



Maths Leader Impact

Presentation to staff and Governors 2021

Maths

Katherine Redman





Mathematics

"Enabling life in all its fullness"

"I came that you may have life, life in all its fullness" (John 10:10)

Our **Core Christian values** for our school are: *Perseverance, Creativity, Trust and Friendship.*



The most important thing about **Maths** is to gain a deep, encompassing sense of
number

We make connections

We reason our thinking

We solve problems

And we recognise that Maths equips us with a powerful set of tools to help us
understand and navigate the world

But most important thing about **Maths** is to gain a deep, encompassing sense of
number

Progression in Calculations Addition			
Objective and Strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	Use cubes to add two numbers together as a group or in a bar. 	Use pictures to add two numbers together as a group or in a bar. 	$4 + 3 = 7$ $10 = 6 + 4$
Starting at the bigger number and counting on	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer. 	Start at the larger number on the number line and count on in ones or in one jump to find the answer. 	Place the larger number in your head and count on the smaller number to find your answer. $5 + 12 = 17$

Year 1 - 6
Calculation Policy
Addition and Subtraction

#MathsEveryoneCan

White
Rose
Maths

Information for parents:
2021 multiplication tables check

Standards & Testing Agency

SHINE BRIGHT ★ REACH FOR THE STARS

Ashton Keynes C of E
Primary School

Calculation policy
September 2020

Band 4 - Maths 44

Number and Place Value

Count to and across 100, forwards and backwards, beginning with 0 or 10, and from given number.

Count and write numbers to 100 in words.

Count and write numbers to 100 in numerals.

Count in multiples of tens, fives and ones.

Identify one more and one less of a given number.

Identify one more and one less of a given number.

Read and write numbers from 1 to 20 in numerals.

Read and write numbers from 1 to 20 in words.

Read and write numbers from 1 to 20 in words.

Addition and Subtraction

Read and measure mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

Write mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

Represent and use number bonds within 20.

Represent and use number bonds within 20.

Represent and use number bonds within 20.

Multiplication and Division

Read and measure mathematical statements involving multiplication (x) and division (÷) signs.

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Read and measure mathematical statements involving multiplication (x) and division (÷) signs.

Measurement

Compare, describe and solve practical problems for length, mass, volume, capacity, temperature, time, money, length, mass, volume, capacity, temperature, time, money.

Compare, describe and solve practical problems for length, mass, volume, capacity, temperature, time, money, length, mass, volume, capacity, temperature, time, money.

Compare, describe and solve practical problems for length, mass, volume, capacity, temperature, time, money, length, mass, volume, capacity, temperature, time, money.

Fractions

Recognise, find and name a half as one of two equal parts of an object, shape or quantity.

Recognise, find and name a half as one of two equal parts of an object, shape or quantity.

Recognise, find and name a half as one of two equal parts of an object, shape or quantity.

Properties of Shape

Recognise and name common 2-D shapes: e.g. rectangle, triangle, circle, and hexagon.

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Recognise and name common 2-D shapes: e.g. rectangle, triangle, circle, and hexagon.

Position and Direction

Describe position, direction and movement, including left, right, up, down, forward, backward, and other terms.

Describe position, direction and movement, including left, right, up, down, forward, backward, and other terms.

Describe position, direction and movement, including left, right, up, down, forward, backward, and other terms.

AK Website

- Policy updated and on website: Yes
- Website updated: in progress (with Sarah)

(intent poem, updated policy, photos, progression documents, parent links, multiplication guidance, photos and work samples – all sent to Sarah in Feb)

To add: pupil voice

Implementation - How?

