#mathscpdchat 7 June 2022

How are you supporting Year 11 students to prepare for studying A level Maths and Further Maths?

Hosted by Rob Southern

*This is a summary of the discussion – to see all the tweets, follow the hashtag **#mathscpdchat** in Twitter*

The links shared during this discussion were:

Support with transition which is the page on the AMSP website from which you can proceed to Supporting students' transition to level 3 study. The AMSP has two resources to help students to consolidate the skills and topics learned at GCSE in preparation for A level study. These two resources are 'Essential Skills materials' (link provided below) and 'Transition to A level Mathematics' (link also provided below). There is also a link to support material related to 'Core Maths and other post-16 courses'. It was shared by Sarah Denison

Transition to A level Mathematics resources: Essential Skills which are AMSP resources that focus on key skills that will be used across the whole spectrum of AS and A level Mathematics. There are six sets of resources, which focus respectively on Simplifying, Expanding, Factorising, Rearranging, Solving and Sketching. It was shared by Sarah Denison

Taster lessons to give you a flavour of studying maths beyond GCSE which are six lessons designed by the AMSP team to provide opportunities for students to try out some of the topics they will meet on a level 3 maths course. There are two lessons for each qualification: A level Mathematics, A level Further Mathematics and Core Maths. It was shared by Sarah Denison

Where maths meets... the world of work which is a set of high-quality videos from the AMSP which showcase the maths in different careers. There are currently four videos focussing on Core Maths, four on A level Mathematics and three on A level Further Mathematics. The careers include being an astronaut, a 'Green Engineer', a climate scientist and a freelance filmmaker! It was shared by Sarah Denison

Experiences of advanced maths which is a series of videos from the ASMP featuring students who have studied A level maths. For example, the 'subject'/'star' of one of the videos is a fourth-year mathematics student at university who hopes to go on to work in coding and computer programming. It was shared by Sarah Denison

Online Enrichment Event recordings which are recordings of interactive Online Enrichment Events that the AMSP has been running. The level of maths involved does not exceed GCSE, and the contexts are novel and engaging. For example, one event was 'Are you psychic', and another was 'Making a Million'! Teacher notes accompany each recording/event. It was shared by Sarah Denison

Inspiring your 11-16 maths students which is the page on the AMSP website where you will find information about the large programme of AMSP enrichment activities. It was shared by Sarah Denison

MEI Inspired 2022 which is a series of twilight webinars for maths teachers provided by MEI, and designed to inspire teachers, enrich their teaching and benefit their students' learning. It was shared by Sarah Denison

Explore and refresh your knowledge of the AQA Level 2 Further Maths course which is an ASMP day course on 16 June 2022 consisting of workshops in which participants will look in depth at the AQA Level 2 Further Maths course. It was shared by Sarah Denison

RISPS Rich starting Points for A level Mathematics which is the index of a collection of 40 'Investigative Activities' created by Jonny Griffiths for the 'A level Pure Mathematics Classroom'. From this page you can reach Risp 8: Arithmetic Simultaneous Equations. It was shared by Matt Man

KS5 Maths which is a very full page of wide-ranging maths resources intended for teachers of KS5 students. It was shared by webmathscouk

Key Ideas in Teaching Mathematics: Research-based guidance for ages 9-19 which is a book by Anne Watson, Keith Jones and Dave Pratt. The authors bring together knowledge on how secondary school students best learn mathematics. It offers a comprehensive overview of secondary mathematics and the transitions into and out of it. It was shared by Mary Pardoe

A full illustrated summary of the discussions in this #mathsCPDchat follows.

Although the host's first question …

Rob Southern @mrsouthernmaths · 14h

Good evening everyone and welcome to #mathscpdchat

This evening we will be discussing the transition from GCSE to A level study.

Please remember to use the hashtag in all responses.

Q1: What do you do to encourage your Year 11 students to study A level Maths and Further Maths?

… generated most of the conversations that constituted the whole chat, his other two questions also prompted useful discussions (which are shown later in this summary).

Two discussions in response to Q1 …

> Q1: What do you do to encourage your Year 11 students to study A level Maths and Further Maths?

… focussed specifically on the aspirations of students in KS3/4 (and even earlier) and encouraging them to think about studying mathematics beyond GCSE: this conversation …

Sam Blatherwick @blatherwick_sam · 14h

Replying to @mrsouthernmaths

Use language that suggests that it is something to aspire towards - eg "when you do Alevel you will see this…" (14-18)

#mathscpdchat

Rob Southern @mrsouthernmaths · 14h

Hi Sam, thanks for getting involved. Using aspirational language is really important. Do you find that the students respond to this? #mathscpdchat

MrsD @MrsDMaths · 15h

Replying to @mrsouthernmaths and @blatherwick_sam

My middle son's (yr9) teacher is an expert at this so now I get him coming home demanding to be taught something she says he will learn when he does FM a level #mathscpdchat

JanaC @JanaC21616241 · 15h

Replying to @mrsouthernmaths and @blatherwick_sam

#mathscpdchat

I keep saying that from year 7 :-) can't tell if it worked on them as yet

Sam Blatherwick @blatherwick_sam · 14h

Ha I think it washes over them… subliminal advertising!

I think making students feel successful at ks4 and open to the wonders of maths is important too. They need exploration in their lessons

#mathscpdchat

Sam Blatherwick @blatherwick_sam · 14h

It's very easy for teenagers to see maths as limited. Showing there's something beyond those limits is intriguing #mathscpdchat

MrsD @MrsDMaths · 15h

Replying to @blatherwick_sam and @mrsouthernmaths

That's a great way of putting it. Those ideas dropped in right from year 7 about what links can be made or where it could take you #mathscpdchat

Rob Southern @mrsouthernmaths · 14h

Definitely - I think preparing students for the "style" of A level is just as important as preparing them for the content. #mathscpdchat

Mary Pardoe @PardoeMary · 15h

Replying to @mrsouthernmaths and @blatherwick_sam

Have you seen this (relevant) tweet?
The blog is here: ocr.org.uk/blog/alevel-ma...
#mathscpdchat

> **NCETM Qualifications and Curriculum**
> @NCETMQandC
>
> OCR subject advisor blogs about developing comprehension skills for A level maths
> ocr.org.uk/blog/alevel-ma...
>
> 3:59 PM · Jun 7, 2022 · Hootsuite Inc.

TM @tm_maths · 12h

Replying to @mrsouthernmaths and @blatherwick_sam

Bit late to the party but also introducing the LDS in KS3/4 - calculations don't have to be complicated here, just get them used to some ideas. Think @BerwickMaths had something on this at a maths conf. #mathscpdchat

Matt Man @mr_man_maths · 14h

Ah, I wonder if the workshop that I did for #mathsconf28 would be useful here with pupils guessing which are GCSE and which are A Level. That might just come in handy for the bridging to A Level sessions that I'm planning to do in a couple of weeks time. #mathscpdchat

Rob Southern @mrsouthernmaths · 14h

Definitely - I was in your session and I thought it was brilliant. Good for the students to see that they have a lot of the skills already.
Key point though, at A level they have to get these questions right!
@EmmaCookeBooks said this if I recall. #mathscpdchat

Matt Man @mr_man_maths · 14h

Yep, the "Crossover" between GCSE and A Level. Sorry Mel and Chris @Just_Maths for misusing the term! #mathscpdchat

JustMaths @Just_Maths · 14h

Replying to @mr_man_maths @mrsouthernmaths and 2 others

No worries ... it'd be the good name of a workbook aimed at students taking A level!

