

Success in Mathematics

There are a number of things you can do to help yourself achieve good results in Mathematics.

1. **BRING ALL EQUIPMENT TO CLASS**

You need to bring the following to make your time in class more effective:

Textbook

Exercise book

Calculator

Ruler

Pens, pencil & eraser

Geometric instruments (for relevant topics)

2. **BE READY TO START WORK STRAIGHT AWAY**

As soon as you enter the classroom, take your books and equipment out and open up to the page you are up to before you start chatting with your friends. You are now ready to start as soon as the teacher arrives.

3. **REALLY LISTEN TO INSTRUCTIONS**

Training your mind to listen is a skill that you can learn and develop. It simply requires a bit of effort in the beginning until it becomes a habit to listen rather just hear.

4. **USE CLASS TIME EFFECTIVELY**

You learn more when you work in class and have a teacher there to ask questions. If you work in class you don't get into trouble, your report comments are positive, less time is need to make up at home and your understanding improves. Using class time effectively means staying on task (i.e. doing what you are supposed to be doing) through the whole lesson.

5. **CHOOSE CAREFULLY WHO YOU SIT NEXT TO**

Some friends work really well together, they keep each other focused and they help out each other when there are problems understanding the work. Other friends always prove to be a major source of distraction. If you can't resolve the problem with you friend, have a quiet word to your teacher and ask them to move you without giving away it was your idea.

6. **THINK DURING EXPLANATIONS**

The part of the lesson when your teacher explains new concepts is the most crucial time of the lesson. Just looking at the worked examples and watching what is happening is not enough. You have to actively explain them to yourself. It is almost like talking to yourself in your head: 'Where did that come from?'. 'How did he get that?', 'Why did she do that?'. And most importantly, if you can't work it out yourself – ask a question! There are probably 10 other people in the class who would like to know the answer to your question.

7. **ASK LOTS OF QUESTIONS**

It is an undeniable fact that students who ask questions generally do better in Mathematics than students who don't.

8. **USE CLEAR SETTING OUT**

Learn the correct way to set out a problem right at the beginning. It is much easier to understand and correct your work if you set your problems out clearly as demonstrated by the teacher. Space problems out rather than crowd them up close. Leave a line between questions as you work down the page. Leave a clear space between the question number and where you start the question.

9. **SHOW ALL WORKING**
Getting the correct answer is not enough to guarantee the top grade. Instead you need to ensure that you have shown all the steps necessary, clearly explaining how you got to each step. You need to practice showing all working in all exercises in order to improve your speed and accuracy in a test situation. If you have a habit of not showing working, you will automatically skip steps in test and examinations. If you do show your working at all times it is easy to go back and review how you did questions or ask for help from teachers.
10. **ONLY REFER TO THE ANSWERS TO CHECK YOUR WORKING**
the best way to use the answers is to complete a question or set of questions first, then check that the answers, correct your work and redo the question you got wrong. Two poor ways of using answers are checking your work ages after you completed it so you are not getting immediate feedback, or looking at the answers too early (or even copying the answers) without giving yourself a real chance to think about the question and have proper go at it.
11. **COMPLETE ALL HOMEWORK**
It is essential that you complete any homework you are given and keep up-to-date. You might not see the reason for it, but your teacher has been teaching this subject for a long time and knows what is needed to succeed in Mathematics. To make the most of homework, complete it, then correct it if possible, try to redo and understand any question that are incorrect. Finally, on a post-it note write a list of the questions that you need to ask your teacher in the next lesson and stick it in you exercise book.
12. **CORRECT YOUR WORK REGULARLY**
Some students will randomly tick their work to pretend to their teacher that they checked the answers. What a waste of time! This is not the way to improve your mathematics. You may be sure that you have all the right answers, but many times is not the case. It is essential you locate the question you got wrong then try and understand what you are doing incorrectly. This is the action that will lift your results as it is where the most learning takes place. And it is more effective if it takes place almost straight after you completed the exercise (i.e. not a week later). If you still cannot understand how to get the answer, ask your teacher about that question (the next lesson if at home). Remember a tick means that you have the problem correct and most importantly you understand it. A page of ticks is a great reward.
13. **KEEP A SUMMARY**
Without a summary you need to go through your textbook and class exercise book in order to locate the rules, formulae and examples that you need to learn for tests and examinations (very time consuming). You need to develop a habit early (from the first topic) of creating a summary. (See the Mathematics Study Formula in this booklet.)
14. **FILE EVERYTHING**
In addition to your exercise book have a folder at home that you use to file sheets for Mathematics. It is definitely worth keeping all past test, assignments and worksheets so that you can review them before a test of examination. Last year's tests are also good revision, so don't through them out at the end of the year. Keep this booklet in your Maths Folder.
15. **FOCUS ON AREAS THAT NEED IMPROVEMENT**
In order to do well in Mathematics, everyone will have certain areas that they need to do more work on. You can expect that you will find some topics more difficult than others and so may need to do extra work for particular topics. The best way to tackle an area you find difficult is to attempt some extra questions and try and work out the point where you get stuck. Then ask your teacher for some help, then try to do the questions again. Keep repeating this pattern: doing questions and asking for help until you have mastered it all.

MATHEMATICS STUDY FORMULA

Step 1 **CLASS NOTES & EXERCISE** – always keep up to date, use the weekend to catch up any work not completed during the week. Never start the week behind in your work.

