

A STUDY REFERENCE GUIDE

Easy to Apply Strategies for Success in Maths

A Step by Step Plan Designed for High School Learners

BY

ASHRAF JAMIE

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Endorsement:

"Ashraf Jamie is an excellent teacher. If you ever get a chance to learn from him, grab it with both hands. And grab it now – don't wait! This Study Reference Guide he has produced for you is totally amazing; I wish I had something like it when I studied Maths at UCT."

– **Siya Mapoko** (B.Sc. Hons (Chem) – UCT), businessman, author of **Conversations with JSE AltX entrepreneurs**

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Be warned, therefore, that this book neither asserts the legality of any of the methods it describes, and the author unequivocally disclaims any responsibility for damages resulting from the use of any of the techniques or the consequences of implementing any contained herein.

TESTIMONIALS

This is what some of my past students had to say about working with me:

"I attended private tuition for Mathematics and Physical Science with Ashraf Jamie. He was extremely enthusiastic in helping me excel in these subjects. His prepared notes were well explained showing each and every step, which was tremendously helpful. He highlighted all the important factors to help us during the exams and kept me motivated. He particularly helped me in my weak areas and stressed on the importance of practicing as many exercises I could manage. Ashraf Jamie was very helpful and gave me lots of guidance."

Sameera Allie – currently majoring in Mathematics at University of Western Cape

"Ashraf was an immense help in boosting both my understanding of and confidence in Maths Literacy. An excellent tutor, his aid was invaluable and contributed greatly to me passing my final matric examinations with greater ease."

Courtney Macaulay – currently studying towards a degree in Politics, Philosophy & Economics

"The insight I gained through tuition was not only limited to the knowledge I needed for the subjects of Maths and Physical Science. It also extended to practical everyday skills which still sticks with me today. My grades improved and I also gained some valuable life lessons from his tuition."

Firdaus Walele – currently studying to become a Chartered Accountant at University of Stellenbosch

"I admired how he would engage himself with the students in a more of one on one basis. I used to be so weak in Mathematics, but he taught and showed me how to approach the problems, which changed my attitude towards the subject."

Rozielah Mwaura – currently studying at Rhodes University

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About me

I have been assisting high school learners in the subjects of Maths & Science since 1997 with great success.

In 2001 I completed a Bachelor of Science degree with majors in Chemistry and Applied Chemistry. As part of my degree, I successfully completed certain university Maths courses up until second year level. During those years I learned how to break down complex problems into simple, easy to understand steps and have enjoyed teaching these skills to my learners up until today.

I have also completed the following studies:

- Postgraduate Diploma in Enterprise Management (2002)
- Bachelor of Commerce Honours in Financial Analysis and Portfolio Management (2004)
- Master of Science in Property Studies (2010)

All of my studies were completed at the University of Cape Town.

I have worked as a professional in the private sector for the past 9 years in the fields of Credit, Investments, Business, Property and Finance.

My diverse academic and professional background, as well as proven results in helping high school learners over the past 15 years, places me in a good position to add a TREMENDOUS amount of value to them.

A letter for your attention

Dear Learner

The fact that you have ordered this Study Reference Guide indicates that you are interested in improving your Maths results. As a result of our mutual interest, I would like the opportunity to work with you on a personal basis in order to help you do so, if you would want me to.

My name is Ashraf Jamie. I have been passionate about assisting high school learners with developing problem-solving skills in the fields of Maths and Science for about 15 years.

I am going to be sharing some of the most useful, easy to apply strategies I have found to work on how to succeed in Maths in this Study Reference Guide. This guide is going to assist you whether you are just struggling to pass this subject or whether you are wanting to EXCEL in this subject. **It is suitable for learners in all high school grades.**

It does not matter whether you are currently doing Maths or Maths Literacy as a subject, this guide will assist you in whichever of the two subjects you are doing. Throughout this study guide I refer to the subject of Maths, but if you are doing Maths Literacy then you can just interchange the word Maths for Maths Literacy.

I want to challenge you to read through this entire guide and to IMMEDIATELY APPLY all of the strategies I share in it as you make your way through it. It should not take you longer than an hour or two to read through this entire guide. It is very important that you make notes of the points that stand out for YOU as you go along. The real hard work will begin once you start to apply the strategies in this guide to design your own personalised Maths study plan, in order that you can end up achieving and even exceeding the goals that you have set for yourself in this subject for this year.

I created this guide to empower you and to give you an outline that can help you succeed in Maths without spending any of your own money. All that you will need is a burning desire to improve your Maths results, and then to invest the necessary time and effort in order to achieve the results you are aiming for.

If you will just APPLY the strategies I share in this guide, your Maths results will improve REMARKABLY – this is my promise. Therefore, please do not be misled by the simplicity of the strategies I share in here - the results, provided that you APPLY the strategies, are SPECTACULAR.

I cannot place a value on this content that I have put together for the benefit of YOU, using ALL of my knowledge and experience accumulated over the years as a part-time Maths educator with a passion for teaching. A guide like this will easily sell for R119.00 in one of our local bookstores, but I know just how much you need this resource right now to be able to succeed in Maths, which is why I want you to have it ABSOLUTELY FREE. The best manner in which you can thank me for creating this guide for you is to PUT INTO PRACTICE all of the strategies I share with you in it in order to make a HUGE SUCCESS of your own life (as you can see, I am extremely passionate about you applying all of the knowledge and wisdom I share with you in this guide, in order that you can be successful, which is why I repeat this point so many times).

I have invested plenty of my valuable hours and energy into developing this resource for you, and have truly enjoyed the whole process of writing it. I hope that you will enjoy this learning journey as much as I have enjoyed creating this GIFT for you.

Please share all of your success stories, as well as any feedback or comments to help improve this guide at the email address below.

