Transition Collaborative Conversations Summary

What makes a good mathematician?

- Resilience
- Confidence
- A passion for the subject
- Curiosity
- Problem solving and reasoning skills
- Ability to work collaboratively
- Ability to communicate ideas
- Pursuit of understanding
- Growth mindset

What is really reassuring for us all is that, overwhelmingly, the comments made about being a good mathematician are centred round attributes and learning behaviours rather than knowledge of, or proficiency in, particular curriculum content. There was a general consensus that when welcoming pupils back in to school either at this point in year 6 or at the beginning of year 7, the focus should be on sparking joy in mathematics and nurturing good learning behaviours rather than focusing on rapid or extensive coverage of curriculum areas that have been missed.

Logistics of transition

- Can secondary schools provide sample maths lessons to Year 6 colleagues? E.g. This is what a typical maths lesson may look like. Some concerns over increased anxiety in maths transition than in other subjects. Pupils believe that in maths, more than any other subject, the challenge will raise significantly in KS3.
- Is there the possibility of providing a short video to feeder schools e.g. “Inside the Maths department”?
- Secondary schools could provide a letter to primary pupils explaining that they are aware that some school has been missed and there will be a big focus around helping pupils to adjust back into school.
- Primary colleagues could give pupils time to look through their secondary school’s website or twitter feed to get a feel for the school.

What should a priority curriculum look like in maths for the remainder of the summer term?

Suggestions	Considerations	Resources to support
Focus on particular known gaps or skills deficits e.g. fluency in mental calculation and removing reliance on written methods.	There was a suggestion from KS3 colleagues not to arbitrarily revisit content unless Year 6 teachers knew it was a weakness to avoid pupils becoming disinterested.	NCETM Primary video lessons focus on concepts in Fractions and in efficient calculation within addition and subtraction. They can be found here: https://www.ncetm.org.uk/resources/54454
Focus on Year 6 only content.	Curriculum content in KS2 for ratio and proportion and algebra is only taught in Year 6. In schools where this content has been not been taught in Year 6, it will never have been taught.	Primary Professional Development Materials provide guidance on Year 6 content in a slimmed down core curriculum: https://www.ncetm.org.uk/resources/50639
Focus on KS2 skills that underpin the KS3 curriculum.	The KS3 curriculum builds on concepts in multiplication, division, fractions, percentages, decimals and ration under the concept of “multiplicative reasoning”. Year 6 colleagues may want to consolidate	Find lessons aimed at KS2 and KS3 collaborative work around multiplicative reasoning here: https://www.ncetm.org.uk/resources/48479

	and revisit in these topics to prepare for KS3.	
Focus on a preparatory skill.	Pupils in KS2 are no longer required to learn to use a calculator and may not have had any experience of teaching in this area. It may be useful to expose KS2 pupils to this in preparation for KS3.	MEI have developed a set of resources for calculator work that can be delivered in school or for home learning: https://mei.org.uk/Primary-KS2-3-Transition
Focus on building mathematical talk.	There was a general acknowledgment that pupils have not had the opportunity for some moths to work collaboratively with peers and engage in challenging conversations that develop verbal reasoning skills.	Article on reviewing priori knowledge and encouraging reasoning and discussion can be found here: https://www.atm.org.uk/write/MediaUploads/Journals/MT260/Which_one_does_not_belong.pdf
Focus on re-inspiring a love for maths.	There was a general acknowledgement that the activities set during home learning may have been dry or lacked inspiration because of the format they have been delivered in and colleagues felt that some work on interesting and exciting enquiry driven tasks would be beneficial in returning to school.	An excellent set of resources to inspire confidence in maths and collaborative learning can be found on the youcubed website. https://www.youcubed.org/week-inspirational-math/

What will secondary schools do in Autumn 1 to think about reducing any gaps?

Suggestions	Considerations	Resources to support
Curriculum Design	Will some KS2 content be blocked before any KS3 content is taught? Will the curriculum be designed so that core concepts from KS2 will be taught first in Autumn 1 before moving on to the KS3 curriculum?	Primary Professional Development Materials provide guidance on Year 6 content in a slimmed down core curriculum: https://www.ncetm.org.uk/resources/50639
Lesson Design	Will the tracking back happen “in lesson” or “in unit”? KS3 curriculum will be delivered from Autumn 1 and units or lessons will track back through earlier “concept building” objectives and AfL within key teaching points.	NCETM Primary video lessons are an excellent professional development resource for KS3 teachers in looking at how to track back to early ideas within a concept and very quickly bring the learning to age appropriate content. See the first 4 lessons in addition and subtraction for an excellent example of this. https://www.ncetm.org.uk/resources/54454 NCETM Secondary Professional Development Materials break the KS3 curriculum down into key areas. In each supporting teacher guide there are details of the knowledge and skills in KS2 that feeds in to each area: https://www.ncetm.org.uk/resources/53449

