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Mult e Maths

KS2 Multiplication and Division Teacher's Notes

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Introduction

All activities in the Mult-e-Maths Strand CD-ROMs are accompanied by teacher's notes, which are included on the CD-ROMS as PDFs. This pre-printed pack is designed to save you printing time, providing a ready-to-use resource that you can file in a ring-binder alongside your maths planning.

The pack consists of four parts, one for each of Years 3, 4, 5 and 6. In each part there are:

- a list of contents, including the titles of the on-screen activities and brief descriptions of them;
- a planning grid linking activities to objectives in the National Numeracy Strategy *Framework for teaching mathematics* (see below for further details);
- teacher's notes for starters and then lessons (see overleaf for further details).

Planning

The **planning grids** included in this pack are designed to help you to incorporate the Mult-e-Maths Strands into your planning.

The left-hand column of each grid shows NNS *Framework* objectives for the appropriate strand and year. They appear in the same order as in the *Framework*.

The right-hand column shows the starter and lesson activities that match each objective. (Lessons are shaded to enable you to distinguish between starters and lessons more easily.)

Note: The grids show the main learning objective for each activity, whereas the teacher's notes also detail any linked objectives.

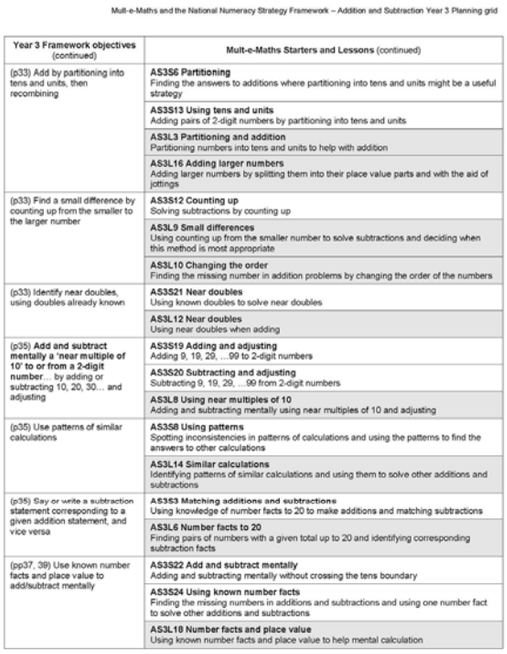
The Mult-e-Maths Strands do not cover all of the NNS *Framework* objectives, but are designed to support other methods of effective teaching, including practical and pencil and paper work.

Medium term plans can be downloaded from the Mult-e-Maths website. These show how each Mult-e-Maths Strand activity can be mapped into your termly planning. They are provided in Microsoft Word ® format to enable you to adapt them to your own school plans.

Clicking on the Mult-e-Maths icon on any screen of a Mult-e-Maths Strand will take you directly to the website at:

www.cambridge-hitachi.com/multemaths/

The medium term plans can be accessed from the 'Ideas and inspiration' section.



Mult-e-Maths and the National Numeracy Strategy Framework – Addition and Subtraction Year 3 Planning grid

