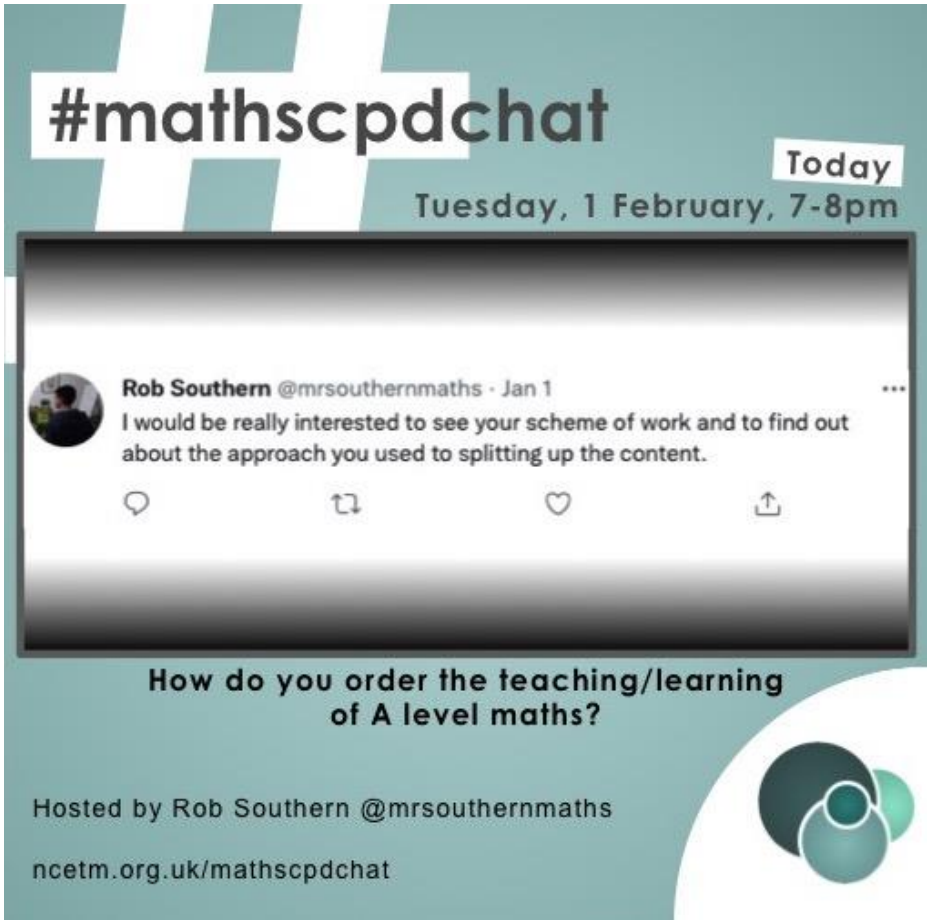
#mathscpdchat 1 February 2022

How do you order the teaching/learning of A level maths?

Hosted by Rob Southern

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



The only link shared during this discussion was:

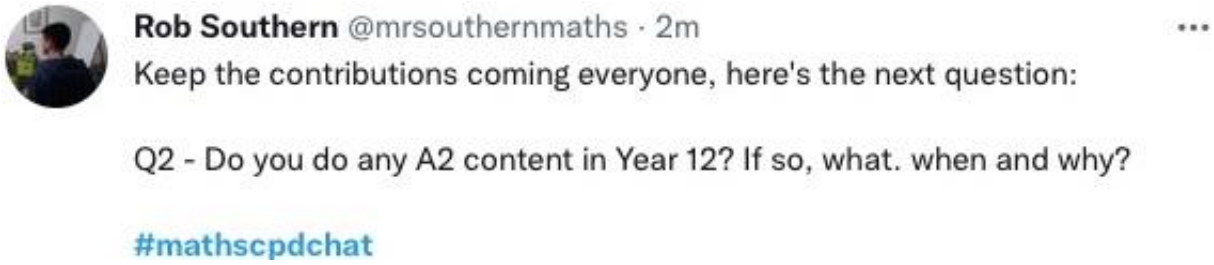
Exam Questions which is a bank of A level maths examination questions with mark schemes, arranged together according to the mathematics addressed in them. It was shared by Tayyub Majeed

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

The summary starts with a record of discussion generated by the host's second question (Q2) because there were far more responses to that question than to the other three.

The screenshots below show conversations generated by Rob's second question. In these conversations the focus shifted, from thinking about A2 content (in particular using radians for angle measure) that may be addressed in Y12, to more general issues, such as consequences/implications of the continued existence, or not, of AS maths, and the time that may be required to think deeply about helpful ways of re-ordering A level maths content. **Click on any of the following screenshots-of-a-tweet to go to that actual tweet on Twitter.**

The following replies and conversations were all initially generated by this question from Rob Southern:



A reply (from Susan Whitehouse) to this question (Q2) prompted comments from Rob Southern, Dan@amPIL Tracker and Tom Bennison …

… and from Sam Blatherwick …

Sam Blatherwick @blatherwick_sam · Feb 1

Replying to @Whitehughes and @mrsouthernmaths

Radians is the first trig we go to in year 12. It's a lovely "new thing" as a hook.

I find this Q difficult to answer as I never refer to this way of arranging the content, there's probably tonnes we cover.

#mathscpdchat

… whose tweet generated a further comment from Giles Meehan …

Giles Meehan @GilesMeehan · Feb 1

Replying to @blatherwick_sam @Whitehughes and @mrsouthernmaths

I knew I'd missed one thing off my list, yes radians too if I can fit it in - FM students need it anyway #mathscpdchat

… and then the following long conversation, initially between Susan Whitehouse, Rob Southern, Rowan Aylett, Jack Brown and Sam Blatherwick …

Susan Whitehouse @Whitehughes · Feb 1

That's the dream - just to teach it in the way that makes most sense. A lot of departments are too dependent on textbooks to do that #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Agreed - I think departments also want to use AS papers as Year 12 exams and make sure they cover the AS content to allow for this. #mathscpdchat

Susan Whitehouse @Whitehughes · Feb 1

It's totally understandable. The system is stacked against doing anything else. Teachers are so pushed for time as it is. #mathscpdchat

