Maths

September 2020 and beyond...

With thanks to Liz Thomas (Integra Schools) for ideas, plans and images

Maths

Part 1 – Why we need a Recovery Curriculum
Part 2 – How we will achieve this in Maths at HMA

“What you do in the first few days/weeks will show your students what you value. What will your first days and weeks say about you as a teacher to your students?”

https://buildingmathematicians.wordpress.com/2020/05/21/how-not-to-start-math-class-in-the-fall-2020/

There is a lot of information being posted “out there” about why we need a Recovery Curriculum and how we can help our children with their return to school.

These are the ones that I found most helpful and I have drawn out a few quotes from them.

https://clf.uk/towards-recovery-a-think-piece/

https://www.evidenceforlearning.net/recoverycurriculum/

https://buildingmathematicians.wordpress.com/2020/05/21/how-not-to-start-math-class-in-the-fall-2020/

https://www.ssatuk.co.uk/blog/a-recovery-curriculum-loss-and-life-for-our-children-and-schools-post-pandemic/

https://www.teachwire.net/news/catching-up-focusing-solely-on-academic-learning-when-pupils-return-to-school-will-be-damaging

https://www.adoptionuk.org/blog/the-myth-of-catching-up-after-covid-19

Teaching is not learning

“As any classroom teacher will tell you, there is a significant gap between what is taught and what is learnt.
All children, even those with a replicated school day being livestreamed into their home, are going to have missed key parts of their education. Education and schooling are about more than book learning and teachers standing up in front of the class delivering instruction. It is about the interactions and relationships that are at the heart of learning.

Those who adhere to the ‘teaching is learning’ school of thought are deeply concerned about the time children have missed in the classroom. They see a need to make up this lost time and missed learning as quickly as possible. They are focused on children who will not meet ‘age expectations’.

We will need to accept that children have missed school and will not be at the same point as previous cohorts.

We will need to respond to what children have learnt, not what we expected them to have learnt.”

https://www.teachwire.net/news/catching-up-focusing-solely-on-academic-learning-when-pupils-return-to-school-will-be-damaging

“Whatever their educational experience during lockdown, children will have been learning – even those who accessed no formal schooling. It is too easy to feel that if work was not set by the school and is not measurable in academic terms that it is not ‘proper’ learning and doesn’t count.

If we are to re-engage children in school, we must recognise, value and celebrate their learning of all kinds. Much of this learning will be different to ‘school learning’ and not on the curriculum. We need to take time to find out who has experienced baking a cake, building a wall or becoming an expert on the Roman Army or the life of an Amazonian dolphin.

Even more importantly, who has been a carer for a sick relative or dealt with grief for someone they couldn’t see? This learning and possible trauma may not be on the curriculum but will be key to who our children are.

Teachers’ responses will be key to how children are able to reintegrate into school and the people that they will become. If we dismiss this as not being ‘proper’ learning and focus solely on ‘catch up’, we devalue children’s experiences and deliver damaging messages about school and their place in it.”

https://www.teachwire.net/news/catching-up-focusing-solely-on-academic-learning-when-pupils-return-to-school-will-be-damaging

“When the children return to school there needs to be a Recovery Curriculum in place. Suddenly daily routines have evaporated and with it, any known curriculum framework. No more rushing to get the school bag ready and running out of the door to begin the journey to school. For most children their daily goal in going to school is not just to learn but to see their friends and to feel a sense of self-worth that only a peer group can offer. You cannot underestimate the impact of the loss of that social interaction. It is as key to their holistic development as any lesson. Human beings are fundamentally social creatures, and the brain grows in the context meaningful human to human interaction. What will the children be making of this period of non-attendance? What worries will they have because grown-ups have now stopped them going to school indefinitely?”

https://www.ssatuk.co.uk/blog/a-recovery-curriculum-loss-and-life-for-our-children-and-schools-post-pandemic/

“Those five losses, of routine, structure, friendship, opportunity and freedom, can trigger the emergence emotionally of anxiety, trauma and bereavement in any child.”

https://www.ssatuk.co.uk/blog/a-recovery-curriculum-loss-and-life-for-our-children-and-schools-post-pandemic/

“From conversations I have had with various teachers, I think we can all agree on a few things here:

•Learning over the past few months has not been ideal for many students;

•Learning about our students’ thinking has been difficult, at best, for us, making it difficult to sequence learning, consolidate big ideas, and use various students’ thinking to drive conversations; and

•There will be a huge discrepancy between how much / what students have learned over the past few months.”

