Make sure you know the basic formulae you need.

- When revising for a maths exam, make sure you work though plenty of practice questions. Maths is much more about skills than about learning formulae.

- There are more revision tips on the students' website, in the solutions to the November 2006 papers. Just follow the links in the solutions to get the comments.

- Use a revision checklist to make sure you have revised all topics on the syllabus.

Paper 1 Tips

- Use the working space to show your method. Write your answer on the answer line.

- For this non-calculator paper, make sure you have practised doing plenty of basic arithmetic without your calculator.

- Always do a quick rough calculation mentally so that you can know whether an answer you have found is sensible. This practises your estimation skills, too!

Paper 2 Tips

- Set out your work clearly, so that the examiner can follow it easily and understand it. Work down the page and don't split the page into two columns – two columns makes it much harder for examiners to put the marks in the correct order, and causes problems in adding the marks and in checking.

- In some questions, the answer is given, so that even if you cannot reach this answer correctly, you can use it in later parts of the question.

- At the start of the examination, check that your calculator is set in degree mode, so that when you use sin, cos or tan functions on the calculator, your answers will be correct.

- Make sure you know how to use your calculator to work out complex expressions, for instance when in the cosine rule or the quadratic formula. For instance, use brackets to group the terms inside the square root symbol in the quadratic formula.

- Think whether your answer is sensible when calculating volumes etc. If it isn't, you may have forgotten to convert units.

- The number of marks available for a question part often gives you a clue to the amount of work that will be required for it. It is most unlikely that you will just be able to find the answer to a 4-mark question in just one line of working, for example.

- In a long question part, if you cannot see how to get what is needed at first, ask yourself what you can find from the information that is given. Then ask yourself whether that will help you to get towards what is needed. Think what else you need to know before you can work out what is needed, and then try to find that first.

- Drawing a sketch diagram can help you to focus on what you need for one part question when a diagram for the whole question has a lot of information on it.

- Remember to show your method – write down the calculation you are about to do, with the relevant numbers substituted into a standard formula.