

Key Stage 1 Maths Parent Talk



Autumn 2019

National Curriculum

- The current National Curriculum was introduced in September 2014 for pupils in KS1 and KS2.
- All pupils (excluding those with SEN) are aiming to meet the 'expected standard' for the end of the Key Stage and therefore must be able to achieve every learning objective completely rather than a 'best fit' model under the old curriculum.
- Year 2 pupils will continue to undertake statutory testing during May- these are important as pupils need to reach the standard score set to be meeting the 'expected' standard for the end of Key Stage 1.

Lesson Structure

- Lessons are designed for all pupils to access core curriculum content (excluding SEN pupils who have their own appropriate content).
- All pupils will be introduced to the learning objective for the session together through our 'Target Tiger' with practical practise opportunities.
- Pupils will complete further 'Practise Penguin' tasks with support, these may be practical or written tasks.
- Pupils will then independently complete 'Mastery Monkey' tasks to demonstrate that they fully understand the concept and are working at Age Related Expectations (ARE).
- Pupils who demonstrate that they fully understand the concept may be moved on to more challenging 'Greater Depth Mastery' tasks during the unit to broaden their experience- the curriculum focuses on broadening rather than 'bigger or harder'. This is a particular focus for pupils working at Greater Depth.
- Any pupils who struggled with the concept will be provided with an additional 'workshop' with a Teaching Assistant, usually that same afternoon.

Example practise task



One less		One more
	8	
	5	
	9	
	12	
	15	

Example mastery task

ARE Mastery 2:

Use the number line to show me

1 more than 12

1 more than 13

1 more than 14

10 11 12 13 14 15 16 17 18 19 20

Continue the pattern, what do you notice?

Example 'Greater Depth' tasks



GD 2: (old) white rose Year I Autumn

place value

True or False?

1 more than 7 is the same as 1 less than 9. Use the ten frame to show me.

I know it is

because.



- It is important to use lots of different models and images to support children's counting.
- Fingers... Bead Strings... Number lines... Hundred Squares... Numicon

Т	1	3	4	5	6	1	8	9	10
Ш	12	B	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	12	73	74	75	76	Π	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100





Ways children need to be counting...

- Forwards and backwards to 100 and beyond
- At different starting points and counting on or back from any number
- In different steps (multiples) of 2, 5, and 10 in Year 1, extend to 3's in Year 2- look for patterns
- In odd and even numbers
- Up and down the hundred square in jumps of 10 from any number
- Counting objects in groups
- Using props, e.g. throwing a ball and counting
- NB- listen carefully when your child counts in 1's and 10's, many children confuse the 'teen' and 'ty' numbers which can lead to later problems with calculating if left
- Hiding numbers on the hundred square and working out the missing numbers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Place Value

- Children need to understand the size of numbers and how they are made as this underpins so many areas of number and calculating.
- This is often referred to as Tens and Units (TU)





41p could be made from 10p + 10p + 10p + 10p + 1p











Children need to understand the importance of exchanging ten units for a ten (rod, pence) as this is an easier quantity to work with when we begin to represent numbers and calculate.





4 rods of 10 represents 40 and there are 3 units. This makes 43.



When we break a number down into tens and units this is called partitioning.

When we put it back together this is called recombining.

Addition

- Children need to be able to understand how to use a variety of methods and not just be reliant on one strategy. This shows that they understand the concept as a whole rather than rote learning how to carry out a method.
- The children are taught which strategy or method is best to use for a particular calculation they meet, e.g. when adding three single digits they learn to look for number pairs then add on the third digit mentally.
- Children move onto formal written methods during Year
 2 as the tests require them to show their methods and they gain marks for this.

From the Foundation Stage onwards children begin to add by combing two sets of objects and counting the total.





9 is 5 and 4 more 9 = 5 + 4

In Year 1 objectives for addition are:

add and subtract one-digit and two-digit numbers to 20, including zero

4 + 7=11

'Magic buttons'

i.e. writing a sum and drawing 'magic buttons' underneath the two numbers to be added, then counting them all together.

Only efficient for smaller numbers.



