Mathematics



Holywell C of E Primary

Flowing, Strengthening, Deepening

Updated: February 2025

I. Rationale

At Holywell C of E Primary School, high quality teaching and learning is at the very heart of our mission. This is because high quality teaching and learning transforms lives, opens doors and provides opportunities. The purpose of this overview is to promote the best possible teaching, learning strategies and outcomes in Mathematics for our pupils. We recognise that Mathematics increasingly underpins all aspects of modern life and technology, and that in order to succeed in the $21^{\rm st}$ century, children need to be confident and competent mathematicians.

2. Aims

Our aims for Mathematics are based on those in The National Curriculum (2014), which sets out three key aims. At Holywell, we link this to our 'Flowing, Strengthening, Deepening' vision by articulating these aims in the following way:

- Flowing: To become fluent in the fundamentals of Mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Strengthening: To reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Deepening: To solve problems by applying their understanding to a
 variety of routine and non-routine problems with increasing
 sophistication, including breaking down problems into a series of
 simpler steps and persevering in seeking solutions.

At Holywell, our Maths overview, and the teaching and learning that stems from it, is designed to ensure the children confidently meet these aims. In addition, we expect all children to develop an appreciation for the increasing importance of Maths in modern life by identifying real-world applications of taught mathematical principles.

3. Teaching

3.1 - What we teach

At Holywell, teachers are encouraged to follow the White Rose Maths (WRM) schemes of work to support their teaching. Following this scheme is designed to ensure that all Maths teaching at Holywell is consistent and of a high-quality by providing a solid base of teaching resources and questions. These are intrinsically linked to each year group's curriculum expectations, for teachers to use and adapt as necessary. We supplement this scheme using other resources such as Classroom Secrets, NRICH and the NCETM mastery resources.

3.2 - Who we teach

At Holywell, we believe that all children are entitled to the same high quality teaching and it is therefore our expectation that all children move through the schemes of work at the same pace. However, we recognise that some children need additional scaffolds and support to achieve the same objectives, and other children may need additional challenge to deepen their understanding further.

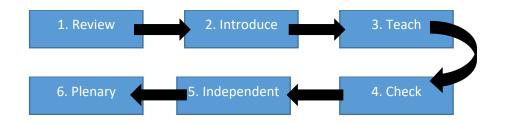
Additional support could come in the form of practical resources, visual frames, targeted group work within lessons and pre-teaching and targeted intervention outside of lessons for some children. This is not an exhaustive list, and the exact form that additional support might take is left to teachers' professional judgement.

For some particularly more confident mathematicians, for whom the schemes of work do not provide sufficient challenge, we provide additional experiences by exposing them to deeper reasoning and problem solving questions and targeted teaching within lessons.

3.3 - How we teach

At Holywell, we use the long and medium-term plans from WRM to structure our units (see Appendix A) which all teachers are expected to follow to ensure full coverage of the curriculum, adapting as necessary.

At Holywell, our Maths lessons follow will always contain aspects of the following structure. However, they may not always be in the same order, depending on the context of the lesson.



- I. Review → Each lesson starts with a short arithmetic-based activity; usually in the form of Fluent in Five or Rapid Reasoning (See Appendix C) quick application of fluency and reasoning with whole class discussions around approaches/methods to use and to identify and recognise any errors made positively. This will then usually be followed by a 'Get Ready' slides from the WRM scheme, or both. This is because constantly being required to recall prior learning means it is more likely to be transferred to pupils' long term memory.
- 2. Introduce → After the review, the learning objective for the lesson is introduced, drawn from the WRM scheme of work, and teachers make explicit links to previous learning where they would have encountered similar concepts, for example in previous year groups.
- 3. Teach → During the 'teach' section of the lesson, teachers use the WRM slides to structure high quality inputs, supplementing the slides and videos with additional modelling and examples to ensure understanding.
- 4. Check → Following the initial input, children are provided with some initial questions based on the material just introduced to work through with a learning partner in their books. As a class, the teacher would then work through the answers to these initial questions, asking children to participate through high quality questioning and whiteboard work, to ensure understanding. Children who might need additional support during the lesson are identified at this point. At this point in the lesson, the more confident mathematicians may move away from the rest of the classes' learning and access work with a deeper level of challenge.
- 5. Independent Activity → Following the 'check' additional teaching is undertaken to introduce the children to their independent learning activities, with a particular focus on reasoning and problem solving questions. Children are then expected to complete these independently to ensure individual accountability and learning.
- 6. Plenary → Plenaries are used as an opportunity to reflect and summarise the key learning once more, as well as to self- and peer-assess

the work. Teachers would be expected to go through the answers with the class, and children would correct their work if necessary using a purple pen, following explicit teacher modelling of the question.