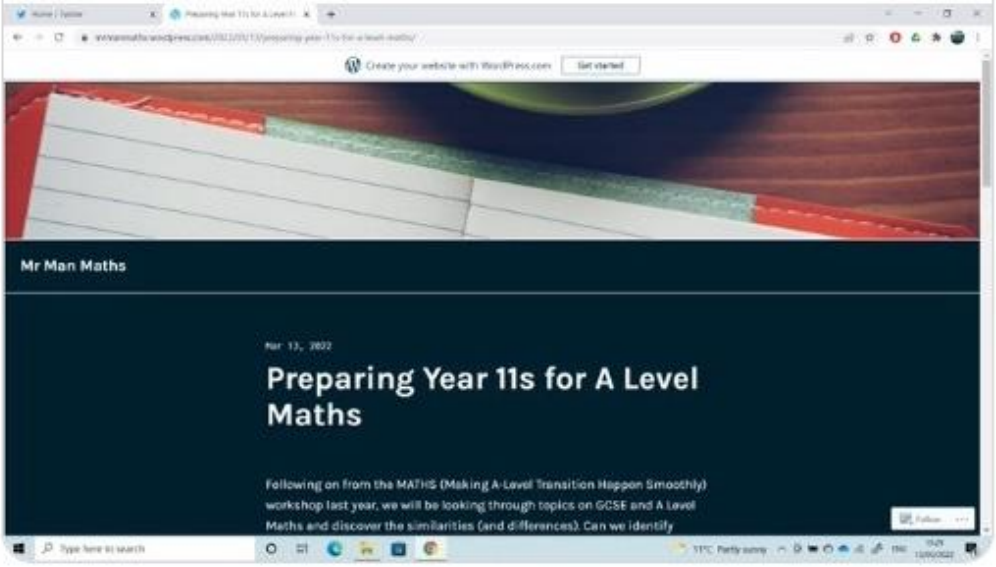
Matt Man @mr_man_maths · 14h

I'll be repeating the same again with a little twist for #Mathsconf29 where I will be using international GCSE and A Level questions. There's lots of cracking exam questions there to continue stretching our GCSE pupils. #mathscpdchat

Matt Man @mr_man_maths · 19h

Referring back to the workshop for @mrsouthernmaths **#mathscpdchat**

> **Matt Man** @mr_man_maths · Mar 13
>
> Launched my website where you can now download slides from my workshop on "Preparing Year 11s for A Level Maths" from #MathsConf28
>
> Link to my post here: mrmanmaths.wordpress.com/2022/03/13/pre..



… and this shorter conversation:

Mr Mattock FCCT NPQSL @MrMattock · 15h

Replying to @mrsouthernmaths

Talk regularly about where things go in A-Level Maths and Further Maths. Was looking today at solving quadratics with "no real solutions". Explained that at A-Level Further Maths they will learn about complex numbers that are the solutions. #mathscpdchat

MrsD @MrsDMaths · 15h

Replying to @MrMattock and @mrsouthernmaths

This is EXACTLY the conversation in class that had my yr9 come home and demand I teach him complex numbers. The next day he asked if you could put them on a graph so we then did the Argand diagram 😂 #mathscpdchat

Rob Southern @mrsouthernmaths · 15h

I agree it is really important for teachers to "set the scene" for future study. We need to support all teachers to be able to do this confidently. #mathscpdchat

Mr Mattock FCCT NPQSL @MrMattock · 15h

Replying to @MrMattock and @mrsouthernmaths

Also run @AQAMaths Level 2 Certificate in Further Maths for Year 11.

A long sequence of conversations, mainly about GCSE Further Maths, developed from a/this comment by Sarah Denison:

MrsD @MrsDMaths · 16h

Replying to @mrsouthernmaths

We used to do GCSE Further Maths which I loved #mathsCPDchat

Rob Southern @mrsouthernmaths · 16h

Did you find that this encouraged more students to carry on with Maths at A level? #mathscpdchat

MrsD @MrsDMaths · 16h

Yes for sure. For some it gave them more confidence, for some it piqued their interest and for lots it helped them to stay doing A Level even when it was tricky. Also persuaded some to do FM #mathscpdchat

Rob Southern @mrsouthernmaths · 16h

How was this organised? Did certain classes do it as part of their regular Maths lessons or did you run a separate class? #mathscpdchat

MrsD @MrsDMaths · 16h

We ran a separate class that was a lunch/after school session. My son's school top set do it in lessons. #mathscpdchat

MrsD @MrsDMaths · 16h

Replying to @mrsouthernmaths

My eldest son actually said he enjoyed the exams for it as they were last and "an enjoyable and low pressure end to GCSEs" #mathscpdchat

Rob Southern @mrsouthernmaths · 16h

Your son sounds like a legend. #mathscpdchat

JanaC @JanaC21616241 · 16h

Replying to @MrsDMaths and @mrsouthernmaths

#mathscpdchat we offer AQA also but only for top set, in lessons . I love the course and use questions from it to enrich GCSE course.

MrsD @MrsDMaths · 17h

Replying to @JanaC21616241 and @mrsouthernmaths

Absolutely this #mathscpdchat

Matt Man @mr_man_maths · 15h

Chris from @Just_Maths mentioned to me about Pearson @EmporiumMaths wanting to do Further Maths GCSE. I wonder if it would be like the international Further Pure Maths IGCSE? There's lots of good bridging material alongside some AS Further Maths @mathscpdchat

Matt Man @mr_man_maths · 15h

For extra A Level bridging style practice, I also would point out the excellent IGCSE Maths B from Pearson @EmporiumMaths. It's effectively the old O Level and lots of great challenging questions there. #mathscpdchat

Rob Southern @mrsouthernmaths · 16h

This sounds great. My school has decided to switch to two parallel top sets in Year 10 next year so that more students can do the Level 2 FM (AQA). I think it gives a good level of challenge and they don't necessarily have to do the exam to get something from it. #mathscpdchat

MrsD @MrsDMaths · 16h

Replying to @mrsouthernmaths

Absolutely. I think it really supports deeper understanding of some of the topics at GCSE which can only be a good thing #mathscpdchat

Ben Fairfax @DrBen4Sats · 16h

I was thinking about running Additional Maths club covering OCR FSMQ content aimed at those students prior start Math + F.Maths at A-Level. My thinking is they need something to soften & bridge in part the gap from KS4-KS5, both culturally and in terms of content. #mathscpdchat