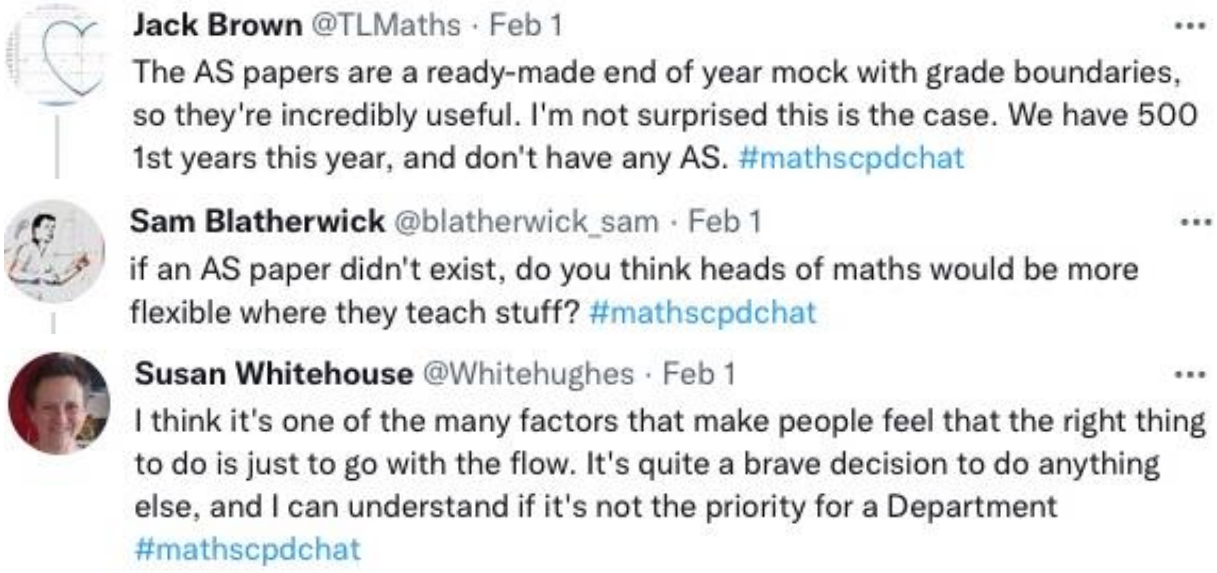
Rowan Aylett @Mrs_Aylett · Feb 1

Replying to @mrsouthernmaths @Whitehughes and @blatherwick_sam

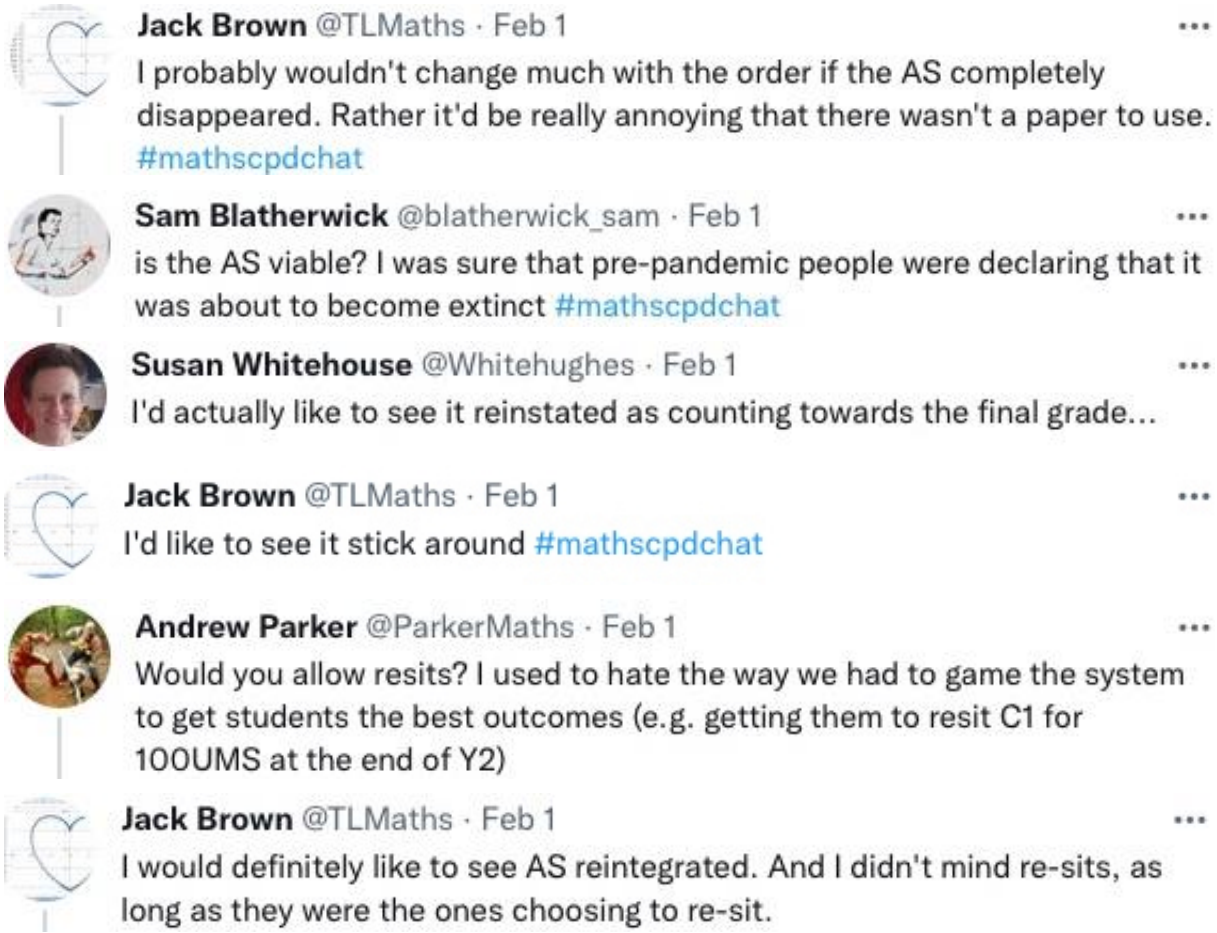
I'm trying to get away from the reliance on the textbook order so that we can teach in a more streamlined way. Should make engaging more able students easier #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Interestingly, when I ran polls on this recently, only 14% of schools offer AS, but 80% teach all the AS content first. #mathscpdchat



… before continuing as a discussion (mainly about implications of the existence-or-not of the AS maths course/exam) between Jack Brown, Sam Blatherwick and Susan Whitehouse, and developing into a dialogue between only Jack Brown and Andrew Parker …



Andrew Parker @ParkerMaths · Feb 1

I can't see why anyone wouldn't resit AS, given that almost all of the content is revisited in Y13. In fact, I'd probably just enter my students for both exams at the end of Y13 without bothering to enter them in Y12.

Jack Brown @TLMaths · Feb 1

Only to reduce number of exams would you not do this. If a student was doing maths and further maths and that consisted of 6 exams each, that would probably be quite tough!

Andrew Parker @ParkerMaths · Feb 1

I don't see why not. Very little extra revision would be required for the AS component. It's not like there would be much extra content to revise that wasn't relevant in Y2. It would basically just be an additional couple of hours of their time.

Jack Brown @TLMaths · Feb 1

It might suit some, but I think getting the AS grade was very useful for some to get them into exam mode. Plus those with access arrangements doing so many exams might be detrimental. Students with 25-50% extra time plus rest breaks would find this particularly tough.

Andrew Parker @ParkerMaths · Feb 1

Each to their own. Personally I find the constant state of preparation for exams a bit joyless and I feel it reduces the amount of time spent understanding the maths more deeply.

… the focus was then slightly changed by Susan Whitehouse, so that it continued to an end in the following way, with Sam Blatherwick and Jack Brown:

Susan Whitehouse @Whitehughes · Feb 1

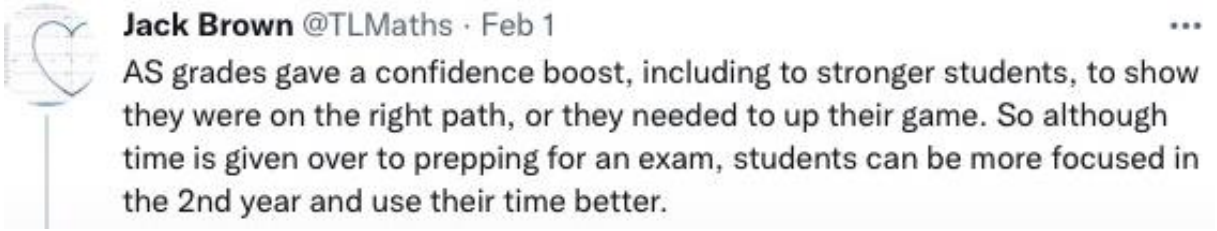
I can really see both sides of this. I agree that in an ideal world we would teach the wonders of Maths free from exam pressures but I think that AS exams helped disadvantaged students, and the 2 year linear approach further benefits the more privileged students. It's a tough one

Sam Blatherwick @blatherwick_sam · Feb 1

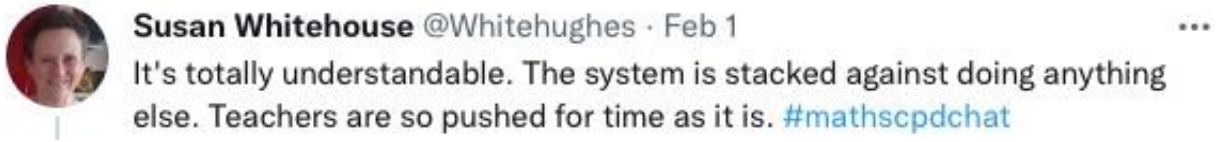
that's interesting - why do you think AS helps disadvantaged? with aspirations?