- Year group annual overviews with Ready to Progress Criteria

	Wk1 1.9.20	Wk2 7.9.20	Wk3 14.9.20	Wk4 21.9.20	Wk5 28.9.20	Wk6 5.10.20	Wk7 12.10.20	Wk8 19.10.20	Wk9 2.11.20	Wk10 9.11.20	Wk11 16.11.20	Wk12 23.11.20	Wk13 30.11.20	Wk14 7.12.20	Wk15 14.12.20
Autumn	Place Value 2NPV-1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning. 2NPV-2 Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.						Addition and Subtraction 2NF-1 Secure fluency in addition and subtraction facts within 10, through continued practice. 2AS-1 Add and subtract across 10. 2AS-2 Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more...?". 2AS-3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. 2AS-4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.						Money		
	Wk1 4.1.21	Wk2 11.1.21	Wk3 18.1.21	Wk4 25.1.21	Wk5 1.2.21	Wk6 8.2.21	Wk7 22.2.21	Wk8 1.3.21	Wk9 8.3.21	Wk10 15.3.21	Wk11 22.3.21	Wk12 29.3.21	Notes:		
Spring	Multiplication & Division 2MD-1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables. 2MD-2 Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotative division).						Fractions					Time			
	Wk1 19.4.21	Wk2 26.4.21	Wk3 3.5.21	Wk4 10.5.21	Wk5 17.5.21	Wk6 24.5.21	Wk7 7.6.21	Wk8 14.6.21	Wk9 28.6.21	Wk10 5.7.21	Wk11 12.7.21	Wk12 19.7.21			
Summer	Time	Statistics		Geometry 2G-1 Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties.		Measurement Length & Height		Geometry Position & Direction		Measurement Mass, Capacity & Temperature					

Calculation Policy guidance



Small steps overview

Year 2 | Spring Term | Week 10 to 12 – Number: Fractions



Overview

Small Steps




- Make equal parts
- Recognise a half
- Find a half
- Recognise a quarter
- Find a quarter
- Recognise a third
- Find a third
- Unit fractions
- Non-unit fractions
- Equivalence of $\frac{1}{2}$ and $\frac{2}{4}$
- Find three quarters
- Count in fractions

Notes for 2020/21

Concrete manipulatives and real life representations are important in these early stages of learning with fractions.

Don't worry too much about formal learning at this stage, instead focus on activities and play based learning.

All of this content will be formalised and built upon in Year 3.

Year 1 Addition	
Statutory Requirements	
Pupils should be taught to:	
<ul style="list-style-type: none">read, write and interpret mathematical statements involving addition (+) and equals (=) signsrepresent and use number bonds within 20add one-digit and two-digit numbers to 20, including zerosolve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as $7 = \square + 2$.	
Concrete Objects	Pictures/Marks
Finding the total of a group of items e.g. counters, teddies, dinosaurs etc. Using Numicon to notice patterns when adding two quantities.	Using simple drawings to record and calculate the total.  e.g. Lisa has 5 lollies and Tim has 2 lollies. How many lollies do they have altogether?
Number Lines	100 Squares
Using prepared number lines to record "jumps" and drawing own number lines to solve calculations. e.g. 	Finding a starting point on the hundred square and moving to the right to count on in ones or moving down to add tens.
Bar Modelling	
As at Year R, for larger numbers. Individual cells are removed to show the numbers as a part of the whole. e.g. $15 \div 4 =$ 	

Year group progression

Primary Progression – Place Value



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value : Use PV and Compare	<ul style="list-style-type: none">given a number, identify one more and one less Autumn 1 Autumn 4 Spring 2 Summer 4	<ul style="list-style-type: none">recognise the place value of each digit in a two-digit number (tens, ones)compare and order numbers from 0 up to 100; use <, > and = signs Autumn 1	<ul style="list-style-type: none">recognise the place value of each digit in a three-digit number (hundreds, tens, ones)compare and order numbers up to 1000 Autumn 1	<ul style="list-style-type: none">find 1000 more or less than a given numberrecognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)order and compare numbers beyond 1000 Autumn 1	<ul style="list-style-type: none">(read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit Autumn 1	<ul style="list-style-type: none">(read, write) order and compare numbers up to 10 000 000 and determine the value of each digit Autumn 1
Place Value: Problems & Rounding		<ul style="list-style-type: none">use place value and number facts to solve problems. Autumn 1	<ul style="list-style-type: none">solve number problems and practical problems involving these ideas Autumn 1	<ul style="list-style-type: none">round any number to the nearest 10, 100 or 1000solve number and practical problems that involve all of the above and with increasingly large positive numbers Autumn 1	<ul style="list-style-type: none">interpret negative numbers in contextround any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000solve number problems and practical problems that involve all of the above Autumn 1	<ul style="list-style-type: none">round any whole number to a required degree of accuracyuse negative numbers in context, and calculate intervals across zerosolve number and practical problems that involve all of the above Autumn 1

Implementation - How?

Implementation - How?