Ben Fairfax @DrBen4Sats · 19h

Replying to @DrBen4Sats @MrsDMaths and @mrsouthernmaths

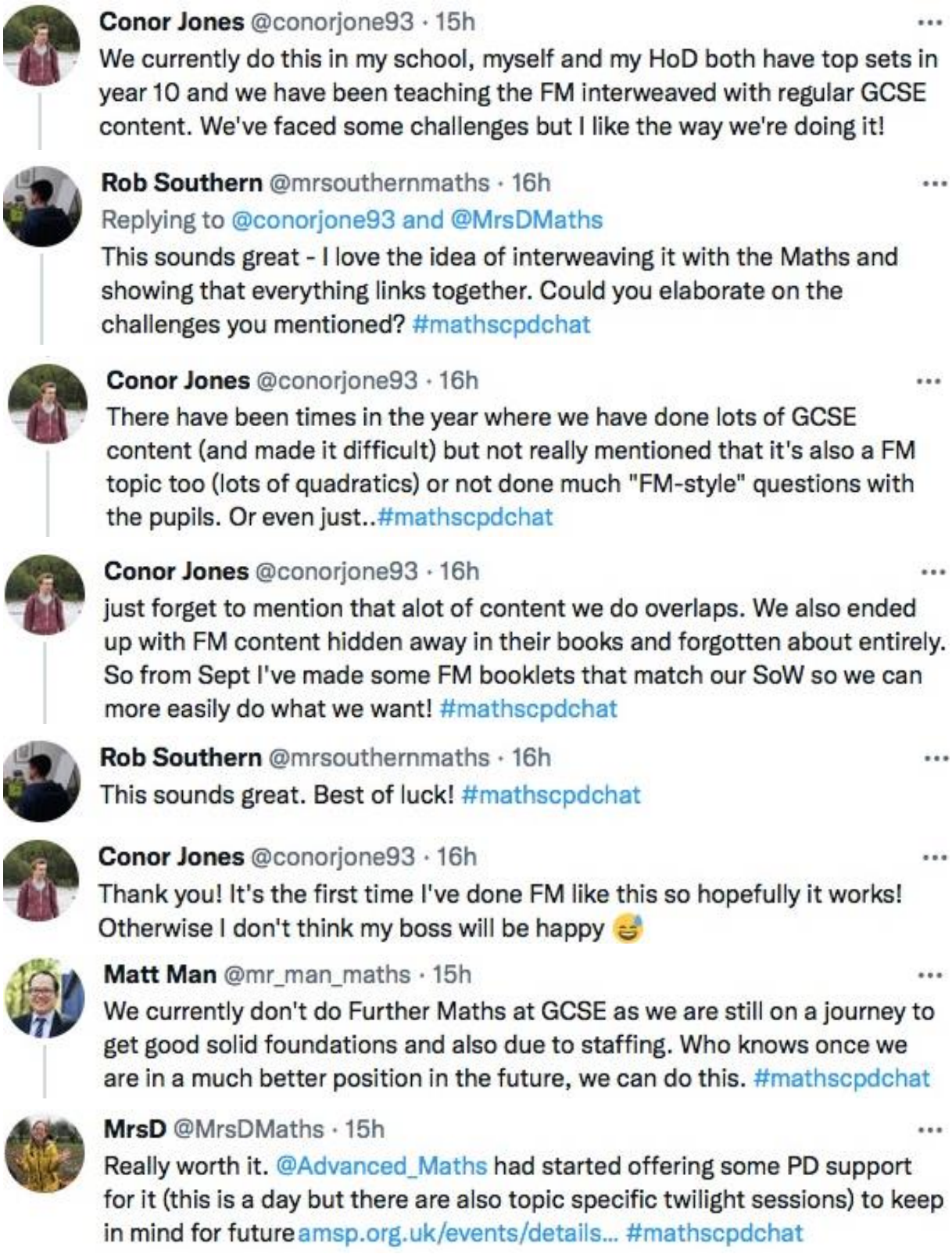
First, have others tried such (any advice?), & does this encourage students to move away from toxic cultural of the right answer irrespective of their understanding? At A-level, wish to encourage an interest gaining deeper understanding of content, versus just learning procedures

Rob Southern @mrsouthernmaths · 15h

This sounds great - they don't necessarily have to sit the exam to get something out of it either. #mathscpdchat

Ben Fairfax @DrBen4Sats · 15h

But how do you sell it, without an exam. Edexcel iGCSE Further Pure is GCSE others certificates... Imagine only (very rare) very keen students would put in effort within an exam in the background. #mathscpdchat



This quote-retweet (of a tweet in the previous conversation) from Rob …

Rob Southern @mrsouthernmaths · 18h

Lots of love for FM GCSE out there. Potentially a slightly controversial question: does anyone who offers this find that it presents issues in Year 12 for students who *didn't* do the FM GCSE? **#mathscpdchat**

> **JanaC** @JanaC21616241 · 18h
> Replying to @MrsDMaths and @mrsouthernmaths
> #mathscpdchat we offer AQA also but only for top set, in lessons . I love the course and use questions from it to enrich GCSE course.

… generated two conversations and one single reply … this conversation …

Tom Bennison @DrBennison · 18h

Replying to @mrsouthernmaths

Not really I don't think. More a need to differentiate up for those who have done it to ensure they don't get bored.

Rob Southern @mrsouthernmaths · 18h

Can you give any examples of how/when you do this? #mathscpdchat

MrsD @MrsDMaths · 18h

I tended to have some really good questions from Underground Maths ready for students to deepen understanding and be challenged when needed. Or some STEP/MAT/TMUA questions that were appropriate #mathscpdchat

JanaC @JanaC21616241 · 18h

Replying to @MrsDMaths @mrsouthernmaths and @DrBennison #mathscpdchat

Yes. Underground maths!!!

Rob Southern @mrsouthernmaths · 17h

Can we start Underground Maths back up again please? #mathscpdchat

Yvonne Scott @DancingScotty · 3h

Replying to @mrsouthernmaths @MrsDMaths and @DrBennison

It really is a great resource and aux a shame it wasn't finished #mathscpdchat

MrsD @MrsDMaths · 18h

Replying to @mrsouthernmaths and @DrBennison

I would love that. What an amazing website 😍 #mathscpdchat

Tom Bennison @DrBennison · 17h

Yes it is a massive shame that funding wasn't renewed by the @educationgovuk to complete the work started on @UndergroundMath

… and this conversation …

Rob Southern @mrsouthernmaths · 18h

Lots of love for FM GCSE out there. Potentially a slightly controversial question: does anyone who offers this find that it presents issues in Year 12 for students who *didn't* do the FM GCSE? #mathscpdchat

> **JanaC** @JanaC21616241 · 18h
> Replying to @MrsDMaths and @mrsouthernmaths
> #mathscpdchat we offer AQA also but only for top set, in lessons . I love the course and use questions from it to enrich GCSE course.

Dominic Guillaume @domwilliamsinic · 18h

Replying to @mrsouthernmaths

We try to encourage all potential A Level mathematicians to do GCSE FM (telling them it's a requirement but we are in fact flexible). Students do slightly struggle without it (but they're generally students we let in on a 6, or even a 5!)

Rob Southern @mrsouthernmaths · 18h

Do they have to do GCSE FM as an extra in their own time? #mathscpdchat

Dominic Guillaume @domwilliamsinic · 18h

No - we run it as an extra class during intervention/PSHE time

… and this single reply:

RobotMaths @robotmaths · 1h

Replying to @mrsouthernmaths

No, because out of 80 students, only around 6 have done either Further Maths or Ad Maths. So they are the exception, not the norm. In fact more have done GCSE Stats than Further/Ad Maths.