Susan Whitehouse @Whitehughes · Feb 1

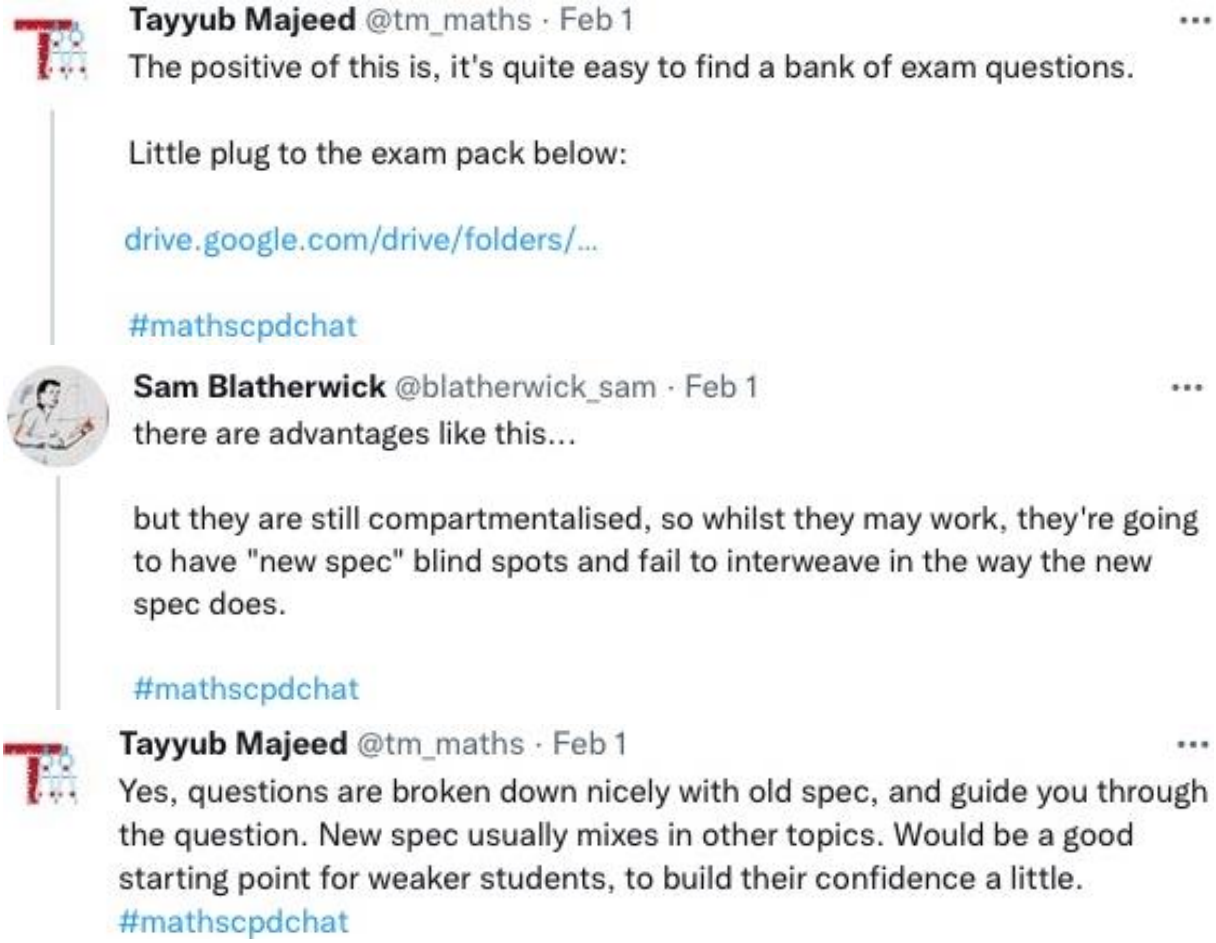
Possibly aspirations, or shorter term goals maybe. I definitely found that it levelled the playing field a bit.



Meanwhile another conversation, more directly about the little time that teachers have available to work on ordering effectively A level maths teaching/learning, developed from this (already shown above) tweet from Susan Whitehouse …

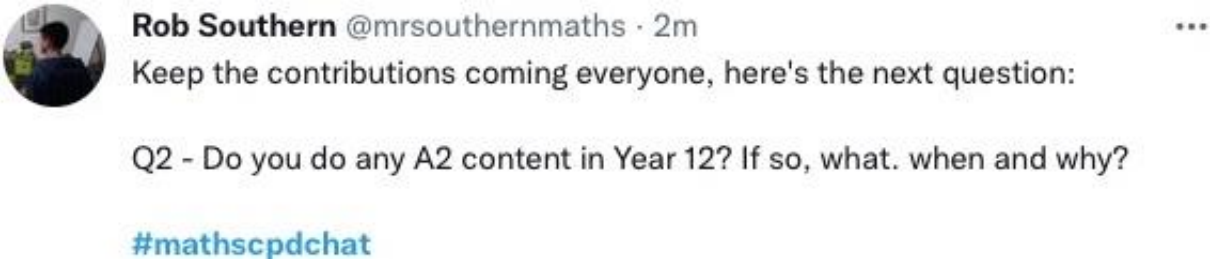


… and included thoughts expressed by Rowan Aylett, Susan Whitehouse, Sam Blatherwick and Tayyub Majeed:

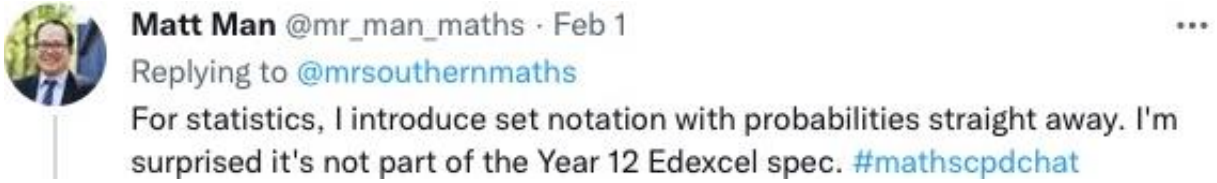


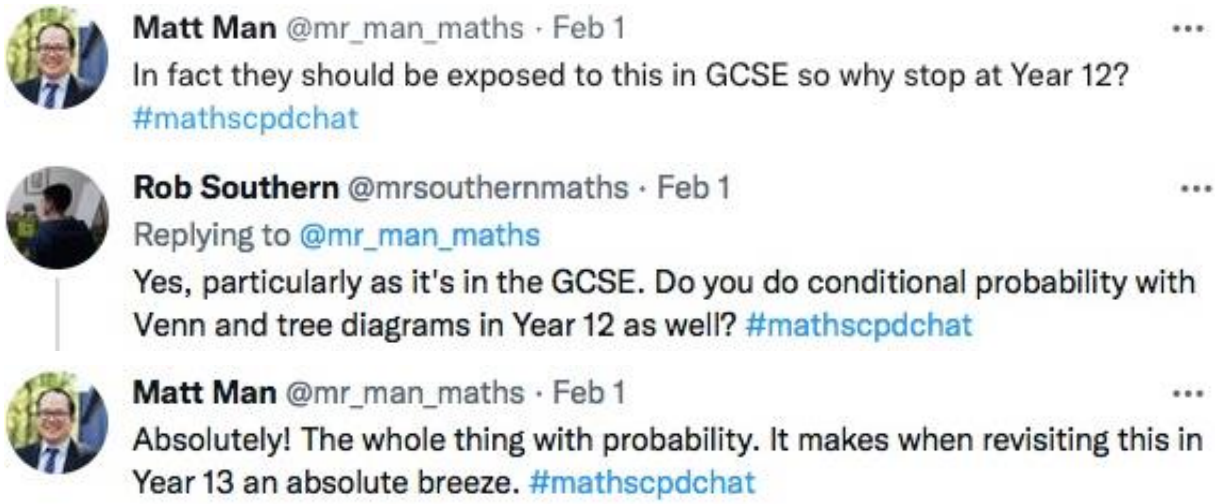
(to read the discussion sequence generated by any tweet look at the 'replies' to that tweet)

