Navigating Mental Mathematics

Timetabling MAP

Timetabling MAP: -

Below you will see three proposed models for timetabling MAP, any of which could be adopted by a school and built into the weekly timetable.

Please note that these are just suggested models; the most successful approach will be the one which is most suited to each individual school.

As long as there is at least 1 hour of specific time allotted to MAP each week then there are numerous additional ways to make it work. Ideally MAP would happen daily but many pilot schools run very successful MAP programmes using Option 2 (3 sessions per week)

All models suggested are in addition to a daily maths lesson of an hour. If timetabling is an issue for any of the models then it is suggested that daily maths lesson are limited to no more than 50 minutes per day, and that the time saved (50 minutes) is used to provide some of the additional time in which to deliver MAP sessions.

MAP is not intended to be a 'mental and oral starter'. It is a set of designated maths sessions which can be delivered at any point during the day or week. In some cases this may well be before (or after) a daily maths lesson, but many schools will find it preferable to timetable the MAP sessions at completely different times, e.g. the 15-20 minutes before or after lunch, first thing in the morning before assembly etc..

The Weekly 'Test'

As can be seen from the three models outlined below, weekly MAP sessions all contain a balance of counting, facts & strategies. Each model, however, has one specific session dedicated to the children spending 15-20 minutes each week completing a short, timed 'test'. This will give them the opportunity to become increasingly confident and fast in their ability to instantly recall key facts: -

- **In KS1 this will mainly be learning number facts for all numbers to 10 (Year 1) or numbers to 20 (Year 2). They will also be tested on doubles to double 10 (Year 1) and double 20 (Year 2). In the summer term of Year 2, tables can begin to be tested for x2, x5 and x10.**
- **In lower KS2 the test will mainly be times tables, initially multiplication, then division, then a mixture, then as missing number style questions**
- **In upper KS2 the test could be: -**
- **Extension of tables (i.e. x40, x700, x0.6, x0.03),**
- **Application of tables (speed fractions / percentages – find 1/3 of 36, 2/5 of 40, 25% of 16, 30% of 60 etc.**
- **Fraction / decimal / percentage equivalences**
- **The MAP Digital Resource Bank will provide sample Speed Grids, which could be used for testing. Alternatively, the tests could be 'Mad Minutes' style tests designed by the school, Number Fun Accelerator Challenges, ICT / online tests, maths apps (especially those with timed options) or commercially produced materials.**
- **It is worthwhile varying the 'test' format over the course of the year, so children get used to seeing facts presented in different ways.**

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Model	1 (Ideal)	2 (Manageable)	3 (Restricted)	4 (Very Restricted)
Timetabling	15 - 20 mins x5	30 mins x3	20 - 25 mins x2 20 mins x1	45-50 mins x1 20 mins x1
	Timetabled away from the Maths Lesson (if possible) Counting, Facts & Strategies	Timetabled away from the Maths Lesson (if possible) Counting, Facts & Strategies	2 x Dedicated Strategies Sessions Additional 'Test' Session	1 x Dedicated Strategies Lesson Additional 'Test' Session
Counting	5 mins per session or 5 mins per day in DML	5 mins per session or 5 mins per day in DML	5 mins per day in DML	5 mins per day in DML
Facts & Strategies	4 MAP sessions: Learn & practice key facts Introduce, practice & consolidate strategies (15 - 20 mins)	2 MAP sessions: Learn & practice key facts Introduce, practice & consolidate strategies (25 - 30 mins)	Facts: 10 mins per day in DML 2 MAP strategies sessions: Introduce and practice *or* consolidate mental strategies (20 - 25 mins)	Facts: 10 mins per day in DML 1 MAP strategies lesson: Introduce, practice and / or consolidate mental strategies (45-50 mins)
Test	1 MAP session: 'Test' of key facts (15 - 20 mins)	1 MAP session: (a) Learn & practice key facts (10 mins) (b) 'Test' of key facts (15 - 20 mins)	1 MAP session: 'Test' of key facts (20 mins)	1 MAP session: 'Test' of key facts (20 mins)

MAP Model 1: -

(Ideal model, following the examples highlighted in 'Running A MAP Session')

15-20 minutes per day in addition to the daily maths lesson (or 15 minutes, with counting included as part of DML)

In an ideal scenario, this session would also be delivered in a different time slot to the daily maths lesson, e.g. the first 20 minutes after lunchtime.

Alternatively, if

- Schools only have space for 15 minutes sessions or
- Schools prefer the MAP sessions to be specifically aimed at facts & strategies then counting could be delivered in the first 5 minutes of the daily maths lesson (DML) , and facts / strategies practised during 5 x 15-20 minute MAP sessions.

If it does make more sense to keep all of the mathematics together then the MAP sessions could be timetabled for the 15-20 minutes before / after the daily maths lesson. The key point for MAP, however, is that the content of the session is independent from the daily maths lesson and is based around counting, facts and strategies.