Another quote-retweet from Rob …

Rob Southern @mrsouthernmaths · 19h

Loads of support from @Advanced_Maths for offering FM at GCSE. #mathscpdchat

> **MrsD** @MrsDMaths · 19h
>
> Replying to @mr_man_maths @conorjone93 and @mrsouthernmaths
>
> Really worth it. @Advanced_Maths had started offering some PD support for it (this is a day but there are also topic specific twilight sessions) to keep in mind for future amsp.org.uk/events/details... #mathscpdchat

… prompted these comments:

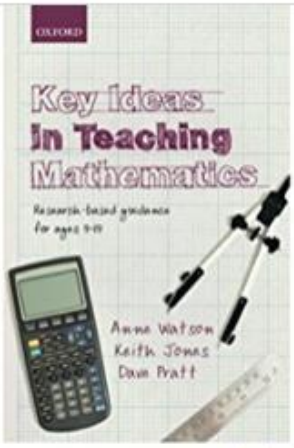
MrsD @MrsDMaths · 19h

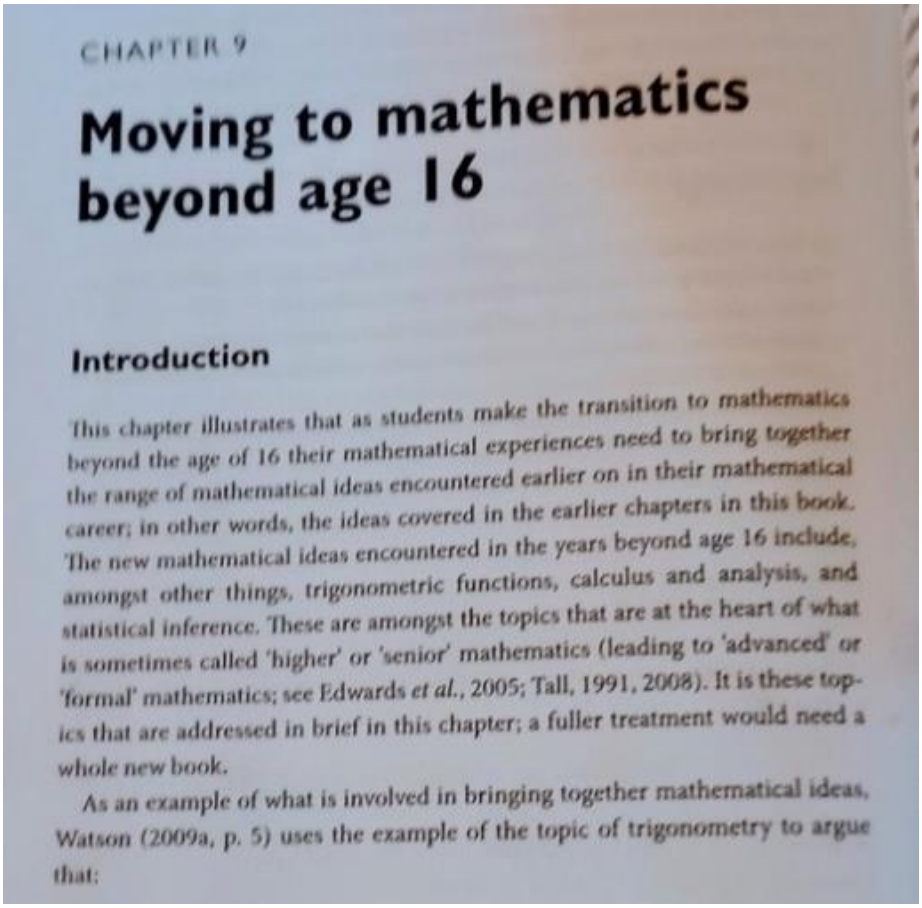
Replying to @mrsouthernmaths and @Advanced_Maths

I am basically an advert for @Advanced_Maths tonight but I am lucky enough to know where different support is so hoping I can help by sharing it in the right places! #mathscpdchat

Rob Southern @mrsouthernmaths · 19h

Thank you for everything that you are sharing and everything that you and your awesome colleagues are doing. #mathscpdchat

> **Mary Pardoe** @PardoeMary · 19h
>
> Replying to @MrsDMaths @mrsouthernmaths and @Advanced_Maths
>
> The last chapter of this book ... amazon.co.uk/Key-Ideas-Teac...
> is also very useful/helpful.
> #mathscpdchat
>
> 
>
>
> ★★★★½ 36
>
> amazon.co.uk
> Key Ideas in Teaching Mathematics: Research-Based Guidance For A...
> Big ideas in the mathematics curriculum for older school students, especially those that are hard to learn and hard to teach, are covered i...



CHAPTER 9

Moving to mathematics beyond age 16

Introduction

This chapter illustrates that as students make the transition to mathematics beyond the age of 16 their mathematical experiences need to bring together the range of mathematical ideas encountered earlier on in their mathematical career; in other words, the ideas covered in the earlier chapters in this book. The new mathematical ideas encountered in the years beyond age 16 include, amongst other things, trigonometric functions, calculus and analysis, and statistical inference. These are amongst the topics that are at the heart of what is sometimes called 'higher' or 'senior' mathematics (leading to 'advanced' or 'formal' mathematics; see Edwards *et al.*, 2005; Tall, 1991, 2008). It is these topics that are addressed in brief in this chapter; a fuller treatment would need a whole new book.

As an example of what is involved in bringing together mathematical ideas, Watson (2009a, p. 5) uses the example of the topic of trigonometry to argue that:

This question (another quote-retweet from the conversation generated by Sarah Denison's tweet about GCSE Further Maths) remained unanswered:

In response to Q1 other suggestions were made:

> Q1: What do you do to encourage your Year 11 students to study A level Maths and Further Maths?

MrsD @MrsDMaths · 15h

Replying to @mrsouthernmaths

Also these are fab (but they might make you cry!) #mathscpdchat amsp.org.uk/resource/where...

Mary Pardoe @PardoeMary · 15h

... and these ...
amsp.org.uk/resource/trans...
#mathscpdchat

Supporting your students' transition to advanced maths

The AMSP aims to increase the number of students studying AS/A level Mathematics, Further Mathematics and level 3 Core Maths.

Supporting students' transition

The transition from GCSE is often challenging for some students so it's crucial that Key Stage 4 students feel confident in their understanding of maths so that they feel well prepared for further study post-16.

A level Mathematics

The AMSP has two resources to help students to consolidate the skills and topics learned at GCSE in preparation for A level study.

Essential Skills materials | Transition to A level Mathematics course

Transition to A level Mathematics resources: Essential Skills

Many students say that they find the initial transition from GCSE to A level challenging. These resources focus on key skills that will be used across the whole spectrum of AS and A level Mathematics. Each section includes:

- skills checks
- a chance to practise and explore
- some extra ideas that you may want to investigate further

There are six sets of resources, and each set should provide about 3 hours of work. If you really get engaged by the enrichment activities, you may want to spend longer than this. Each set includes either written worked solutions, video solutions or links to websites.

MrsD @MrsDMaths · 17h

I have those primed for a later question 😉

Mary Pardoe @PardoeMary · 17h
Excellent! #mathscpdchat

MrsD @MrsDMaths · 17h
Replying to @MrsDMaths and @mrsouthernmaths
These are also good. Designed as year 10 enrichment lessons (full disclosure - I am in one of them 😂) #mathscpdchat
amsp.org.uk/resource/onlin...