In response to Rob's second question …

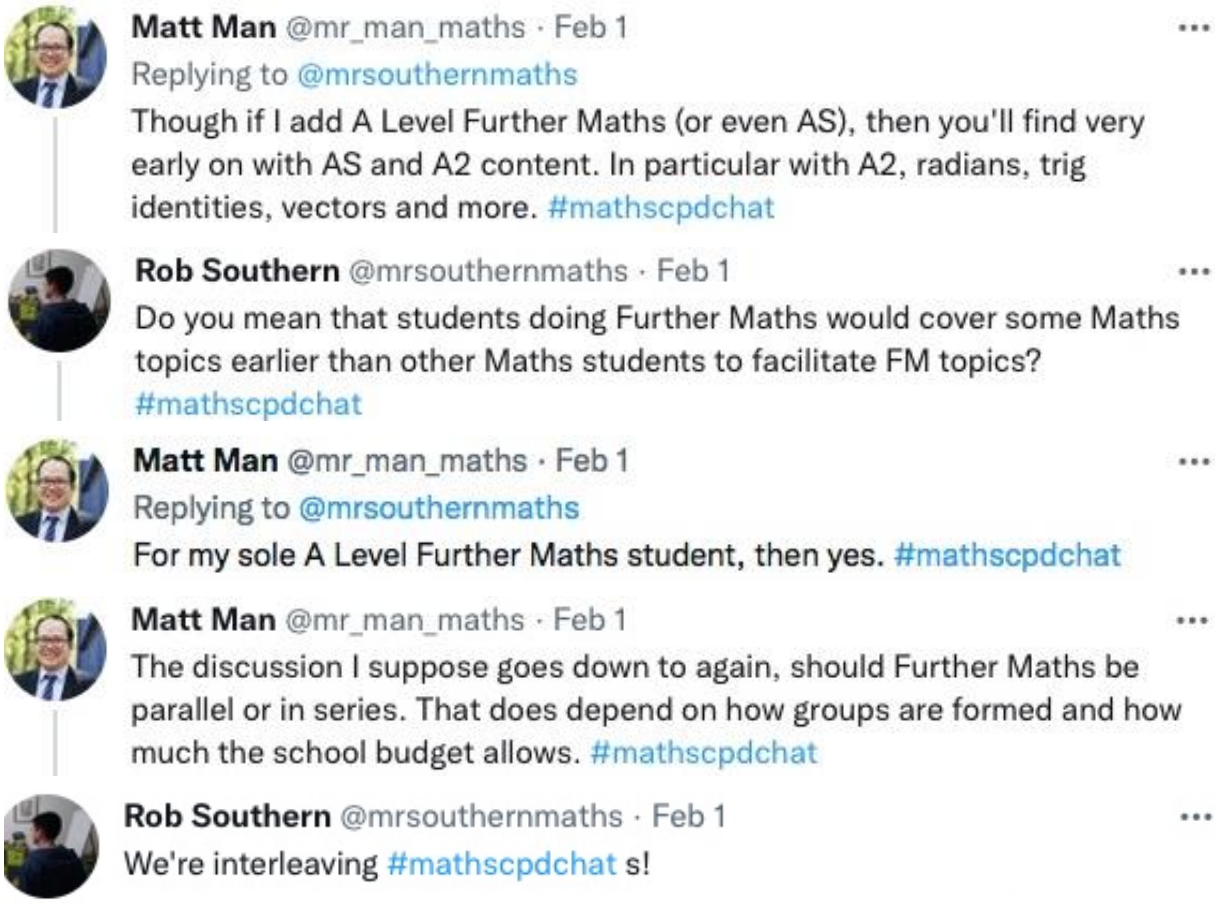


… there were other comments and conversations. For example, this conversation provided a reminder that, when planning the ordering of A level teaching and learning, it is essential to consider students' previous learning:





… and the conversation continued, with a reference to the topic of the #mathsCPDchat that Rob hosted on 30 November 2021, which was about whether to teach Maths and Further Maths in parallel or in series …



There was a substantial discussion about when it is effective to focus on functions, and on 'domain and range' in particular. The first tweet in this discussion was again a direct reply to

Q2 - Do you do any A2 content in Year 12? If so, what. when and why?

Miguel Pimentel @mrpimentelmaths · Feb 1

Mainly at the end. After we finish all the year 12 content, we do Partial Fractions and Functions in Pure and start with Moments in Applied. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

That's interesting. Functions is one of those topics I would describe as "hard to place". They have seen bits of the notation at GCSE and a lot of what we do at A level depends on understanding functions...
What made you choose to start with functions? #mathscpdchat

Miguel Pimentel @mrpimentelmaths · Feb 1

A few reasons: Students really struggle with domain and range, so seeing it once in year 12 and again in year 13 gives us more of a chance to practise/reteach; It feels odd that they don't do much with composite functions algebraically in year 12; Textbook order. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

I expect domain and range would come pretty high in a poll on "what students seem to struggle with most"! #mathscpdchat

Susan Whitehouse @Whitehughes · Feb 1

I think it comes pretty high in a poll of topics A-level Maths teachers struggle to deliver in a meaningful way. Possibly the two are related? 😉
#mathscpdchat

Miguel Pimentel @mrpimentelmaths · Feb 1

We have had SO many dept conversations about domain and range. It's so crucial to understanding what a function really is, the relationship between the algebraic expression and the graph, etc... We are learning more every day, and refining approaches every year! #mathscpdchat

… and there was another, later, response to this tweet (shown above):

Rob Southern @mrsouthernmaths · Feb 1

That's interesting. Functions is one of those topics I would describe as "hard to place". They have seen bits of the notation at GCSE and a lot of what we do at A level depends on understanding functions...
What made you choose to start with functions? #mathscpdchat

Tom Bennison @DrBennison · Feb 1

Replying to @mrsouthernmaths and @mrpimentelmaths

Interesting. We now have one teacher start Year 12 with function stuff. In some regards a tricky topic to begin with but we think it sets them up well for the course. Also makes no sense doing trig, exponentials, differentiation etc without having done functions. #mathscpdchat

Students' understanding of, and ability to use, the domain and range of a function was a focus of discussion that was 'picked up' again in this conversation …

Q2 - Do you do any A2 content in Year 12? If so, what. when and why?

Simon Ball @ballyzero · Feb 1
Replying to @mrsouthernmaths
Yes! All logarithm and exponential work - which we just finished, actually - and all differentiation barring implicit. We believe the course is about functions, so we cover all the different kinds of functions in Y12 before doing calculus… which we do in one block. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1
This sounds really well thought through. When do you cover domain and range? #mathscpdchat

Simon Ball @ballyzero · Feb 1
Not my thinking, I have to admit: a far greater mind than mine! Domain and range come in during the functions topic, which is… November Y12, or so? #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1
How do you find students grasp this concept at that stage? #mathscpdchat

Simon Ball @ballyzero · Feb 1
That is an excellent question. I've found it hard to explain the concept to my own satisfaction my whole career so far. It gives us more chance to remind students of and reinforce the concepts throughout the course; i.e. I'm still not sure they get it! #mathscpdchat

… and there was some curiosity about Simon's 'far greater mind than mine' …

Alex J-W @Trudgeteacher · Feb 2
Replying to @ballyzero and @mrsouthernmaths
Who do you mean?

Simon Ball @ballyzero · Feb 2
Whoever decided on the order of topics in the Notes booklets… 😇

Alex J-W @Trudgeteacher · Feb 2
That would have been a collegiate approach.

Hypothesis testing was mentioned in this conversation …

Nikki @mathszest · Feb 1

Replying to @mrsouthernmaths

We don't mix between AS and A2 but we start A2 after y12 exams at the end of may, start of June #mathscpdchat

Matt Man @mr_man_maths · Feb 1

For me, for Stats, zero correlation stuff straight after doing exponential and logarithms from Year 12 in pure. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Do you mean hypothesis testing? #mathscpdchat

Matt Man @mr_man_maths · Feb 1

Nonlinear models then PMCC then hypothesis testing for zero correlation #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Yes OK that makes sense - applying the pure logs and exponentials to models in stats. Sounds great! Would this be the first time students meet hypothesis testing? #mathscpdchat

Matt Man @mr_man_maths · Feb 1

No the first time they would have done hypothesis testing is after doing the interleaving of binomial expansion in pure and binomial distribution in Statistics. #mathscpdchat

… and there was a separate reply to Nikki's tweet that had also started the conversation above:

Nikki @mathszest · Feb 1

Replying to @mrsouthernmaths

We don't mix between AS and A2 but we start A2 after y12 exams at the end of may, start of June #mathscpdchat

Emily Rae @ECR_Maths · Feb 1

Replying to @mathszest and @mrsouthernmaths

We do the same. We start with all of the topics that used to be on AQA Core 2 (sequences and series, radians, trapezium rule) so that students can access old C2 papers, and also because some of these topics are needed in November for the TMUA and MAT students #mathscpdchat

Another short conversation, also prompted by Nikki's tweet, introduced thoughts about when students focus on 'proof' in A level maths:

Nikki @mathszest · Feb 1

Replying to @mrsouthernmaths

We don't mix between AS and A2 but we start A2 after y12 exams at the end of may, start of June #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Replying to @mathszest

What is the first A2 topic you cover? #mathscpdchat

Nikki @mathszest · Feb 1

Proof closely followed by partial fractions

06-Jun	Start of Y2	Exam review	Exam review
13-Jun	1.1 Proof	1.2 Alg fractions	
20-Jun	1.3 Partial fractions	1.4 Repeated Factors	1.5 Algebraic Division
27-Jun	3.1 Arithmetic Sequences	3.2 Arithmetic Series	
04-Jul	3.3 Geometric Sequences	3.4 & 3.5 Geometric Series & Sum to Infinity	3.6 Sigma Notation
11-Jul	3.7 Recurrence Relations	3.8 Modelling with Series	

[The issue of where 'proof' fits sensibly in an A level maths course is returned to below in this summary of discussions generated by Rob's last two questions (Q3 and Q4).]