Core Year 6 Content – Scale factors, ratio and proportional reasoning	This unit of work underpins core concepts in the KS3 curriculum and could be taught in Autumn 1 to fill any gaps within these concepts.	Find a teacher guide for scale factors, ratio and proportional reasoning as part of the Primary Professional Development Materials here: https://www.ncetm.org.uk/resources/53675
Core Year 6 Content – Linking fractions, decimals and percentages	This unit of work underpins core concepts in the KS3 curriculum and could be taught in Autumn 1 to fill any gaps within these concepts.	Find a teacher guide for linking fractions, decimals and percentages as part of the Primary Professional Development Materials here: https://www.ncetm.org.uk/resources/53654
Starting with enquiry	There was a feeling that starting with enquiry-based mathematics across all sets would give teachers the opportunity to quickly assess skill deficits and forward plan content to catch up in the Autumn Term. An enquiry-based approach would also enable confident pupils to show what they can do, whilst providing a non-threatening start to secondary school for less confident pupils.	Sarah Bonnell Secondary School in Newham have developed some resources to support starting year 7 with enquiry focused maths. If you would like further details, please contact Keira McDonnell kiera.mcdonnell@sarahbonnelll.net
Starting with probability	There was a strong suggestion that starting with something fresh will create a level playing field for all pupils as well as appealing to more confident mathematicians. Starting with something like probability which is new content in KS3 also will enable teachers to see very quickly where the gaps are in the underpinning skills.	Surinder Panesar, one of our Local Leaders of Education (LLME) is happy to advise and support on starting year 7 with probability. If you would like further details, please contact Surinder: spanesar@fbaok.co.uk
Starting with Algebra	There was a strong suggestion that starting with something that was relatively new to all would also provide similar opportunities to the approach mentioned above. Starting with algebra would also allow skills in calculation to be revisited.	Mili Prakash, one of our Local Leaders of Education (LLME) is happy to advise and support on starting year 7 with algebra. If you would like further details, please contact Mili: Mili.Prakash@willowfield-school.co.uk
Mixed Ability Groups	There was a suggestion that not setting in Year 7 would allow gaps to be exposed and remedied more quickly.	Coopers Coburn Secondary School in Havering have established mixed ability sets in Year 7. If you would like further details, please contact Michaela Spoor micki_spoor@yahoo.co.uk

Are there implications for setting in Y7?

There was a general feeling that there is opportunity in the current situation to do something different with setting in Year 7 next year. Should we set at all given that there will be gaps in learning across all sets? If we do set, how should we set? What information will we use to set? Here is a summary of some different ideas around setting that were discussed in our meetings.

1) Mixed ability setting across Year 7 with the same content delivery throughout the year
2) Soft sets for Year 7 and 8 and hard setting at the beginning of Year 9 to prepare for GCSE
3) Soft setting with same content delivery across all sets in the Autumn Term to get a feel for the year group as a cohort. Continuation of soft setting but with more targeted content after Christmas.
4) Soft setting/no setting for Autumn Term with testing before Christmas to inform sets from Spring 1.
5) Soft setting/no setting for Autumn 1 with testing before half term to inform sets from Autumn 2
6) Setting with smaller groups and heavily targeted support for the bottom set. Bottom and middle sets to be delivered the same content to bring bottom set attainment inline with middle set as soon as possible.

Secondary schools should be aware that teacher assessments have been made by Year 6 teachers based on how pupils were performing at mid-point during the year and do not necessarily reflect actual attainment, rather a projection of how the rest of the year may have enabled that pupils to perform. Because of the time of school closure, some schools will have had limited opportunities to administer mock papers and therefore will have had limited hard data in order to make teacher judgements.

Consideration should be given to whether on entry testing in KS3 is appropriate given that many pupils (in some schools up to 80%) will have been out of education from March – September. On entry testing is going to give a very arbitrary picture of what pupils can actually do. Secondary schools should also be aware that many pupils who have not engaged in home learning or have engaged in home learning to a lesser degree are pupils who are already vulnerable or disadvantaged. It would be a national tragedy to find bottom sets filled with vulnerable pupils next year because of performance in an on-entry test where no learning has happened during the previous months.

There is a suggestion from KS3 colleagues that administering high quality lessons with good assessment for learning practices, whilst at the same time holding off on formal setting at least initially, can replace grading or testing and give a more accurate picture of pupil attainment and pupil potential.

Important resources cross phase

NCETM Primary Lesson Videos

https://www.ncetm.org.uk/resources/54454

KS2 - Useful for Year 6 teachers to deliver now to look at closing gaps in particular curriculum areas. All lessons have been planned and delivered by mastery specialists using the Primary Professional Development Materials for lesson design.