Each new unit of work is signified with a Unit Front Sheet (See <u>Appendix B</u>), which breaks the learning down into small steps throughout each unit. These front sheet also have diagrams, examples and models of concepts that will be learnt throughout each particular unit.

3.4 - Numbots and Times Table Rock Stars

In order to develop rapid recall of multiplication and division facts (Year 3 and 4), Maths lessons in KS2 is may proceeded by a multiplication and division test which is marked as a whole class using Times Table Rock Stars. This is also used to track performance and average speed. The children are encouraged to use the app for additional practice at home to increase their average time per question. See Appendix D for example TTRS quiz.

This same principle underpinned with rapid recall of addition and subtraction facts in Year I using Numbots (See <u>Appendix E</u>). This is again used (when appropriate) in school, however mostly encouraged to complete at home with parents and family support.

3.5 - When we teach

As a core subject, Maths is taught daily. Each key stage is expected to timetable the following:

<u>Key Stage One</u>

Daily hour long Maths lesson. (including Fluent in Five or NCETM mastery)

<u>Key Stage Two</u>

- Daily hour long Maths lesson (including Fluent in Five or Rapid Reasoning)
- Daily TTRS practice (5-10 minutes in Year 3 and 4).

3.6 - Calculation Policy

To ensure that all children are taught age-appropriate, consistent approaches and methods to calculation, we use the White Rose Calculation Policy (a link of which can be found on the school's website - https://www.holywellprimary.co.uk/page/?title=Maths&pid=36). It demonstrates the progressive techniques and skills that children may practise and acquire when learning about the four operations. This calculation policy is used in conjunction with the White Rose scheme of learning by all members of teaching staff, and is also shared with parents regularly to ensure consistency with home learning.

3.7 - Mathematical Vocabulary

The use of correct, accurate and specific mathematical terminology is at the core of effective and deep-rooted mathematical understanding. We encourage all staff to use and model appropriate mathematical vocabulary and use the following documents to ensure children are taught and apply this vocabulary in their learning journey.

NCETM Mathematics Glossary for teachers in Key Stages 1-3

https://www.ncetm.org.uk/media/hpihrj3s/national-curriculum-glossary.pdf

4. Feedback and Marking

4.1 General Principles

Our Teaching, Learning, Feedback and Marking Policy sets out our approach to feedback and marking as a school. The following sections of this overview detail how this applies to Maths lessons in particular.

4.2 Live Marking

During the independent learning phase of a lesson, the teacher will circulate the class and provide high quality verbal feedback as the children are completing their work. Since teachers are speaking to pupils during the lesson, this enables feedback to be both clear and precise. Teachers would live mark and point out any mistakes and children

would be expected to correct them with a purple pen following additional modelling.

4.3 Whole Class Feedback

As teachers are circulating, it might be the case that common misconceptions are identified, at which point these would be addressed whole class using mini-plenaries. Additionally, during a post-lesson review of books, the teacher will identify common misconceptions or general points for improvement relevant to groups of children or the whole class. They will then address these whole-class, before the start of the next lesson.

4.4 Self- and Peer- and Shared Marking

Self- and peer-marking take place during the 'check' and 'plenary' parts of the lesson. Teachers may provide the answers for students to check mark themselves using a purple pen. They may then be encouraged to work with a partner to correct any mistakes, and additional teacher modelling used to support if necessary.

4.6 School Marking Code

During live marking, teachers would be expected to apply the school's marking code as follows:

sp	Incorrect spelling
0	Change case of letter or
	punctuation mark
_	Punctuation mark missing
^	Missing word
()?	This doesn't make sense
✓	Correct response (Maths)
•	Incorrect response (Maths)
• ✓	Corrected response (Maths)

5. Assessment

5.1 Formative Assessment

Formative assessment is use to make 'on the spot' adaptations to lessons, and well as plans to future lessons within the unit in response to children's learning. Formative assessment takes place during the 'check' part of the lesson to identify children who need additional support teaching and may take the form of short whiteboard activities for example, to demonstrate understanding. Teachers also use formative assessment during the 'independent practice' part of the lesson, where they circulate to identify how the children engaging with the new learning. These strategies, combined with a post-lesson review of the children's work in their books, allows the teacher to make adaptations, for example by providing additional practice, or condensing lessons, to ensure the children are successful. Ongoing formative assessment in Maths lessons enables the class teachers to identify children falling behind on a daily basis and put additional support in place for them.