“Because of these three points, when students finally get back into classrooms we will likely have many eager to attempt to make the best of things. However, what first moves we make when school returns matters more this year than ever. This leads me to wonder, will our decisions be driven by thoughts of how to fill gaps or how to build a community of learners?”

see table on next page

https://buildingmathematicians.wordpress.com/2020/05/21/how-not-to-start-math-class-in-the-fall-2020/

Which type of teacher do we want to be?

	Gap Driven	Student Driven
Goal	• Find and fill gaps in students' math learning • Mastering discrete topics	• Build community that is able to learn with and from each other • Building connections between previous concepts and new concepts
Focus	• Base-line or diagnostic tests • Paper-and-pencil or multiple choice tasks/tests • Attempt to determine groupings based on data	• Investigating, problem solving, development of reasoning skills • Teachers noticing student thinking, asking students probing questions, facilitating conversations
Teacher Beliefs	• Gaps need to be filled before we can learn new things • Differentiated Instruction means giving different students different assignments based on readiness	• Students can all learn new concepts with the right shared experiences • Differentiated Instruction means providing open tasks that are accessible to all, notice students' thinking, then building conversations that facilitate important mathematics connections

https://buildingmathematicians.wordpress.com/2020/05/21/how-not-to-start-math-class-in-the-fall-2020/

The recovery curriculum is based on five key levers:

- **Lever 1: Relationships** – we can't expect our students to return joyfully, and many of the relationships that were thriving, may need to be invested in and restored. We need to plan for this to happen, not assume that it will. Reach out to greet them, use the relationships we build to cushion the discomfort of returning.
- **Lever 2: Community** – we must recognise that curriculum will have been based in the community for a long period of time. We need to listen to what has happened in this time, understand the needs of our community and engage them in the transitioning of learning back into school.
- **Lever 3: Transparent Curriculum** – all of our students will feel like they have lost time in learning and we must show them how we are addressing these gaps, consulting and co-constructing with our students to heal this sense of loss.
- **Lever 4: Metacognition** – in different environments, students will have been learning in different ways. It is vital that we make the skills for learning in a school environment explicit to our students to reskill and rebuild their confidence as learners.
- **Lever 5: Space – to be, to rediscover self, and to find their voice on learning in this issue**. It is only natural that we all work at an incredible pace to make sure this group of learners are not disadvantaged against their peers, providing opportunity and exploration alongside the intensity of our expectations.

https://clf.uk/towards-recovery-a-think-piece/

“We have no idea what next year will look like. So, whatever time we do have in classrooms, we need to build the kinds of relationships and norms that will help us in case we are expected to once again learn from home.
How To Start?
If we really are worried about gaps in prior learning, thinking about how to start all new learning with experiences that will help bridge current understandings with what your students will be learning will need to be a focus.

Instead of starting with a test that quantifies learning or sorts kids, how about you:
•Start with a diagnostic Task for each new concept
•Choose a specific notice and wonder image as a shared experience where you can build important discussions about key concepts
•Use an open problem that is highly accessible. Then share specific examples with the group that lead to relationships between prior and new learning
•Choose a spatial task to help students learn to persevere when challenged
•Ask students to share what they know on a frayer model which can be updated throughout upcoming days
•Play a game that uses the concept you want to address so you can watch students’ in action, then bring up what you have noticed with the class
•Anything to get your students DOING so you can NOTICE their current thinking and WONDER about what to do next.
•Anything that gets kids thinking, talking, sharing, testing ideas, playing with concepts, making conjectures, noticing patterns, building, representing…..
Content will come. Focusing on our kids as thinkers and doers of mathematics needs to come first.”