One of the 5 sessions each week will always be a 'test' of key facts.

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MAP Model 2: -

3 weekly sessions of approximately 30 minutes spaced throughout the week

If 30 minutes per session is difficult to timetable then counting could be practised in the first 5 minutes of the DML and there could be 3 additional sessions of 25 minutes.

In many schools, due to timetabling restrictions, this model is easier to organise.

The total amount of MAP time is almost the same, comprising three additional sessions, each of approximately half an hour.

One of these sessions will always be a 'test' / speed practice as before (mainly tables, particularly in Years 3 & 4).

The other two sessions will allow the regular learning and practice of key facts, along with the introduction, revision, consolidation and regular practice (through many different games, songs and approaches) of mental calculation strategies. E.g.

- Session 1 Learn / practice facts (15 minutes) + Introduce / practice strategy (15 minutes)
- Session 2 Learn / practice facts (10 minutes) + 'Test' (20 minutes)
- Session 3 Practice / consolidate strategy - song or game (30 minutes)

MAP Model 3 (restricted) and MAP Model 4 (very restricted): -

Model 3: 1 weekly 20 minute test, 2 weekly MAP strategies lesson of 20 -25 minutes - counting and facts to be covered in the daily maths lesson

Model 4: 1 weekly 20 minute test, 1 weekly MAP strategies lesson of 45 -50 minutes

- These models would be ideal for schools where timetabling is much more difficult.
- In both models, the first 15 minutes of each daily maths lesson would be used for counting and learning / practising facts, with the remaining 45 minutes used for teaching the main lesson content.
- The weekly test would be scheduled for a 20 minute slot at some point during the week (probably just before lunch on one of the days).

There would then be an additional

- Two weekly MAP strategy sessions of 20-25 minutes (Model 3) or
- One single, 45-50 minute MAP strategy lesson per week (Model 4)

These would be designed to cover one of the mental strategies in depth. The strategy would be introduced, practised and then consolidated through songs, games or activities.

In Model 3 it would be introduced in the first session then consolidated in the second.

In Model 4 everything would be delivered over the one single lesson.

The same strategy would then also be covered the following, and possibly a third week, to ensure that the children have enough time to master and consolidate it.

The advantage of Models 3 & 4 is how much easier they are to timetable and that each strategy could be taught in more depth within a session.

Children would also be getting daily practice in recalling facts.

The disadvantage (as with Model 2) is that there are only one or two actual MAP sessions / lessons per week.

Timetabling MAP

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Running a Block of MAP Sessions: -

As explained in more detail later within this guidance document, in order for children to become confident and efficient in mental calculation they need: -

- To count in different steps from different starting points
- To secure a secure bank of key facts which they can instantly recall (automaticity)
- To have regular and consistent practice of a repertoire of mental strategies for all four operations

Once facts are known then children can concentrate instead on choosing the appropriate strategy rather than having to keep returning to first principles of counting on or back.

What areas will be covered in MAP sessions?

The fundamental principles of MAP centre around the amount of time needed to 'make it work'. For example:

- Children in KS1 will probably spend more time initially on learning and practising facts, playing games and participating in activities associated with building up a strong bank of number facts. Strategies (mainly for addition and subtraction) will be introduced later in the year once the children have enough facts to support their learning.
- During the second year of MAP, however, children in Year 2 will already have learned a set of key number facts and should be equipped to start strategies earlier
- In lower KS2, as children should already have instant recall of certain addition & subtraction key facts, strategies can be introduced much earlier.
- New facts for lower KS2 will now mainly involve times tables.
- Again, in later years, strategies may well be practised almost immediately if the children have already been introduced to them in KS1
- In upper Key Stage 2, especially in later years, different facts are expected to be learned (fraction, decimal & percentage equivalences) so strategies for all four operations could be introduced and practised earlier in the year.

As MAP is so flexible, teaching staff can assess the mental arithmetic skills of their children (in factual recall and application of strategies) at the start of the year and plan a bespoke set of MAP sessions based around their specific needs.

Building on the principles of the NNS mental starter (approximately 5 minutes of counting and 5-10 minutes of recall or strategies per day, timetabled in half termly blocks), MAP sessions allow teachers to plan a varied balance of mental mathematics each week.

Unlike the NNS, however, the MAP sessions are intended to be flexibly delivered according to the time available within the school.

What does a MAP session look like - Organisation & Structure

As mentioned, the three main elements of the MAP Policy are Counting, Number Facts and Mental Calculation Strategies. Every MAP Session will contain some or all of these elements.

Ideally, counting needs to be delivered as a 5-minute designated activity every day. This would usually be part of a MAP session (see MAP Sessions - Possible Models). but would work equally as well as part of the daily maths lesson if staff prefer to use MAP sessions specifically for working on mental calculation.

