ST. TERESA'S SCHOOL

Calculation Policy

Year Two

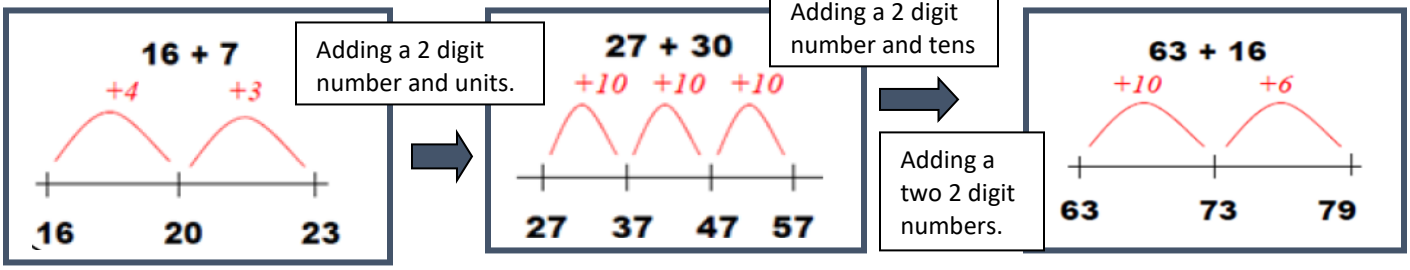
Addition Year Two

Key Skills

- Add a 2 digit number and units and a 2 digit number and 10s.
- Add pairs of 2 digit numbers.
- Add three single digit number.
- Know and show that adding can be done in any order (the commutative law).
- Recall bonds to 20 and multiple of 10 bonds to 100.
- Count in steps of 2,3 and 5 and count in 10s from any number, forwards and backwards.
- Understand the place value of 2 –digit numbers (tens and ones).
- Compare and order numbers to 100 using < > and = signs.
- Read and write numbers to at least 100 in numerals and words.
- Solve contextual addition problems.

Focus: Adding with 2 digit numbers.

Children should explore and understand how to use blank number lines to add using their knowledge of place value and how to partition numbers in different ways. Once confident they should move onto written partitioning methods.



34 + 23 = 57
30 + 20 = 50
4 + 3 = 7

58 + 43 = 101
50 + 40 = 90
8 + 3 = 11

78 + 47 = 125
70 + 40 = 110
8 + 7 = 15

Partitioning should be started with 2 digits numbers that do not bridge the tens or hundreds so children become fully confident with the method itself.

Once children are confident they can start using the partitioning method to add numbers that bridge the tens and hundreds boundaries.

Key Vocabulary

Add, more, plus, and, make, altogether, total, equal to, equals, the same as, double, most, count on, number line, *sum, tens, units, partition, addition, column, tens boundary*

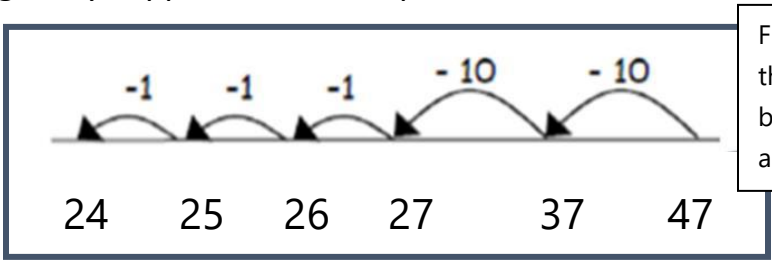
Subtraction - Year Two

Key Skills

- Recognise the place value of each digit in a 2 digit number.
- Recall and use subtraction facts to 20 fluently, use to derive related facts to 100.
- Subtract using objects, images, 100 squares and mentally including a two digit number and ones, a two digit number and 10s and two 2 digit numbers.
- Understand and show that subtraction calculations cannot be done in any order.
- Use the inverse relationship between + and – to check calculations and solve missing number problems.
- Solve simple subtraction problems in context using written and mental methods.
- Read and write numbers to at least 100 in numerals and words.

Focus: Subtracting with 2 digit numbers.