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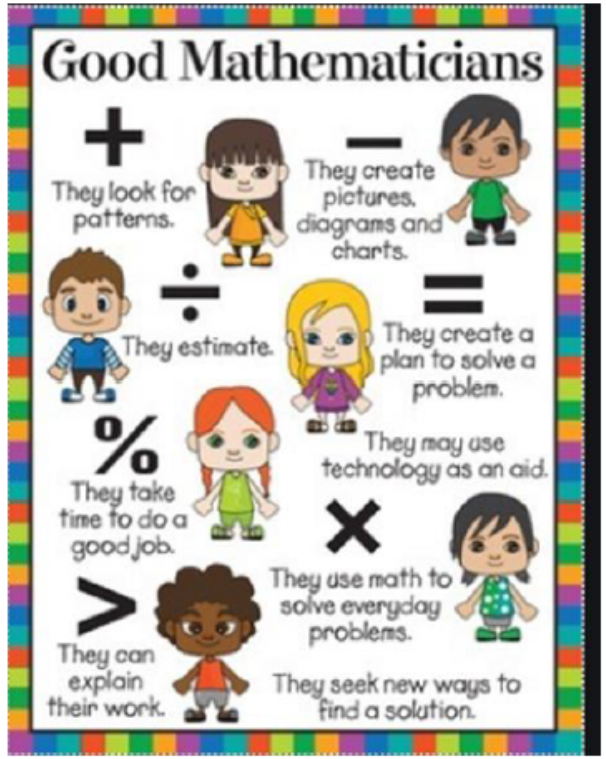
Growth Mind-set

integra. schools

Be aware that pupils may feel very differently about maths depending on their experience over the time at home .
We need to acknowledge that much of the learning may have been online with games or worksheet driven.
We also need to rebuild pupil self esteem , motivation and resilience.



Remind the pupils that it's ok to:

Have forgotten how to do things
To not get everything right all the time
To do maths in different ways
To use different things to help you with maths
To ask for help from anyone
Get stuck
Make mistakes and errors

How can we develop Mathematicians at Herons' Moor in 2020 - 2021?

Remind the pupils that it's ok to:

Have forgotten how to do things
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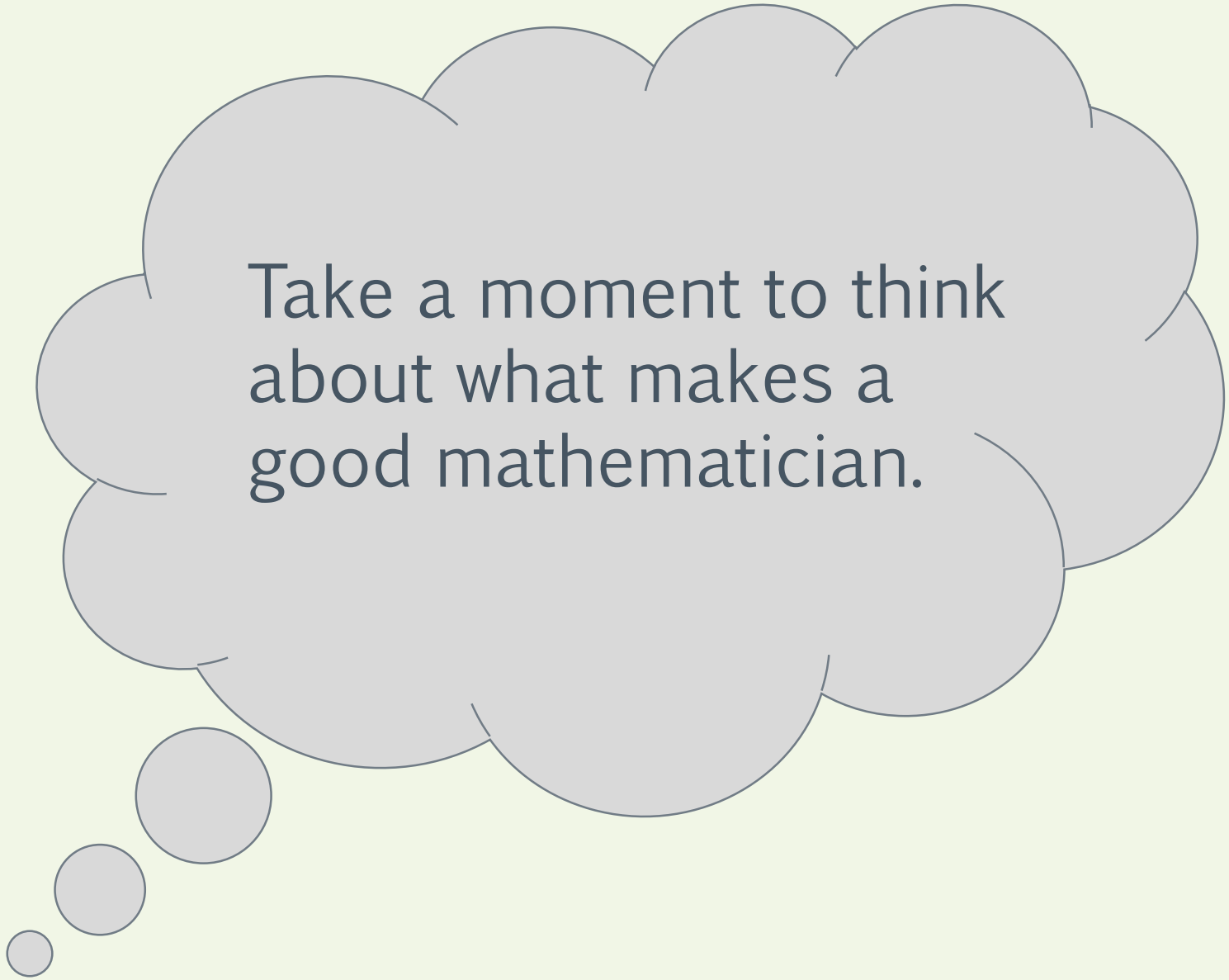
This kindness and understanding is crucial.