Thank you and best wishes,

Ashraf Jamie

7 July 2012

Email: ashrafjamie@gmail.com

A couple of suggestions / points to note before we get started

1. Print out the "1 Page Summary" (on Page 9) and stick it on your wall for quick and easy reference.
2. Print out this guide in colour for easy reference.

You will notice in this guide I have made use of capitals, or bolding of words, or different colours in order to emphasise or highlight certain points, but also to make this guide more of an easy read.

LET'S GET STARTED! ENJOY 😊

1 Page Summary: Ashraf Jamie's Strategies for Success in Maths

1. Change your mindset: Know that Maths can be EASY and even FUN!
2. Set yourself a "SMART" goal to achieve in Maths by the end of this year (Page 16).
3. On a daily basis follow my tips on staying effective and productive during the day: (i) get 7 to 8 hours sleep at night; (ii) drink lots of water; (iii) take a 15 minute break after concentrating for 45 minutes, and then carry on working.
4. Invest money in buying one or both of the Question and Answer study guides that I recommend: *The Answer Series* and the *Study and Master* are good ones to buy. Buy the study guides for your grade and the earlier grade, and test your understanding using these! Don't let them gather dust.
5. Immediately start working towards the goal:
 - Determine which sections of work you still need to cover and understand before the end of this year.
Note Well: If you do not understand what it is that you do not understand, then it is best that you immediately seek the services of a good Maths tutor.
 - FOCUS on getting the highest possible mark for each test and project from now until the end of the year.
 - Read the section titled "DETAILED ACTION PLAN" in this study guide to help you come up with an effective study plan.
6. Measure on a regular basis whether you are moving closer to or further away from the goals.

If you are not reaching the goals that you have set for yourself, then this means that you will need to WORK SMARTER and put in a greater effort in order to ensure that you reach your goals. Part of working smarter involves (i) paying attention in class and (ii) asking questions in class.

7. You must budget at least four weeks before any major exam to start working through question papers. Remember my 2 main exam tips: (i) Identify what the problem is asking you and (ii) Apply the powerful Pareto Principle (aka the 80-20 rule).

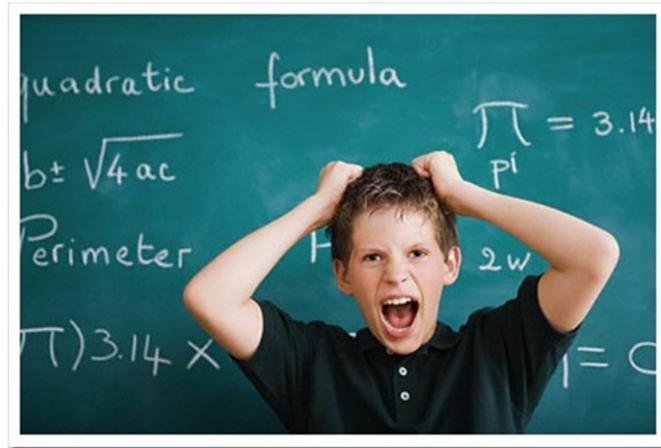
SHOULD YOU NEED EXTRA LESSONS, TURN TO PAGE 10 IN THE GUIDE OR CALL ME ON 083-440-4551.



Maths and Science School – Details of Extra Classes

- Help offered in the following subjects: **Maths, Maths Literacy and Physical Science**
- Grades 10 to 12
- Outside of school hours – during the week and on weekends
- Professional and conducive learning environment
- Taught by Ashraf Jamie {*BSc (Chemistry); PDEM (Enterprise Management); BCom Hons (Investments); MSc (Property)*}
- 15+ years of proven results in helping students in the subjects of Maths and Physical Science.
- Classes are kept small and manageable
- SEATS ARE LIMITED.
- Call Ashraf Jamie on 083-440-4551 or email: ashrafjamie@gmail.com

Why the need for a Maths Study Plan?



- Had a wake-up call after receiving your June Maths results?
- Passed Maths, but you are still unhappy with your results?
- Feeling lost in Maths?
- Feeling overwhelmed by the amount of work in Maths and having to juggle your time with all of your other subjects, and your private life?
- Concerned about the quality of teaching you are receiving?
- Concerned that the standard at your school will not prepare you adequately for the national exam to be written at the end of the year in Grade 12?

If you fall into any one of these categories, then please carry on reading. I promise that this study reference guide has the right tools to assist you.

Introduction

Change your MINDSET: Maths can be EASY and FUN!

I must state upfront that Maths is NOT a difficult subject. Unfortunately, I have seen for myself, that there are many learners out there that have developed a bad attitude towards the subject of Maths (this happens for Physical Science as well) simply because they have heard many friends or family 'bad mouth' the subject. I know that this sounds crazy, but if enough people convey a similar message to you about something or someone, then it is possible that you can start to believe them if you do not verify the facts for yourself (there is a word to describe this. It is called IGNORANCE). **One of the principles I live by and I highly recommend that you do this too, is to TAKE RESPONSIBILITY FOR YOUR ACTIONS** – do NOT accept information as being the truth without verifying the facts for yourself first using credible resources. **In other words always verify any information you receive before you decide to accept it as being true by doing your own research.** What I am sharing with you here, will not only assist you to improve your Maths results, but will assist you in ALL areas of your life.

The fact of the matter is that **Maths is an EASY subject – on condition that (i) your Maths teachers (both old and current) have provided you with a solid foundation and (ii) you have practiced solving Maths problems over the years.**

I can say this to you because I have worked with many different kinds of learners over the last 15+ years, many of which came to me with a very weak foundation, and after assisting them they all seem to agree that Maths actually is not a difficult subject at all, but that it only requires a good teacher to explain the concepts and also lots of practice. I hope that these words will serve as a source of motivation and encouragement to you.