- Assessment and data: Hot and Cold assessments - tracked

Number Place Value Y1 test		Number Place Value Y2 test		Score change	Number Add & subtract		Number Add & subtract		Score change	Number Fractions		Number Fractions		Score change	Geometry	
%	Score	%	Score	Score + or -	%	Score	%	Score	Score + or -	%	Score	%	Score	Score + or -	%	Score
80%	24	80%	24	NA	50%	15	53%	16	1	60%	18	83%	25	7	100%	24
87%	26	57%	17	NA	43%	13	60%	18	5	40%	12	70%	21	9	100%	24
83%	25	73%	22	NA	20%	6	73%	22	16	47%	14	73%	22	8	92%	22
57%	17	90%	9	NA	0%		40%	12	12	60%	18	43%	13	-5	92%	22
80%	24	57%	17	NA	17%	5	77%	23	18	73%	22	70%	21	-1	92%	22
33%	10	43%	13	3	7%	2	47%	14	12	33%	10	50%	15	5	58%	14
93%	28	73%	22	NA	27%	8	0%			63%	19	70%	21	2	96%	23
60%	18	43%	13	-5	7%	2	47%	14	12	47%	14	57%	17	3	79%	19
57%	17	80%	24	7	23%	7	37%	11	4	0%		47%	14	14	71%	17
83%	25	73%	22	NA	20%	6	83%	25	19	73%	22	73%	22	0	96%	23
70%	21	67%	20	NA	33%	10	73%	22	12	33%	10	57%	17	7	100%	24
83%	25	47%	14	NA	13%	4	63%	19	15	60%	18	73%	22	4	100%	24
93%	28	53%	16	NA	33%	10	50%	15	5	47%	14	83%	25	11	96%	23
60%	18	80%	24	6	57%	17	70%	21	4	53%	16	77%	23	7	100%	24
90%	27	60%	18	NA	37%	11	80%	24	13	53%	16	43%	13	-3	92%	22
0%	0	80%	24	NA	53%	16	80%	24	8	53%	16	67%	20	4	92%	22
90%	27	70%	21	NA	40%	12	63%	19	7	67%	20	83%	25	5	92%	22
87%	26	100%	30	4	67%	20	87%	26	6	87%	26	97%	29	3	96%	23
80%	24	67%	20	NA	23%	7	77%	23	16	67%	20	87%	26	6	100%	24
63%	19	87%	26	7	37%	11	90%	27	16	53%	16	67%	20	4	92%	22
67%	20	93%	28	8	40%	12	80%	24	12	53%	16	77%	23	7	100%	24
63%	19	100%	30	11	80%	24	100%	30	6	100%	30	100%	30	0	100%	24
77%	23	53%	16	NA	20%	6	47%	14	8	53%	16	37%	11	-5	100%	24
67%	20	67%	20	NA	23%	7	67%	20	13	27%	8	83%	25	17	100%	24
87%	26	53%	16	NA	50%	15	87%	26	11	33%	10	40%	12	2	96%	23
0%	0	53%	16	NA	17%	5	33%	10	5	53%	16	40%	12	-4	71%	17
73%	22	57%	17	NA	27%	8	77%	23	15	33%	10	67%	20	10	96%	23
0%	0	60%	18	NA	60%	18	77%	23	5	50%	15	87%	26	11	88%	21
67%	20	43%	13	NA	30%	9	57%	17	8	60%	18	60%	18	0	83%	20
90%	27	73%	22	NA	40%	12	87%	26	14	40%	12	63%	19	7	100%	24
		23%	7		83%	25	23%	7		40%	12	23%	7	-5	0%	0
		57%	17		13%	4	47%	14		53%	16	50%	15		10%	3
		20%	6		3%	1	30%	9		7%	2	27%	8		90%	27
		77%	23		17%	5	77%	23		60%	18	77%	23		100%	30

completed by Years 1-6 and monitored closely to ensure appropriate progress is made.

This is used alongside question analysis to see if there are common gaps in understanding which require further work in class to help children become secure.