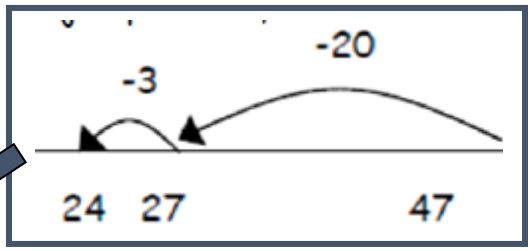
In Year 2 children will start to use blank number lines to subtract by counting back which will greatly support the development of mental subtraction skills.

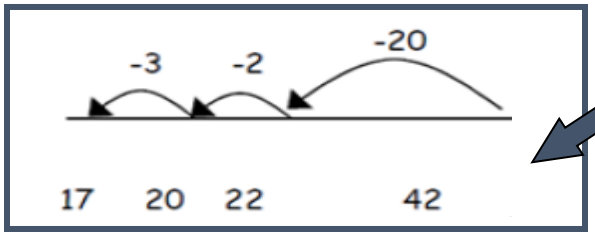


For 47 – 23 = 24, children should start by partitioning the tens number and subtracting that first by counting back in tens. They will then subtract the units number and subtract that by counting back in 1s.

Once children develop their confidence of counting back they will be able to select more efficient jumps to solve a problem and will not have to partition the tens and units numbers

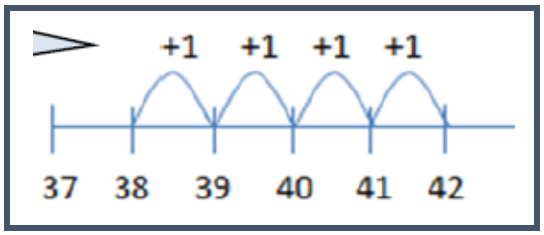
Once confident with efficient jumps, children are ready to subtract by bridging through 10, again partitioning is very important here and the children will need to be very confident with partitioning in different ways.





Counting on as a mental method

Counting on is a super mental method! It is especially useful for finding the difference problems and numbers that are close together. It is important that children understand that although they are counting on, they are finding the difference which is subtraction!



Key Vocabulary

Equal to, take, take away, less, minus, subtract, leaves, distance between, difference between, how many more, how many fewer/less than, most, least, count back, how many left, how much less is_?, *count on, strategy, partition, tens, units, sum, difference.*

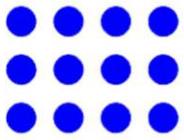
Multiplication - Year Two

Key Skills

- Count in steps of 2,3 and 5 from zero and in 10s from any number.
- Recall and use multiplication facts for the 2,5 and 10 times tables.
- Recognise odd and even numbers.
- Write and calculate number statements using the x and = signs.
- Show that multiplication can be done in any order (the commutative law).
- Solve a range of multiplication problems using objects, arrays, repeated addition, mental methods and multiplication facts.
- Use and become familiar with all of the above multiplication language.
- They use inverse relations to develop multiplicative reasoning (for example, 4 × 5 = 20 and 20 ÷ 5 = 4).

Focus: Multiplying using arrays and repeated addition- 2,3,4,5,10x table facts

In Year 2 children will be aware of simple arrays and pictorial representations and understand what they mean. In Year 2 children will develop the knowledge of how to make their own arrays to solve a problem and also how repeated addition on a number line can get them to a solution.



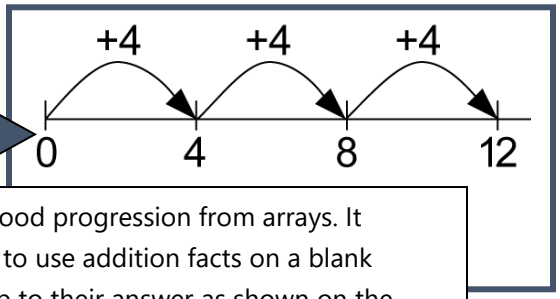
4 x 3 = 12

3 x 4 = 12

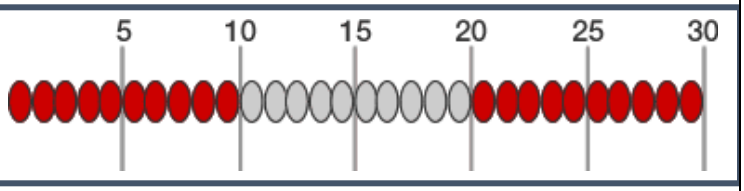
3 x 4 = 4 + 4 + 4 = 12

4 x 3 = 3 + 3 + 3 + 3 = 12

Arrays are super for children to solve the answer to simple problems. They are also great for showing children the commutative law, for example, if you turned this array for 3 x4 = 12 sideways you would see that 4 x 3 also equals 12.