5.2 Summative Assessment

At the end of each unit, children sit the WRM end of unit assessments. Based on the results of these assessments, children are targeted for additional teaching if their score is not satisfactory. In addition these end of unit assessments are used to inform the 'review' section of the lesson, with concepts that are not as secure revisited more frequently. See Appendix F for an example end of unit assessment.

On a termly basis, the children in Years 3, 4 and 5 sit PiXL tests during an 'assessment week'. These tests inform our judgements of the children's level of attainment, and the results of Summer Term assessments are reported to parents in the annual report. In Years 2 and 6, the children sit termly DfE SATs assessments in the same format as the PiXL assessments in other year groups.

Following each termly assessment week, the results of these tests are used to identify children who, based on their prior attainment, are not

achieving in-line with our expectations. As well, teachers complete extensive question-level analysis (QLA) for each test in identifying key areas to develop and cover as a class (as well as individually) After the assessment process, pupil progress meetings are held with senior leaders and teachers, so that the children are identified quickly and promptly targeted for additional support.

5.3 - Year 4 Multiplication Tables Check

Year 4 children will undertake a statutory test to determine pupils' recall and fluency of their times tables. The test is taken in the summer term. Support and engagement is given throughout the year and the children will undergo termly 'mock' tests to better prepare and understand the process.

In preparation for the Multiplication Tables Check, and to ensure that children have grasped the recall of multiplication facts and associated division facts, as well as derived facts, the following long term plan sets out explicit multiplication tables teaching:

	Autumn I	Autumn 2	Spring 1	Spring 2	Summer I	Summer 2
УІ	Counting in Is within 20	Counting in Is beyond 20	Counting in 10s to 100	Counting in 5s to 50	Counting in 2s to 20	Doubles and halves
У2	Counting in Is and 10s	Learn Ix table	Revise Ix Learn 10x	Revise 10x Learn 5x	Revise 5x Learn 2x	Doubles within 100
У3	Revise 10x 5x Learn ÷10, ÷5	Revise 2x/÷2 Learn 4x/÷	Revise 4x/÷ Learn 8x/÷	Revise 8x/÷ Learn 3x/÷	Revisit 3x/÷ Learn 6x/÷	Revise 6x/÷ and all others
УĻ	Revise Y2/Y3 Learn 7x/÷	Revisit Ix 10x Learn 9x/÷	Revise 9x/÷ Learn IIx/÷	Revise IIx/÷ Learn I2x/÷	Revise I2x/÷ and all others	Counting in powers of 10
У5	Revisit all kno Develop menta	•	, ,	l x/÷ methods vith fractions	Count in decim 100 an	al steps x/÷ 10, d 1000
У6	Revisit x/÷ 10, Revisit mental		1 1 3	tal and written s to FDP	•	ns involving and statistics

Appendices

Appendix A: White Rose Maths Yearly Overviews

Appendix B: Example Unit Front Sheets

Appendix C: Example Fluent in Five and Rapid

Reasoning

Appendix D: Example TTRS Quiz

Appendix E: Example Numbots

Appendix F: Example End of Unit Assessment (WRM)

Appendix G: Progression of Mathematical

Vocabulary

Appendix A: White Rose Maths Yearly Overviews

<u>Year I Long Term Plan</u>

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place	value (within	10)		Number Addit (withi	ion and in 10)	l subtro	action		Geometry Shape	Consolidation
Spring	Number Place (with	value in 20)			ion and action in 20)	ı	Number Place (with	value in 50)	Measure Lengt and heigh	th	Measure Mass and volun	
Summer		plicatio ivision	n	Number Fracti	ions	Geometry Position and direction		value in 100)	Medsurement Money	Measure Time	ment	Consolidation

Year 2 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Numbe Plac	er e value			Numbe Add i	^{er} ition an	d subti	raction		Geome Shap		
Spring	Measu Mon	rement e y	Numbe Mult		on and	divisio	n	Measu Leng and heig		Mas capa	rement s, icity ar peratui	
Summer	Numbe Frac	er tions		Measu Time	rement		Stat	istics	and	tion	Conso	lidation

Year 3 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place	value		Number Addi t		d subtr	action			iplication division		
Spring		plication livision			^{ement} th and neter		Number Fract	ions A		Measure Mass and c		y
Summer	Number Fract	ions B	Measure Mone		Measure Time			Geomet Shap		Stati	stics	Consolidation

