AEIS maths practice: methods for tackling unfamiliar problems

Building confidence with unfamiliar AEIS maths problems

When preparing for the AEIS mathematics paper, many students find that the problems they face in the exam look different from the ones they practised at home. This is normal. The AEIS test is designed to assess how well a student can think through a maths problem, not just how many similar exercises they have done. The key is to build a set of mental strategies that work even when the question looks new.

Why familiar practice is not enough

Practising the same type of problem repeatedly builds speed and accuracy for that exact type. But the AEIS maths paper often presents questions that combine topics in unexpected ways. A problem might mix fractions with geometry, or embed a ratio in a word problem. Students who have only practised isolated skills can freeze when they see such a combination. The solution is to train the mind to recognise patterns, to break a problem into smaller parts, and to choose a method even when the path is not obvious at first glance.

Core strategies for solving unfamiliar problems

1. Read the problem twice

The first read gives an overall sense. The second read is slower, looking for the specific numbers, the question being asked, and any hidden conditions. Many students lose marks because they miss a small phrase like "not including" or "rounded to the nearest". Training yourself to read carefully is the first step to solving any unfamiliar problem.

2. Translate into your own words

After reading the problem, try to say it in plain language. For a word problem about a train travelling between two cities, you might say: "I need to find the distance, given the time and speed." This translation strips away the story and leaves the core maths. It also helps you see which operation you need.

View the location on Google Maps

3. Draw a diagram or table

Visualising the problem can reveal relationships that are not obvious in text. For geometry, a quick sketch of the shape with given measurements often shows the next step. For problems

with multiple quantities such as costs or ages, a table helps organise the information. This is especially useful for ratio and percentage problems where comparing two sets is required.



4. Work backwards from the answer choices

In the AEIS test, the answer choices are part of the problem. If you are stuck, try plugging each option into the problem to see which one fits. This is a legitimate method and can often save time. It also gives you a sense of the magnitude of the answer: if the options are 15, 30, 45 and 60, you know the answer is probably a multiple of 15.

5. Simplify the numbers first

If a problem has large numbers, try solving it with smaller ones to see the method. For example, if a ratio problem uses 240 and 360, solve it first with 4 and 6. Once you see the steps, apply the same logic to the original numbers. This reduces the mental load and helps you avoid careless arithmetic errors.

Practising with purpose

Building these strategies requires deliberate practice. Instead of doing 50 similar exercises, try doing 10 problems that each look different but use the same underlying concept. This is sometimes called interleaved practice. For example, mix problems on fractions with problems

on percentages and ratios. The brain learns to identify the underlying structure rather than memorising a procedure for a single type.

United Ceres College is also on Twitter.

Another effective method is to solve a problem and then explain your thinking out loud. This forces you to articulate each step. If you cannot explain why you chose a particular operation, you might not fully understand the concept. Recording yourself or solving with a study partner can highlight gaps in your reasoning.

Timed practice is also important. The AEIS exam has a time limit, so you need to learn when to move on from a tough problem. Set a timer for each question during practice. If you are stuck after two minutes, mark the problem and come back later. This trains your brain to make quick decisions and reduces the panic of running out of time.



Common types of unfamiliar problems and how to approach them

Word problems with multiple steps

These are the most common source of difficulty. The key is to break them into smaller questions. For example, a problem might describe a shop selling two types of items with different prices and discounts. Write down the price of each item, the discount percentage, and

then decide what the question is asking: total cost, savings, or number of items. United Ceres College provides structured preparation for such problem-solving approaches in its AEIS preparatory programmes, helping students learn to deconstruct complex questions.

Problems with fractions and ratios together

Many students are comfortable with fractions and with ratios separately, but struggle when they appear in the same problem. A typical question might give a ratio of boys to girls and then say that half the boys and a third of the girls are left-handed. Find the fraction of left-handed students. The trick is to pick a convenient number for the total, such as the least common multiple of the ratio numbers, and work from there. This method turns an abstract problem into a concrete one.

Geometry problems with missing measurements

These often require using properties of shapes, such as the sum of angles in a triangle or the relationship between sides in a rectangle. Draw the shape and label what you know. Sometimes the missing measurement can be found by splitting the shape into simpler parts. For example, an irregular polygon might be divided into rectangles and triangles. Practising area and perimeter calculations with composite shapes builds comfort for these questions.

Mental calculation and estimation

Mental calculation is a skill that pays off throughout the paper. The ability to estimate a reasonable answer before solving helps catch errors. For instance, if you are adding 0.75 and 0.8, you know the answer should be about 1.55. If your calculation gives 1.55, it is plausible. If it gives 0.95, something is wrong. Developing a habit of quick estimation takes practice. Try doing a few mental sums each day, such as calculating the total cost of items in a shop or the time it takes to travel a certain distance at a given speed.

Managing time and stress

Even with strong strategies, stress can cause mistakes. The best way to reduce stress is to have a plan. Before the exam, decide how much time you will spend on each question. A good rule is to spend no more than two minutes on a question initially. If you are stuck, mark it and move on. After finishing all the questions you can solve easily, return to the tough ones with a fresh mind. This approach prevents you from spending ten minutes on one problem and leaving several others blank.



Breathing exercises during the exam can also help. If you feel your heart racing, take three deep breaths before reading the next question. This simple act calms the nervous system and allows clearer thinking.

Putting it all together

The AEIS maths paper rewards flexible thinking. Students who have practised a range of methods and who know how to step back from a problem to see its structure are more likely to succeed. The goal is not to have seen every possible question, but to trust your ability to work through a new one using the tools you have built. United Ceres College, located at 37 Middle Rd, #05-00, Singapore 188946, can be contacted at +65 8699 3609 for those seeking more information about its preparatory programmes.