The Academy at
St James
Aspire, Achieve, Believe

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MATHS POLICY

Reviewed and Approved by:-

Date of meeting:- 06/02/2018

Signature:-

Position:-

Date:-06/02/2018

Next review date:- 05/02/2021

THE ACADEMY AT ST. JAMES
MATHS POLICY

Rationale

Mathematics teaches us how to make sense of the world around us through 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 shape and space in their everyday lives. Through their growing knowledge and understanding, the children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

Aims

We aim, in our teaching of mathematics, to develop children's understanding of number, shape, measurement, graphical representation and problem solving techniques and to make mathematics an enjoyable, worthwhile, relevant experience for all our pupils.

We aim, in our teaching:-

- To foster a positive attitude and enthusiasm for mathematics
- To provide enjoyment of learning through practical activity, exploration and discussion.
- To develop the mathematical skills necessary to link mathematics to every day life
- To provide the children with the basic skills needed to develop confidence in their mathematical ability and enhance their independence when working
- To encourage a spirit of inquiry and exploration
- To stimulate an interest and fascination for mathematics
- To develop the ability to communicate using appropriate mathematical language
- To develop logical thinking and reasoning skills through natural curiosity and an investigative approach
- To develop a methodical approach to solving problems
- To encourage accuracy in working and the importance of self-checking
- To develop mathematics through a cross curricular approach
- To help the children to describe the methods and ideas in verbal and written form

Teaching Time

To provide adequate time for developing numeracy skills each class teacher from Year 1 onwards will deliver a daily mathematics lesson. This may vary in length but will usually last for about 45 minutes in Key Stage 1 and 50 to 60 minutes in Key Stage 2. Each lesson will have an Oral/Mental starter, Main Activity and a Plenary.

Learning and Teaching styles

The school uses a variety of teaching and learning styles in Numeracy. Our principal aim is to develop children's knowledge, skills and understanding. During our daily lessons we encourage children to ask as well as answer questions. They have the opportunity to use a wide range of resources, such as number lines, number squares, digit cards and small apparatus to support their work. ICT is used in Numeracy lessons regularly by teachers for modelling ideas and methods. Children have the opportunity to use ICT

to enhance learning. Wherever possible, we encourage children to apply their learning to everyday situations.

In all classes children have a wide range of mathematical abilities. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through differentiated group work, paired work and individual work.

Teachers will develop **effective questioning** as part of their teaching strategies. This will enable a more appropriate pace to be developed in many lessons. The use of both **open** and **closed** questions will build in variety into the lessons and encourage pupils to manipulate numbers to a greater degree.

We have a Calculations Policy which informs teachers of which calculation should be taught in each year group and pupils should be expected to **explain their methods of calculation** from their time in early years. Their full involvement in mathematics lessons will be further advanced through **pupil demonstrations** in practical or imaging activities and whiteboard work. The greater emphasis on oral work will result in **appropriate mathematical terminology** being introduced year by year. Numeracy vocabulary is available for teachers with each unit.

Curriculum Planning for Mathematics

Mathematics is a core subject in the National Curriculum and at St James' Church Primary we use the Numeracy Framework as the basis for implementing the statutory requirements of the programmes of study for mathematics.

We carry out the curriculum planning in three phases – long term, medium term and short term. The Numeracy Framework for Teaching gives a detailed outline of what we teach in the long term.

Our medium term plans
give details of the coverage each half term and define what we teach. The short term planning is of teacher planned and devised activities which meet the Learning Objective.

Each class teacher completes short term plans weekly. These list the specific learning objectives, success criteria, differentiated activities and give details such as resources to be used or any assessment to be carried out.

The Foundation Stage

In Foundation the class will be organised to promote the development of mathematical language and understanding and social skills. The children will be presented with a practical mathematics experience with a firm foundation in sorting, experience in measures, shape and space, pictorial representation, number and the growing use of both their own and mathematical language. The work children undertake is often integrated with the other areas of learning but by the end of the Summer Term, Reception children will take part in a numeracy lesson.