Learners who have not performed well in Maths have fallen short in one out of the two areas above. **I want you to change your mindset right now and understand that Maths is NOT a difficult subject. If you will just invest the necessary time and effort, you will discover that Maths can be easy.** The right kind of teacher will even make this subject good fun!

Maths develops problem-solving skills and opens up many doors

Maths is truly an EXCELLENT subject. It helps to develop a learner's skills of logical thinking, understanding, problem-solving and the quality of perseverance. The mastering of basic Maths skills in high school can open up a broad range of exciting careers to learners. These are just a few of the great benefits associated with learning Maths. In fact, not taking Maths as a subject or performing poorly in Maths can actually seriously limit your career options. **The bottom line is that you are ultimately responsible for your success in life, so you must decide whether you want to perform well or not in Maths, and whether this is going to affect your chances of being successful in life in the long run.**



Knowledge applied is power: Please put all of these strategies into practice

The aim of this Study Reference Guide is to provide learners with **FREE** access to the strategies that I have found to have helped many of my learners see visible improvement in their Maths results over the years.

I believe that the information shared in this Study Reference Guide truly has the power to put you on a strong footing to pursue your career path of choice. **All that I request from you is that you PLEASE APPLY THE KNOWLEDGE I SHARE IN THIS GUIDE in order that it can have a positive impact on your life.**

You must have heard the saying: "Knowledge is power". I disagree. I believe that **KNOWLEDGE APPLIED IS POWER.**

Simple Strategies for Success

SET "SMART" GOALS FOR YOURSELF TO ACHIEVE



I like the picture above, which provides five criteria that a goal must meet in order for it to be a "SMART" and MEANINGFUL goal. This is what "SMART" stands for:

Specific – A goal must be specific: it must state exactly what you want to achieve, for example, I want to achieve at least 80% in my next Maths test

Measurable – A goal must be measurable. In Maths, for example, the best way to measure your progress is by monitoring your Maths results achieved in either tests or projects.

Attainable – A goal must be attainable / reachable. Here I would advise you to listen to your gut instinct. What does your gut tell you? For example, is it realistic for me to want to achieve 80% in my next Maths test if I only achieved 50% in the last Maths test? In this case, maybe I should aim for 65% first and if I do better, then that's good.

Relevant – A goal must be relevant to what you want to achieve at the end of the day – in this case, it could be passing the subject of Maths or excelling in the subject of Maths. If your goal does not relate to the end goal you want to achieve, then it is not relevant.

Time bound – A goal must be time bound. This means that you need to put a deadline to your goal, for example, I want to achieve a pass mark of 90% in Maths by the end of this year.

Step 1: Begin with the end goal in mind.

The main question you need to answer is:

"What grade do I need to achieve at the end of this year in order to set myself up well for my future after high school?"

START BY ANSWERING THIS QUESTION NOW ALREADY!

Step 2: Immediately start working towards the goal!

Don't fall into the trap of becoming lazy – **TAKE ACTION NOW MY FRIEND!** I know that you do not fall into the lazy group of learners since you have already proven that you are an ACTION-TAKER by downloading this guide! I just want to caution you right now from falling into the trap of getting bogged down by Maths problems and becoming discouraged to do anything about it.

Set a couple of milestones (targets in between now and the end of the year) for you to achieve from now till the end of the year – these milestones can include for example the minimum grade or percentage you would like to achieve in upcoming tests and projects, as well as the amount of work you want to cover on a weekly basis (Note well: I am using the word "minimum" here because you always want to be exceeding the goals that you set for yourself). With this I mean I just want you to have a broad idea of how you are planning to reach your goal by the end of the year (this is what is called a BIG PICTURE VIEW). I will be assisting you with a DETAILED ACTION PLAN later on in this guide – so don't worry about the details now.

Example: I am getting 40% for Maths now (i.e. June 2012) and I want to achieve a pass mark of at least 70% by the end of the year (November 2012) - this means that by the end of July 2012 I want to at least be achieving 50% in my Maths tests and by end of August I want to at least be hitting 60% for all my Maths tests.

WRITE DOWN YOUR OWN MILESTONES RIGHT NOW THAT YOU NEED TO ACHIEVE FROM NOW TILL THE END. You will gain maximum benefit from this plan if you follow what i tell you to do.

In other words, you want to set yourself targets along the way to make certain that you are making progress all of the time in moving towards your end of year goal.

An important question to answer at this stage is:

“Which sections of work do I still need to cover and understand before the end of the year?”

Make a detailed list of this. At this point in time, I know that you may be anxious to write all of this down in detail. However, **I can assure you that it is in your best interests, right now, that you set aside between 1 and 2 hours to do this TODAY. Do NOT procrastinate / delay!**

What I have to say now is more relevant to Senior high school learners / matric students, who will soon be finishing high school. Your academic results this year is a SERIOUS business since it will affect your future:

- It will affect whether you get accepted into a particular course of study at a technikon or college or university
- It will affect your ability to get a part-time or a full-time job – potential employers or companies looking to hire staff would want to hire people who have shown that they have succeeded at school.
- Even if you are considering taking a gap year next year in order to make up your mind about which kind of career you would like to pursue, your results achieved at the end of this year will most likely be called upon later down the line and can make a real difference in how quickly you achieve your goals.

Whichever path you decide to take when finishing high school, you do not want to end up in a situation where you need to repeat Maths in the future due to failing or not meeting the grade for your chosen career path. **I see my role as helping you to achieve your goals in the shortest amount of time possible and with the least amount of risk (money spent; struggle).**

I am telling you that the longer you wait to tackle the problem head-on, the bigger the problem will become! You want to prevent that from happening, correct?