The introduction of students to working with radians was a subject that was discussed again in the following conversation, in which the whole process of considering various different ways of reordering the teaching and learning of A level maths was also mentioned:

Rowan Aylett @Mrs_Aylett · Feb 1

Replying to @mrsouthernmaths

I'm about to change our sow as we've got a new distribution of lessons in a new timetable. I'm looking to shuffle things around a bit and am certainly planning on shuffling things around. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Is there anything that you definitely want to change? #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

Absolutely.

1. I'd like to bring radians forward to deliver alongside the trig solving in year 1. A member of the department likes the idea of continuing on from that to year 2 trig, but will need some consideration.

Rob Southern @mrsouthernmaths · Feb 1

Trig equations in Year 1 but only in degrees definitely seems odd. It also restricts the past exam material you can use as well - radians was in C2 with the trig equations. #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

Replying to @mrsouthernmaths

Exactly! It's a really exciting but daunting prospect, being forced into rethinking the delivery of the A level. #mathscpdchat

Andrew Parker @ParkerMaths · Feb 1

I prefer to split degrees and radians. I find topics covered together in one large block tend to be poorly retained by weaker students..too many related new ideas in one go. Revisiting trig equations in radians at a later point allows some relearning of the original concepts.

Rob Southern @mrsouthernmaths · Feb 1

When do students first meet radians in your SoW? #mathscpdchat

Andrew Parker @ParkerMaths · Feb 1

Most students at the end of Y1. FM students earlier as a flipped learning topic. #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

I agree to some extent, but it does feel like so much of what they do in year 1 doesn't have any depth to it, because it's only being looked at at an AS level. By revisiting the trig solving before starting year 2 trig identities there'd be a similar revisit #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

2. We're thinking about doing the bulk, but not all, of mechanics in year 1 and leaving stats until after their EoY which would also push back binomial #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

3. Definitely reshuffling some of the applied content. Like the forces in mechanics being taught together and probability in stats #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Replying to @Mrs_Aylett

Again, the Year 1/Year 2 split in forces seems strangely disjointed. No forces at an angle or friction in Year 1... #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

Replying to @Mrs_Aylett and @mrsouthernmaths

I'm very open to different options and have a small working party who will start looking at developing initial ideas from the inset day in Jan. #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

I'm actually quite keen to start with logs after the indices is covered at the beginning of the year so that they can meet something new early on. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

A few people have mentioned starting with something completely new. I think this has huge merit.

Good luck with the redesign - I'll be keen to hear how you get on! #mathscpdchat

When students' maths involves working with/using forces was the main focus of this conversation:

Anthony Shaw @ShawMaths · Feb 1

Replying to @mrsouthernmaths

I need to redesign my SOW, I don't like the 12/13 split, especially in mech.

Rob Southern @mrsouthernmaths · Feb 1

What are your "things I will definitely change"? #mathscpdchat

Anthony Shaw @ShawMaths · Feb 1

The over-simplicity of forces. I want slopes and friction in y1 and then connected particles in y2 to review this.

Radians in y12

Conditional Probability
#mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

I definitely agree about forces - the whole "we don't do friction in Year 1" idea is very strange. #mathscpdchat

Tom Bennison @DrBennison · Feb 1

The whole “we don’t resolve in year 1” is also very very odd.
#mathscpdchat

Anthony Shaw @ShawMaths · Feb 1

And trying to do anything interesting without friction or slopes with dynamics or connected particles is just impossible!

The following two conversations focused on teaching binomial expansion … this conversation …

Q2 - Do you do any A2 content in Year 12? If so, what. when and why?

Ms Pedley-Whittingham @MissPWMaths · Feb 1

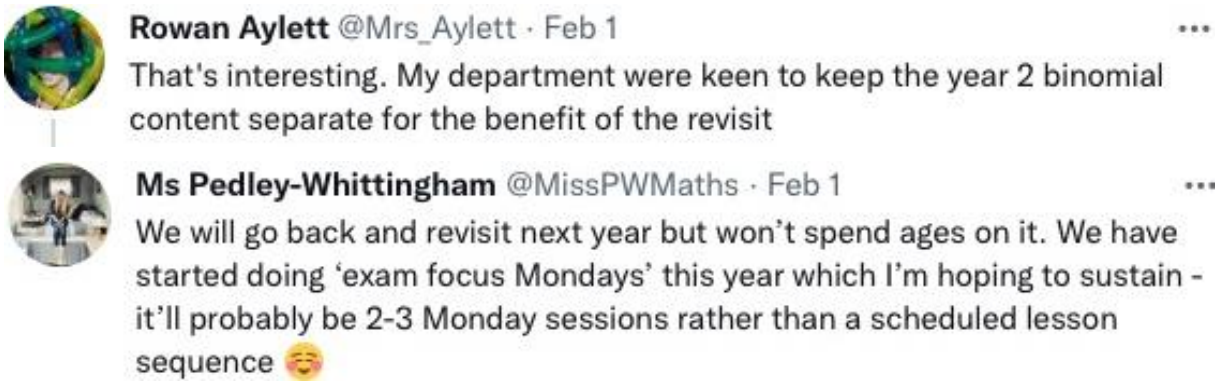
Replying to @mrsouthernmaths
#mathscpdchat
Binomial expansion and, dependent on teacher preferences, probability from stats. Makes more sense in y13 content usually

Rob Southern @mrsouthernmaths · Feb 1

Do you teach binomial expansion for non-integer powers straight after positive integer powers or come back to it after a period of time?
#mathscpdchat

Ms Pedley-Whittingham @MissPWMaths · Feb 1

Straight away. Have found some students struggle more if there’s a gap. Sometimes like to do the (1+x)^n formula for all, and explain positive integer powers as a special finite case. #mathschat



