

# MATHS with Anne Eadie and Jenny Campbell-

## Transcript

[00:00:00] **George Eadie:** [00:00:00] Since 1975 The Answer Series, often called TAS, has been empowering high school learners. We've become the best-selling study guide series in South Africa.

TAS study guides are comprehensive and easy to use. They are written – and frequently updated – by teachers, examiners and subject specialists. The Answer Series is – and has always been – a family-run business.

[00:00:25] Our purpose with The Answer Series is to impart the gift of confidence. Welcome to Subject Scoop, with me your host and TAS CEO, George Eadie. In each episode of Subject Scoop, we dig into a specific subject area and what the year holds for that subject. We'll unpack what learners are really struggling with and how you as a teacher can help them on a practical level.

[00:00:49] It will also cover what subject experts experienced in Gr 12 exam marking. In this episode, we tackle Maths and joining me to do so is Anne Eadie and Jenny Campbell, Anne has been the lead maths author at TAS for 46 years. She has written and analyzed every matric maths paper written in South Africa since 1975.

[00:01:11] Now at the pinnacle of her mathematics journey, COVID 19 times have catalyzed Anne's desire to reach teachers more directly and at scale via platforms like this. Side note, um, Anne is also my mom and I can attest to her unwavering passion for maths my whole life. Jenny too, is a highly experienced mathematics teacher with 30 years in the classroom, culminating and being the head of mathematics at Bishop college.

[00:01:40] Her track record in maths includes being an author, a matric marker. And currently she is the internal moderator for mathematics paper one. She has just pivoted her career by joining the TAS team to scale her impact in mathematics, beyond the classroom, to as many learners and teachers as [00:02:00] she can possibly reach.

[00:02:02] Welcome Anne and Jenny, it is totally awesome to be getting into this hot topic with you both today. And mom, Anne, I'm going to direct the first question at you and it's a personal one. Why mathematics? What aspects about this subject attracted you to it? And why did you want to teach it to others? I think the context of your background is really helpful before we get into current day challenges.

[00:02:27] **Anne Eadie:** [00:02:27] When I found that mathematics engages in mind, like no other subject. The aspect that attracted me to it was the nature of the challenges it brings. And responding to these challenges, getting immersed into the vagaries of mass, often struggling through, but ultimately mastering new ways of thinking with each topic and then feeling good.

[00:02:48] So of course, this is an experience one wants for others. Seeing their delight as they overcome their fears, gaining confidence and achieve success is what excites master teachers.

[00:03:00] [00:02:59] **George Eadie:** [00:02:59] Awesome. Yeah, so that real overcoming of, uh, of challenges and, and, and the essence of building confidence, um, one challenge overcome the time. I love it. Um, Jenny, let's hear some of your perspectives perhaps in a different angle, which is, you know, what significant changes have occurred in mathematics since 1994 and perhaps what are some of the positive and negatives of some of these changes that you've noticed.

[00:03:27] **Jenny Campbell:** [00:03:27] Well, it's really easy to speak about the most significant change. And that is the fact that there is no longer a separation between grades. So you don't have a higher grade, um, option or offering for the bright students and as standard grade for the weakest students, you now have one level. Which makes teaching very challenging and at the same time, quite exciting. So you have to be far more, uh, cognizant of the fact that you've got super bright children, who you need to stimulate more.

[00:03:56] Because the syllabus doesn't always cater for them. And then at the same time, [00:04:00] you've got other students who are being expected to do very difficult things that previously were in the higher grade syllabus. So it's quite a challenge. The upside of the changes include the fact that quite a few more interesting sections have been brought in from the learner's perspective.

[00:04:15] So sections like financial maths statistics, you don't have to stand in the classroom and always argue about the fact that maths will never be relevant. Because those two topics in particular, you can't debate. They are relevant all of the time. The downside is that we are doing so many more topics in our syllabus that you don't do anything in depth.