Learning facts and practising strategies will be included throughout each weekly or half termly set of MAP sessions, and will entail a combination of instructions, games, activities, songs, characters (and catchphrases), chanting, downloadable resources and templates, visual images, manipulatives and weekly 'testing'.

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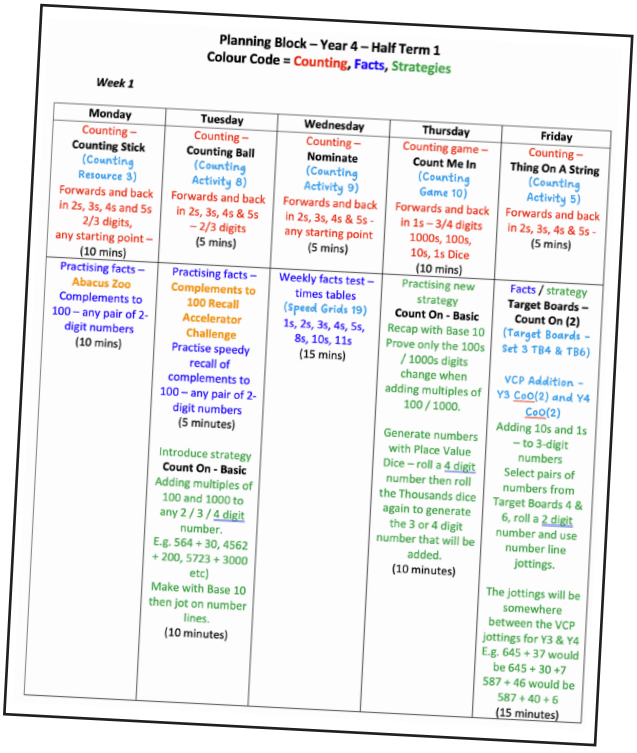
Therefore, each MAP Session will usually contain either 2 or 3 elements, depending on the needs of the class and the choices of the teacher.

- **There is daily counting, but this can be 5 minutes per day, a longer 10 minute session or even be a game which lasts for the whole 15 minute session, especially as the children get better at counting in different steps.**
- **Generally, it is expected that one of the MAP sessions each week is used to 'test' number facts (see separate section on 'Testing' later in this document)**
- **Learning / practising facts and introducing / practising strategies can take between 5 and 15 minutes per day, depending on the activity (song, game, test, visual, manipulative etc.) and the focus for the week.**
- **As the term progresses there should be less learning of facts and many more opportunities to practise facts and strategies through games.**
- **Every week can take a different format, or they can follow a similar model if teachers prefer a consistent approach. As shown in the model below, options can include counting every day then any of the following:**
  - **5 mins facts and 10 mins strategies**
  - **5 mins facts and 10 mins game**
  - **10 minutes facts and 5 minutes introduction of strategy**
  - **15 minutes fact / strategy song**
  - **15 mins strategy practice**
  - **15 mins game (practising both facts & strategies)**
  - **15 mins 'consolidation' session / – this gives the option of reinforcing other topic areas of maths such as time / angles / measurement facts etc..**

Check out the Planning Section on the MAP website for possible activities for developing mental mathematics in your yeargroup. You should feel free to adapt and personalise this planning to meet the needs of your class.



Planning Block – Year 4 – Half Term 1
Colour Code = Counting, Facts, Strategies

Week 1

Monday	Tuesday	Wednesday	Thursday	Friday
Counting – **Counting Stick** (Counting Resource 3) Forwards and back in 2s, 3s, 4s and 5s 2/3 digits, any starting point – (10 mins)	Counting – **Counting Ball** (Counting Activity 8) Forwards and back in 2s, 3s, 4s & 5s – 2/3 digits (5 mins)	Counting – **Nominate** (Counting Activity 9) Forwards and back in 2s, 3s, 4s & 5s - any starting point (5 mins)	Counting game – **Count Me In** (Counting Game 10) Forwards and back in 1s – 3/4 digits 1000s, 100s, 10s, 1s Dice (10 mins)	Counting – **Thing On A String** (Counting Activity 5) Forwards and back in 2s, 3s, 4s & 5s - (5 mins)
Practising facts – Abacus Zoo Complements to 100 – any pair of 2-digit numbers (10 mins)	Practising facts – Complements to 100 Recall Accelerator Challenge Practise speedy recall of complements to 100 – any pair of 2-digit numbers (5 minutes) Introduce strategy **Count On - Basic** Adding multiples of 100 and 1000 to any 2 / 3 / 4 digit number. E.g. 564 + 30, 4562 + 200, 5723 + 3000 etc) Make with Base 10 then jot on number lines. (10 minutes)	Weekly facts test – times tables (Speed Grids 19) 1s, 2s, 3s, 4s, 5s, 8s, 10s, 11s (15 mins)	Practising new strategy **Count On - Basic** Recap with Base 10 Prove only the 100s / 1000s digits change when adding multiples of 100 / 1000. Generate numbers with Place Value Dice – roll a 4 digit number then roll the Thousands dice again to generate the 3 or 4 digit number that will be added. (10 minutes)	Facts / strategy **Target Boards – Count On (2)** (Target Boards – Set 3 TB4 & TB6) VCP Addition – Y3 CoO(2) and Y4 CoO(2) Adding 10s and 1s – to 3-digit numbers Select pairs of numbers from Target Boards 4 & 6, roll a 2 digit number and use number line jottings. The jottings will be somewhere between the VCP jottings for Y3 & Y4 E.g. 645 + 37 would be 645 + 30 +7 587 + 46 would be 587 + 40 + 6 (15 minutes)