This was another conversation generated by Q1:

Q1: What do you do to encourage your Year 11 students to study A level Maths and Further Maths?

Matt Man @mr_man_maths · 14h
Replying to @mrsouthernmaths
Good evening Rob! First of all, it's important to have the right teachers with the right groups. So in my school, the A Level teachers will normally take key classes (e.g. Set 1) throughout Years 9 to 11 throughout high school... #mathscpdchat

Matt Man @mr_man_maths · 14h
Replying to @mr_man_maths and @mrsouthernmaths
And building good key relationships between the students and the teachers. We motivate them by entering to the @UKMathsTrust Maths Challenges such as the IMC and hopefully when it comes back the Senior Team Maths Challenge which is also run by @Advanced_Maths #mathscpdchat

Rob Southern @mrsouthernmaths · 14h
Thanks Matt, some great ideas here - engaging and challenging the students is really important. I agree that relationships are important but is there potentially an issue with developing your team if the A level teachers also teach all the top sets? #mathscpdchat

Matt Man @mr_man_maths · 14h
It's an interesting take and not all top sets are taught by A Level teachers. At some point, either during Years 9, 10 or 11, they will have a teacher that also teaches A Level
Otherwise it will be like a two tier system #mathscpdchat

Rob Southern @mrsouthernmaths · 14h
Sounds good - I think the role of the Year 11 teacher in encouraging students to study Maths and particularly Further Maths at A level is crucial. #mathscpdchat

Matt Man @mr_man_maths · 14h

Yep, so I share the two top set Year 11s last year when I joined at my new school and again this year. Our applications received have sky rocketed. Might be to do with my puns and awful "dad" jokes. #Mathscpdchat

Matt Man @mr_man_maths · 14h

We would also collaborate with say Computer Science, the Sciences, D&T etc. And cross promote each other so that more pupils consider choosing Maths at A Level #mathscpdchat

Rob Southern @mrsouthernmaths · 14h

Replying to @mr_man_maths

Great idea to collaborate. Are there any rules for subject combinations at your school - for example do they have to do Maths if they do Physics? #mathscpdchat

Matt Man @mr_man_maths · 14h

No, a free choice. It's unfortunate though to hear that only a small handful of students want to do physics but we have loads wanting to do Maths. Having strong Maths and/or Physics specialists would help massively here. #mathscpdchat

Matt Man @mr_man_maths · 14h

We ask our existing A Level students to help promote A Level Maths at our sixth form open evenings and also key to their choices. #mathscpdchat

Rob Southern @mrsouthernmaths · 14h

Replying to @mr_man_maths

I guess this is one of the advantages of having a Sixth Form in that you have students who are able to help you sell the course. #mathscpdchat

Matt Man @mr_man_maths · 14h

Parents evening are also crucial. It's almost like we are sales people and we promote A Level Maths as much as we can when and wherever an opportunity arises. #mathscpdchat

Rob Southern @mrsouthernmaths · 14h

This sounds great. I think promoting the subject and convincing the students and their parents that they are capable of studying A level Maths is really important. #mathscpdchat

The following replies to Q1 did not generate conversations:

W E Cookson @WECmathventures · 16h

Replying to @mrsouthernmaths

Show them comparison of average starting salaries A-level Maths students achieve with those of any other subject.

W E Cookson @WECmathventures · 20h

#mathscpdchat To encourage take-up of Maths A-level get Yr10/11s to produce barcharts of average starting salaries for students taking different A-level subjects

Rob Southern @mrsouthernmaths · 20h

Replying to @WECmathventures

This definitely motivates some students! #mathscpdchat

Adam Goodridge @AdamGoodridge18 · 14h

Replying to @mrsouthernmaths

We have ran the GCSE Stats and Additional Maths as a joint option aimed at our most able mathematicians. The Add Maths course particularly gives students a valuable head start for beginning Year 12 #mathscpdchat

JanaC @JanaC21616241 · 16h

Replying to @mrsouthernmaths

#mathscpdchat

Algebraic fluency is important.

We are trying to run internal " competition clubs" - solving equations, exponents etc. How many can you complete in 30 mins. I think competition element works.

The host followed up his first tweet …

Rob Southern @mrsouthernmaths · 14h

Good evening everyone and welcome to #mathscpdchat

This evening we will be discussing the transition from GCSE to A level study.

Please remember to use the hashtag in all responses.

Q1: What do you do to encourage your Year 11 students to study A level Maths and Further Maths?

… with a further comment …

Rob Southern @mrsouthernmaths · 18h

I'm interested in a range of responses here - do you work in an 11-16, 11-18 or post-16 setting? I'm especially interested in how 11-16 schools prepare students for A level and what sort of outreach sixth form colleges do. twitter.com/mrsouthernmath…

… which itself generated a useful conversation:

MrsD @MrsDMaths · 17h

Some examples amsp.org.uk/teachers/11-16… #mathscpdchat

MrsD @MrsDMaths · 17h

Experiences of studying advanced maths #mathscpdchat
amsp.org.uk/resource/advan…

Rob Southern @mrsouthernmaths · 17h

These look great. #mathscpdchat

MrsD @MrsDMaths · 18h

Replying to @mrsouthernmaths

Also important for 11-16 schools to realise that the @Advanced_Maths had lots for them as well - I know many teachers who think it is only for L3 but the work to encourage participation starts far earlier and we want to help (& we can!) #mathdcpdchat

Rob Southern @mrsouthernmaths · 19h

This is a really important point. There is lots of support out there for 11-16 schools.

Is there anything else that 11-16 teachers would like to see happening to support them in progressing their students to A level? **#mathscpdchat**

MrsD @MrsDMaths · 18h

Replying to @mrsouthernmaths

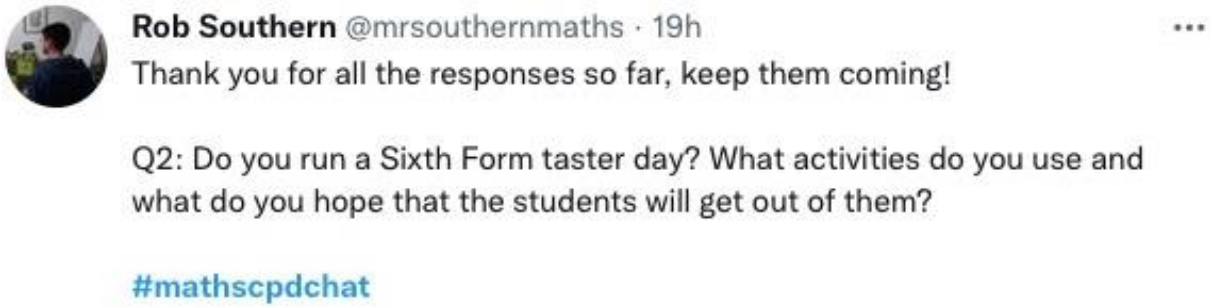
This might be useful. Essential skills can be used fork website, transition to A Level Maths students can sign up to themselves & get certificate & likewise with the Core Maths skills course so all useful for 11-16 as well as 11-18 & colleges #mathscpdchat amsp.org.uk/teachers/11-16...