I also understand that **some of you** are struggling quite badly, so bad that you **do not even know what it is that you do not know** - in this case, I recommend that you **IMMEDIATELY obtain the services of a good** (i.e. experienced and has a track record of producing good results), **patient** and **available Maths teacher or tutor**. Ask them to help you find out where the exact gaps in your understanding are - he or she will probably need to ask you to do a couple of exercises or tests / assessments (don't become scared by the mention of these words) and your results obtained in these tests will determine what kind of a study plan needs to be put in place for you. I must emphasise here that you must please not be discouraged if you do not perform well in these exercises or tests – the whole aim of these are to identify what it is that you don't know in order that you can move forward from the point that you are at right now.

Once it has been identified what it is that you don't know, then going forward, you will be focusing on the sections of work that (i) you do not understand yet AND (ii) that you have not covered yet.

All of this work needs to be CAREFULLY PLANNED in such a way that your results IMPROVE STEADILY with each and every single test and class project you tackle for the remainder of the year.

Note Well: I am going to be sharing a DETAILED ACTION PLAN with you in the next section, but first I want to finish talking about the importance of setting goals and working towards your goal on a daily basis.

Step 3: Measure your progress regularly against the goals you have set.



This is how you do this:

- Ask your class teacher for a record of your past marks for all the projects and class tests you have done in this year.
- It is also important that you find out exactly what percentage each project and test counts towards your overall and final Maths mark at the end of the year.
- Finally, from now until the end of the year you must keep a record of the marks of your projects and tests going forward.
- Each time you receive a new mark for a test or project, you can calculate your **weighted average percentage** using all of the year's marks that you have received so far in order to measure how you are progressing towards your end of year goal.

At this stage, I would rather not delve into the details of how to go about calculating your weighted average mark - if you do not know how to calculate this, then I have some homework for you to do: ask your Maths teacher at your school to show you how to do this or maybe even research how to do this on the internet. If you are still uncertain, then you can drop me an email using my contact details contained in this guide, and I will gladly send you an example of how to go about this on condition that you can show me that you have made a good effort to find the answer yourself (**Remember: Take Responsibility**).

Important points to note in monitoring your progress

- If you are reaching the interim (in-between) goals that you have set for yourself, then continue working towards your end of year goal, and **be sure to incorporate the POWERFUL exam preparation techniques I share in this guide in order to obtain the best results.**
- If you are not meeting the interim goals you have set for yourself, either in terms of the amount of work you needed to cover in each week or in terms of your test and project marks, then this means that you will need to put in a greater effort on your side. You will most probably need to put in more hours than you were putting in before or you need to find ways to work smarter towards your goal. Fortunately for you, I share many valuable tips on working smarter in this guide. You may even want to consider obtaining the services of a good tutor.

Most importantly, I want you to **FOCUS LIKE A LASERBEAM** on getting the highest mark possible for each and every single project and test you will be doing from now until the end of the year.

DETAILED ACTION PLAN

Building a strong foundation in Maths

Now that you think that you understand which sections of work you are struggling with, as well as the sections of work you have not covered yet, you will need to systematically work through them.

Did you notice that I said "now that you think you understand" and not "now that you understand"? The reason for me saying it in this way is because it is my personal experience that learners have a tendency to underestimate the gaps in their understanding.

In other words, you cannot just list the topics that you do not have a good understanding of - **the only way to truly test your understanding of a particular section of work is through TACKLING problems!** Maybe you have heard this many times before...well, guess what?? It's TRUE.

Testing your understanding in Maths

This is how you should go about testing your understanding of the Maths syllabus:

- i. **You should purchase Q&A self-study guides that contain questions and detailed answers, showing you step by step how to solve the problem, and ensure that it is suitable for your grade.** Two good study guides that I can recommend are titled "Study & Master" and "the ANSWER series" – **by the way, I receive no monetary gain from the suppliers of the brands I recommend in this guide: I just genuinely believe that these resources will be able to benefit you.** Use the internet / Google to find their contact details, and then give them a call to find out where your nearest supplier is or just ask at your local bookstore. **Once you are in possession of a good study guide, I would just check with a reliable and helpful Maths teacher whether they are happy with the quality of the study guide you plan on using.** You WILL need a good quality study guide like this if you do not already have one – so either you can BUY one or BORROW one, but make certain that you get one! These study guides are going to become an essential tool to help you improve your Maths grades.

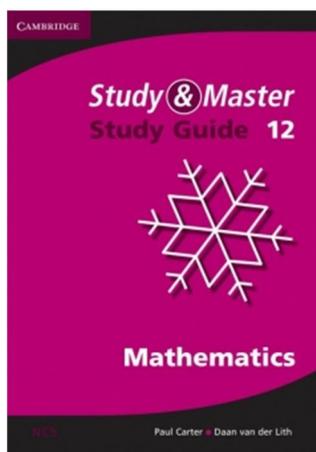
Try your best to grab a hold of these study guide brand names

Note Well: Below are some pictures of the study guide brand names I can recommend – just so that you are able to identify what the brand name looks like before purchasing the study guide that is suitable for your grade.

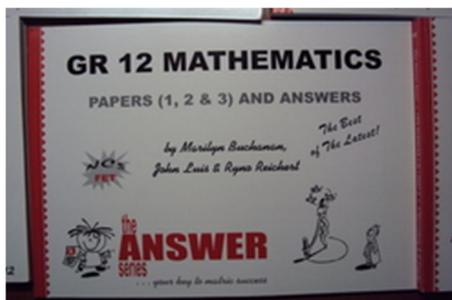
I wish to repeat here that I receive no monetary gain from the suppliers of the brands mentioned in this guide: I use these resources to benefit my learners and therefore I believe that these resources will be able to benefit you as well.

Remember that the study guides for different grades will have different covers, perhaps in different colours, but the logos of course will be the same.