Links between mathematics and the other subjects

At St James' Church Primary opportunities will be sought for pupils to develop and apply their mathematical skills in other subjects, for example measuring in Science and D.T., shape and geometric pattern in Art and Design, and collecting and presenting data in Science, History and Geography. This will

allow children to begin to use and apply mathematics in real contexts. ICT can be used in most areas of Maths.

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the maths involved. Children are asked to explain how they solved a particular problem or their reasoning in working out an answer to a question in mental maths. Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

Numeracy and ICT

Information Communication and Technology enhances the teaching of Numeracy because ICT is particularly useful for mathematical tasks. It also offers ways of impacting on learning which are not always possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children can understand concepts more quickly.

ICT will be used in various ways to support teaching and motivate children's learning. ICT will involve the computer, calculators, and audio-visual aids. They will however only be used in a daily mathematics lesson when it is the most efficient and effective way of meeting the lesson objectives.

Numeracy and Inclusion

We teach Numeracy to all children, whatever their ability and individual needs. Through our Numeracy teaching, we provide learning opportunities that enable all pupils to make progress. As a school, we strive hard to meet the needs of those children with special educational needs, disabilities, New to English, English as an additional language and the gifted and talented.

Equal Opportunities

The school is committed to working towards equality of opportunity in all aspects of school life. Our aim is to give all our pupils a mathematical curriculum that is relevant and differentiated to all pupils' needs and abilities so that every child may reach his/her potential.

Assessment and recording

Assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.
We make short term assessments, which we use to help us adjust our daily plans. These short term assessments are closely matched to the learning objectives of each lesson. We use APP to help inform teachers with their assessments.

We make termly assessments to measure progress against the key objectives and to help us plan our next unit of work. The progress is then monitored by the SLT.
Mental progress is monitored by the use of regular mental maths tests, which assess learn by heart facts such as times tables, division facts and number facts.

Assessments are made using standard tests in May and Teacher Assessment at the end of the Summer Term. We use SATs to inform Teacher Assessment in Year 2. The optional QCA tests for years 3, 4 and 5 are used to inform Teacher Assessment. We use these results to assess progress against school and national targets and accurate information will then be reported to parents and the child's next teacher at the end of the year.

Resources

There is a range of resources available for the teaching of mathematics across the school. Mathematical materials, equipment and basic resources are stored in each classroom. Less frequently used equipment, such as that for shape, space and measures, and a range of books relating to mathematics are stored centrally in the maths resource area. Resources are reviewed and updated throughout the year by the Numeracy Co-ordinator.

Written Calculations Guidance

Essential thought process for calculating

1 Estimate first
2 Can I do it in my head?
3 Can I do it in my head with some jottings?
4 Which written method do I need?
5 Have I checked my answers?

Involve problem solving as much as possible

Always look for real life applications

For addition and multiplication- Reinforce commutative law (3+2 is the same as 2+3) and associative law (2 + [3+3] is the same as [2+3]+3)

For subtraction- Complementary addition is a useful tool if used carefully

For multiplication- Reinforce distributive law ([a + b] x3 is the same as [ax3] + [bx3])

Addition

Year 1

Focus on oral work. Lots of concrete apparatus to support calculation. Children should have access to a wide range of counting equipment.

Children should add with numbers up to 20

+ = signs and missing numbers

Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'.

2 = 1 + 1
2 + 3 = 4 + 1

Missing numbers need to be placed in all possible places.

3 + 4 = □ □ = 3 + 4
3 + □ = 7 7 = □ + 4

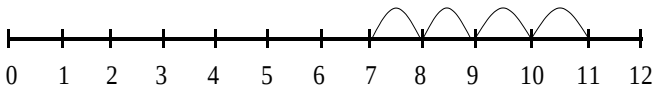
Counting and Combining sets of Objects

Combining two sets of objects (aggregation) which will progress onto adding on to a set (augmentation)

Understanding of counting on with numbered number lines (supported by models and images).

Encourage children to start with the larger number and count on

7+ 4 = 11



Year 2

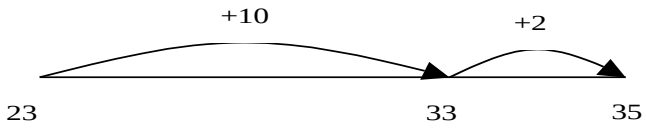
Focus on oral work. Lots of concrete apparatus to support calculation.

