

THE OWLET

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HOW TO BECOME A BETTER MATHS PROBLEM SOLVER

Complex problem-solving questions appear in the calculator allowed exams of the Mathematical Methods and Specialist Mathematics exams as well as SACs. How do we prepare for those questions? To be able to do well on those questions, students must be strong with all basic skills. If the algebraic and number skills aren't strong, students will have great difficulty with problems. However, a student's excellent skills don't always translate to good problem solving.

Often these questions are worded so that students draw knowledge from different areas, see patterns, generalize and in some cases use novel ways to solve problems, requiring them to be efficient under timed conditions. Before all this, students need to understand what the problem is about and draw relevant information. After solving these questions, students must interpret the answers and show their understanding. In the extended response section of the exam, the questions often have many parts. Often the answer to a previous section will need to be used in a later part. Sometimes the examiner may not break up the problem, leaving it to the student to decide how to break up the problem into smaller parts before solving it. The steps may be sequential or brought from different areas of knowledge. All these scenarios can lead to great stress for students who need to answer the questions under the time pressure of the examination.

Scoring well in extended response questions starts with how the problem is approached by a student. A 'can-do' attitude with an open mind will greatly enhance how someone scores. What do students do whilst reading the question? Students must be able to keep their mind open to the big picture, as well as paying attention to the smaller details. There are always easier parts mixed in with harder parts. Is a student able to carry on even if they couldn't do an earlier part? Are they able to remember what they wrote for an earlier section and use that response to answer a later section? Are they able to translate diagrams and sentences into mathematical expressions and equations? Developing all of the above takes time and effort.

Everyone can become a better problem solver if they practise and work hard. Only by struggling with a problem and learning by failing will allow a student to become a better problem solver. Students should try to discuss their workings and thought processes with others. Problems don't need to be solved in one go while learning and sometimes students can learn by attempting a question and coming back to it. Having a skeleton idea and then improving on it by adding details is also a good way to practise. Even when the teacher is solving a worded problem in class, students should try to listen attentively and try to predict what the teacher's next step will be. A variety of questions attempted will enhance the problem solving ability as well.