Rob Southern @mrsouthernmaths · 22h

More brilliant stuff from @Advanced_Maths

Sign your students up for the summer prep work for A level Maths and Core Maths. **#mathscpdchat**

The (linked-to-Twitter) screenshots below show the two conversations, and some suggested links, generated by Rob's second question. Teachers discussed what they do in 'taster lessons' for Y11 students who are going on to do A level Mathematics in Y12, how many of such lessons are provided, how long each lesson lasts, and when during the year such lessons take place. Click on any of the screenshots-of-a-tweet to go to that actual tweet on Twitter. So the following conversations and replies were in response to this question from the host Rob Southern:



This was a conversation between Matt Man, Rob Southern and Sarah Denison:

Matt Man @mr_man_maths · 19h

The plan is to do one pure session and one applied session for A Level Maths shared by myself and one other colleague. For A Level Further Maths, I'll do a separate one but planning to do by invite only for specific pupils due to the increased level required for it #mathscpdchat

Matt Man @mr_man_maths · 19h

For pure, it will be an activity from one of the Risps by @therispguy. I use Risp 8 on arithmetic simultaneous equations and linking to sequences. #mathscpdchat

Rob Southern @mrsouthernmaths · 19h

Replying to @mr_man_maths and @therispguy

I know the one you mean - excellent choice! Using some Maths they already know in an unfamiliar context. #mathscpdchat

Risp 8: Arithmetic Simultaneous Equations

...1, 3, 5, 7, 9, 11....

...-16, -5, 6, 17, 28, 39...

...78, 76, 74, 72, 70, 68...

Each of the above sequences is called ARITHMETIC; the terms go up or down by a constant amount each time.

Pick six consecutive terms from an arithmetic sequence, and place them in order into the squares below.
(Keep the numbers as simple as you can to start with!)

$\square x + \square y = \square$

$\square x + \square y = \square$

Now solve the pair of simultaneous equations you have created.

What do you discover?
Can you make a conjecture? Can you prove it?

www.risps.co.uk

(link provided above)

Matt Man @mr_man_maths · 19h

For applied, it will be either Statistics linking binomial expansion to both Pure and Applied. For mechanics, the "Three motion graphs activities" from the wonderful @Integral_Maths website where if you don't have a school login, get one from @Advanced_Maths #mathscpdchat

MrsD @MrsDMaths · 19h

This sounds awesome #mathscpdchat

Rob Southern @mrsouthernmaths · 20h

Lots of great ideas for Sixth Form taster sessions from @mr_man_maths this evening. **#mathscpdchat**

> **Matt Man** @mr_man_maths · 20h
> Replying to @mr_man_maths @mrsouthernmaths and @therispguy
> For applied, it will be either Statistics linking binomial expansion to both Pure and Applied. For mechanics, the "Three motion graphs activities" from the wonderful @Integral_Maths website where if you don't have a school login, get one from @Advanced_Maths #mathscpdchat

Matt Man @mr_man_maths · 20h

Replying to @mrsouthernmaths

Thank you Rob! #mathscpdchat

And these suggestions were from Mary Pardoe, Sarah Denison and Cat van Saarloos:

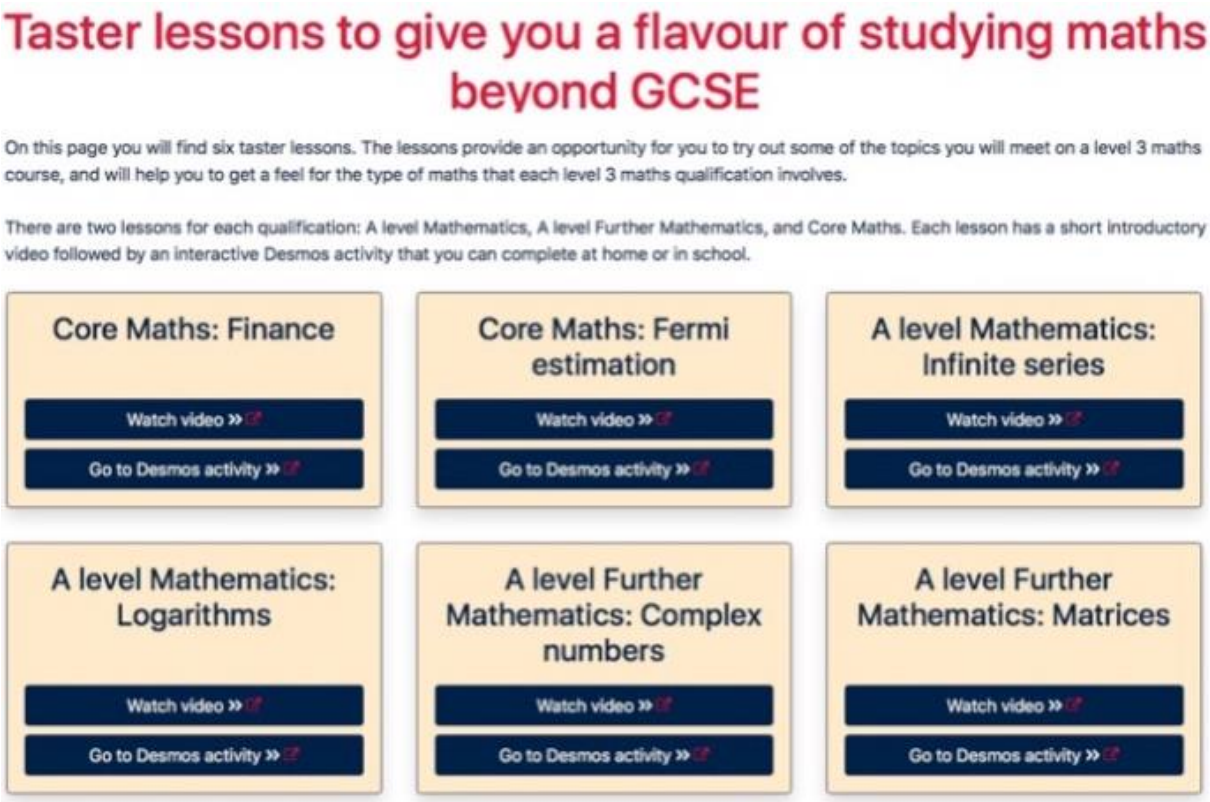
Mary Pardoe @PardoeMary · 19h

Replying to @mrsouthernmaths

Are you about to share this link, @MrsDMaths? 😀

amsp.org.uk/resource/level...

#mathscpdchat



(link provided above)

This conversation, also generated by Q2, was between Sarah Denison, Rob Southern, Adam Wiggins and Neil Stewart:

Rob Southern @mrsouthernmaths · 19h

Thank you for all the responses so far, keep them coming!

Q2: Do you run a Sixth Form taster day? What activities do you use and what do you hope that the students will get out of them?