Year 3 Framework objectives (continued)	Mult-e-Maths Starters and Lessons (continued)
(p33) Add by partitioning into tens and units, then recombining	**AS3S6 Partitioning** Finding the answers to additions where partitioning into tens and units might be a useful strategy
	AS3S13 Using tens and units Adding pairs of 2-digit numbers by partitioning into tens and units
	AS3L3 Partitioning and addition Partitioning numbers into tens and units to help with addition
	AS3L16 Adding larger numbers Adding larger numbers by splitting them into their place value parts and with the aid of jottings
(p33) Find a small difference by counting up from the smaller to the larger number	**AS3S12 Counting up** Solving subtractions by counting up
	AS3L9 Small differences Using counting up from the smaller number to solve subtractions and deciding when this method is most appropriate
	AS3L10 Changing the order Finding the missing number in addition problems by changing the order of the numbers
(p33) Identify near doubles, using doubles already known	**AS3S21 Near doubles** Using known doubles to solve near doubles
	AS3L12 Near doubles Using near doubles when adding
(p35) **Add and subtract mentally a 'near multiple of 10' to or from a 2-digit number**… by adding or subtracting 10, 20, 30… and adjusting	**AS3S19 Adding and adjusting** Adding 9, 19, 29, …99 to 2-digit numbers
	AS3S20 Subtracting and adjusting Subtracting 9, 19, 29, …99 from 2-digit numbers
	AS3L8 Using near multiples of 10 Adding and subtracting mentally using near multiples of 10 and adjusting
(p35) Use patterns of similar calculations	**AS3S8 Using patterns** Spotting inconsistencies in patterns of calculations and using the patterns to find the answers to other calculations
	AS3L14 Similar calculations Identifying patterns of similar calculations and using them to solve other additions and subtractions
(p35) Say or write a subtraction statement corresponding to a given addition statement, and vice versa	**AS3S3 Matching additions and subtractions** Using knowledge of number facts to 20 to make additions and matching subtractions
	AS3L6 Number facts to 20 Finding pairs of numbers with a given total up to 20 and identifying corresponding subtraction facts
(pp37, 39) Use known number facts and place value to add/subtract mentally	**AS3S22 Add and subtract mentally** Adding and subtracting mentally without crossing the tens boundary
	AS3S24 Using known number facts Finding the missing numbers in additions and subtractions and using one number fact to solve other additions and subtractions
	AS3L18 Number facts and place value Using known number facts and place value to help mental calculation

Planning grid for Addition and Subtraction Year 3

Year 3 sample plan: Autumn term, part 1

EVERY DAY: Practise and develop oral and mental skills (e.g. counting, mental strategies, rapid recall of +, –, x and ÷ facts).

Read and write whole numbers up to 1000.
Add/subtract 1, 10 and 100 to/from any whole number.
Count on/back in 10s and 100s from any 2- or 3-digit number.
Recall addition and subtraction facts for each number to at least 10.
Recall pairs of whole numbers that total 20.
Derive doubles of whole numbers to 15, and corresponding halves.
Recall multiplication facts for 5 times-table, and derive division facts.
Recall multiplication facts for 10 times-table, and derive division facts.
Recall multiplication facts for 2 times-table, and derive division facts.

Unit	Days	Pages	Topic	Objectives: children will be taught to …	Mult-e-Maths starter reference	Mult-e-Maths lesson reference
1	3	8–19	Place value, ordering, estimating, rounding	Read and write whole numbers to 1000 in figures and words. Know what each digit represents, and partition 3-digit numbers into a multiple of 100, a multiple of 10, and ones. Read and begin to write the vocabulary of estimation. Estimate up to 100 objects.	NS3S4 NS3S12 NS3S3 NS3S1	NS3L2 NS3L3 NS3L1
		76–77	Reading numbers from scales	Read scales to the nearest division.	SS3S13	
2–3	10	24–29	Understanding + and –	Extend understanding of the operations of addition and subtraction. Read and begin to write related vocabulary. Use +, – and = signs. Recognise that addition can be done in any order.		
		66–69	Money and 'real life' problems	Recognise all coins and notes. Understand £.p. notation (e.g. £3.06). Find totals, give change and work out how to pay.		AS3L15, SP3L6
		32–41	Mental calculation strategies (+ and –)	Put the larger number first to count on. Identify near doubles. Bridge through a multiple of 10 and adjust.	AS3S11 AS3S21 AS3S17, AS3S18, AS3S23	AS3L13 AS3L12 AS3L7
		58–61	Making decisions, checking results	Choose appropriate number operations and calculation methods to solve word problems. Explain and record methods informally. Check sums by adding in different order.		SP3L1
		13	Place value, ordering, estimating, rounding	Say the number that is 1, 10 or 100 more, or less, than any given 2- or 3-digit number.	NS3S2, NS3S11	NS3L4
4–6	13	70–77	Measures, including problems	Read time to 5 minutes. Read and begin to write the vocabulary related to length. Use a ruler to draw and measure lines to the nearest half cm. Read scales to the nearest division. Use decimal notation for m and cm. Measure and compare using m and cm. Know the relationships between m and cm, km and m. Suggest suitable units and equipment to estimate or measure lengths, including km. Record to nearest whole/half unit, or as mixed units (e.g. 3 m 20 cm). Choose an appropriate number operation and calculation method to solve word problems. Explain and record methods informally.	SS3S9	SS3L6 SS3L7
		80–89	Shape and space	Classify and describe 3-D and 2-D shapes, referring to reflective symmetry, faces, sides/edges, vertices, angles. Read and begin to write the vocabulary of position. Use spaces on square grids. Identify right angles in 2-D shapes and in the environment.	SS3S1, SS3S3 SS3S15 SS3S5	SS3L2 SS3L3
		62–65	Reasoning about shapes	Investigate general statements about shapes.		
7	2		Assess and review			