Take a moment to think about what makes a good mathematician.

These are some of the skills you may have thought of and it is important to remember that most of them are not "testable".

10 Things Every Good Mathematician Should Do:

1. **Look For Patterns**
2. **Draw a Picture, Diagram or Chart**
3. **Estimate**
4. **Ask Good Questions**
5. **Create a Plan**
6. **Take Your Time**
7. **Check Your Work**
8. **Explain Your Work**
9. **Use Math to Solve Everyday Problems**
10. **Seek New Ways to Solve a Problem**

And finally, **don't be afraid to make a mistake**. That's part of the learning process!! Especially when it comes to mathematics. Sometimes the only way to figure out what works is to first determine what doesn't. Just don't give up!

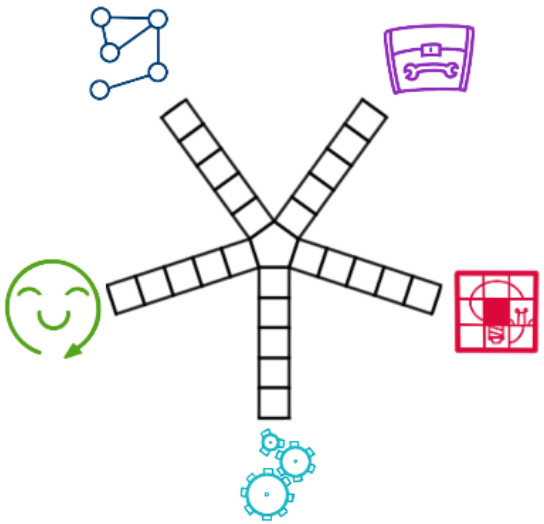
Understanding - Maths is a network of linked ideas. I can connect new mathematical thinking to what I already know and understand.

Tools - I have a toolkit that I can choose tools from to help me solve problems. Practising using these tools helps me become a better mathematician.

Problem solving - Problem solving is an important part of Maths. I can use my understanding, skills and reasoning to help me work towards solutions.

Reasoning - Maths is logical. I can convince myself that my thinking is correct and I can explain my reasoning to others.

Attitude - Maths makes sense and is worth spending time on. I can enjoy Maths and become better at it by persevering.



- Persistence
- Communication
- Resilience
- Critical thinking
- Logic
- Curiosity
- Creativity
- Organization
- Collaboration

If we want our children to think and talk mathematically, we need to give them opportunities and time to do so.

We need to be simultaneously building up their confidence, developing their reasoning skills and assessing gaps in knowledge....

...so how are we going to do that in September?

Read on for Part 2!

There are two parts to our HMA Maths Recovery Curriculum for 2020

a. Transition work to take place during the first couple of weeks back in class (detailed here). This must NOT involve testing.

b. Building in time throughout 2020 – 2021 to revisit and consolidate objectives; find and fill gaps in core knowledge and prepare children to meet age related expectations by July 2021 (to be shared with all staff in September).

With this email are two documents created to support the reintegration of children into more formal maths learning in the classroom and to help prepare them for the reintroduction of our mastery lessons at HMA.

Unit 1: Reasoning about Number Patterns and Calculation
Unit 2: Reasoning about Calculation and Statistics

The activities are designed to be practical low threshold / high ceiling tasks that can be accessed by all children whatever their start point but with a challenge for those who are more able.

They also will help with developing a growth mindset **and** they link well with our Values, being a Herons' Moor Learner and the Achievosaurs. Winner, winner!

The sessions are designed to be no more than 30 minutes but could be extended. There are 5 linked lessons with a choice of activities and they increase in difficulty each day. The theme for each day is the same across the whole school, so you can drop back into prior year groups for individuals if necessary.