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Understanding the Structure of the Planning Blocks: -

Below are a generic 4-week rotation of MAP sessions.

Week 1

Monday	Tuesday	Wednesday	Thursday	Friday
Counting – **Activity 1** (5+ mins)	Counting – **Activity 2** (5 mins)	Counting – **Activity 3** (5 mins)	Counting – **Activity 4** (5+ mins)	Counting – **Activity 5** (5+ mins)
Practising facts **Activity 1** (10+ mins)	Practising facts **Activity 2** (5 minutes)	Weekly facts test **Test** (15 mins)	Practising strategy **Activity 2** (10+ minutes)	Practising Facts / Strategies **Activity 3** (10+ minutes)
	Introduction / Recap of strategy **Activity 1** (10 minutes)			

Week 2

Monday	Tuesday	Wednesday	Thursday	Friday
Counting – **Activity 1** (5+ mins)	Counting – **Activity 2** (5+ mins)	Counting – **Activity 3** (5 mins)	Counting – **Activity 4** (5+ mins)	Counting – **Activity 5** (5+ mins)
Consolidate strategy **Activity 1** (10+ mins)	Practising facts **Activity 1** (10+ minutes)	Weekly facts test **Test** (15 mins)	Practising Facts / Strategies **Activity 2** (10+ minutes)	**Recap / consolidation 10 questions** **Activity 1** (10+ minutes)

Week 3 *(Same structure as Week 1)*

Monday	Tuesday	Wednesday	Thursday	Friday
Counting – **Activity 1** (5+ mins)	Counting – **Activity 2** (5 mins)	Counting – **Activity 3** (5 mins)	Counting – **Activity 4** (5+ mins)	Counting – **Activity 5** (5+ mins)
Practising facts **Activity 1** (10+ mins)	Practising facts **Activity 2** (5 minutes)	Weekly facts test **Test** (15 mins)	Practising strategy **Activity 2** (10+ minutes)	Facts / strategy **Activity 3** (10+ minutes)
	Introduction / Recap of strategy **Activity 1** (10 minutes)			

Week 4 *(Same structure as Week 2 with a different activity on Friday)*

Monday	Tuesday	Wednesday	Thursday	Friday
Counting – **Activity 1** (5+ mins)	Counting – **Activity 2** (5+ mins)	Counting – **Activity 3** (5 mins)	Counting – **Activity 4** (5+ mins)	Counting – **Activity 5** (5+ mins)
Consolidate strategy **Activity 1** (10+ mins)	Practising facts **Activity 1** (10+ minutes)	Weekly facts test **Test** (15 mins)	Practising Facts / Strategies **Activity 2** (10+ minutes)	Practising Facts / Strategies **Activity 3** (10+ minutes)

Generic Structure of the Planning Blocks: -

If some staff prefer a more simplistic, structured approach, where it is clear what happens during each session, the following model is one example: -

Session 1 – Learning Doubles / Bonds / Facts
Session 2 – Mental Strategies 1 – Learn / practise strategy (song)
Session 3 – 'Test' – Tables facts
Session 4 – Mental Strategies 2 – Practise / consolidate (activity)
Session 5 – Number Game (dice, card, board) – Facts and / or strategies

This model would then be repeated weekly, with one session specifically linked to learning facts and one a facts test, two sessions linked to strategies and one session playing some form of number game.

Monday	Tuesday	Wednesday	Thursday	Friday
Counting – **Activity 1** (5+ mins)	Counting – **Activity 2** (5+ mins)	Counting – **Activity 3** (5 mins)	Counting – **Activity 4** (5+ mins)	Counting – **Activity 5** (5+ mins)
Practising facts **Activity 1** (10+ mins)	Learn / Practise / Recap strategy **Activity 1** (10+ minutes)	Weekly facts test **Test** (15 mins)	Practising Strategy **Activity 2** (10+ minutes)	Practising Facts / Strategies **Activity 3** (10+ minutes)