Sample medium term plans for Year 3

Teacher's notes

Each strand except Solving Problems consists of separate starters and lessons to enable you to mix and match starter and lesson activities appropriate to your planning. (The starters for Solving Problems are incorporated within the lessons, because each starter is designed to revise specific maths skills needed in the problem-solving lesson activity.) All of the activities are accompanied by teacher's notes.

The teacher's notes for starters include the following sections:

- **Objective(s)** from the NNS *Framework*
- **Prior knowledge and skills** to help you to plan when it is appropriate to incorporate this activity into your teaching
- **Vocabulary**
- **Resources**
- **Main teaching activity** to give a suggested order of teaching, plus notes on using the Mult-e-Maths activity
- **Probing questions**

In addition to these sections, teacher's notes for lessons may also include some or all of the following:

- **Differentiated pupil activities**
- **Plenary**
- **Key idea and assessment** to suggest a focus for what to assess during the plenary
- **Solutions** to pupil activities

For ease of reference, each activity and its accompanying teacher's notes are coded, for example:

- FD6S17 means Year 6 Starter 17 of the Fractions, Decimals, Percentages, Ratio and Proportion Strand.
- AS3L7 means Year 3 Lesson 7 of the Addition and Subtraction Strand.

The codes for the six Mult-e-Maths Strands are:

FD Fractions, Decimals, Percentages, Ratio and Proportion

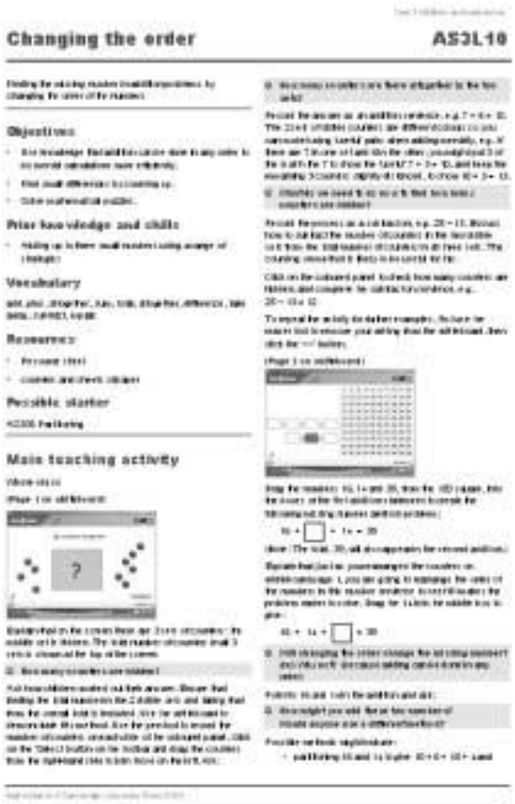
NS Numbers and the Number System

AS Addition and Subtraction

MD Multiplication and Division

SS Measures, Shape, Space and Handling Data

SP Solving Problems


Changing the order AS3L10

Objectives

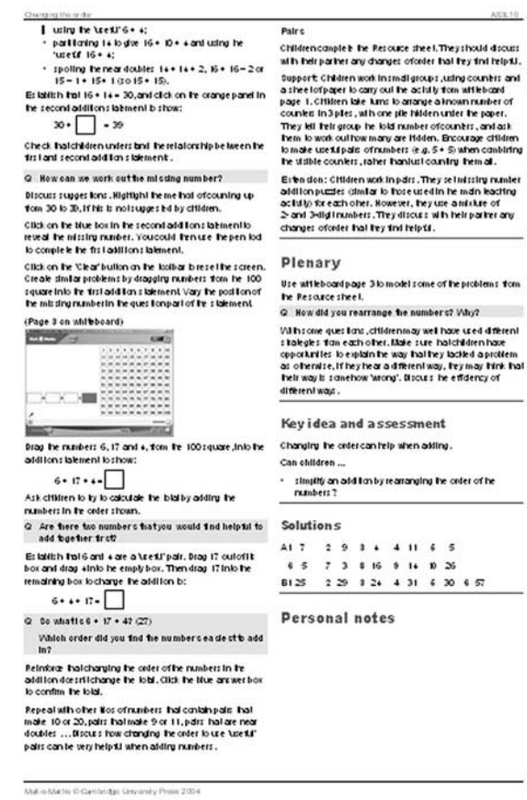
Prior knowledge and skills

Vocabulary

Resources

Possible starter

Main teaching activity


Plenary

Key idea and assessment

Solutions

Personal notes

Sample teacher's notes for AS3L10

Multiplication and Division — Year 3 Contents

Planning grid

Starters

Lessons

Multiplication and Division — Year 4 Contents

Planning grid

Starters

Lessons

Lessons (continued)

Multiplication and Division — Year 5 Contents

Planning grid

Starters

Lessons

Multiplication and Division — Year 6 Contents

Planning grid

Starters

Lessons

Lessons (continued)

Multiplication and Division Year 3 — Planning grid

Year 3 Framework objectives	Mult-e-Maths Starters and Lessons
(p47) Extend understanding that multiplication can be done in any order	**MD3L1 Order of multiplying** Making and describing arrays to reinforce that multiplication can be done in any order
(p49) **Understand division** as grouping (repeated subtraction) or sharing. Read and begin to write the related vocabulary	**MD3S5 Sharing and grouping** Using sharing and grouping methods to solve divisions
(p49) **Recognise that division is the inverse of multiplication,** and that halving is the inverse of doubling	**MD3L3 Getting back to the start number** Dividing to reverse the effect of multiplying and vice versa
(p51) Begin to find remainders after simple division	**MD3L6 Remainders** Finding remainders using visual representations and knowledge of times-tables
(p51) Round up or down after division, depending on the context	**MD3L7 Rounding after division** Deciding whether to round up or down after division
(p53) **Know by heart multiplication facts for the 2, 5 and 10 times-tables**	**MD3S1 2, 5 and 10 times-tables** Identifying numbers that are answers in the 2, 5 and 10 times-tables
	MD3S8 Using multiplication and division facts Using knowledge of multiplication and division facts to solve number puzzles
(p53) Begin to know the 3 and 4 times-tables	**MD3S2 The 3 and 4 times-tables** Applying knowledge of the 3 and 4 times-tables
(p53) Derive quickly division facts corresponding to the 2, 5 and 10 times-tables	**MD3S4 Dividing by 2, 5 and 10** Choosing three numbers to make a division sentence
(p53) Derive quickly doubles of all whole numbers to at least 20	**MD3S6 Doubling** Finding and using doubles of integers to 20
	MD3L4 Finding doubles Finding doubles of numbers greater than 10
(p53) Derive quickly doubles of multiples of 5 to 100	**MD3S7 Doubling multiples of 5** Identifying which multiples of 5 give specified answers when they are doubled
(p53) Derive quickly all halves corresponding to doubles of whole numbers to 20, multiples of 5 to 100 and multiples of 50 to 500	**MD3S9 Halving** Finding halves and using partitioning and doubling methods to check answers
(p55) To multiply by 10/100, shift the digits one/two places to the left	**MD3S3 Multiplying by 10 and 100** Using knowledge of multiplying by 10 and 100
	MD3L2 Multiplying by 10 Using place value to multiply by 10
(p57) Use known number facts and place value to carry out mentally simple multiplications and divisions	**MD3S10 Multiplying multiples of 10** Using knowledge of times-table facts to multiply multiples of 10
	MD3L5 Multiplying 2-digit numbers Multiplying 2-digit numbers by splitting them into their place value components

Key to lesson and starter references

MD3S1 refers to Multiplication and Division Year 3 Starter 1

MD3L1 refers to Multiplication and Division Year 3 Lesson 1