KS3 - Useful for KS3 teachers as a professional development tool to look at the way the lessons are crafted to build carefully on concept building teaching points and very quickly move into challenging, age related content. Also useful to look at opportunities for assessment for learning in the lessons and how content is broken down in to sizeable chunks to enable both pupils access and teacher assessment.

NCETM Primary Professional Development Materials

https://www.ncetm.org.uk/resources/50639

KS2 - Useful for Year 6 teachers to look at core content in their year group that may be a focus for the remaining weeks of term. The teacher guides support with professional development, lesson design, choosing representations, stem sentences and task design.

KS3 - Useful for KS3 teachers to look at core content in Year 6 and build this learning in to blocked content at the start of Year 7, or build this learning in to “in unit” or “in lesson” supporting content. This will aid KS3 teachers in knowing what the potential gaps may be in each core area.

NCETM Secondary Professional Development Materials

https://www.ncetm.org.uk/resources/53449

KS3 – Useful to look at small steps in learning in each core area of the KS3 curriculum. The teacher guide gives an overview of what should have been covered in KS2 to prepare for this new content, as well as

showing where this is picked up in KS4. Each teacher guide provides support with professional development, lesson design, choosing representations, stem sentences and task design.

NCETM Secondary Professional Development Materials – Using Mathematical Representations in KS3

https://www.ncetm.org.uk/resources/53609

KS3 – It is likely that teachers in all sets will have unprecedented numbers of pupils with gaps in their mathematical knowledge come September. This set of resources provides support and professional development about how mathematical representation can be used in Key Stage 3 to underpin and embed complex learning.

Improving Mathematics in Key Sages 2 and 3

https://educationendowmentfoundation.org.uk/tools/guidance-reports/maths-ks-2-3/

All – Research report from the EEF on Improving Mathematics in Key Stage 2 and 3. Review your school's approach and read the eight recommendations to improve outcomes in maths for 7-14 year olds.

Things that KS2 teachers felt that KS3 teachers should know

- Some schools teach a liner curriculum and some schools teach a spiral curriculum. Because of the timing of school closure, schools who teach a linear curriculum may have delivered no curriculum content from the second half of the Year 6 curriculum. Those schools delivering a spiral curriculum, may have delivered all topics but not consolidated learning in all areas.
- New fractions content in Y6 (multiply and divide fractions by integers) will likely have been taught in a very abstract way from the perspective of calculation rather than understanding due to time constraints. It is likely that many pupils will know a trick to get the correct answer right but may have little deep learning in this area.
- Mode and median are no longer taught for averages in KS2. Mean as average is the only averages content in the new curriculum. Most schools spend one or two lessons on this only due to time constraints so learning in this area may not be well embedded.
- Probability is no longer in the KS2 curriculum – it is a KS3 curriculum area now.
- Ratio, proportion and algebra are Year 6 only content. They do not appear explicitly in any other area of the Primary Curriculum. If this these areas have not been covered in Year 6 due to closure, they will never have been covered. In a normal year, most schools report 1 – 2 weeks spent on ration and proportion and 3-5 lessons on algebra with a focus on calculating unknowns. This is not a normal year. There is likely to be skill deficit in this area of the curriculum.
- KS3 teachers should be aware that, because of the timing of school's closures, pupils will not have had the opportunity to consolidate skills and bring their learning together. Pupils may have strong skills sets in areas such as fraction and strong skills sets in areas such as decimals and strong skills sets in areas such as percentages, but it is likely that these skills remain disparate rather than pupils understanding the intricate links as schools would not have had the opportunity to revisit these concepts and bring them all together.
- Not all Year 6 pupils have returned to school. Some schools have seen a very small percentage of their cohort return.
- Some pupils have not engaged at all in home learning or have engaged in an inconsistent way.

A strong suggestion for Secondary Schools

There was a strong suggestion that it will be impossible for secondary schools to knit together the picture of their Year 7 cohort without some information from their feeder primaries. There unanimous agreement that a survey of all primary schools by way of a google form to the info@ or office@ email address marked for the attention of Year 6 teachers would give some solid information to go on. The following suggestions for content were made:

1) What percentage of Year 6 pupils have returned to school?
2) Do you teach a linear or spiral curriculum?
3) Have you adopted a Teaching for Mastery approach?
4) If yes, do you use a Textbook?
5) If yes, which Textbook?
6) To what extent has each curriculum area been covered?

Curriculum Area	In depth in school	Touched upon in school	Home learning	Not covered
Place Value				
Addition and Subtraction				
Multiplication and Division				
Fractions				
Decimals				
Percentages				
Ratio and Proportion				
Measurement				
Geometry – properties of shape				
Geometry – position and movement				
Statistics				
Algebra				

Many thanks to all colleagues who collaborated to bring together ideas and suggestions to support each other during these challenging times.