



Maths at St Mary's  
September 2017 onwards

Information for parents



From September 2017, St Mary's will be using the Maths schemes of learning developed by the White Rose Maths Hub, one of the 35 Maths Hubs around the country that have been established to improve maths outcomes for everyone. They are centred around the belief that every child can succeed in mathematics.

The White Rose materials help teachers to break down the National Curriculum content into small manageable steps, with the intention of helping children to gain a deeper understanding of mathematical concepts.

Flexibility is built into the scheme to allow teacher's to continue to tailor the learning to the children in their class. Teachers are encouraged to spend more time on particular steps if they feel it is necessary.

# Concrete – Pictorial – Abstract

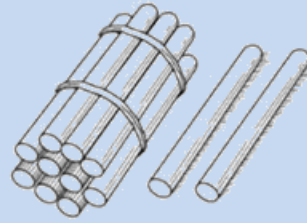
When introduced to a new concept, children should have the opportunity to build competency by taking this 'CPA' approach:

**Concrete** – children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

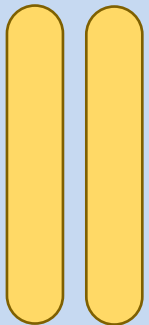
**Pictorial** – alongside this, children should use pictorial representations. These representatives can then be used to help reason and problem solve.

**Abstract** – both concrete and pictorial representations should support children's understanding of abstract methods.

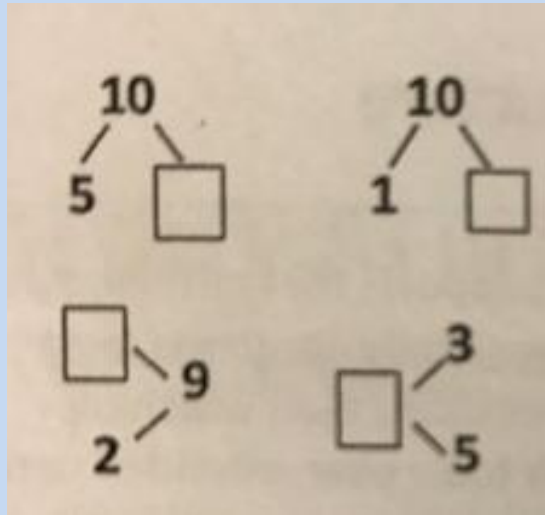
# Concrete: resources could include:



100	10	



# Pictorial: representations could include:

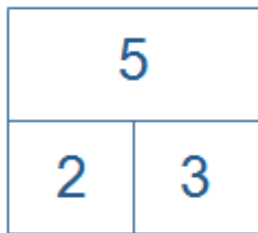


A school kitchen is making lunches.  
85 children are having school lunch.  
 The kitchen has made 37 lunches so far.  
How many more do they need to make?

85 children/lunches	
37 lunches	? lunches

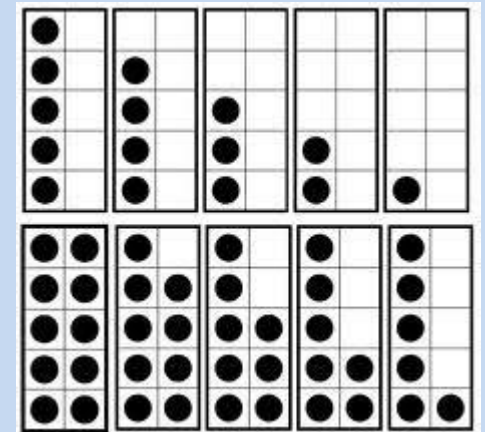
$$85 - 37 = 48$$

## Part part whole



$\square + \square = \square$	$\square = \square + \square$
$\square + \square = \square$	$\square = \square + \square$
$\square - \square = \square$	$\square = \square - \square$
$\square - \square = \square$	$\square = \square - \square$

- Every part part whole relationship can be represented by 8 different number sentences.



# Example of a yearly overview showing curriculum coverage:

(available to download from your child's class webpage)

## Year 2 – Yearly Overview

	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: Addition and Subtraction				Measurement: Money		Number: <u>Multiplication</u> and Division		
Spring	Number: Multiplication and <u>Division</u>		Statistics		Geometry: Properties of Shape		Number: Fractions			Measurement: length and height	Consolidation	
Summer	Position and direction			Problem solving and efficient methods		Measurement: Time		Measurement: Mass, Capacity and Temperature		Investigations		

# Medium Term Plan showing which objectives are being taught when:

(available to download from your child's class webpage)

WRMH – Year 2 – Scheme of Learning 2.0

## Year 2 – Autumn Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12		
<p><u>Number – Place Value</u></p> <p>Read and write numbers to at least 100 in numerals and in words.</p> <p>Recognise the place value of each digit in a two digit number (tens, ones)</p> <p>Identify, represent and estimate numbers using different representations including the number line.</p> <p>Compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs.</p> <p>Use place value and number facts to solve problems.</p> <p>Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.</p>			<p><u>Number – Addition and Subtraction</u></p> <p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.</p> <p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers.</p> <p>Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p> <p>Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods.</p> <p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p>					<p><u>Measurement: Money</u></p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</p>		<p><u>Multiplication and Division</u></p> <p>Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.</p> <p><u>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign.</u></p> <p><u>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.</u></p> <p><u>Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</u></p>			



# Small steps guidance breaks curriculum content into manageable steps in learning

Year 2 | Autumn Term | Small Steps Progression

Week 1 to 3 – Number: Place Value

## Overview

### Small Steps

- Count objects to 100 and read and write numbers in numerals and words
- Represent numbers to 100
- Tens and ones with a part whole model
- Tens and ones using addition
- Use a place value chart
- Compare objects
- Compare numbers
- Order objects and numbers
- Count in 2s, 5s and 10s
- Count in 3s

### NC Objectives

Read and write numbers to at least 100 in numerals and in words.