5 in the bag and 3 more

'Counting on mentally'

Counting on from a given number to find the total. We put the biggest number in our head then use fingers to support counting on. Counting on from the biggest number using a number line

- efficient for counting on in small quantities in jumps of 1

So for 18 + 5= 23 we start with 18 then count on 5



In Year 2 addition objectives include-

add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

- adding three one-digit numbers, e.g. 6+4+8
- a two-digit number and ones, e.g. 37+5
- a two-digit number and tens, e.g. 43+30
- two two-digit numbers, e.g. 23+42

The Statutory tests are comprised of one reasoning paper and one mental arithmetic paper, so pupils need to be equipped with both mental methods and the ability to show their working out using jottings or a written method.

Adding 3 single digits



Look to see if there are any known number pairs, then add on the third number.

If not, put the biggest number in your head then count on once, then again.

Adding a 2 digit number and ones



Put the biggest number in your head, then count on.

Adding a 2 digit number and tens



Pupils should be able to count on in tens from any given number.

They may draw tens and units to check their counting if unsure.





Adding two 2 digit numbers- Column method

42 + 25 = 67

TU 42 +25

67

Adding two 2 digit numbers when the units add to more than 10- bridging(carrying)

45 + 36 = 81TU 45 +361_ 81

Subtraction

Children need to understand that subtraction or 'taking away' is the **opposite** or **inverse** of addition, and that they are counting **backwards** instead of forwards.

In Year 1 objectives for subtraction are:

add and subtract one-digit and two-digit numbers to 20, including zero



They begin by practically taking away an amount from a set.



We can then begin to relate this to counting backwards using a number line, then counting back mentally.



Counting backwards in 1's is efficient when working with smaller numbers,

e.g. 10-4=6

Year 2- Subtracting single digits from a 2 digit number



Pupils should be able to count back mentally. They may put the biggest number in their head and use fingers to support counting backwards.

Pupils struggled with this last year when it came to crossing a tens boundary, e.g. if met with 42 - 7 = so counting back practise is very important!

Year 2- Subtracting tens from a 2 digit number



Pupils should be able to count back mentally in tens. If they struggle with this they could draw tens and units, but this will be on the arithmetic test!



Subtracting two 2 digit numbers- TU



Subtracting two 2 digit numbers-Column method

56-32= 24

TU 56

-32

24

Subtracting two 2 digit numbers when the first unit is less than the second unit-Column method with borrowing



Year 2 pupils will come across 2 step problems in their reasoning paper.

James has 89 sweets. He gives 36 to Sally. He then gives 42 to Jess.



How many sweets is James left with?

Show all of your working out.

sweets

Number Facts

Knowing pairs to 10 off by heart is important as children can work out corresponding number facts from here.

This will also assist with their calculation strategies.





Year 1 pupils should learn to recall all pairs that make 10 & 20.



By learning one fact such as 7+3=10 children will also know that 3+7=10

This is known as **commutative.**

Pupils in Year 1 must also know ways to make every number up to and including 20.





Pupils in both year groups will use part-partwhole models to aid their knowledge of number bonds and to assist their calculations-



Year 1 pupils in particular will also use tens frames to help them to work out number bonds, and then to solve simple calculations-



$$3 + 7 = 10$$

7 + 3 = 10

10 - 3 = 710 - 7 = 3 Pupils need to understand addition and subtraction as **inverse** or **opposite** operations. They should be able to work out all 4 number sentences for a number family.





Year 2 pupils need to see their pairs to 10 and 20 as a logical **pattern** as they need to know pairs to 100.

	Pairs to 20 then become	and pairs to 100
1 + 9 = 10	clear 1 + 19 = 20	10 + 90 = 100
2 + 8 = 10	2 + 18 = 20	20 + 80 = 100
3 + 7 = 10	3 + 17 = 20	30 + 70 = 100
4 + 6 = 10	4 + 16 = 20	40 + 60 = 100
5 + 5 = 10	5 + 15 = 20	50 + 50 = 100
6 + 4 = 10	6 + 14 = 20	60 + 40 = 100
7 + 3 = 10	7 + 13 = 20	70 + 30 = 100
8 + 2 = 10	8 + 12 = 20	80 + 20 = 100
9 + 1 = 10	9 + 11 = 20	90 + 10 = 100

Multiplication and Division

In Year 1 pupils must-

- count in multiples of twos, fives and tens
- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

In Year 2 pupils must-

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
- Pupils must also be able to rote count in multiples of 3.