Study & Master brand:



the ANSWER series brand:



A USEFUL STUDY TIP: It is very useful to even buy the study guides for the previous grade as well. For example, if you are in Grade 12, then try to get your hands onto the study guides for Grade 11 as well. In my experience, quite often I find that the problems learners experience in their current grade relates back to an earlier grade and this is why I recommend getting the book of the earlier grade as well.

- ii. Once you have a suitable study guide in your hands, you want to tackle problems relating to a particular section of work (for example: Quadratic Equations) and **only after you have attempted to solve the problems yourself first, should you visit the answers to see exactly where you have gone wrong.**

A good question that may have crossed your mind right now is:

“How many study guide problems on a particular section of work should I try in one study session in the beginning?”

I would recommend that you look at the mark allocation for each question and choose a certain number of problems in the study guide relating to a section of work that you want to cover that add up to say 45 marks – it could be 3 or 4 or 5 or even several questions. Then I would give myself say 1 minute for 1 mark just to give myself a deadline in which to attempt to solve these problems – in this example, you would give yourself 45 minutes to work through 45 marks of problems.

In the beginning, you may find that it takes you much quicker to work through 45 marks of study guide questions, simply because you do not know how to go about solving the problem or you may have even forgotten how to do it. No problem! As soon as you are done, you can go ahead and look at the solutions to see which problems you got correct and which ones you got wrong.

- iii. So, once you have done your best to solve the problem by yourself, without asking for any help from anyone or looking at the answer in the study guide, only then do you want to spend some time looking at the answer in order to try and understand where your mistakes are.

Guidelines for creating a Maths study plan

Note Well: The exercises in the study guides that I am recommending you tackle in these study sessions are besides the homework you receive at school. If you are stuck on your school homework, I would just leave this for now and immediately start building on your Maths understanding by following my guidelines in this guide. At least in this manner you will feel like you are moving ahead and you not feel like you are going backwards. By doing it in this manner, you will start to see that you reach a point of understanding where you can actually start to tackle your school homework.

In the beginning, as you start with your Maths study programme, it should not take you longer than say 90 minutes (including a 15 minute break after 45 minutes of work) to work through 45 marks of study guide questions yourself and to work through the answers. If you are taking longer than this, then it might be a good idea to start thinking about getting a tutor.

You would also have noticed that I underlined the words "in one study session" when I asked the question on Page 23 above. As you practice more, you will notice that you take quicker to finish 45 marks of questions. So in the beginning, I believe that one study session where you are tackling 45 marks of study guide questions is going to be fine, but in the 4 weeks PRIOR TO (BEFORE) any major exam I strongly recommend that you do two of these study sessions a day – this means that I want you to tackle 90 marks of study guide questions in 90 minutes.

Let's recap: I will recommend that you tackle at least 45 marks of study guide questions following the method outlined above. In this manner, I can promise you that you will start to notice a STEADY improvement in your marks over time.

I want you to carry on doing problems in a particular section of work until you are satisfied that you have gotten most of or all of the answers correct and that you have MASTERED that particular section of work.

Note Well: It is NOT necessary for you tackle all of the study guide problems relating to a particular section of work, as long as you have tackled ENOUGH problems relating to a particular section of work.

Question: How do you know how many questions is enough?

Answer: After say two or three of these 45 minute study sessions, where you tackle each and every single study guide problem relating to particular section of work, I recommend that you do a study session where you begin to tackle the balance of the study guide problems on that section of work in a more random manner (do every second or third problem perhaps). If you are getting most or all of these answers correct for the problems that you attempt at random, then this is probably a good indication that you have done enough and have a decent understanding of that particular section of work.

A few GREAT tips for being effective in the day

Tips for getting the most out of your day:

- Ensure that you are getting between 7 and 8 hours sleep each day. During the day, ask yourself the question: "Am i well rested?" You are not going to accomplish much if you are tired.
- After every 45 minutes of work and focus, I want you to take a 15 minute break to relax and drink some water. After your 15 minute break, you can return to work to carry on for a maximum of another 45 minutes before you take your next study break. This tip does not only apply to maths, it applies to any work that you are doing.
- Ensure that you are drinking sufficient water throughout the day and that your body is well hydrated. Water keeps you energised and cleanses your body.

High performance studies show that the most effective and productive people do all of the above. You will see the positive impact this has on all of your results. You can thank me later.

The Snowball Effect

Maths is NOT a subject that you can study in parrot fashion! I'll repeat this again: **Maths is NOT a subject that you can study in parrot fashion!**

It's all about PRACTICE, PRACTICE, PRACTICE and MORE PRACTICE - until you have MASTERED solving that kind of problem.

If you follow my guidelines, you will start noticing that you will soon be able to start solving problems that you could not do before. **The more problems you start to solve successfully, the more your CONFIDENCE will start to build.**

Please pay attention to what I am saying here:

Huge success does NOT happen overnight. It's by doing many of the little things right over and over and over again, that all the pieces of the puzzle start falling into place. Soon, what once appeared to be a difficult problem to solve, you will see is actually an easy one.

I want you to understand that many little successes build BIG SUCCESS! This is what is called 'The Snowball Effect'.



Did you know that the world's wealthiest and most successful investor in the world right now, a man by the name of Warren Buffett, wrote a book called *The Snowball*? I am speaking about something similar here. So, **I promise you that there is WISDOM in the principles I am sharing with you here.**

What if self-study using study guides does not work for me?

Again, not everyone is able to discover and correct their Math problem errors through a process of self-study, in which case it is best to approach an AVAILABLE, EXPERIENCED, HELPFUL and PATIENT teacher or tutor ASAP (as soon as possible) for assistance.

Through doing a few simple assessments with you (as mentioned earlier), he or she will be able to determine exactly where your foundation of understanding is lacking, and where this needs to be strengthened before you are in a position to understand more advanced topics.