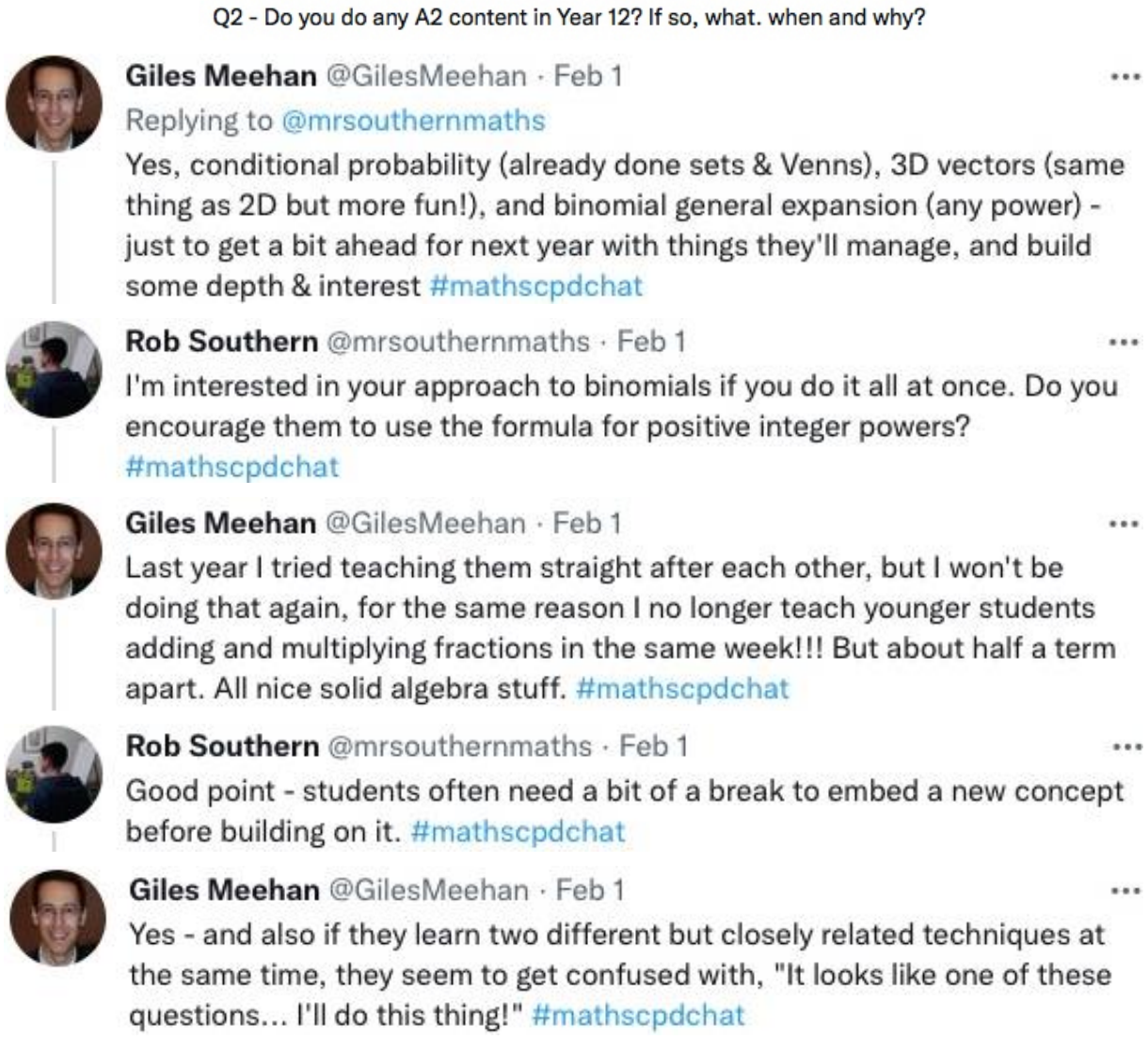
Rowan Aylett @Mrs_Aylett · Feb 1

That's interesting. My department were keen to keep the year 2 binomial content separate for the benefit of the revisit

Ms Pedley-Whittingham @MissPWMaths · Feb 1

We will go back and revisit next year but won't spend ages on it. We have started doing 'exam focus Mondays' this year which I'm hoping to sustain - it'll probably be 2-3 Monday sessions rather than a scheduled lesson sequence

… and this conversation:



Q2 - Do you do any A2 content in Year 12? If so, what. when and why?

Giles Meehan @GilesMeehan · Feb 1

Replying to @mrsouthernmaths

Yes, conditional probability (already done sets & Venns), 3D vectors (same thing as 2D but more fun!), and binomial general expansion (any power) - just to get a bit ahead for next year with things they'll manage, and build some depth & interest #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

I'm interested in your approach to binomials if you do it all at once. Do you encourage them to use the formula for positive integer powers? #mathscpdchat

Giles Meehan @GilesMeehan · Feb 1

Last year I tried teaching them straight after each other, but I won't be doing that again, for the same reason I no longer teach younger students adding and multiplying fractions in the same week!!! But about half a term apart. All nice solid algebra stuff. #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

Good point - students often need a bit of a break to embed a new concept before building on it. #mathscpdchat

Giles Meehan @GilesMeehan · Feb 1

Yes - and also if they learn two different but closely related techniques at the same time, they seem to get confused with, "It looks like one of these questions… I'll do this thing!" #mathscpdchat

There was a late 'single' response to Rob's second question, and all the conversations shown above in the summary up to this point:

Rob Southern @mrsouthernmaths · 2m

Keep the contributions coming everyone, here's the next question:

Q2 - Do you do any A2 content in Year 12? If so, what. when and why?

#mathscpdchat

Mrs L Maths 🐶 🏴 🏊 😎 @nkl_17 · Feb 1

Replying to @mrsouthernmaths

Really interesting to read this thread. Would be interested in seeing a SOW from anyone who inserts things like radians etc in yr 12 as looking at rewriting ours as very based on textbooks at moment, but realise it's not the best way. #mathscpdchat

Rowan Aylett @Mrs_Aylett · Feb 1

I'm very happy to share and discuss once we've sorted ours out. Probably won't be until after Easter though! #mathscpdchat

The host's first question …

Rob Southern @mrsouthernmaths · 1m

Good evening and welcome to **#mathscpdchat**

Tonight's discussion is all about curriculum sequencing at A level.

A reminder to use the hashtag in all responses please.

OK, let's get going:

Q1 - Do you interleave the pure and application content? Feel free to elaborate!

… generated several conversations. In this one Jack Brown shared an image showing how he sequences some Y12 content:

Jack Brown @TLMaths · 20h

Replying to @mrsouthernmaths

More the mechanics than the stats. Here you can see a series of 1st year lessons that mix calculus and kinematics. 1st year stats is taught more in a block, but we mix in binomial expansion before the binomial distribution. #mathscpdchat

- 123 Differentiation from First Principles
- 124 Graphs of Motion
- 125 Constant Acceleration SUVAT 1
- 126 Constant Acceleration SUVAT 2
- 127 Differentiation
- 128 Differentiation - Tangents and Normals
- 129 Differentiation - Stationary Points
- 130 Second Derivatives and Points of Inflection 1
- 131 Second Derivatives and Points of Inflection 2
- 132 Differentiation - Optimisation
- 133 Integration
- 134 Integration - Finding Areas
- 135 The Trapezium Rule
- 136 Integration - Areas between Curves
- 137 Variable Acceleration 1
- 138 Variable Acceleration 2

Rob Southern @mrsouthernmaths · 20h

This looks brilliant Jack. Thank you for sharing. Do you find you are making links between pure and app more with the new spec than when it was modular? #mathscpdchat

Jack Brown @TLMaths · Feb 1

Definitely. When it was modular, the papers seemed disconnected. Even to the point where probably not enough links were even made between core modules!

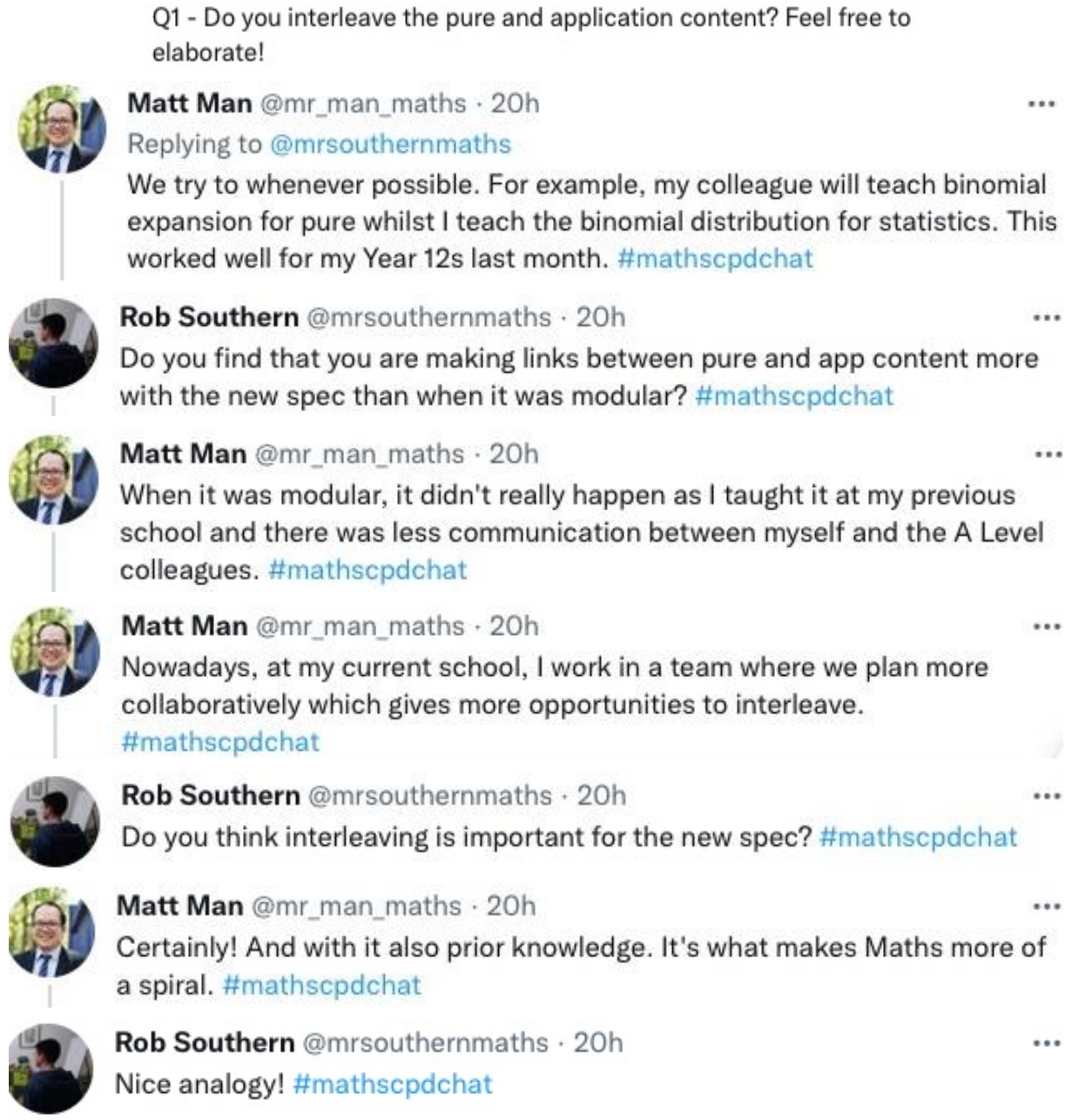
Rob Southern @mrsouthernmaths · Feb 1

So do you think we ought to be interleaving the content with the new spec? (Slightly provocative maybe) #mathscpdchat

