

How to Prepare for O-Level Mathematics and Chemistry in 16 Weeks



By Ai Ling and Sean Chua

Many parents often asked us: "Is there still time for my child to do well in O-Level?" Every June holidays, we encounter many phone calls from anxious parents seeking help for their children who didn't perform well for their mid-year examinations.

We understand their concern. After all, it's only another 16 weeks before their child sits for the national examination, the GCE O-Level. Doing well for the O-Level examination gives their child more options of schools and courses to choose from to further their education.

From now till the O-Level, students must stay focused and adopt the correct strategies so as to prepare themselves confidently for the examination. For Chemistry and Mathematics, we suggest the following:

Build up Strong Foundation of Basic Concepts

Based on the decades of teaching experience, the root problem we noticed in students underperforming in examination is their lack of understanding of the fundamentals in Chemistry or Mathematics. The level of understanding in the basic concepts is way below par.

Building strong foundation is the main key when students prepare for the O-Level, following a topic-by-topic approach. For each topic, students must revise and understand the underlying key concepts or formula, before moving to the next topic.

For Chemistry, it is important to know and master the topics taught in Secondary 3 first. For example, students must have a very

clear understanding of Secondary 3 basic essential topics such as chemical bonding, writing balanced chemical and ionic equations as well as acids and bases. Chemistry is a much more abstract science subject compared to Physics and Biology because almost every topic is interrelated to another topic, especially those covered earlier in Secondary 3.

For Elementary Mathematics, the foundation is formed in the Lower Secondary levels, mainly in algebra, proportion, geometry, and mensuration.

For Additional Mathematics, the foundation is often built on related topics found in Elementary Mathematics before the application solving strategies are introduced. Also, based on the analysis of past years' O-Level examination papers, the three key topics with more than 50 per cent weighting are Trigonometry, Differentiation and Integration. It is important that students have an excellent understanding in these topics.

Attempt Ten Years Series Questions

Next, to put their understanding of each topic to the test, students are advised to work immediately on the O-Level questions as it will provide a reasonable gauge for their level of understanding of the key concepts and build up their confidence at the same time.

Since strong foundation is built on a topic-by-topic approach, the use of the Ten Years Series (TYS) topical books is strongly

recommended, preferably one that provides step-by-step detailed solution. Such feature of the book allows students to check the answers at their own convenience.

Keep Clarifying

Building strong foundation consists of understanding the key concepts for each topic, testing the student's understanding by working on the questions, and most importantly, clarifying any doubts and correcting any mistakes made.

Many students accumulate so many doubts over the years

that it has reached a critical stage that these doubts, if remained unresolved, will cripple their chance of performing well in their O-Level examination. They must start asking questions to clear their doubts in order to feel confident and prepared!

If your child is afraid of embarrassment, get him to ask someone he is comfortable with, for example, his friends, his siblings, his teachers or tutors. With technology, he can even email or message his questions to someone he trusts.

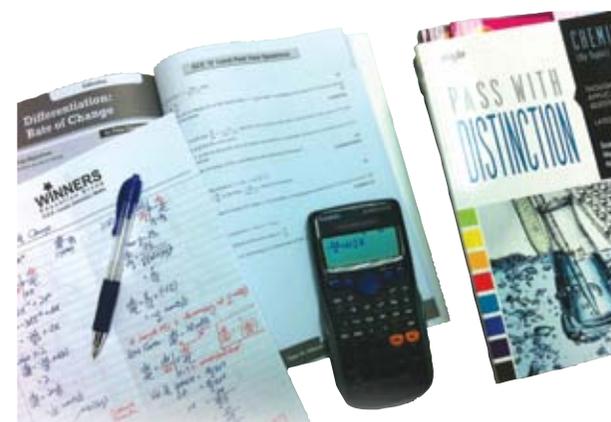
Some TYS books even highlight mistakes that are commonly made, and this feature helps students learn how to avoid them during the examination.

Examination Strategies

"Know thy self, know thy enemy. A thousand battles, a thousand victories." – Sun Tzu, *The Art of War*

Taking examination is like a game. Your child plays to win within a given time frame, and to win this game, your child must be prepared and aware of the rules of the game. The real opponent is himself.

Once your child has mastered all the key concepts for all the topics, the next step is to learn how to manage his time during examination. He can attempt a full set of examination paper, under timed condition, to simulate the actual O-Level examination. In fact, we put our students through such timed trial exercises so that they can understand the importance of time management during examination.



Here are some commonly-asked questions from parents:

Q My child has not completed his Ten Years Series questions since he received many sets of prelims papers of the other schools. Should he complete all the papers before O-Level?

A Many students have come to us seeking advice as they felt very stressed out when they could not keep up with the number of prelims papers given out by their teachers. As a result, their confidence dipped and they felt that they were not sufficiently prepared since they did not have the time to complete these prelims papers.

Don't get us wrong. We do agree to a certain extent that doing the other schools' prelims papers are good for exposure and building analytical skills, but it is only for students who already have a satisfactory understanding of the concepts for the subject i.e. it will only benefit those with grades above B3 (65 per cent).

Imagine a student who has never passed Chemistry before. Does practising these prelim papers, in which questions are often set at a much more challenging level, benefit him? As Albert Einstein once said, "Insanity is doing the same thing over and over again and expecting different results."

It is more important for the student to master the key concepts first, i.e. complete the TYS questions and clarify any doubts before attempting such prelim papers.

Q My child can answer most of the questions in the Ten Years Series. Does it mean that he is well-prepared to score an 'A' for the O-Level?

A While your child is strong in his fundamentals, his performance is ultimately determined by his state of mind on the actual day of examination. Before that, he should try to work under examination conditions to sharpen his thinking and time management skills. He can also get more exposure by working on other schools' prelim papers that may consist of higher order thinking questions.

Q Is a crash-course programme beneficial for my child if he has very poor results in the subject?

A Educators from specialised learning centres do play an important role when they guide students with the right set of questions that are carefully structured to get them thinking and questioning, even leading them to answer their own questions.

However, parents must find out more details of such programme. After all, the effectiveness of the programme is the main consideration in the learning centre you want to place your child in to prepare him for the O-Level.

If some programmes are too good to be true, they are likely to be! For example, any programme that claims to cover two years of content in just 10 to 20 hours is totally unreliable! How can a student

understand everything in 20 hours if he can't even do that in his two years in school?

Since it is a crucial period of time, you want to choose a specialised learning centre with proven track record to assist your child in his final leap. Do start any crash course programme early! The June holidays is perhaps the best time to re-learn their concepts.

We wish your child the best in his preparation for the GCE O-Level Examination!

Q Does memorising the contents of each topic help to build strong foundation of concepts?

A In Chemistry, only 10 to 20 per cent of the syllabus requires memorising. It is a major misconception of many parents and students who perceive Chemistry as a memory-intensive subject. In O-Level, students are tested more on their application ability using the basic concepts instead of their rote memorisation ability.

In Mathematics, a list of formulas is provided for all the Elementary or Additional Mathematics papers. They contain important formulas students might need in order to solve the questions. There are definitely other formulas that students must memorise since they are not provided. However, the ability to know how and when to use these formulas is much more important than just the ability to memorise.