In my experience as a part-time Maths teacher, I have often found that learners in Grade 12 have not mastered certain Maths concepts that should have been understood in Grade 11 already, and sometimes the problem even traces back to a weak understanding of earlier grades - **Don't despair! There is HOPE / HELP for you, but it is going to be up to you to go and seek it.** I have successfully assisted many learners who fall into this category - but this is only because they came to me early enough for me to be of help to them. **The moral of this story is that YOU MUST SEEK HELP EARLY FOR YOUR OWN BENEFIT.**

Maths is a step by step learning process

Maths is the kind of subject where you cannot jump steps i.e. you need to do step 1 before moving onto step 2, and must to step 2 before you can do step 3, and so on.



The right teacher will immediately be able to reinforce the building blocks of understanding you require, through explaining the relevant sections of work to you in the right order (i.e. starting with the basics and then gradually moving onto more advanced topics) and getting you to quickly practice and master the solving of these kinds of problems. Only once this has been done, will you be ready to build momentum in covering all the areas of work that you still need to cover.

In other words, through filling your gaps in understanding in the correct sequence, you will be building a solid foundation, which will greatly assist in **ACCELERATING your understanding of the sections of the Maths syllabus that you still need to work through.**

Covering the syllabus

Plan ALL of the work that lies ahead

- i. Make certain that you have listed all of the sections of the syllabus that you still need to work through - if you have not already done so!
- ii. Block out the free time you have each day - from now until the end of the year. This means that **you will need a diary** and on a daily basis you want to know how much free time you have available to study, after taking into consideration all of your daily and weekly commitments including your time spent in school, any sporting or other extra-curricular activities (exercise, other classes, going to church or mosque etc).
- iii. You need to allocate / fit all of the work that needs to be done into the free time that you have available.

Study Schedule							
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6:00	Sleep	Getting ready for	Getting ready for school.	Getting ready for school.	Getting ready for school.	Getting ready for	Sleep
7:00	Sleep	School	School	School	School	Sleep	Sleep
8:00	Get up.	School	School	School	School	Sleep	Sleep
9:00	Church	School	School	School	School	Sleep	Sleep
10:00	Church	School	School	School	School	Sleep	Sleep
11:00	Church	School	School	School	School	School	Eat Breakfast
0:00	Church	School	School	School	School	School	Watch TV.
1:00	Home	School	School	School	School	School	Socialize
2:00	Socialize	School	School	School	School	School	Study
3:00	Socialize	Study / Homework	Free Time	Study	Study	Study	Study
4:00	Homework	Homework	Study	Homework	Study	Homework	Socialize
5:00	Homework	Homework	Study	Homework	Free Time	Homework	Socialize
6:00	Eat	Eat	Eat	Eat	Eat	Eat	Eat
7:00	Study	Study	Bible Study	Practice	Study	Study	Study
8:00	Study	Homework & Study	Bible Study	Practice	Homework & Study	Socialize	Study
9:00	Watch TV	Finish Homework	Homework & Study	Finish Homework	Finish Homework	Finish Homework	Watch TV.
10:00	Sleep	SLEEP	Homework & Study	SLEEP	SLEEP	Sleep	Sleep

A word of caution: You can't do this in a 'willy-nilly' (haphazard) way. This needs to be done very STRATEGICALLY (in a smart way).

What I mean by this is that you need to work through the syllabus in a manner that prepares you in the best way for your next coming or final exams!

Some IMPORTANT guidelines for you to follow in PLANNING all of the work:

- You must plan your work in such a way that you make certain you cover all the sections in the syllabus.
- Very important is that you allow more than sufficient time to work through QUESTION PAPERS! [Note well: I will explain below in more detail the exact method I recommend for working through question papers]

I recommend that you will need to start working through question papers at least one month BEFORE any major exam - at the same time I understand that this is not always possible, simply due to many learners waking up too late before the exams.

If you are pressed for time (which often happens because students will be students), I would urge you to remain calm (Do NOT panic) and **firstly try to gain an understanding of those particular sections of work that you have NOT managed to cover or understand yet in preparation for your test or exam** – do this by going through worked examples in your prescribed textbook and **immediately after you have worked through those sections of work, I recommend that you move onto working through question papers under exam conditions.** In other words, skip working through many study guide problems for those sections of work (since you just do not have the time to do this now) – it is going to be much more important for you to gain an understanding of what kinds of questions for those sections of work are EXAMINABLE by working through question papers instead. However, if after working through the question papers (Reminder: study my preferred method of working through question papers follows below) you find that you still have time available for working through study guide questions, then search for similar kinds of problems in the study guide as those questions that you have noticed tend to show up on a regular basis in the question papers (relating to a particular section of work), and focus on gaining an understanding of how to solve those problems.

Maths exam preparation techniques

THE FIRST THING TO KNOW WHEN TRYING TO SOLVE ANY MATHS PROBLEM: IDENTIFY THE PROBLEM!

Remember that if you cannot even identify what the question or problem is asking of you, then you will not be able to solve it.

The two questions below will assist you in identifying what the problem is requiring you to do:

- i. Which section/s of the syllabus is/are applicable?
- ii. Which problem solving technique/s will I need to use?

Note Well:

If you are able to identify (i) exactly what the problem is testing and (ii) what needs to be done, then there is a good chance that you will either get the problem correct or score most of the marks.

On the other hand, even if you are unable to identify what the problem is testing, just asking the two questions above already puts you in a better position. Why do I say this? Because the moment you realise that you do not know how to answer the problem, then at least you will know that you can leave that question and move immediately onto the next one, so that you avoid wasting any time!

Remember: In any exam, time counts for marks! So you only want to be spending time on questions that you know you can answer.