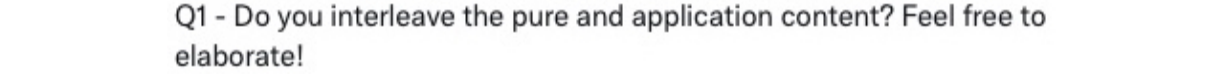
Jack Brown @TLMaths · Feb 1

I wouldn't go so far as to say you ought to deliver it like this, but the linear nature of the course lends itself to be delivered this way. I sometimes describe to the 1st years that the course is like one of those Schichttorte cakes. We keep coming back and adding a layer.

The following discussion includes a reference-to/example-of the value of collaborative planning:



The next four conversations show that the amount of 'interleaving' of pure maths and application of maths content varies from institution to institution …



Simon Ball @ballyzero · 20h

Replying to @mrsouthernmaths

To some extent. We do the correlation and regression work after straight line co-ordinate geometry, for example... and 1D kinematics around the same time, possibly for similar reasons. #mathscpdchat

Rob Southern @mrsouthernmaths · 20h

What influenced your decision to do it this way? #mathscpdchat

Simon Ball @ballyzero · 20h

Linking together everything involving straight lines on axes, I think. The decision was made before I started working at the college. The kinematics is followed with 1D SUVAT and then it's back to Pure until that's complete. Well, except for proof by contradiction. #mathscpdchat

...

Q1 - Do you interleave the pure and application content? Feel free to elaborate!

Miguel Pimentel @mrpimentelmaths · 20h

Replying to @mrsouthernmaths

We don't, mainly because separating the teaching between Pure and Applied works well logistically (new teachers focusing on learning one part of the course at a time, 3h pure/2h applied split works well for timetabling and assessment), but it'd be good to explore! #mathscpdchat

Rob Southern @mrsouthernmaths · 20h

It sounds like you would have the potential to make links between concepts if you're teaching pure and application side by side. #mathscpdchat

Miguel Pimentel @mrpimentelmaths · 20h

Definitely! We should definitely link more modelling with lines and correlation, or the pure and the mechanics vectors (teaching them separately makes v little sense) #mathscpdchat

Tayyub Majeed @tm_maths · 20h

vectors have no other use other than mechanics is what I find, so I'd just teach vectors just before mechanics. #mathscpdchat

...

Q1 - Do you interleave the pure and application content? Feel free to elaborate!

Sheena @Sheena2907 · 20h

Replying to @mrsouthernmaths

We keep them separate rightly or wrongly. Would be interesting to see the comments on this. We do pure at the end of the year

Rob Southern @mrsouthernmaths · 20h

So do you start with all the application content and do it in a block? #mathscpdchat

Sheena @Sheena2907 · 20h

I wrote that wrong sorry my brain is not functioning due to covid. Do all the pure first then applied at the end #mathscpdchat

Rob Southern @mrsouthernmaths · 20h

No worries! What influenced your decision to do it this way? #mathscpdchat

Sheena @Sheena2907 · 20h

Tbh it's a legacy issue from modular but also it works better with the further maths. I've been tempted to do the applied first with the furthers to allow the a level pure to be covered more before further pure but not made the leap yet #mathscpdchat

Rob Southern @mrsouthernmaths · 20h

I see - so you find that you need to "front-load" the pure to allow FM to run in parallel? #mathscpdchat

Sheena @Sheena2907 · 20h

Yeah and it still doesn't work but it's the best it'll be I think #mathscpdchat

...

Tayyub Majeed @tm_maths · 20h

Replying to @mrsouthernmaths

Our stats and mechanics is mixed in. PMCC is with all the straight line stuff very early on in Y12, and integration is introduced through areas under curves to find displacement.

#mathscpdchat

Rob Southern @mrsouthernmaths · 20h

That sounds great. How is the teaching shared where you are? #mathscpdchat

Tayyub Majeed @tm_maths · 20h
It's a sixth form college, so each teacher has their own class. There's no AS maths, the Y2 content is mixed with Y1 stuff. #mathscpdchat

Rob Southern @mrsouthernmaths · 20h
Ooh OK, I have a question about that for you to elaborate on later. Do teachers at your sixth form find that interleaving it has changed how they teach or the student experience? #mathscpdchat

Tayyub Majeed @tm_maths · 20h
Not been there long enough to comment, I'm afraid! I guess the students wouldn't know any different, regardless of the order, though. #mathscpdchat

… and there was this 'single' reply:

> Q1 - Do you interleave the pure and application content? Feel free to elaborate!

Ms Pedley-Whittingham @MissPWMaths · 20h
Replying to @mrsouthernmaths
have tried both ways in the past - this year finished pure for y12 by Christmas, moved onto applied afterwards... however, able to make much more references to modelling, and calculus for mech should be a breeze. different routes based on cohorts, could change again next year!

When Rob asked the last two questions …

Rob Southern @mrsouthernmaths · 41s
OK, I'm going to ask the last two questions together:

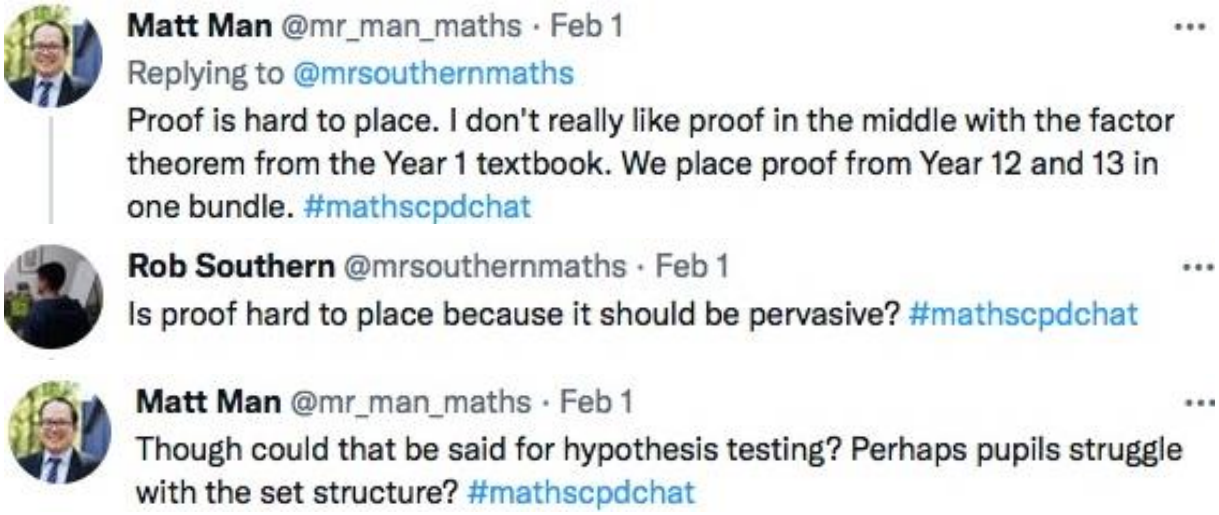
Q3 - which topics do you find hardest to place on the SoW?

and

Q4 - what do you do last?

#mathscpdchat

… he prompted several short conversations. This short chat raised the recurring issue of where during the A level maths course students look specifically at 'proof':



This was a longer discussion:

Implications of teaching Maths and Further Maths in parallel or consecutively were mentioned again in this conversation:

Tayyub Majeed @tm_maths · Feb 1

Replying to @mrsouthernmaths

I guess it's stuff that is required in further maths beforehand which is difficult to place. #mathscpdchat

We do proof by contradiction last - I don't know the reasoning. Maybe because all of the knowledge is taught so you know where to begin a question.