Multiplication

In Year 1 pupils begin by learning to rote count in a multiple pattern (e.g. 2,4,6,8,10...). They begin to understand multiplying by adding groups of the same quantity together. This is known as **repeated addition.**

In Year 2 they also need to recall multiplication facts (1x2=2, 2x2=4, 3x2=6, 4x2=8...)



Year 1 pupils begin to record their repeated additions-

2 + 2 + 2 = 6

To become more efficient Year 1 begin to work with **arrays-** a way of setting out their sets/groups/lots in a grid pattern.



The Year 1 curriculum does not require pupils to be introduced to the multiplication sign X.

We do not formally teach this but if a pupil already knows and understands this symbol they are not stopped from using this in their work. Year 2 pupils are formally introduced to the multiplication sign X and develop their understanding of arrays in more depth.



multiplication can be done in any order and will give the same total.

This is known as **commutative**.

Division

In Year 1 pupils begin by **equally sharing** an amount into a number of groups. Again there is no requirement to introduce them to the division sign \div

6 shared by 3 = 2



Pupils in Year 2 must be formally introduced to the division sign ÷

$6 \div 3 = 2$



Children then begin to come across remainders .

$7 \div 3 = 2 r1$



In some word problem contexts children may need to divide by putting an amount into **groups.**

e.g. One car holds 5 people. There are 12 people. How many cars do we need?



So $12 \div 5 = 2 r 2$ Means 3 cars!!! Pupils need to understand multiplication and division as **inverse** or **opposite** operations. They should be able to work out all 4 number sentences for a number family.



By understanding multiplication and division as inverse operations, this should help pupils to recall their multiplication and division facts in sequential and non-sequential order.



There are lots of online games available to help with quick recall of facts, e.g.

http://ictgames.com/resources.html

Links to these can be found on our website under the learning tab- curriculum-maths.

We also highly recommend Percy Parker videos available on youtube or in the app store- singing times tables tunes that really help with fact recall!

Statutory Testing in Maths

Key stage 1 mathematics test framework 7

Table 1: Format of the test

Component	Description	Number of papers	Number of marks	Approximate timing of paper
Paper 1: arithmetic	assesses pupils' confidence and mathematical fluency with whole numbers, place- value and counting	1	25	20 minutes
Paper 2: mathematical reasoning	mathematical fluency, solving mathematical problems and mathematical reasoning	1	35	35 minutes
	Total	2	60	Recommended 55 minutes

3.3 Resource list

The resource list for Paper 1 and Paper 2 of the mathematics test comprises a pencil, eraser and ruler. Pupils will not be permitted to use a calculator or other supporting equipment in either of the components.

Table 10: Profile of content domain

Content area	Number of marks	Percentage of marks
Number Number and place value (N) Addition, subtraction, multiplication, division (calculations) (C) Fractions (F)	48–54	80–90%
Measurement, geometry and statistics Measurement (M) Geometry – properties of shapes (G) Geometry – position and direction (P) Statistics (S)	6–12	10–20%

The full mathematics curriculum can be accessed online-

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/ 335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf



Example arithmetic questions



Example reasoning questions



Further information with all of our progression guides can be found on our school website under the learning tabhttp://www.sholinginfantschool.co.uk/page/?title=Mathematics

<u>&pid=157</u>



To view examples of the statutory tests for reasoning and mental arithmetic-

https://www.gov.uk/government/publications/2016-key-stage-1-mathematicssample-test-materials-mark-schemes-and-test-administration-instructions Please fill in the evaluation form with your pack and return it to the tray at the front on your way out. Please help yourself to any photocopied resources.



Thank you for attending.