[00:04:36] And therefore you lose the learners in the process because. You just start one section and they just start getting coming to grips with it and then you move on and then they have to start their thinking process all over. So lots of positives and some negatives and a lot of debates still around the fact that it probably in the long term looks like we should pursue [00:05:00] a different way of catering to the needs of the students who will use mathematics at university. And those who worked. So I don't think the debate is over yet.

[00:05:09] **George Eadie:** [00:05:09] Now mathematics surely must be the most boring subject to teach. How do maths teachers survive. We just mentioned earlier of your 30 years of experience in the classroom, how do maths teacher survived, doing the same thing day after day, year after year?

[00:05:26] **Jenny Campbell:** [00:05:26] Okay. So I have to forgive you for that comment because only a non math teacher would ask something in that tone, because if you're in the classroom, you're teaching teenagers high school, maths, not even the same experience between double periods because teenagers are volatile. So it doesn't matter what subject you teach teaching high school is not boring. So that's the first thing. And the second thing is that the mind just wanders everywhere in mathematics. So. You teach something, you've taught it for 30 years and you're quite [00:06:00] convinced you totally on top of your game. And then a boy or a girl will ask you something you've never thought about.

[00:06:05] And suddenly you have to say, I actually don't think I can answer that. So if you don't mind, I'll come back tomorrow and I've had a chance to mull it over a bit. So the nature of the subject is that it's changing all the time, depending on the children that you're

teaching. And depending on the questions that they're asking and depending on the mood that they're in and depending on why they're studying math so boring no, lots are fun.

[00:06:26] **George Eadie:** [00:06:26] Mom turning attention back to you now. Um, one of the areas I'm really interested to gain perspective on is the situation we find ourselves in, in mathematics, in South Africa, you know, we hear a lot about the declining numbers of people that are taking mathematics. Um, the academic outcomes have been on the decline. Um, What is there to be optimistic about and what are some of the hard facts that we may have to face as we sort of contemplate where we are in mathematics right now?

[00:06:58] **Anne Eadie:** [00:06:58] Well, sadly, the number of [00:07:00] learners taking core maths has been declining as many as 11,000 per year and even more in this recent exam. And so to the performance was only 35% achieving 40% and above and 22% achieving 50% and above. Clearly both learners and teachers find rest very challenging. A vital aspect of the recovery of math in our country is the historical need to catch up on foundational concepts. And now most, especially on time on task as a result of COVID these difficulties have our ever shine, a light on the need for new ways, very significantly.

[00:07:35] Having our learners, taking more responsibility for their own learning and making our job extremely interesting and exciting.

[00:07:43] **George Eadie:** [00:07:43] As the founder of the answer series, your resources are well-known and well-respected, but generations of matriculants, I constantly bump into people who comment on how the answer series got them through. And they're now heads of industry, et cetera. [00:08:00] Have you made any significant changes to the support you offer to learners of late, especially, um, and also to teachers us, especially since outbreak of COVID 19.

[00:08:11] **Anne Eadie:** [00:08:11] Yes, we have. As a matter of fact, we had already begun to make our eBooks freely available to teachers in January of 2020, prior to the outbreak of the pandemic. Having that underway meant that our material was a known support to teachers which, who were plunged overnight into the biggest challenge of their lives as teachers. To further assist both teachers and learners. We immediately embarked as teaching and learning came to a Haute on a mission to provide videos free of charge for grade twelves, across six subjects.

[00:08:42] These matriculants and their teachers by hook or by crook had to be ready to write the final examinations come the end of the year, we also ran a number of maths presentations and webinars on challenging questions in grade 12, maths for a number of provinces. These were well received.

[00:08:59] **George Eadie:** [00:08:59] Now that you mentioned [00:09:00] resources for teachers, we've actually got a small ad that we'd like to share about the answer series resources, and then we'll return to some of the questions.

[00:09:09] **Ad break:** [00:09:09] Study Guides emerged as 2020's game-changer for independent learning. Choose the best study guides for your learners. They will thank you later, we promise!