Matt Man @mr_man_maths · Feb 1

Replying to @mrsouthernmaths

I agree with @tm_maths with placing topics especially with the Further Maths students. There's still quite a lot of barriers to ensure a smooth parallel delivery as opposed to a consecutive delivery. #mathscpdchat

Tayyub Majeed @tm_maths · Feb 1

I find the AS and AL split within further maths quite difficult to get right, e.g., a lot of AS FP1 is required for AL FP1. So it's getting the split right within further maths as well as maths which make it difficult. Think it would depend on FM the modules, too?

Matt Man @mr_man_maths · Feb 1

Yep, my sole Further Maths pupil is doing all the pure so it's even harder with FP1 and FP2. What we have found in Year 12 was that he can access all the FP2 ones as it required less prior knowledge from A Level Maths compared to FP1. #mathscpdchat

Anthony Shaw @ShawMaths · Feb 1

This is one of the main reasons we moved away from FP1

Tayyub Majeed @tm_maths · Feb 1

Whilst I love working through FP1 papers, I would prefer starting with D1. No prerequisite knowledge required.

Matt Man @mr_man_maths · Feb 1

Try FP2 @tm_maths! It's actually really interesting and reminds me a lot of 1st or even 2nd year university of Maths

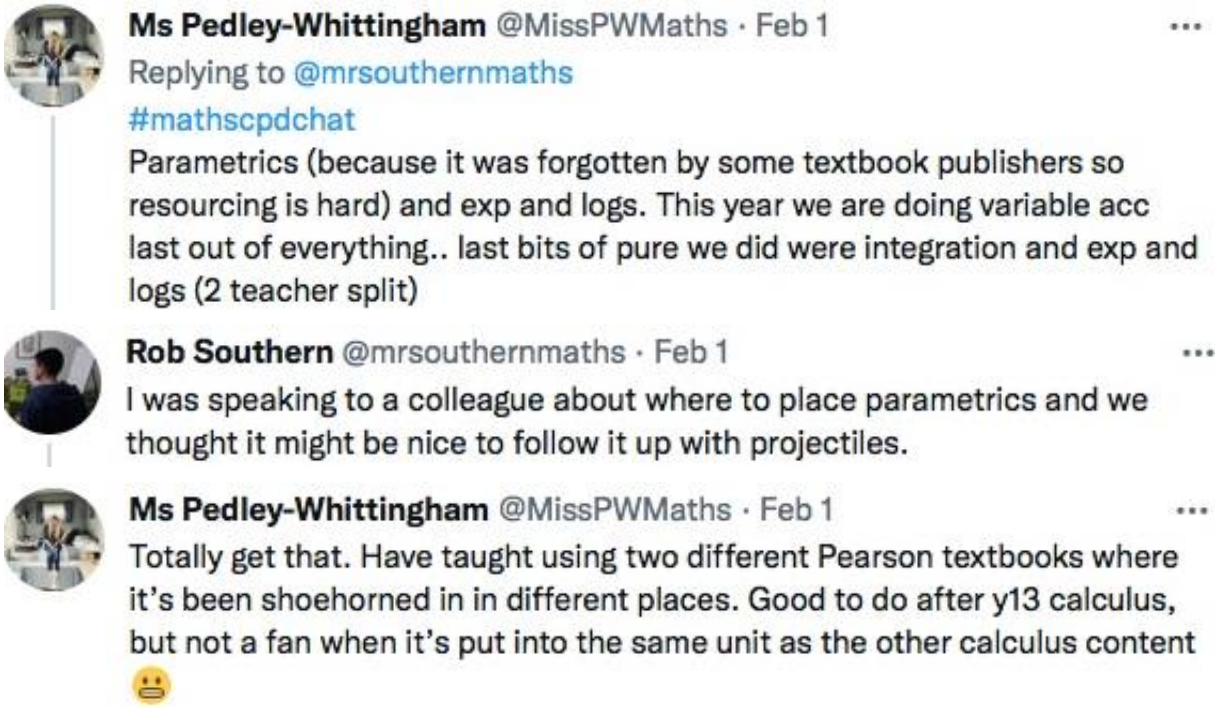
Tayyub Majeed @tm_maths · Feb 1

Did a degree in engineering, but certainly wouldn't mind creating some videos.

Matt Man @mr_man_maths · Feb 1

You should! The Resources for FP2 are rather limited as there are nowhere near as many walk through videos as FP1.

In this short conversation textbooks were again mentioned:



Ms Pedley-Whittingham @MissPWMaths · Feb 1

Replying to @mrsouthernmaths

#mathscpdchat

Parametrics (because it was forgotten by some textbook publishers so resourcing is hard) and exp and logs. This year we are doing variable acc last out of everything.. last bits of pure we did were integration and exp and logs (2 teacher split)

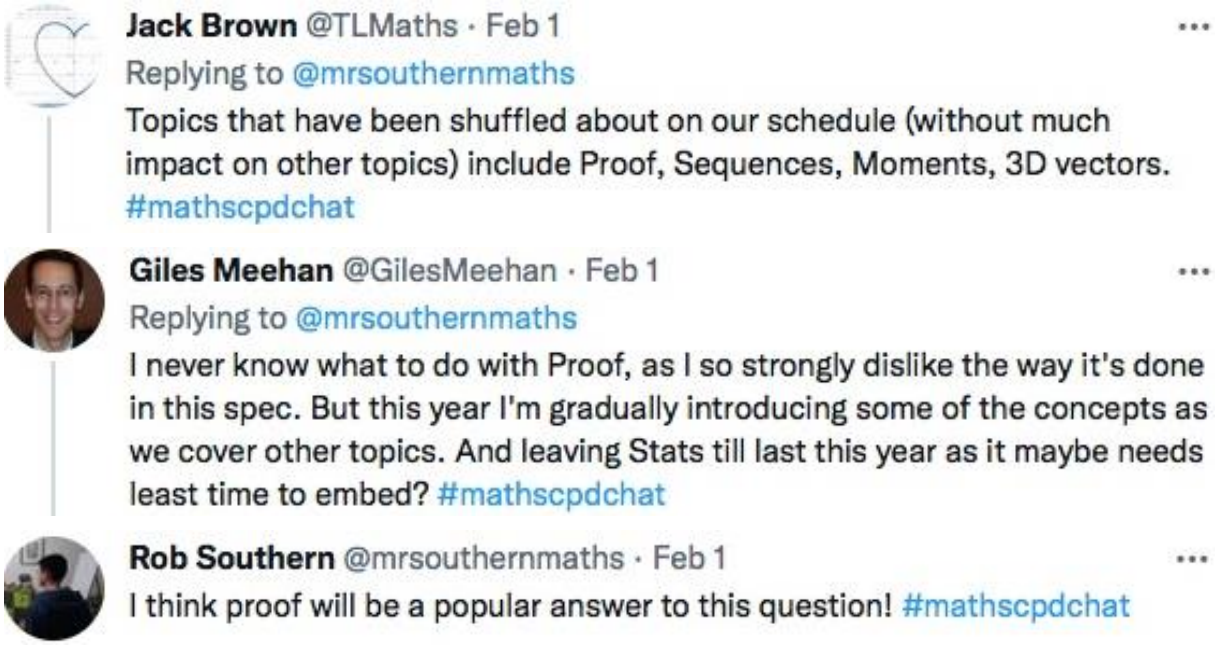
Rob Southern @mrsouthernmaths · Feb 1

I was speaking to a colleague about where to place parametrics and we thought it might be nice to follow it up with projectiles.

Ms Pedley-Whittingham @MissPWMaths · Feb 1

Totally get that. Have taught using two different Pearson textbooks where it's been shoehorned in in different places. Good to do after y13 calculus, but not a fan when it's put into the same unit as the other calculus content 😬

Teaching and learning about proof was also mentioned in these replies …



Jack Brown @TLMaths · Feb 1

Replying to @mrsouthernmaths

Topics that have been shuffled about on our schedule (without much impact on other topics) include Proof, Sequences, Moments, 3D vectors. #mathscpdchat

Giles Meehan @GilesMeehan · Feb 1

Replying to @mrsouthernmaths

I never know what to do with Proof, as I so strongly dislike the way it's done in this spec. But this year I'm gradually introducing some of the concepts as we cover other topics. And leaving Stats till last this year as it maybe needs least time to embed? #mathscpdchat

Rob Southern @mrsouthernmaths · Feb 1

I think proof will be a popular answer to this question! #mathscpdchat

…