<u>Year 4 Long Term Plan</u>

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place	value				tion and	d	Measurement Area		plication		Consolidation
Spring		plication		Measurd Leng and perin		Number Fract				Number Decir	nals A	
Summer	Number Decir	nals B	Measure Mone		Measure Time		Consolidation	Geomet Shap		Statistics	Geomet Posit and direc	ion

Year 5 Long Term Plan

	Week 1 Week	2 Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place value	2	Number Addit and subtr			plicatio ivision		Number Fract	ions A		
Spring	Number Multiplicat and divisio		Number Fract	ions B		nals and ntages		Measure Perim and a	neter	Statis	stics
Summer	Geometry Shape		Geometr Positi and direct	ion	Number Decin	nals		Number Negative numbers	Measure Convo units	erting	Medsurement Volume

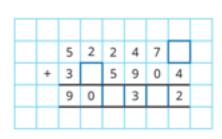
Year 6 Long Term Plan

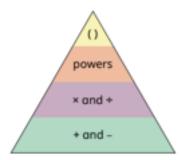
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place	value			otractic	on, division		Number Fract	ions A	Number Fract i	ions B	Measurement Converting units
Spring	Ratio		Algeb	ra	Number Decin	nals	Number Fraction decim and percer		Measure Area, perim and volum	eter	Statis	itics
Summer	Geometry Shape			Geometry Position and direction	Them	ed proj	ects, co	onsolido	ation a	nd prob	olem so	lving

Appendix B: Example Unit Front Sheets



Year 6 - Addition, Subtraction, Multiplication and Division



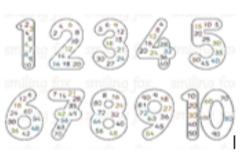


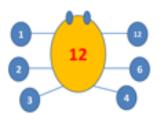
П						Γ
	0	2	4	r	12	
15	3	7	2			
	3	0	0			
		7	2			
		6	0			
		1	2			

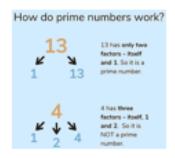
Small Steps	Small Steps	
Add and subtract integers	Divisian using factors	
Camman factors	Intraduction to long division	
Camman multiples	Lang divisian with remainders	
Rules of divisibility	Salve prablems with division	
Prime numbers to 100	Salve multi-step prablems	
Square and cube numbers	Order of aperations	
Multiply 4-digit by 2 digit numbers	Mental calculations and estimation	
Salve prablems with multiplication	Reasan far knawn facts	
Shart divisian		

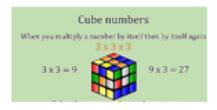


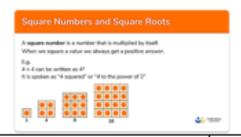
Year 5- Multiplication and Division











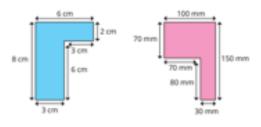
Small Steps	
Multiples	
Common multiples	
Factors	
Common factors	
Prime numbers	
Square numbers	
Cube numbers	
Multiply by 10, 100 and 1000	
Divide by 10, 100 and 1000	
Multiples of 10, 100 and 1000	



Year 3 – Length & Perimeter







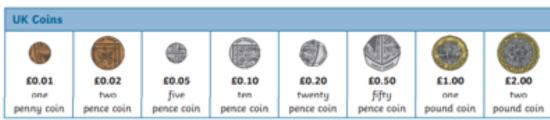
78 mn	n
70 mm	mm

365 cm		
cm	65	mm

Small Steps	
Measure in metres and centimetres	
Measure in millimetres	
Measure in centimetres and millimetres	
Metres, centimetres and millimetres	
Equivalent lengths (centimetres and millimetres)	
Campare lengths	
Add lengths	
Subtract lengths	
What is perimeter?	
Measure perimeter	
Calculate perimeter	



Year 4 - Money







Small Steps	
Write maney using decimals	
Convert between pounds and pence	
Campare amounts of money	
Estimate with maney	
Calculate with maney	
Salve prablems with maney	

Appendix C: Example Fluent in 5



Year 1 Week 2 – Day 3

1. Half of 8 = ?



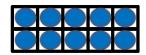
$$2.6 + 4 = ?$$

Use...