Why not become a TAS Teacher. Update your details and receive the following:

20% off your class's books for the year

Free Access to the TAS Podcast

Free e-books through IT.si or Snapplify

Free access to Grade 12 Videos

Helpful blog resources for teachers and many more exciting things to come. To find out more follow the link in the show notes of this podcast.

[00:09:47] **George Eadie:** [00:09:47] And we're back. And I would love Jenny for you to comment on a followup question to what Anne was just mentioning now about, about how much pressure mathematics is under declining enrollments. [00:10:00] Declining outcomes. Part of me feels like teachers there's unrealistic pressure placed on teachers to make sure that every learner doesn't miss one step in mathematics along the way. Can you comment on the role of teachers in mathematics and how much is the balance between being a coach and being an instructor, um, to foster that sense of independent learning that learners themselves take responsibility for missing those steps?

[00:10:28] **Jenny Campbell:** [00:10:28] It's kind of a team effort. So you can't really give all the responsibility to your learners because they need a coach and you sit and you can't play the game for them because you don't write the exams. So if they don't work with you, you're not going to get anywhere. And then just a comment on your, you said the fact that you have to keep stacking things. I think that's rather important. And I think the solution to that is to look within each school and how you structure your teaching. Because if you teaching all the grade [00:11:00] eights and another teacher's teaching all the grade nines and another teacher is teaching all the grade tens, which I understand is fairly common practice in many schools.

[00:11:08] It causes problems because your grade eight teacher is not really aware of what the children need in grade nine. And the grade nine teacher is not really aware of what they need in grade Ten. And it also gives the teachers a lack of accountability. So it's the grade 12 teacher who get stuck with the candidates who actually need to write exams and they are now being examined on everything that they've done basically in the last five years.

[00:11:32] So if your colleagues haven't come to the party and done what they should do, then you're carrying the can. So I like the structure where we're, if it's possible, you take a class from grade eight all the way through to grade 12, because then you know exactly what you've taught them. You know, their strengths, you know, their weaknesses, you build on that. You don't blame anybody else because you've been with them. They don't blame anybody else because they've been with you. And from that comes a real sense of security and [00:12:00] commitment and passion for the subject. So I think there's a way around that.

[00:12:07] **George Eadie:** [00:12:07] That's absolutely awesome. And, and I've got to follow up on that, which is, we all hope that in 2021 life would be kind of back to normal, but we know this is not the case. Do you have any advice for parents and learners on how best to handle the challenge of not always being able to have face to face teaching in the classroom?

[00:12:29] **Anne Eadie:** [00:12:29] We won't ever be back to normal. The hardship and grief suffered in our country and across the world has been immense. But so too is the resilience of the South Africans. It means there are many new discoveries and experiences, which we will continue to build on not least of all attitudes and approaches the advice for parents and learners who have had the most unexpected opportunity to operate as a unit and get to know one another. Is that it is up to families to set routines and to [00:13:00] inspire and support one another.

[00:13:02] The responsibility for their futures is theirs and their cooperation was teachers and supported. Their schools is critical at this time.

[00:13:11] **George Eadie:** [00:13:11] Jenny turning now to this year's grade twelves and acknowledging that, you know, they were not required to write any examinations in their grade 11 year. Nor will they be required to write a June examination in this year? Do you have any advice for learners on how best to prepare for their trial examinations in the third quarter and then for their final examinations thereafter?

[00:13:37] **Jenny Campbell:** [00:13:37] I do. And I think what you've just, um, made everybody aware of is quite a scary prospect if it's not properly handled. So the first thing you have to do to process that properly is to say to yourself, well, what is the benefit of exams?

[00:13:52] Because I mean, many people would say exams actually add no value because they're just creates stress. So my answer to that would be [00:14:00] first look at what you gain from an exam. So essentially if you're going to write an exam, You're going to prepare for it unless you want to do really badly. So one of the biggest advantages of exams is the preparation that goes into it.