Children should add with pairs of 2 digit numbers

Children work on missing number problems e.g
14 + 5 = 10 + □ 32 + □ + □ = 42 36 = 1 + □ + 5

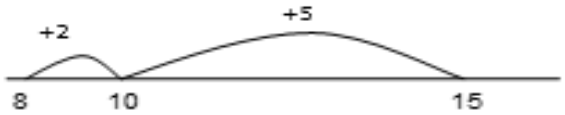
It is valuable to use a range of representations (also see Y1). Move on to use empty number lines to develop understanding of:

Counting on in tens and ones
23 + 12 = 23 + 10 + 2
= 33 + 2
= 35



Partitioning and bridging through 10.
The steps in addition often bridge through a multiple of 10 e.g. Children should be able to partition the 7 to relate adding the 2 and then the 5.

8 + 7 = 15



Towards a Written Method
Partitioning in different ways and recombine

47+25

47 **25** **60 + 12**

Leading to exchanging:

Year 3

Concrete apparatus to support calculations may be needed by some children. Children will be encouraged to label columns HTU in written work.

Children should add numbers with up to 3 digits

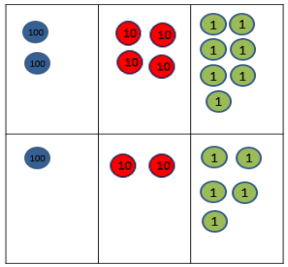
Children work on missing number problems using a range of equations as in Year 1 and 2 but with appropriate, larger numbers.

Partition into tens and ones
Partition both numbers and recombine.

247 + 125 = 200 + 100 300
= 40 + 20 60
= 7 + 5 12
= 372

Children need to be secure adding multiples of 100 and 10 to any three-digit number including those that are not multiples of 10.

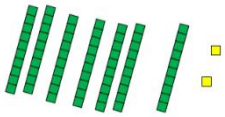
Towards a Written Method
Introduce expanded column addition modelled with place value counters (Dienes could be used for those who need a less abstract representation)



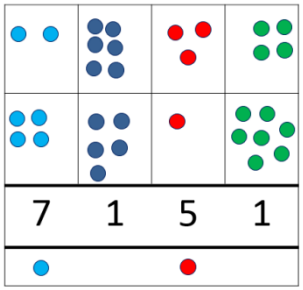
200 + 40 + 7
100 + 20 + 5
300 + 60 +12 = 372

247
+125
12
60
300
372

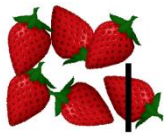
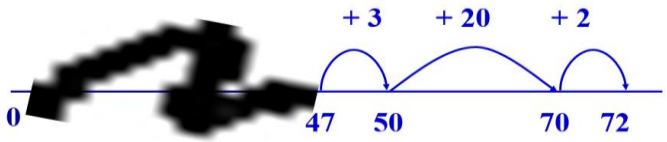
Leading to children understanding the exchange between tens and units.

	72  **Expanded written method** 40 + 7 + 20 + 5 60 + 12 = 72 Demonstrate that adding can be done in any order (the commutative law)	 Some children may begin to use a formal columnar algorithm, initially introduced alongside the expanded method. The formal method should be seen as a more streamlined version of the expanded method, not a new method. **247** **+ 125** **372** **1**