Recognise the place value of each digit in a two digit number (tens, ones)

Identify, represent and estimate numbers using different representations including the number line.

Compare and order numbers from 0 up to 100; use  $<$ ,  $>$  and  $=$  signs.

Use place value and number facts to solve problems.

Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.

# Further support is provided for teaching each step:

Year 2 | Autumn Term | Teaching Guidance

Week 1 to 3 – Number: Place Value

## Count Objects to 100

### Notes and Guidance

To build on skills learned in Year 1, children need to be able to count objects to 100 in both numerals and words.

Problems should be presented in a variety of ways e.g. numerals, words and images. Variation should challenge children by providing them with missing numbers which are non-consecutive.

### Mathematical Talk

How can you count the cars? Do you have a strategy?  
What is one more/one less?

Which is the largest number?  
Which number is tricky to write in words?

Which numbers sound similar?  
How are 17 and 70 different? Can you show me?

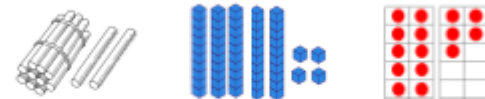
### Varied Fluency

- 1 Count and write the number of cars in the car park.



There are ..... cars in the car park.

- 2 What numbers are represented below?  
Write your answer in numerals and words.



- 3 Match the numerals to the words.



Thirty eight      Seventy      Forty eight      Seventeen

# Further support is provided for teaching each step:

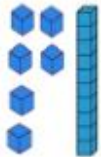
Year 2 | Autumn Term

Week 1 to 3 - Number: Place Value

## Count Objects to 100

## Reasoning and Problem Solving

Tom says he has 61  
Is he correct?  
Explain your reasoning



Tom is not correct  
because he has 16. He  
has switched his ten  
and one around.

Freddy rolls two dice.  
One dice shows a 6.  
What could his total be?  
Write your answers in words.



How many dots of one die?  
How did you count the dots?  
How many dots on a nine sided die?

Freddy's totals could  
be: seven, eight, nine,  
ten, eleven and twelve.

6 sided die:  
21 dots

9 sided die:  
50 dots

Each bag contains 10 cookies.



How many cookies are there  
altogether?

Write your answers in numerals and  
words.

What strategy did you use?

Did your partner use a different  
method?

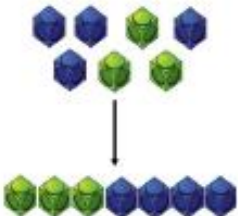
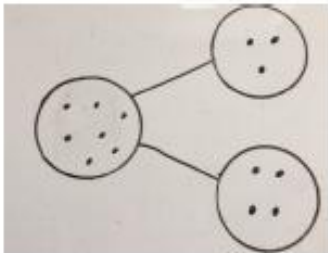
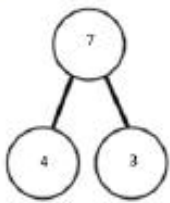
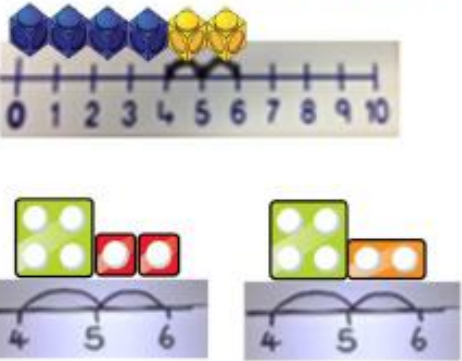
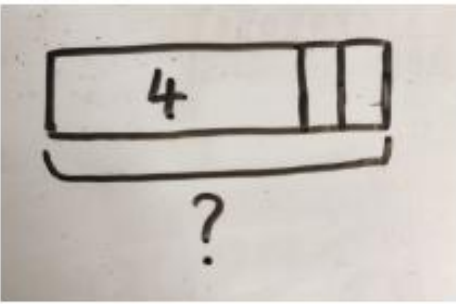

What is the best strategy to use

There are 48 (forty  
eight) cookies  
altogether.  
(Children may count in  
10s and 1s or know that  
there are 4 tens which  
equals 40, then count  
on 8 more.)

# We are trialling the White Rose calculation policy, which follows the concrete- pictorial- abstract process (Please download from the school website)

## Calculation policy: Addition

Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

Concrete	Pictorial	Abstract
<p>Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).</p> 	<p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p> 	<p><math>4 + 3 = 7</math> Four is a part, 3 is a part and the whole is seven.</p> 
<p>Counting on using number lines using cubes or Numicon.</p> 	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? <math>4 + 2</math></p> 

# St Mary's are working on the following priorities in Maths:

- Embedding the concrete-pictorial-abstract process into our Maths curriculum, improving children's mathematical understanding and fluency
- Improving outcomes for girls in Maths, identifying reasons for the gender gap and taking action to close it
- Ensuring that mathematical concepts are revisited often and approached in a range of different contexts to ensure deep understanding