Apply The Pareto Principle aka (also known as) The 80-20 Rule



Pictured here is **Vikki, the Viking** –

He is one of the smartest cartoon characters in TV history 😊

I have learned that in many areas of life that this principle holds true. It's a pity that I only discovered this principle a few years into my university studies through a friend of mine who was a tutor at the time - had I learned this earlier, I would have done much better in my studies in earlier years already – and **I want to save you the years of struggle I went through where I literally learned the hard way.** As soon as I started applying this principle, I started to see a GREAT improvement in my results. Therefore I believe it is ABSOLUTELY NECESSARY for me to share this principle with you for your future success. **I GUARANTEE that if you start applying The Pareto Principle immediately at this early stage in your life, you will ACCELERATE your success in your studies, your career and your life as a whole!**

Put simply, the Pareto Principle says that you need to WORK SMART, NOT HARD.

I'm sure you have heard this saying before, but you may not truly understand what this means. **This principle is also called the 80-20 rule for good reason.**

You see, given all the other work pressures you are under as a learner and balancing this with your private life, I think you will agree with me that it is going to be almost impossible to work through each and every single problem in your textbook, or in the worksheets / tutorials that may have been handed to you in class, or even in the study guides that I have recommended you purchase. Personally, I too would not be able to work through all of these problems – however, **I am always interested in achieving the best results possible in the shortest amount of time**, in order that I can focus my free time on the activities that I truly enjoy like being out in nature for instance.

According to Pareto, 80% of your results depends on focusing your efforts / energy on the 20% of the most important work (sections of the entire Maths syllabus – in our case) - so in other words, there is a certain degree of 'spotting' required in Maths if you want to pass your examinations well. 'Spotting' for exams means taking an educated guess on the likelihood of a particular section of work being tested in an exam.

Few teachers will share this information with you since they would not want to encourage you to slack or become lazy or take shortcuts, but I am sharing this strategy with you because I understand the pressures that you find yourself under (these pressures are very real and can cause you to get bogged down if you do not have a good plan). More importantly, I have written and successfully passed dozens of challenging exams under huge pressures by applying the 80/20 rule, and many of my learners too have achieved great results from me sharing this strategy with them. **At the end of the day, all I am interested in is RESULTS and in my 15+ years of experience as both a student and a teacher myself, I can assure you that this method works.**

Your faculty of LOGIC should tell you that it is simply IMPOSSIBLE for all of the work to be examined in one exam that will last for say 1 or 2 or 3 hours.

The question you should be asking yourself now is:

“How do I spot the most important work in the Maths syllabus?”

Tips to help you focus on the most important sections of work

Tips to help you spot the most important work in the Maths syllabus:

- Go through the last 2 to 3 years examination papers and then look for patterns in each exam paper i.e. which sections of work tend to always get tested? These are the sections of work where you want to focus your energy.
- When going through past question papers, it is also important for you to check how many marks is dedicated to each section of work. I would recommend that you start practicing problems in the sections which get tested for the highest amount of marks, before moving onto sections with lesser amount of marks.

More tips on working smarter, not harder

- PAY ATTENTION IN CLASS: THE MORE YOU UNDERSTAND WHAT YOUR MATHS TEACHER IS EXPLAINING IN CLASS, THE LESS YOU NEED TO FIGURE OUT AT HOME.
- ASK YOUR MATHS TEACHER QUESTIONS IN THE CLASS IF YOU DO NOT UNDERSTAND. A GOOD TEACHER UNDERSTANDS THAT THERE IS NO SUCH THING AS A STUPID QUESTION AND WILL BE HAPPY TO ANSWER IT FOR YOU. DON'T BE SILLY ON YOUR PART AND CHOOSE TO REMAIN IGNORANT. IT IS YOUR TEACHER'S JOB TO ANSWER YOUR QUESTIONS – HE OR SHE RECEIVES A SALARY FOR TEACHING YOU AND ANSWERING YOUR QUESTIONS.

Create and Simulate the Exam Environment BEFORE Exam Day



I always recommend to my learners that they practice by putting themselves in an exam environment, as many times a possible, before they write the ACTUAL exam.

As mentioned earlier, many learners are put off just by the mention of the word "Maths" due to ignorance. Maths exams therefore can be the cause of anxiety for many learners - in my view, the best way to overcome the anxiety is to face your fears head-on!

I would therefore recommend that you practice working through several question papers in an exam environment before exam day (you are busy simulating the exam environment by doing so – in other words, it will feel like you are writing the actual exam on the day, but actually you are just practicing). **The more you practice being in a Maths exam, the more comfortable you will become when it comes to writing the real Math exam.**

This means that you will need to work through an old question paper in a quiet area (where you will not be disturbed) and manage/monitor the time you spend on each question, just as you would do when writing the actual exam – and you need to do this as many times as possible!

Please ensure that you understand the example below:

Let's say, for example, you have 180 minutes for 150 marks, I would spend 1 minute for 1 mark (i.e. 150 minutes for 150 marks) leaving you with 30 minutes to check your workings. You will notice that the more you practice being in an exam environment, that this will act as a CONFIDENCE BOOSTER and you will reach a point when you sit for an exam without having any issues with nerves or anxiety. **You will just carry on with the task at hand of gaining the maximum amount of marks in the shortest possible time. It will just be you and the question paper, and nothing else will matter anymore at that point in time.**

Note Well: Only once you have practiced doing a full question paper, uninterrupted and sticking to the time limit of that question paper, are you allowed to then visit the memo or answers for that question paper to see how well you have done and **more importantly where you have gone wrong** (areas where you still need more practice in and need to focus on more).

The principle I wish to emphasise here is:

Keep on doing what you are doing right, but focus on the areas where you need to improve.