...to help you

$$3.20 - 1 = ?$$





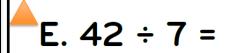


Year 4 Week 8 – Day 1 **KEY**



Try a written method

B.
$$\frac{1}{3} + \frac{1}{3} =$$



ω 2 4,708 x 35 = 70,487 – 13,109 = $6 \times (10 - 5) =$ Class. ..Score.. 1 mark 1 mark 2 marks 6 5 4 45÷ 94 - 13 + 20 =472 + 30 == 9 1 mark 1 mark 1 mark

Fluent in Five - Year 6 Week 14 - Day 4

Name.

Date.

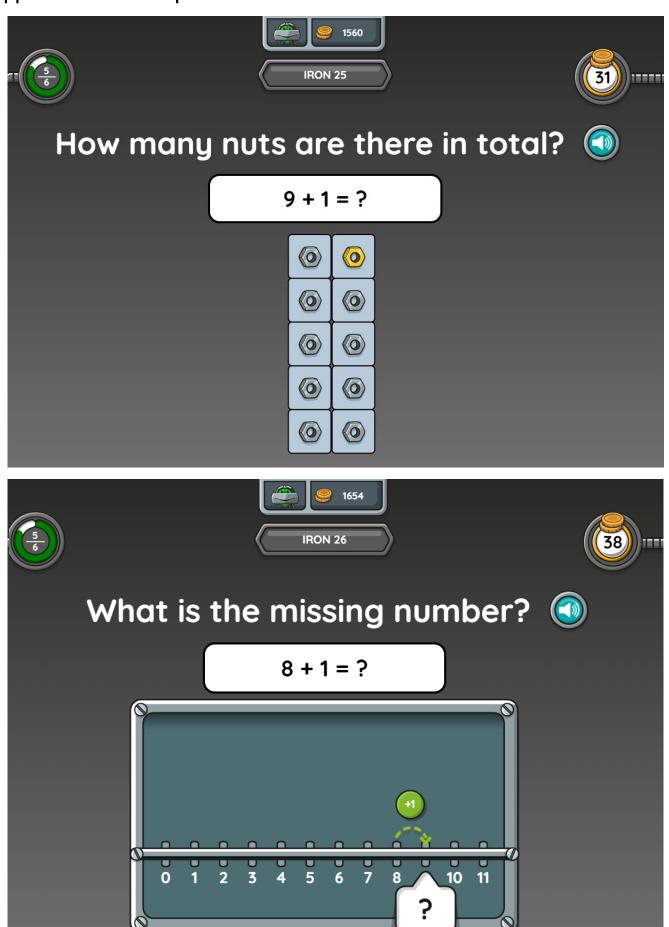
..School.