Repeated addition is a good progression from arrays. It encourages the children to use addition facts on a blank numberline and count up to their answer as shown on the example above which models that 3 x 4 = 12.



Mental methods and practical apparatus are still very important at this stage. Visual images such as the bead string to the left that demonstrates 6 x 5 = 30 will support children's visualization of multiplication and allow them to develop stronger mental skills.

Key Vocabulary

Groups of, lots of, times, array, altogether, multiply, count, *multiplied by, repeated addition, column, row, sets of, equal groups, times as big as, once, twice, three times*.

Division - Year Two

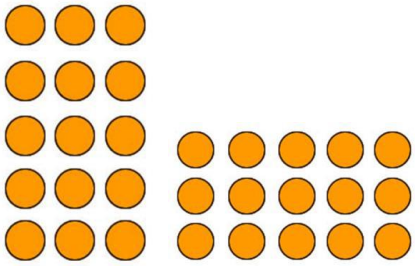
Key Skills

- Count in steps of 2, 3, 5 and 10 from 0.
- Recall and use x and ÷ facts for the 2, 5 and 10 times tables.
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- Solve division problems and write division number sentences for problems.
- Understand that division is not commutative unlike multiplication.
- Solve increasingly challenging division problems using concrete objects, arrays, and simple written methods such as grouping on a number line.

Focus: Grouping and sharing larger quantities using written methods and symbols

Children will continue to use the methods of sharing and grouping in division with objects to support their understanding of arrays for sharing and grouping and the division number line for grouping.

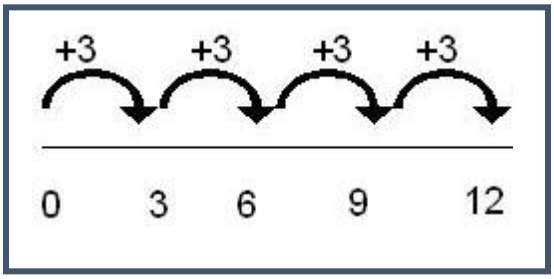
To solve problems such as 15 ÷ 3 =, children will share 15 objects into 3 groups like in the first array or make groups of 3 until they get to 15, like in the second image.



Completing both of these processes will help children see the link between sharing and grouping but also the link between 15 ÷ 3 = 5 and 15 ÷ 5 = 3.

The difference between grouping and sharing should be discussed regularly and visual models and diagrams are very important. Children should solve a variety of contextual problems that will require them to group or share.

Children will start to group on a number line, which will help cement their understanding of division as grouping. When grouping on a number line, children will start with a zero at the beginning and will write the dividend at the end of the line, they will then jump in steps of the divisor. The example to the right shows a number line for the calculation 12 ÷ 3 = 4 as there were 4 jumps of 3 to get to 12.



Key Vocabulary

Share, share equally, one each, two each…, group, groups of, lots of, array, divide, *divided by, divided into, division, grouping, number line*

Year Two Statutory Requirements

Number - Place Value	Number – Fractions
• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forwards and backwards • 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. • Read and write numbers to at least 100 in numerals and in words. • Use place value and number facts to solve problems.	• Recognise, find, name and write fractions 31, 41, 42 and 43 of a length, shape, set of objects or quantity. • Write simple fractions for example, 21 of 6 = 3 and recognise the equivalence of 42 and 21.
Number - Addition & Subtraction	**Number – Multiplication & Division**
• 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. • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. • 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 • Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• 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 (×), 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.

Geometry – Property of Shape	Geometry – Position & Direction
• Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. • Identify 2-D shapes on the surface of 3-D shapes: a circle on a cylinder and a triangle on a pyramid. • Compare and sort common 2-D and 3-D shapes and everyday objects.	• Order and arrange combinations of mathematical objects in patterns and sequences. • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).
Measures	**Statistics**
• Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. • Compare and order lengths, mass, volume/capacity and record the results using >, < and = • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. • Find different combinations of coins that equal the same amounts of money • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. • Compare and sequence intervals of time. • Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. • Know the number of minutes in an hour and the number of hours in a day.	• Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. • Ask and answer questions about totalling and comparing categorical data.