An excellent LOCAL resource (website) to help Grades 10 to 12 with exam preparations

I will highly recommend that you visit the following website:

www.mathsexcellence.co.za

The big advantage of this website is that it is a South African website and really contains a wealth of FREE resources to help South African learners prepare for local examinations. **Here you can download past question papers with answers, textbooks, tutorials and there are even online videos for you to view – Can you believe it? :) It sounds too good to be true hey, but you will find all of these valuable resources there.**

I have not forgotten about the Grades 8 and 9 learners. Please continue reading.

Currently the **BEST** and biggest library of online Maths videos I've come across – for learners of all grades

NOW VISIT THE FOLLOWING WEBSITE:

WWW.KHANACADEMY.ORG

This is an international website, where you can search for the Maths topic that you interested in learning more about. You will then be taken to online videos, which provide a clear explanation on that particular topic or section of work.

All that you need to benefit from all of the online resources I have recommended is an internet connection!

This is where you now need to **MAKE A PLAN** to get access to one (**Remember: Take responsibility for the results in your life – do NOT find REASONS or EXCUSES**).

Do not 'drop the ball' in your other subjects

Remember that Maths is only one of your subjects. It is not going to help you if you do very well in the subject of Maths and then you do poorly in some of your other subjects.

You need to know exactly what grades are required for your various subjects in order that you are able to pursue your dream career one day.

I always advise my learners to pay more attention to their weaker subjects, while at the same time staying on top of things in the subjects that they are stronger in. In this way, you will see improvement in your weaker subjects while still maintaining good results in your stronger subjects.

With my own group of learners, I go into more detail with recommendations on how to work smarter in all of their subjects, given the different nature of each of these subjects. However, this falls outside the scope of this Study Reference Guide.

Switching to Maths Literacy as an Option

Whether you should take Maths or Maths Literacy as a subject choice depends on your chosen career path.

Maths Literacy is the easier option without a doubt. Unfortunately, there is a wrong perception amongst learners that Maths Literacy is for the 'Mathematically challenged' learners. I view it completely differently: I actually believe that Maths Literacy is a subject that tests more of a practical understanding by giving more real-life examples (word problems) while Maths tests more of a theoretical understanding. Therefore Maths Literacy can actually be viewed as more exciting than Maths and therefore this subject should not be underestimated. **More complex Maths than Maths Literacy is NOT a requirement of all careers. On the other hand, I must state that Maths as a subject choice allows you a much broader choice of career options, which is why you need to CAREFULLY make this decision. So, the decision as to whether you choose Maths or Maths Literacy as a subject choice depends entirely on which career path you choose to take.**

Here are some pointers to assist you with this subject choice:

- Find out whether your high school offers Maths Literacy as an option since not all schools do offer this as a subject choice.
- Call the tertiary institution where you intend to study to find out whether it is a requirement that you pass Maths, or whether it is fine for you to do Maths Literacy?
- Find out exactly what grade in Maths or Maths Literacy is needed in order for you to gain successful entry into your desired study programme.
- If Maths Literacy is all that is required, then why would you want to place yourself under unnecessary pressure? Or perhaps you would like to keep your options open, and therefore you feel that Maths is the better option? As I said, this decision lies in your hands.

You will need to have a very good understanding of your passions, hobbies, interests, likes, dislikes, strengths and weaknesses in order to choose the career path that is right for you – your chosen career path, in turn, will decide whether you need to do Maths or Maths Literacy.

EXERCISE / HOMEWORK: Make an effort to understand YOURSELF better and what the different career options are that could possibly suit you, and then whether Maths or Maths Literacy is going to help you get there.

Schools that offer both Maths and Maths Literacy as subject choices are usually given a deadline, after which you can no longer switch between these two subjects - find out by your teacher or school principal about this. The Education Department is very strict with adhering to these deadlines since changing subjects gives your school and the department extra work to do. If this deadline has passed, then you stand a slim chance of being able to switch subjects. **However, I will share another lesson that I have learned in all of my years of experience: There is ALWAYS an exception to the rule** - if you are able to provide your school teacher or principal with a very good motivation to change your subjects at an early enough stage after the deadline has already passed, and either of them is then able to motivate your unique case with the Education department, then you might just stand a chance of switching subjects. In other words, things might just work out in your favour and you could well be THE EXCEPTION TO THE RULE.

I am a strong believer in the saying "where there's a will, there's a way", so I would encourage you to persevere and to strongly motivate for the choice that you believe is going to be in your best interests. You may not always get your way, but it's definitely worth a shot! Nothing ventured, nothing gained.

At least, through doing the exercise / homework I have given you above, you will have a better understanding of what you want out of life – so, even if you do not get to make the correct subject choice in time, you will have a clearer idea of what is needed to pursue your dream career. It might take you slightly longer, but you will eventually get there. You will not believe how many students pursue certain careers without giving this BIG decision plenty of thought, which can end up costing them their happiness in the long term.

Conclusion

Maths is a subject to be appreciated. It can open up a world of opportunities to the learner that is willing to make the necessary effort to succeed in it!

Unfortunately too many learners incorrectly assume that it is a difficult subject because of ignorance and listening to the masses. I have explained in my introduction that, on the contrary, Maths is an easy subject.

I really hope that you have gained a tremendous amount of value from all the strategies, tools, tips and guidelines I have shared with you in this Study Reference Guide, and that you have enjoyed the learning process!

You have my assurance that if you just APPLY THE KNOWLEDGE AND WISDOM SHARED WITH YOU IN THIS GUIDE, that you will reap the fruits of your efforts through seeing a steady improvement in your Maths results from now onward until the end of the year. **What I have shared with you in this guide will provide you with a strong foundation to succeed in any tertiary studies, whether it is at a college or technikon or university.**

Once again, please share all of your success stories with me at my email address below. I also welcome any ideas that you may have to improve on this resource, which will ultimately benefit many more learners.

I am based in Cape Town and provide extra tuition in the subjects of Maths & Science. For enquiries, you may contact me on my cell number below.

To your success!

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