Securing additive facts in Key Stage 2

Guide to using materials

Rationale

For pupils to make good progress through the Key Stage 2 mathematics curriculum, they need to have a secure understanding of the additive relationship and have secured addition and related subtraction facts within 20, as detailed in the table on page 332 of the DfE Curriculum Guidance.

These materials will support Year 3 teachers (and other teachers in Key Stage 2) to ensure that all pupils have these secure foundations.

Resources provided

Eight blocks of materials are provided. Those shown in bold relate to the relevant ready-to-progress (RtP) criteria and should be used with the whole class.

Block	Content	No. of sessions*	Ready to Progress Criteria
1	**Securing understanding of the additive relationship**	12	**3AS–3** Manipulate the additive relationship
2	Composition within 5 and related facts	12	**2NF–1** Secure fluency in addition and subtraction facts within 10, through continued practice.
3	Structures within 10: odd/ even; 5 and a bit, and related facts	10	
4	Composition 6 to 10 and related facts	23	
5	Alternative strategies for addition and subtraction within 10	10	
6	**Addition strategies across 10 (doubles and near doubles)**	15	**3NF–1** Secure fluency in addition and subtraction facts that bridge 10, through continued practice.
7	**Addition strategies across 10**	12	
8	**Subtraction strategies across 10**	15	

* Teachers should use their professional judgement when making decisions about how quickly to move through the materials. Note that the number of sessions shown for each block is approximate. The material in one session might be used over several sessions, and some sessions may be combined as pupils become increasingly fluent and confident. Some sessions contain optional practice tasks.

A detailed overview of each block is provided [Mastering Number Securing additive facts Overview of blocks with assessment guidance] showing:

- the intended pupil outcomes of each block
- the related DfE ready-to-progress criteria
- guidance on which pupils will benefit from the materials
- the number of sessions provided in each block.

Each block of materials contains:

- a presentation with a link to a short, recorded teacher guide
- pupil-facing slides with teacher notes
- assessment materials which can be used to check pupils' factual recall, both before and after using each block of work
- practice tasks on photocopiable sheets (labelled with the block and session number which is referenced in the teacher notes on pupil-facing slides).

Making decisions about which blocks of materials to use

Teachers and maths leads will need to make informed decisions, based on assessment, about which materials to use with pupils.

Where materials relate to ready-to-progress criteria from Year 2, teachers should use the materials with those pupils who have not yet secured the relevant criterion. Pupils may particularly benefit from using Block 4 if they are not secure with all additive facts with sums or minuends of 6, 7, 8, 9 and 10.

Assessment could be carried out with small groups or the whole class using assessment sheets, or with individual pupils using flashcards. Teachers should consider the advantages and disadvantages of both ways of assessing pupils; they should ensure that their chosen method allows them to look carefully for pupils who may be using counting strategies rather than quickly recalling facts.

Connecting learning to the main lesson

Teachers should consider their pupils' current level of fluency when planning calculation work in the main lessons. In order to encourage pupils to develop a habit of recalling known facts rather than reverting to counting processes, calculations in the main lesson should be related to facts that have been secured. For example, if columnar methods of addition and subtraction are introduced before pupils are fluent in working across 10, numbers used in the calculations should involve working *only* within 10. Opportunities for practice should also be provided in the main lesson through giving pupils problems to solve which involve applying known facts.

Teachers should look carefully for any pupils who revert to counting strategies when calculating; they should remind pupils to try to recall facts that have been learnt in Mastering Number sessions, and provide further support where facts are not secure.

Use of representations including rekenreks

Throughout the materials, the key representations which were used in Mastering Number in Reception and Key Stage 1 are included on pupil-facing slides. These should be seen as a tool for thinking and not for finding solutions. Visual images are used dynamically where appropriate, and pupils should be encouraged to try to visualise and describe how beads or counters will be moved *before* teachers animate the slides. Schools with pupils who have not completed Mastering Number

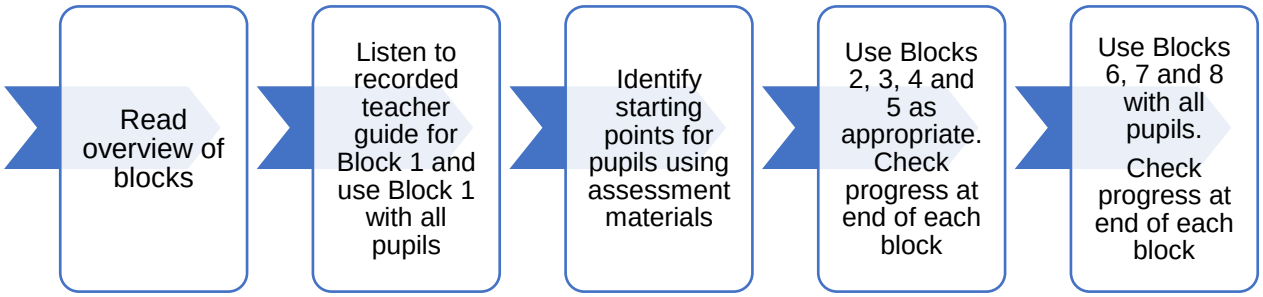
at Key Stage 1 (e.g. junior schools) should consider carefully which representations pupils might need to spend longer exploring, so that they are familiar with the structures they show, e.g. the rekenrek.

Representations include: finger patterns, a 'double-dice frame', 10-frames, and rekenreks. Note that these are used to expose the structure of the numbers and calculations rather than to find the answer (by counting). Some pupils may benefit from using a physical rekenrek when re-visiting strategies for calculating across 10. Maths leads should ensure that teachers understand how to use the rekenrek correctly, using subitising skills and a 'one-push' technique, rather than moving beads in ones. See NCETM Guide to using a rekenrek on Vimeo.

Stem sentences are also provided on slides. Guidance about the use of stem sentences is given in the recorded teacher guides and in the notes under relevant slides.

Getting started

Year 3 teachers can use the following process:



This process could also be used by pupils beyond Year 3 who are not yet secure in additive facts within 20.