Mathematics teaches us how to make sense of the world around us by developing a child's ability to calculate , to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives.

At Winton we strive to ensure pupils' experience a wide range of mathematical experiences that promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion. We aim that all pupils' are:
- confident and competent with numbers and the number system
- develop their ability to solve problems through decision-making and reasoning in a range of contexts.
- understanding of the ways in which information is gathered and presented
- explore features of shape and space, and develop measuring skills in a range of contexts
- understand the importance of mathematics in everyday life.

Mental Mathematics
Mental Mathematics focuses on strengthening children's oral and mental skills through regular daily practice. Mental mathematics should occur daily at the start of each lesson for 5 to 10 minutes. The starters should be objective-led and focus on areas of development from prior assessment; mental oral starters should be differentiated to ensure all pupils are challenged.

Mental mathematics should focus on the 6 R's:
- Rehearse
- Recall
- Refresh
- Refine
- Read
- Reason

The calculation policy (Calculation Appendix) sets out key expectations for mental mathematics in each year group and also the progression between levels. At the end of each week a short mental mathematics test should be taken recapping on prior strategies, this should take a maximum of 15 minutes of the whole lesson.

Calculation Policy

PROGRESSION THROUGH CALCULATIONS FOR ADDITION

To add successfully, children need to be able to:
- recall all addition pairs to 9 + 9 and complements in 10;
- add mentally a series of one-digit numbers, such as 5 + 8 + 4;
- add multiples of 10 (such as 60 + 70) or of 100 (such as 600 + 700) using the related addition fact 6 + 7, and their knowledge of place value;
- partition two-digit and three-digit numbers into multiples of 100, 10 and 1 in different ways.

> It is important that children's mental methods of calculation are practised and secured alongside their learning and use of an efficient written method for addition.

MENTAL CALCULATIONS

These are a **selection** of mental calculation strategies:

Mental recall of number bonds

6 + 4 = 10   □ + 3 = 10
25 + 75 = 100   19 + □ = 20

Use near doubles

7+ 8 = double 7 + 1 = 15

Programme of Study

The National curriculum sets out the program of study for each year group, at Winton we believe mathematics should be cross curricular and where possible link to main topic being covered. The programmes of study ensure all pupils become:

- **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics 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.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on. For more detailed information about individual strategies see Calculation Policy (Calculation Appendix)

Jottings

At Winton Primary School we believe children need to be taught how to record their thinking and reasoning in mathematics as they describe, replicate and create patterns and explore properties and relationships. These skills of recording, using objects, pictures, numbers or shapes, help children to see what *is* and begin to consider what *might be*. They help children to clarify what is the same and what is different. They help children to collect evidence when testing general statements or to predict and propose new hypotheses.

Children need to see working examples and models that they can use, supported with opportunities to share and evaluate one another's approaches. Together, these provide children with the tools from which to make informed choices about how best to organise their work.

We aim to create:

- A culture with a significant focus on mathematical mark-making in line with early writing, through, for example, role-play and the use of popular mathematical signage in the environment
- A learning environment that encourages children to choose to use their own *mathematical jottings* to support their mathematical thinking and processes'.
- Scaffolds to support learners with their mathematical jottings

Recording of Pupils jottings:

Recording work may involve children making rough jottings first followed by recording actual answers for the teacher's attention When children are working in books, jottings should also appear in books (not be done on whiteboards). All children are encouraged to work tidily and neatly when recording their actual answers but jottings may take any form and are important evidence for the teacher.
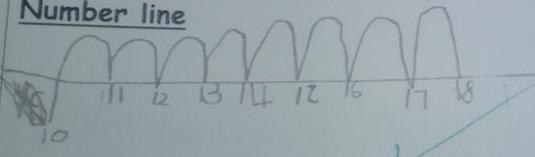
Examples of Jottings:

3 + 3 = 6
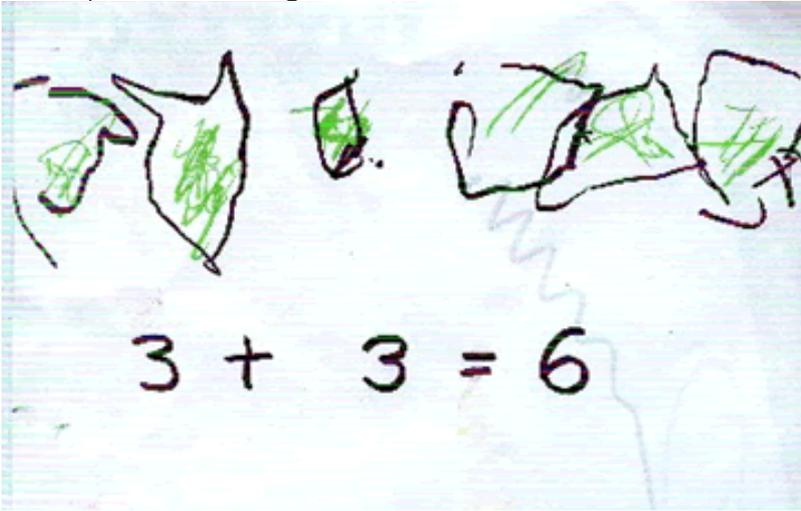
Recording – Reception

L.I: To be able to solve problems involving addition.