Fluent in Five - Year 6 Week 14 - Day 4

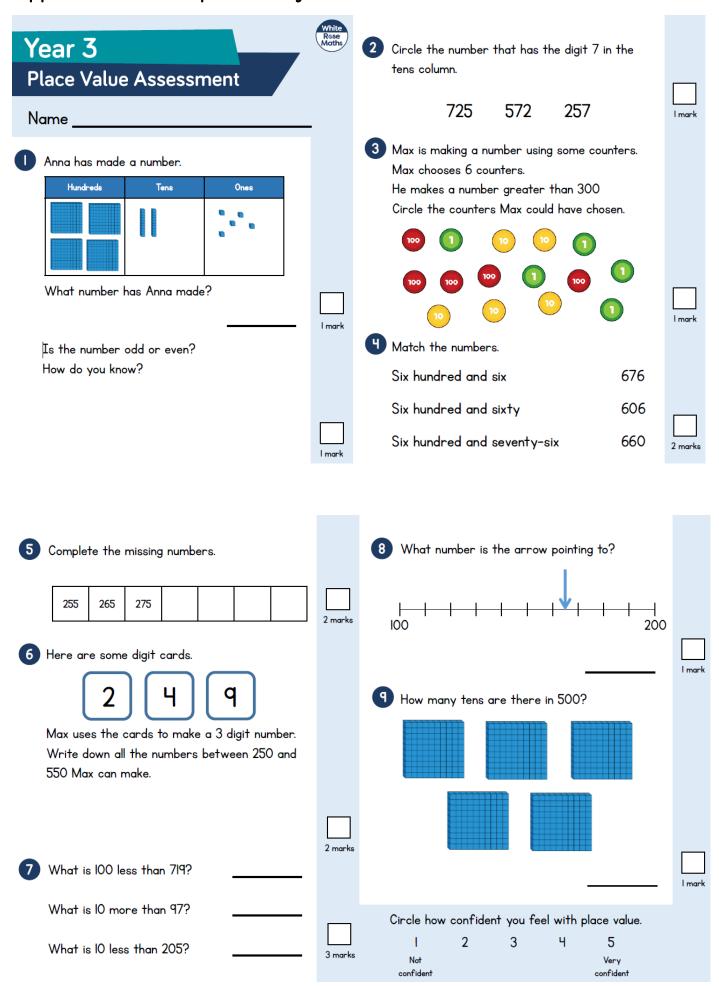
Appendix D: Example TTRS Quiz

Name						Week 1 Session 1
Т	imes Tables		3			2020-21 3s 4s and 8s
	Rock Stars		Times 1	Table	S	5 a week
	to Holywell CofE Primary Scho			42		
1	3 × 12 =	21	3 × 10 =	41	4 × 3 =	
2	3 × 1 =	22	3 × 12 =	42	9 × 3 =	Time taken
3	3 × 12 =	23	3 × 2 =	43	8 × 3 =	: ① 3 minute time limit ②
4	3 × 4 =	24	3 × 6 =	44	1 × 3 =	
5	3 × 2 =	25	3 × 3 =	45	12 × 3 =	
6	3 × 10 =	26	3 × 8 =	46	11 × 3 =	60
7	3 × 10 =	27	3 × 7 =	47	2 × 3 =	What's your rock status?
8	3 × 5 =	28	3 × 3 =	48	7 × 3 =	ЗВАНАН
9	3 × 12 =	29	3 × 5 =	49	3 × 3 =	< 18 correct in 3 mins
10	3 × 5 =	30	3 × 2 =	50	1 × 3 =	
11	3 × 4 =	31	3 × 3 =	51	9 × 3 =	A 4 11 1
12	3 × 5 =	32	1 × 3 =	52	7 × 3 =	
13	3 × 9 =	33	8 × 3 =	53	1 × 3 =	25-29 correct in 3 mins BREAKTHROUGH ARTIST
14	3 × 6 =	34	3 × 3 =	54	6 × 3 =	30-35 correct in 3 mins
15	3 × 6 =	35	8 × 3 =	55	4 × 3 =	36-44 correct in 3 mins HEADLINER
16	3 × 5 =	36	2 × 3 =	56	10 × 3 =	45-59 correct in 3 mins
17	3 × 7 =	37	6 × 3 =	57	7 × 3 =	All correct in ≤ 3mins
18	3 × 10 =	38	9 × 3 =	58	7 × 3 =	All correct in ≤ 2min
19	3 × 9 =	39	7 × 3 =	59	10 × 3 =	All correct in ≤ 1 min TLACE TABLES
20	3 × 12 =	40	3 × 3 =	60	11 × 3 =	

Appendix E: Example Numbots



Appendix F: Example End of Unit Assessment (WWRM)



Appendix G - Progression of Mathematical Vocabulary

(Extracts - see website for full document)

	Multiplication and division							
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
double	multiplication	multiplication tables	exchange	factor pairs	multiples	multi-digit numbers		
half	division	commutative	mathematical statements	formal written layout	factors	long division		
twice as many	arrays	repeated addition	missing number problems	distributive law	prime numbers			
equal			integer scaling problems	remainders	square numbers			
unequal			correspondence problems		cube numbers			
share			derived facts		short division			
group					product			
odd					dividend			
even					divisor			
•					quotient			
					operations			

Fractions/Decimals/Percentages								
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
	whole	three quarters	tenths	decimal equivalence	fifth			
	half	third		hundredths	thousandths			
	quarter	equivalent fractions		convert	mixed numbers			
	equal parts	unit fractions		proper fractions	per cent %			
		non unit fractions		improper fractions	factors			
		numerator		decimal point	integer			
		denominator			complements			
		one whole						

	Geometry – Position and direction								
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
over	position	clockwise/anti-clockwise		co-ordinates	reflection	four quadrants			
under	direction	straight line		first quadrant		co-ordinate plane			
between	movement	rotation		grid					
around	whole turn	arrange		translation					
through	quarter turn	sequences		plot					
on	half turn			polygon					
into	three-quarter turn			axis					
next to									
behind									
beneath									
order									
repeat									
patterns									
on top of									

Statistics							
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
		pictograms	table	time graph	timetable	pie chart	
		tally chart	bar chart	discrete data	two-way tables	mean	
		block diagram	one-step problem	continuous data			
		category	two-step problem	line graph			
		sorting		comparison problem			
		totalling		sum problem			
		comparing		difference problem			
		horizontal		calculate			
		vertical		interpret			