[00:14:13] Secondly, it's very difficult to write a high stake matric exam in November. If you haven't been through the experience. A significant number of times beforehand, because you get better with practice at how you handle the exam. And thirdly, there's the fact that when you're studying for exams, you actually need to know where your strengths are and where your weaknesses are so that you can prepare properly.

[00:14:35] So you can say to yourself, well, I've lost all of that. How am I going to sort that out and the solution is actually quite simple. You create an exam for yourself. There are many past papers available. So you create. An opportunity for yourself on the weekend. When you can have three hour slots, one for paper, one, and on a different weekend, one for paper two.

[00:14:56] And you make sure that you book that on your calendar. No friends, , [00:15:00] no interruptions, no phone calls, no phone near you. You write the three hour exam as if it's an exam and you set the date long in advance so that you can prepare for it as you would, if it was an exam. After you finished writing that you take the time to mark it.

[00:15:16] And then when you've done that you actually figure out what you do and don't understand, and then you make sure you get help. And whether that help is our way of looking things up for yourself, or whether it's by going to your teacher, doesn't make any difference working with friends, but you can actually simulate everything that you gain from writing an exam.

[00:15:33] If you're committed and really want to do well at the end of matric. And that's in fact, the advice that I gave my students last year, because there were no junior exams. And they did pretty well in the exam. And I think many students did exactly that for themselves and those who didn't that's the way to go.

[00:15:49] **George Eadie:** [00:15:49] Excellent. Yeah. So really substituting the, sort of the organized, structural way of doing it and just doing it yourself and taking matters into your own hands. Um, [00:16:00] but fortunately it doesn't involve, uh, any new resources. It just involves a commitment and discipline. Um, and, and one of the things of course, that I'd love you to comment on as a follow on from that is the emotional content. So there's one, obviously that the there's the there's the mathematical preparation and the academic preparation, but anxiety is prevalent. Uh, anxiety can take a fairly good learner and render them helpless on a given day. What are some of the things that you've seen really helped with addressing anxiety, such that. All good preparation can actually be converted on the day of the exam,

[00:16:38] **Jenny Campbell:** [00:16:38] Alright so anxiety in mathematics is very common and it's something you actually are playing psychiatrist or psychologist in the classroom. And if you're not, you're not doing your job as a teacher. So you have to get into the head of each learner.

[00:16:53] So that they bring out the best in the exam, the same as a rugby coach or hockey coach or do on the sports field. So each line is [00:17:00] different and the ones that really become stressed in exams, what you have to do is encourage them to practice. Exactly. Even if exams were being written regularly. I would still encourage the students who struggle with anxiety to create more opportunities for themselves to practice writing under their own self-induced pressure.

[00:17:19] So that's the first thing. The second thing is the strategies in the writing process that are critical. So if you are very determined to try every question and take the paper from question one, to question 10, you likely to do rather badly. So you have to have the discipline and the confidence to plan, to leave things out..

[00:17:38] Because at the end of the day, we have problem solving questions interspersed throughout the paper. And the problem solving makes up a small proportion of the result. The majority of the marks are allocated to questions that everybody can actually cope with. So your stress levels drop quite dramatically.

[00:17:57] If you go into the paper saying, I don't mind if they're [00:18:00] problem solving questions, I'm going to leave them out. And in the same way that before you run a sprint race, You can't really expect to run a hundred meters. Well, if you do no warm up and take off from the starting block, you're likely to pull a hamstring and then you're out of the race.

[00:18:14] The same applies with math. So if you take the exam and the first time you go through it, you're doing the easy, manageable questions. Your brain is actually warming up. It's a little bit like downloading information off the internet. So it takes a long time to download and the best way to handle that frustration and boredom is to actually get on with another task.

[00:18:32] And then when you look back at what you were downloading, it's all there. So if you read the questions that you're not comfortable with, And you just forget about them and carry on working. Your brain is way more potent than a computer. And when you come back to that question, you've calmed down. You've done all the easy things. You're not worried about it. Time management, because you finished the paper once already. Now you're coming back to the questions that get you stuck. The tension levels drop dramatically because now you're not running the risk of leaving art marks at the end of the [00:19:00] exam that you could have answered.