Problem

Akkash had 10 red cars and 8 yellow cars. How many cars did he play with altogether?
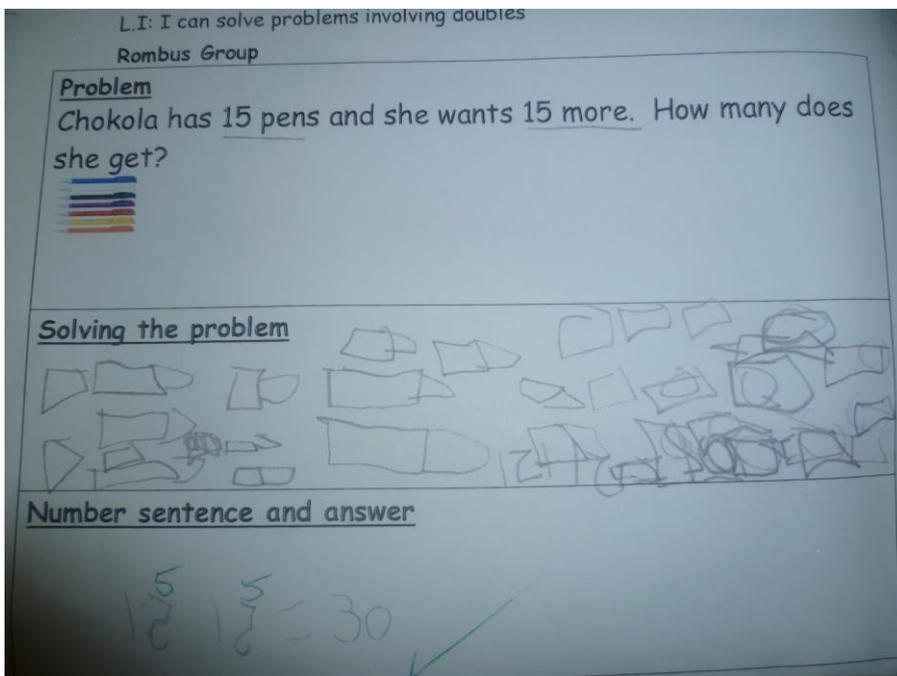
Number line

11 12 13 14 12 6 17 18

10

Number sentence

10 + 8 = 18

KS1 Jottings

See Jottings Appendix:
1) Models and images for ordering numbers to 100 *(Primary National Strategy)*
2) Models and images for addition and subtraction facts to 20 *(Primary National Strategy)*
3) Models and images for portioning and recombining *(Primary National Strategy)*
4) Models and images for counting on and back in ones and tens *(Primary National Strategy)*
5) Models and images for addition and subtraction *(Primary National Strategy)*
6) Models and images for multiplication and division *(Primary National Strategy)*

Planning

Mathematics should be interlinked to other areas of the curriculum, the yearly curriculum overview sets out the main areas of study for each term.   At the start of each mathematical topic, teachers complete the big picture and plan weekly, teachers only plan in depth for the first three days of the week to ensure they allow opportunities to reflect and address misconceptions.

Big Picture Format

Year 1

DAY	Mental Maths	Teaching Approach	The Big Idea	Objective(s)	Assessment Focus (APP)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

Weekly Planning Format

Weekly Planning Sheet	Class:		Term:		Week:		
	Assessment Focus (APP)	Mental/Oral		Main Activity			Plenary	Common Errors
		Objectives	Activity	Objectives Key Vocabulary	Key Questions Steps for Success	Activity- Groups, Talk partners, Mixed/near ability **Differentiation** ICT links T= teacher OA=other adult I= Independent		
Monday								
Tuesday								

Teachers use a range of materials including: Mathematics APP, overcoming barriers, securing level to ensure they are planning a range of opportunities for all learners within the classroom.

Curricular Targets

Each term the whole school has a mathematics target; these have been identified as whole school areas of weakness. All pupils and parents have a copy of their target card and through teachers individualised planning throughout the term pupils address these areas.

Example of Target Cards:

Year 2 Mathematics Target Card

I can order numbers to 100.

I can read a 2 digit number.

I can order numbers to 100.

I can round a 2 digit number to the nearest 10.

I can write a 2 digit number.

I understand the value of each digit within a 2 digit number.

I can understand the value of each digit in a 2 digit number.

I can partition numbers to 100 into tens and units.

I can compare numbers using < >

I can count forwards and backwards in steps of 1,2,5 and 10 from different numbers.

I can describe patterns in a sequence of 2 digit numbers.