<u>You must use at least one activity a day</u> during the full fortnight of mark making.

KEY POINTS:

These resources were originally written when Good Ol' Gavin was intending for all children to return to school during Term 6, and therefore they are labelled accordingly. This means that you will need to look at the previous year group for your main plans but please do look at either side of your year group if you feel that a greater or lesser challenge is needed.

Year 1 please use WTS Y1 plan

Year 2 please use Y1 plan

Year 3 please use Y2 plan

Year 4 please use Y3 plan

Year 5 please use Y4 plan

Year 6 please use Y5 plan

There is no need to do any further written planning for these tasks, but please keep a record on your mark making or weekly timetable of which activities you have worked on. Just writing Y1 Day 1 Activity 2 is enough.

Example Plan for Week 1

Unit 1: Reasoning about Number Patterns and Calculation

Y2	Number Patterns Day 1 Find that number	Number Patterns Day 2 How many… ?	Number Patterns Day 3 Follow the Leader	Number Patterns Day 3 Number pairs and Trios	Number Patterns Day 5 Find that number
You need	counters, 100 squares, dice, number tracks, timer	counters, 100 squares, objects to support counting in 2s,5s,10s	counters, 100 squares or number tracks, dice, snakes and ladders	100 squares and counters	100 Squares, counters, timer
	Activity 1: Cover up 1 Cover up the numbers on the square with counters. Throw two 0 – 9 dice and make a 2-digit number. Work out which counter the number is hidden under. If you are right, keep the counter. If you are wrong, put the counter back down. How many counters can you collect in 5 or 10 minutes? Play again and try to beat your record. **Activity 2: Cover up 2** Each player covers up writes down 5 numbers from the 100 square. The players take it in turns to give up to 5 clues for the other player to find that number. Questions can only have yes/no answers and not ask questions such as is it 5?	**Activity 1: Multiples** Cover the multiples of 2, 5 and 10 etc. (one multiple at a time). What can you see? How many multiples of 2? 5? 10? What do they have in common? Are there any multiples of 5 that are also multiples of 2? Use the patterns to predict which numbers will be in the sequence. **Activity 2: Different starting place** Start at 2 and count on in 5s what do you notice? Start at 5 and count on in 2s what do you notice? Start at 10 and count on in 5s? Start at 20 count on in 5s? What do you notice? Choose your own investigation.	**Activity 1: Follow the leader** Start at 25 add on 5 count back 3 where am I? Start at 67 subtract 7 add on 1 subtract 2 where am I? **Activity 2: Routes** Give start and finish and ask children to make up 2 or 3 routes for each one. **Activity 3: Wrong route** Work out what is wrong with the route 33 + 7 + 7 = 46 **Activity 4: Snakes and Ladders** Make your own snakes and ladders game or find a version to play	**Activity 1: Digit sums** Use counters to cover numbers on the hundred square whose digits add up to 10. Explain the patterns that you notice. Use a different colour counter to cover numbers whose digits add up to 9, 8, 7 etc. Can you explain what is happening each time? **Activity 2: Three Single digits** Finding all possibilities with 3 single digit numbers to make all the numbers to 10 or 20. Challenge: Choose a teens number.	**Activity 1: Finding 100** How many pairs of numbers on the hundred square that total 100 can you find in 5 minutes? How many different pairs can you find? Which two numbers do not have a partner? **Activity 2: Sort it!** Now sort your pairs of calculations into Odd + odd Even+ even Odd + even Compare with your partner. **Activity 3: Own Choice** Choose a new target number and start again.

How to use these activities.

- These are not activities for the children to complete alone. To be useful as a formative assessment tool, you need to be in there with the children - talking, questioning and doing the maths with them.
- Have maths conversations and encourage talk between partners and groups.
- Model mathematical language and vocabulary (check your year group's vocabulary list)
- Share your mathematical thinking out loud to remind children of the thinking processes required.
- Make notes to build possible interventions and adapt the plan for the next session.
- Address misconceptions as they arise (mini plenary style).
- Keep your own records, so that when these topics arise again in the MTP, you know your start points.

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So important, I'm making you read it twice!

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If you have any questions, Rosie and I will be available on a Teams call from 4 to 5pm on Wednesday 15th July so you can see our smiling faces and ask your question in person.

We will send a link to you all, but there is no obligation to join if you are happy with the resources and how you will integrate them into the mark making weeks.