#mathscpdchat

MrsD @MrsDMaths · 19h

Replying to @mrsouthernmaths

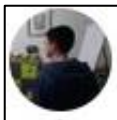
We also did and it was really useful. It was generally around January and partly hoped it would enthuse students to focus on GCSE prep because they wanted to do those subjects. I always did Complex Numbers for FM and differentiation from first principles for maths #mathscpdchat

Rob Southern @mrsouthernmaths · 19h

Did you do anything in the summer after students had made their A level choices? #mathscpdchat

MrsD @MrsDMaths · 19h

We gave them work to do over summer and then support when they started but no taster sessions at that point. They didn't finalise their choices until results day so there wasn't much time but I think it could work well #mathscpdchat



Rob Southern @mrsouthernmaths · 19h

We have our taster days coming up at the start of July. We get 30 minutes with them. I usually do a coordinate geometry activity where they have to draw shapes from a set of clues. It gets them working together. #mathscpdchat

MrsD @MrsDMaths · 19h

Replying to @mrsouthernmaths

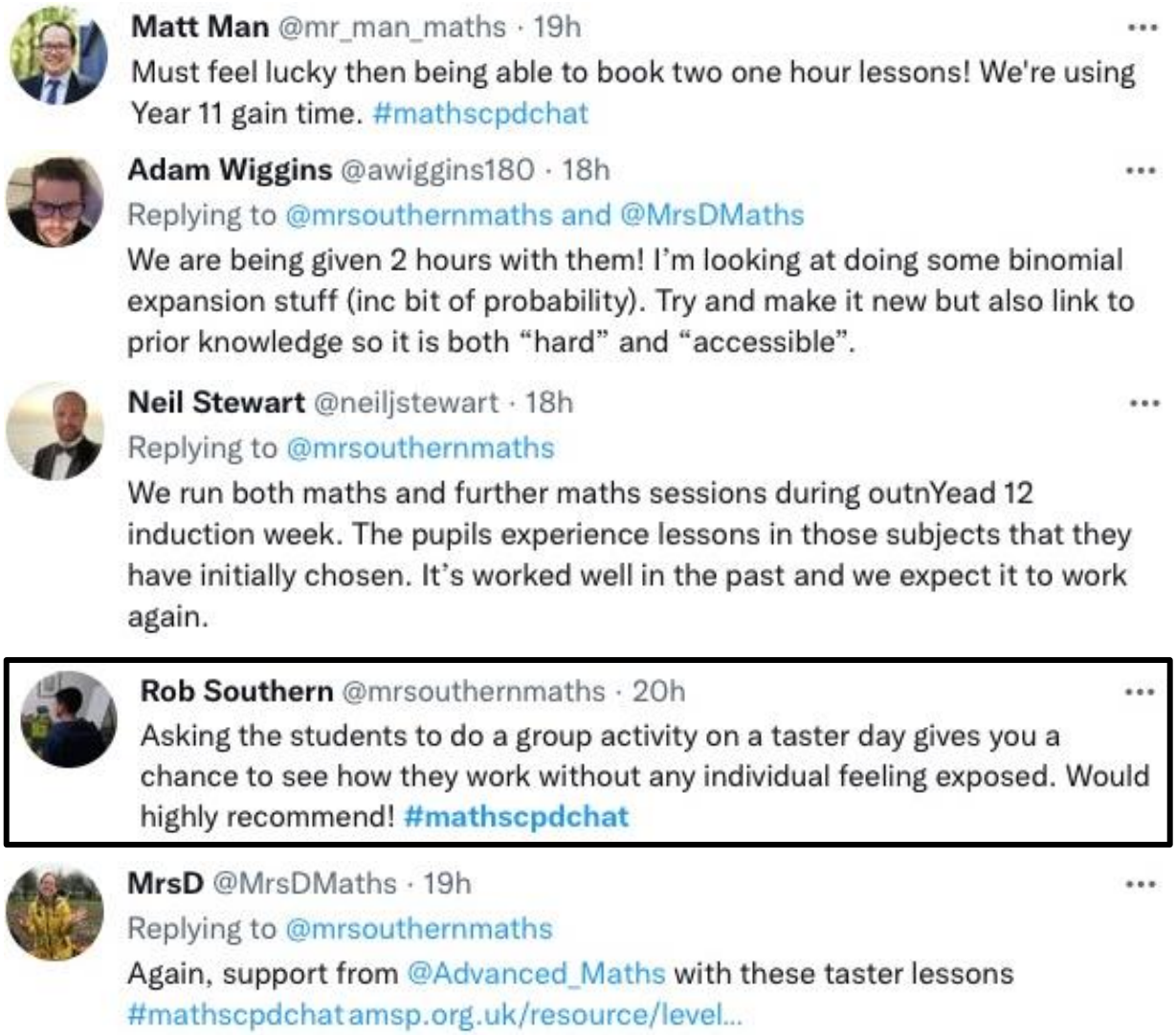
Yes, have done similar and love them. Do you have any issues with attendance with it being after exams? #mathscpdchat

Rob Southern @mrsouthernmaths · 19h

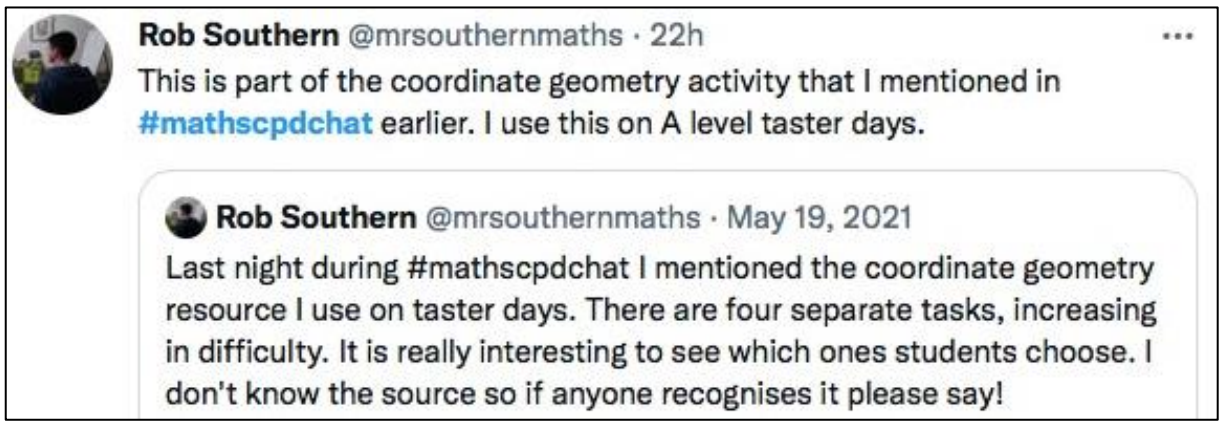
Generally they're quite keen to come in and feel a bit more grown up for a day. It's also quite good for students joining the Sixth Form from other schools to come in, look around and meet some people. But it's by no means 100% attendance. #mathscpdchat

MrsD @MrsDMaths · 19h

Absolutely, we always had students who would be new to the school included in the January day for the same reason #mathscpdcahat



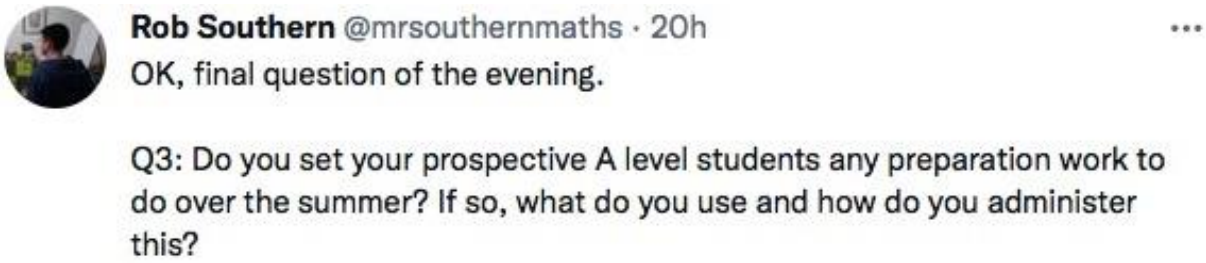
Finally, to complete the record of contributions to the chat that were in response to the host's Q2, Rob Southern shared this resource after the end of the actual chat:



Two of the lines pass through $(2,8)$	The y intercept of one of the lines is at $y = 12$	The shape made by the lines lies in all 4 quadrants	The y intercepts of two of the lines is at $y = 4$
Two of the lines pass through $(2,2)$	The design has one line of reflection symmetry	The x intercept of one of the lines is at $x = -2$	The x intercept of one of the lines is at $x = 6$
Two of the lines cross at $(4,4)$	The steepest two lines have gradients of 2 and -2.	Two of the lines are perpendicular	Two of the lines cross at $(-4,-4)$
One of the lines has a gradient of 1.	Two of the lines cross at $(8,-4)$	One of the lines passes through the origin	The design consists of four lines
The x intercept of one of the lines is at $x = 4$	The line $x = 2$ is a line of symmetry	The lines form the edges of a quadrilateral	One of the lines has a gradient of -1.

(to read the discussion-sequence generated by any tweet look at the 'replies' to that tweet)

There were two closely-connected conversations generated by Rob's third question …



… the focus of which moved from 'transition work' generally (and a new project currently being developed) and the monitoring of such work, to finding for students an appropriate effective 'transition course':

Rob Southern @mrsouthernmaths · 20h

Exciting! #mathscpdchat

Adam Wiggins @awiggins180 · 21h

Replying to @mr_man_maths @mrsouthernmaths and @Just_Maths

This sounds superb

Rob Southern @mrsouthernmaths · 20h

Do you check that they have done it? #mathscpdchat

Matt Man @mr_man_maths · 20h

I ask them to bring them during the first week. I guess one of the downfalls of the CGP book though is that it's not quite a workbook and they have to do it in paper. #Mathscpdchat

TM @tm_maths · 19h

Replying to @mr_man_maths and @mrsouthernmaths

Pietro Tozzi has a lovely transition pack he recently sent out via email (also on his Google drive).

Matt Man @mr_man_maths · 18h

Yep! I've got that

Rob Southern @mrsouthernmaths · 20h

I have always found monitoring transition work to be really time-consuming. And then you have the issue of students deciding to do Maths at the start of September - what do they do? The @Advanced_Maths course @MrsDMaths shared looks like it could deal with this. #mathscpdchat

Matt Man @mr_man_maths · 20h

Ah just realised there is an @Integral_Maths course on this. And as my school is registered with @Advanced_Maths, we can register students for free, can you confirm @MrsDMaths? That might just save our Maths budget! #mathscpdchat

MrsD @MrsDMaths · 20h

It is free for everyone to register students or for students to register themselves. 😁 #mathscpdchat

MrsD @MrsDMaths · 20h

#mathscpdchat (click picture to see all the info) amsp.org.uk/teachers/11-16...

Transition to A level Mathematics course

Who is this support for?

Year 11 students in preparation for studying A level Mathematics. New Year 12 students at the beginning of their A level Mathematics course.

What is it?

A free, online, interactive course that aims to give students the confidence that they are ready to start A level Mathematics. The course covers the topics that are of most value at the beginning of the A level course and aims to improve understanding – not just fluency with skills – by delving deeper into GCSE content.

How is it designed to be used?

The course is designed for students to work through by themselves without input from a teacher over the summer between Years 11 and 12. Students can continue to access the resources and work through the topics to support them at the start of Year 12. Each of the seven topics is structured in the following way:

- Chapters containing videos and activities
- An assessment – scores will appear on a certificate of completion
- Going deeper – optional material to give students a head start at A level

How do we access it?

This course is hosted in Integral and requires an individual login to gain access and allow progress to be tracked.

There are two ways to get access:

1. Teachers can sign up their students by completing this simple form.
2. Students can register for free access themselves, if they are not signed up by a school or college.

Teachers in AMSP-registered schools/colleges can also access the course (and view its content) using the school/college's shared Integral account. If your school/college is not registered with the AMSP yet, you can register now for free.

Matt Man @mr_man_maths · 20h

Replying to @MrsDMaths @mrsouthernmaths and 2 others

I assume that if we sign up students, I will be able to monitor how they are doing as a teacher? #mathscpdchat

MrsD @MrsDMaths · 20h

Yes 😁 There is more information here in the top recording #mathscpdchat

mei.org.uk
MEI Inspired 2022 - MEI
MEI Inspired is a series of free twilight webinars designed to inspire you, enrich your teaching and benefit your students'...

Matt Man @mr_man_maths · 20h

This one? vimeo.com/705667505/baaf... #mathscpdchat

vimeo.com
MEI Inspired - Transition Projects
This is "MEI Inspired - Transition Projects" by Alex on Vimeo, the home for high quality videos and the...

MrsD @MrsDMaths · 20h

Yes 😁

Matt Man @mr_man_maths · 20h

Excellent, watching it now. Thank you Sarah!

Sarah Denison's direct reply to Q3 …

Rob Southern @mrsouthernmaths · 20h

OK, final question of the evening.

Q3: Do you set your prospective A level students any preparation work to do over the summer? If so, what do you use and how do you administer this?

… in effect continues the previous discussion:

MrsD @MrsDMaths · 20h

Replying to @mrsouthernmaths

This is what i would have my students do. The Transition to A Level maths course is brilliant. teacher can sign up students (including incoming) or students can sign up. There is also a course for Core Maths (& useful for bio, geog and psych) #mathscpdchat amsp.org.uk/teachers/11-16...

Joanna Hill @JoannaH52111534 · 20h

Replying to @MrsDMaths and @mrsouthernmaths

We used this last year and it was really easy to see what students completed. Students weren't in favour because it was very time consuming and they couldn't skip things they already felt confident with already. We thought we could use it again but maybe be more selective.

MrsD @MrsDMaths · 21h

Replying to @MrsDMaths and @mrsouthernmaths

The essentials skills resources could be used in lessons, as part of support for students at the start of A Level (we had extra sessions for grade 6 students), or for students to do themselves #mathscpdchat amsp.org.uk/teachers/11-16...

Rob Southern @mrsouthernmaths · 20h

Brilliant! I will be recommending this to the HoD.#mathscpdchat

MrsD @MrsDMaths · 20h

It is genuinely brilliant and students who sign themselves up can get a certificate with scores on each section (or if teacher does it they can see) which is so useful for the start of year 12 #mathscpdchat

There were also two 'single' replies to Q3:

Mark Wilson @lazymarky · 20h

Replying to @mrsouthernmaths

I always set work, OCR do a whole massive booklet. However, I don't assess it as we have so many (sometimes 50%) who are not contactable in July. It would be too much to expect these pupils to catch up in September so there is no point in sanctioning the pupils we already know

webmathscouk @Dids31 · 20h

Replying to @mrsouthernmaths

These links are on this page with other useful KS5 weblinks

webmathscouk.wordpress.com
KS5 Maths
Standards Unit Improving Learning in Maths A Level Maths Revision.com Colleenyoung.org A Level ...