- All notes and examples completed.
- All exercises completed and marked (a tick means finished and understood)
- Added extra detail to your solution for exercises that you had trouble with.
- Use post-it notes to keep track of problems you need to finish, revise, ask for help.
- Ask your teacher for help with questions you are having difficulty with.

Step 2 **SUMMARY of CLASS WORK** – This must be on going, start in week 1, make it part of your weekly homework. A summary of each topic should be completed within one week of completing the topic. Have a separate book to do your summary in.

- Organised with headings.
- Includes definitions, rules, examples, tips.
- Point form.
- Only include relevant information.
- Leave space to add more detail if needed later
- Use your course outline to make sure your summary covers all outcomes.

Step 3 **EXECUTIVE SUMMARY**

- Summary of the summary.
- Reduce your summary, leaving out details you are sure you know.
- These are the notes you study from.
- Revise each topic separately first – redo class exercises, chapter review sets, past topic tests, exercises from excel
- Practice exam questions – general review sets in your textbook or excel, past exam papers
- Add details to your summary as you come across a problem that your summary could not help you work out how to do.

Step 4 **MEMORISE**

- Repeatedly write down the executive summary on a blank sheets of paper.
- Look, Say, Cover, Write, Check (repeatedly).
- Use abbreviations and memory queues.

Repetition is the key to all learning

Do heaps and heaps of practise

Questions you cannot do? Ask for help ASAP

Practise builds up you speed and accuracy

Practise makes perfect

You can't do it all in one night

You will remember more from 15 minutes a day over 5 days than one 75 minute period

Examination Techniques for Mathematics

BEFORE THE EXAM

- Batteries:** Spend a few dollars before major exams and replace the batteries in your calculator.
- Equipment:** A week before make sure you have all the equipment you need for the exam; pens (at least two), pencils (at least two), eraser, ruler, geometrical instruments and your **CALCULATOR**
Pack your bag the night before with all the equipment, and don't forget the **CALCULATOR!**
- Liquid Paper:** Don't take it! Don't use it! Why? Because: 1) it wastes time 2) many people forget to write in the numbers after the liquid paper dries 3) you won't get marks for what is erased – it might have been right!!! Then you may still get some marks. Just cross it out neatly (not a big scribble, just a single neat line through it.)
- Study:** It is never too early to start. See the Mathematics Study Formula in this booklet.

DURING THE EXAM

Read the instructions carefully:

The first thing to focus on is the instructions or directions on the front cover of the paper. It is important that you read through them carefully (even if you think you know what they going to say).

Do a short memory dump:

If there are rules or formulae you think you might forget, take the time as soon as you are allowed to write to quickly jot them down.

Look through the whole paper:

Before you start have a quick look through the whole paper to familiarize yourself with the content and question types in the exam. Allocate time to each question/section and don't go over your allocated time. Time would be better spent on another question where you could gain more marks quickly. Look for questions you think you know the best to do first.

Decide on your plan of attack:

To build up your confidence do the questions you definitely know first. One way is to simply start at the beginning and move through the paper doing the questions you know and skipping the others. Put a star next to the questions you skip, then go back through the paper again attempting the questions with the star, keeping in mind the allocated time per question. If you get stuck on a question, move on. If the paper has multiple choice questions it is often best to leave them to last. That way if you do run out of time you can quickly answer them all.

Provide clear solutions:

- Write legibly and make sure your numbers are easy to read and there is no confusion between numbers, symbols and pronumerals (eg \times and x).
- Label all your answers clearly so that it is clear what question you are answering.
- If you make a mistake; don't use liquid paper, don't scribble it out, just put a single line through it and continue on.
- **SHOW ALL WORKING!!!** Don't just put the answer down or skip steps. If you make a silly error and only record the answer you will get no marks.
- For diagrams and graphs use a pencil (not pen), use a ruler, make them large and clear, ensure you choose appropriate scales for axes and label all diagrams and graphs.

Allocate some time at the end to check your work:

- Have you given your answer in the correct units?
- Have you actually answered the question?
- Check for silly or careless errors.
- Have you drawn all diagrams neatly and clearly?
- Have you answered every question?

AFTER THE EXAM

Check the adding up:

Go through your test very carefully checking the adding up of all marks. If you find a mistake, politely ask your teacher about it.

Find out how to do the questions you got wrong:

If your teacher goes through the test, listen carefully and write down the correct solution or the steps where you made an error. Or if you are given a solution sheet go through it for homework and if you cannot understand the questions that you got wrong ask the teacher to explain that question to you.

Add notes to your summaries:

At home take the time to look through the mistakes you made in the test. What could you add into your summary to remind you not to make these mistakes again.

Redo the questions you got wrong:

Wait for a day or so, then come back to the test and, without referring to the solutions, try to redo the questions you got wrong. Even if you made a small mistake, by redoing the questions you will fix in your mind the correct approach to the question. Again, ask for further help if needed.

Decide what extra work needs to be done:

Unless you obtained full marks or very close to 100%, your next step should be to spend some time doing some review or extra work on the types of questions you got wrong or you don't fully understand. In so much of mathematics, new topics depend on your knowing the old topics. This means it is essential that you fix any problems that have been uncovered straight away.

Learn from your mistakes:

Keep a list of the sorts of mistakes you make with reminders about what you need to remember to avoid those mistakes. Consider how many careless mistakes you make. Is it because you are trying to work too quickly? Did you read the question carefully, at least twice? The better you know your material, the more automatic it will become for you to do the questions. You will become more confident by doing lots and lots of practice and you will have more success in examinations.