- Question analysis grids completed for every assessment to allow us to identify any gaps in understanding and target interventions

Question Objectives

Question Objectives	Children's Scores	Percentages
1. identify 2D shapes (g 1)	22 14 19 17 17 24	92 58 79 71 71 100
2. identify a 2D shape from its properties (g 1)	22 22 22 23 23 24	100 92 92 96 96 100
3. match 2D shapes to their names (g 1)	23 22 24 22 24 23 20 24	96 92 100 92 100 96 93 100
4. draw a vertical line of symmetry on 2D shapes (g 1)	24 24 22 22	100 100 92 92
5. identify a 3D shape from its properties (g 2)		
6. identify the number of faces on a 3D shape (g 2)		
7. match 3D shapes to their properties (g 2)		
8. identify properties of 3D shapes (g 2)		
9. identify 2D shapes on the surface of 3D shapes (g 3)		
10. compare and sort common 2D and 3D shapes (g 4)		
11. identify a pattern in a sequence (g 5)		
12. order a sequence of shapes (g 5)		
13. understand the vocabulary of position, direction and movement to calculate amount of turn (g 6)		
14. describe 'turn' as a number of right angles (g 6)		
15. follow directions to find a position (g 6)		

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What?

Ensuring consistency with online learning

Developing Maths section of the AK website

Y4 Multiplication Tables Check ready

Massive reorganisation of resources and ordering more manipulatives

Maths book scrutiny - WWW & EBIs shared with staff team

CPD - Attended several online courses, NCTEM Maths Covid Recovery, Prioritising the Mathematics Curriculum, DfE Ready to Progress Criteria, Maths Subject Leader Conferences and disseminated information.

Researched Maths catch up tutoring (Number Sense)

All Year groups have produced annual overviews linked to new DfE Ready to Progress Criteria

Data - monitoring Year group data to ensure children are on track

Impact - so what?

How have I made a difference?

1. Despite lockdown learning, Maths progress is looking positive (new format developed). Fewer assessments to maximise learning time

2. Catch up tutoring scheme (Number Sense) agreed

3. Ready to Progress Criteria assessments (planned) for all Pupil Premium pupils to target delivery of catch-up tutoring objectives

CHALLENGES:

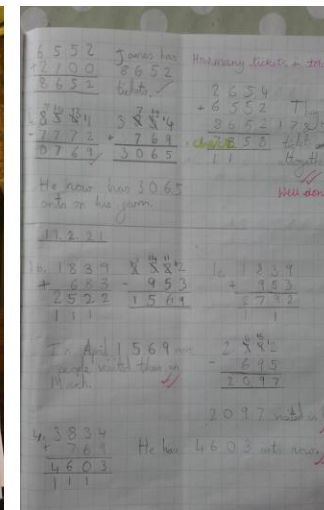
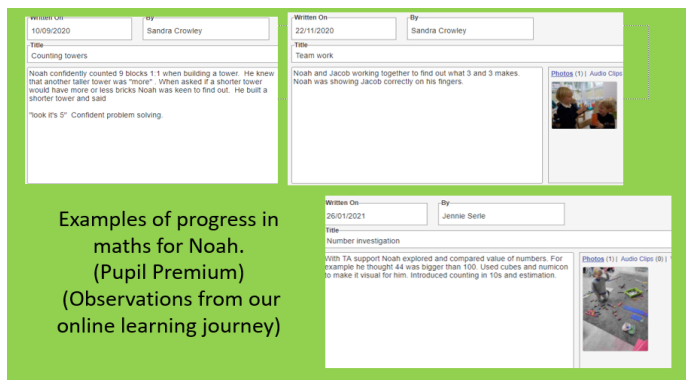
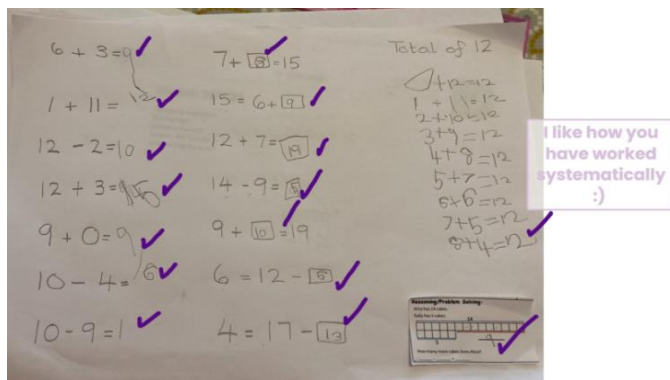
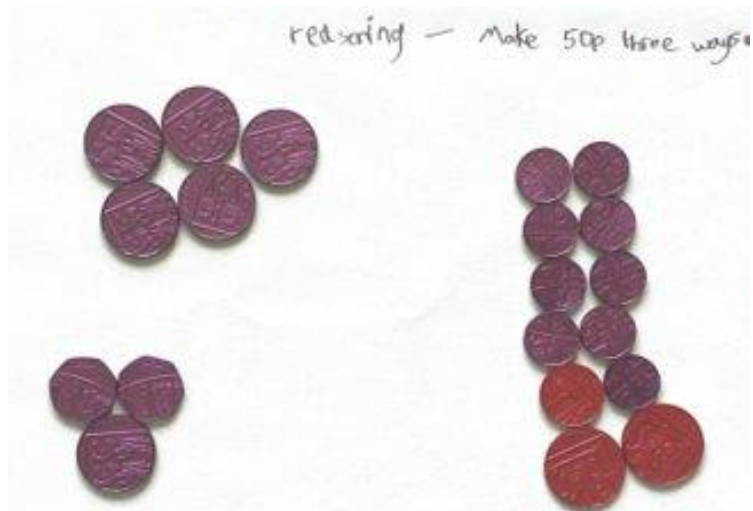
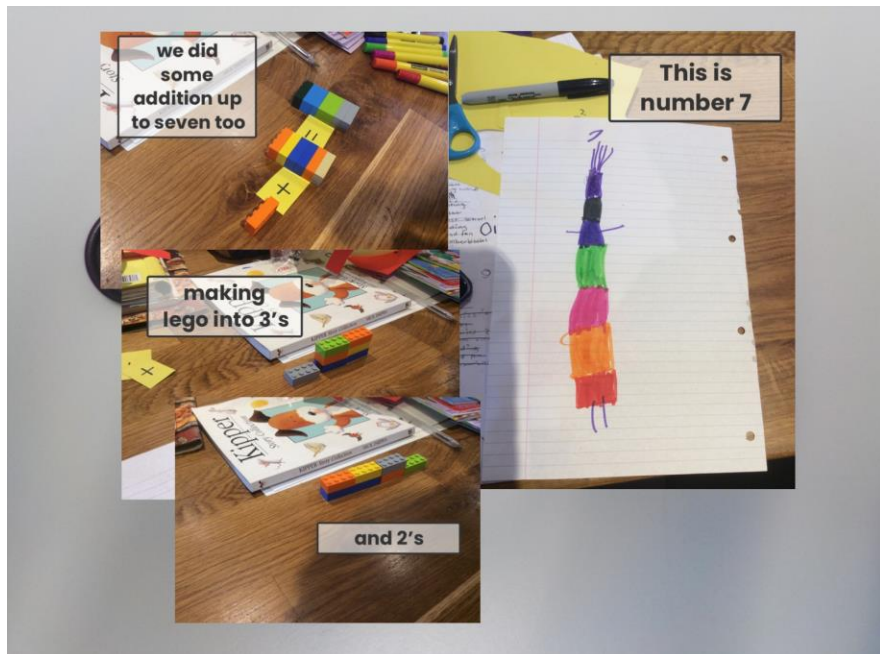
Fewer interventions due to no whole school assemblies

Difficult to observe teaching due to bubbles

Pupil resilience following home schooling – some over reliant on adults.

Online learning platform





What do AK children say about Maths?

What do you most enjoy? I most enjoy problem solving (Y2-4) different star challenges, TTRS (Y2)

How do you know how well you are doing? Ticks in book, feedback from teach, LO stamp, lots of positive feedback, with a star stamp to show I've done super work (Y2) I get to share things (Y1)

What helps in lessons? Adults, talk partners, times tables mats, counters, number lines, seeing examples.

What helps you improve? Checking your work, answering reasoning and problems solving questions, extra times tables groups (Y4) Doing harder questions (Y3) Check your work and do editing (Y2) Use apparatus (Y1-5)

What happens if you get work wrong? Go through with an adult (Y4), make corrections using pink pen (Y3)

What happens if you find work easy? Push yourself to a harder level (Y3) Move onto the next star challenge (Y4, Y3 & Y2) I try a challenge card (Y1)

What do you do if you get stuck? Look on the working wall (Y2) Move onto the next question (Y2) Ask a partner to help you (Y2) Ask a learning buddy (Y5)