[00:19:01] You've answered all those questions. Now you come back and think about the things. That actually are more difficult to answer. And that definitely helps with stress.

[00:19:09] **George Eadie:** [00:19:09] That sounds super helpful. And you have just come off the back of, of marking and seeing a whole bunch of, uh, the last year's cohorts, having, you know, written mathematics.

[00:19:21] What percentage of them don't finish for instance, do you get a sense of the lack of the strategy that you've just spoken about and being put into action? Can you comment on that?

[00:19:31] **Jenny Campbell:** [00:19:31] Actually it's, it's a very interesting thing because you can see the schools where learners are taught how to handle the paper, because they all finish.

[00:19:40] That doesn't mean that answer every question, but they don't leave out the last two or three questions that answer everything. And there might be gaps in their paper, but every question is attempted and the gaps are where the problems are. And then you have candidates who do leave art questions near the end, and then you will find most candidates in that learning center do [00:20:00] the same thing.

[00:20:01] So this is really about educating both the learners and the teachers about strategy. And if you plan how you write your exam, a you do better. And B you're more relaxed in the writing process.

[00:20:14] **George Eadie:** [00:20:14] So changing tack a little bit now, but still with you, Jenny, what role does mathematics play in the future careers of learners? You know, while it is obvious that a good understanding of mathematics would be important in careers and just engineering and computer science or business science, actuarial science, and so on. It's not at all clear why it plays such a huge role in the selection of medical students. For instance, Can you share your thoughts on this as to why so much emphasis is placed on mathematics results?

[00:20:44] **Jenny Campbell:** [00:20:44] I actually really liked that question. Thanks for asking it. Um, I have a niece who's a medical doctor qualified within the last 10 years, and I couldn't

wait for her to start studying. So I could ask her that because she had to take AP maths and she had to take maths and she had to get very high marks in order to [00:21:00] get into medicine.

[00:21:01] So two or three years down the line, I put it on the spot and said, I need to know whether you're using any maths and why is it that maths is important if you're not using it? And she was surprisingly helpful in a response. And she said it hadn't really occurred to her until she started studying and getting to the stage where she was needing to make a diagnosis on an illness.

[00:21:23] And if you think about all the logic that we do in maths. Maths is not about the mathematics. It's not about whether you will use algebra one day. It's not about whether you will ever use geometry. It's irrelevant. What it's about is learning to take certain facts that you have, but you never get everything that you need.

[00:21:41] How do you use the fact that you have to solve a problem when you don't appear to have everything you need? So the best doctors or the best diagnostic doctors are the ones who are able to. Listen carefully to what it is that you think is wrong with you or that you, what are your symptoms? And the problem for it for the doctor is that [00:22:00] three people all manifests very similar symptoms, but they don't have the same illness.

[00:22:04] So the ability to be logical and to diagnose properly. Go hand in hand. And I think for me, that's helped me going forward to actually explain to learners who are very frustrated about the need for math to explain to them that when I teach the maths, I'm not teaching them the content I'm teaching them the logic so that no matter what they're doing the lives one day, they might never use maths ever, but they need to think about me every time they make a wise decision because in the background of that is logical thinking. So that's my take on it.

[00:22:39] **George Eadie:** [00:22:39] Certainly in a world that is not filled with more and more uncertainty. Um, but nevertheless, the need to act and move forward. Um, the requirement of problem solving and applying that logic extends far beyond just the medical field. Um, and I'm just really pleased that you able to comment on that. Thank you so much.

[00:22:59] Um, [00:23:00] mum, turning back to you in, in your opinion. What issues do you feel are the most urgent to address in mathematics now? And how do you think teachers can go about addressing these issues?

[00:23:12] **Anne Eadie:** [00:23:12] What I'd like to link in to what Jenny just spoke about? Um, That maths is a way of thinking. It is not something that you do. It's how you think. And that is what makes it most valuable. And that is actually, um, and this, if learners only have a procedural understanding of maths as something that they do and not something that they need to apply their mind to, that has been they're limited in the way that they perform. But the most urgent issue to address is actually the catch-up, especially this year.

[00:23:46] The owners have missed out on a lot of work. And in the case of the metrics revision of grade 10 and 11 work should be scheduled into their program prior to the commencement of each topic dealt with, we provide ideal support for teachers and learners [00:24:00] in this regard and what needs to be reinstated in every corner of our country is routine and commitment and the belief that we shall overcome.

[00:24:10] **George Eadie:** [00:24:10] , I think that catch-up focus is so important. But perhaps is there a way that you could make it even more practical for teachers and perhaps give them the confidence to convey that message to their learners? For instance, you mentioned about, you know, some grade 10 and 11 work that needs to be covered prior to tackling at now grade 12. I mean, if, if I'm a teacher, should I be telling my learners that, that they need to be allocating in their diaries? One hour on a Sunday or two hours or three hours, or what's the, what's the actual number. And, um, and even throughout the year, what should be that time expectation that teachers should be communicating to their learners about matching learners, ambitions for their results, for mathematics, with what it's going to [00:25:00] take to actually get there?

[00:25:02] **Anne Eadie:** [00:25:02] Absolutely. And that is a question one should ask right at the beginning of the year, how badly do you want this? How badly do you want to succeed in maths and understand that? Especially in the metric, every single topic we do is going to be based on the work from before. But realistically speaking, there just is no time to teach three years in one year in the classroom.

[00:25:23] And so it is very much up to learners to fill that in, in their programs that they in good time prior to any topic being started, they're going to revise the grade 10 and 11 work. And, uh, we often refer to that in the answer series about work that they should go back and look at and make sure that they understand before they proceed.

[00:25:44] **George Eadie:** [00:25:44] Wow. Well, it's just been awesome chatting to you, both and hearing what your thoughts have been about mathematics and, um, what are some of those thoughts are going forward into 2021? And that really brings me into. What I would consider a few points that jumped out after [00:26:00] having spoken to you to you both today.

[00:26:02] You know, one of the things that became such a loud point was this idea around building concepts over time and having the consistency and discipline to do that, you know, right from the way teachers may structure their, their calendars in terms of. You know which classes they get allocated. So that there's a flow through of concepts, right through, from grade eight to grade 12, but then also in the, in the hands of the learners, um, to, to allocate time prior to going through a topic to, uh, to brush up on their grade 10 and 11 work so that they're not coming in cold. And, um, and then they can do that, uh, that, that grade 12 work, um, with a, with a running start.

[00:26:42] Um, one of the other things that really jumped out for me was, was the importance for, for teachers out there to assume the role of coach and to, to be getting into the minds and hearts of learners in a way that helps them to develop strategies, to reduce their anxiety, um, because [00:27:00] great mathematics learners could show up at the exam and not do justice to what they know in the subject, if they don't have good strategy.

[00:27:07] And they haven't learned, learned ways to manage their anxiety. Hopefully when these things are addressed and we can, um, you know, really come together as a teaching community in mathematics to pull off some of these insights, we can arrest the decline in mathematics, particularly given its relevance. Not just in subjects that are sort of more commonly understood, like it's relevance in engineering or in software or whatever, but right through to medicine and practically anywhere where there's any form of complex problem solving, maths has relevance.

[00:27:43] We're so glad that you took some time to listen to this episode of Subject Scoop.

Please feel free to share the link with anyone you feel would benefit from it. Do also keep an eye out on our podcast channel for a new series launching soon called 'Around the Table with George Eadie' where I'll be talking all things education, innovation and inspiration with some brilliant guests from around the country and further afield.

Follow us on social media for more updates @theanswerseries and follow me, George Eadie on Twitter on the handle @georgeeadie You'll find links to these podcasts on our blog. Or simply watch out for them on Apple Podcasts, Spotify or wherever else you listen to your podcasts.