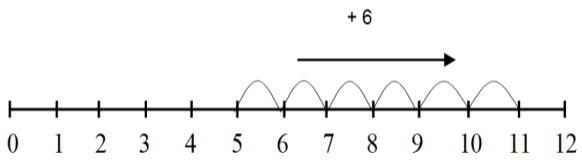
Addition

Year 4	Year 5	Year 6
Children should add numbers with up to 4 digits. Continue working on missing number/digit problems. **Mental methods** should continue to develop, supported by a range of models and images, including the number line. **Compact written method** Extend to numbers with at least four digits.  2634 +4517 7151 1 1 **Children should be able to make the choice of reverting to expanded methods if experiencing any**	**Children should add numbers with more than 4 – digits (including decimals with different numbers of decimal places)** Continue working on missing number/digit problems. **Mental methods** Children should practise with increasingly large numbers to aid fluency e.g. 12462 + 2300 = 14762 **Written methods (progressing to more than 4-digits)** As year 4, progressing when understanding of the expanded method is secure, children will move on to the formal columnar method for whole numbers and decimal numbers as an efficient written algorithm. 172.83 + 54.68 227.51 1 1 1 The decimal point should be aligned in the same way as the other place value columns and must be in the same column in the answer.	**Children should add several numbers of increasing complexity.** Continue working on missing number/digit problems. **Mental methods** Children should perform mental calculations including with mixed operations. **Written methods** As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue calculating with decimals, including those with different numbers of decimal places. 23.361 9.080 59.770 + 1.300 93.511 2 1 2 Tenths, hundredths and thousandths should be correctly aligned with the decimal point lined up vertically including in the answer row.

difficulty. **Reinforce correct placec value by reminding children that the actual value is 6 hundreds and 5 hundreds not 6 and 5, for example.** Extend to one decimal place if children are secure with above. 72.8 + 54.6 127.4 1 1	Children should be able to add more than two values. Empty decimal places can be filled with zero to show the place value in each column. 19.01 3.65 + 0.70 23.36 1 1	Zeros can be added into any empty decimal places to show there is no value to add. 81,059 3,668 15,301 + 20,551 120,579 1 1 1 1 Children should be confident to add several numbers with more than 4 digits. **Problem Solving** Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding.

Subtraction		
Year 1	**Year 2**	**Year 3**
Children to subtract from numbers up to 20 Children continue working on missing number problems e.g. 20 - □ = 9; 15 – 9 = □; 16 – 0 = □ Use concrete objects and pictorial representations. If appropriate, progress from using number lines with every number shown to number lines with significant numbers shown. Understand subtraction as take-away:  6 – 1 = 5 Understand subtraction as finding the difference by counting on using a numbered number line starting with the smallest number:	**Children should subtract with 2 digit numbers** Children continue working on missing number problems e.g. 52 – 8 = □; □ – 20 = 25; 22 = □ – 21; 6 + □ + 3 = 11 It is valuable to use a range of representations (also see Y1). Move on to use an empty number line counting on from the smallest number.. 72 – 47 = 25  **Towards written methods** Recording subtraction in expanded columns can support understanding of the quantity aspect of place value and prepare	**Children should subtract with 2 and 3 digit numbers.** Children continue working on missing number problems e.g. □ = 43 – 27; 145 – □ = 138; 274 – 30 = □; 245 – □ = 195; 532 – 200 = □; 364 – 153 = □ **Mental methods** should continue to develop, supported by a range of models and images, including the number line. Children should make choices about whether to use complementary addition or counting on, depending on the numbers involved. **Written methods (progressing to 3-digits)** Introduce expanded column subtraction where no exchanging is required, modelled with place value counters or Dienes

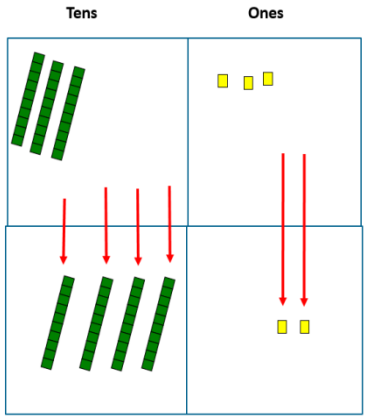
11 – 5 = 6



The use of images is also valuable for modelling subtraction e.g. Numicon, bundles of straws, Dienes apparatus, multi-link cubes, bead strings.

Mental Strategies
Children should start by recalling subtraction facts up to and within 10 and 20, and should be able to subtract zero.

for efficient written methods with larger numbers. The numbers may be represented with Dienes apparatus. E.g. 75 – 42

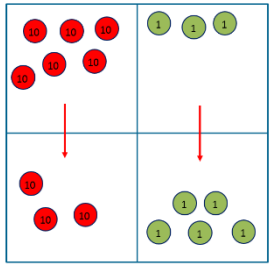


$$\begin{array}{r} 70\ \ 5 \\ -\,40\ \ 2 \\ \hline 30\ \ 3 \end{array}$$

Mental Strategies
Subtract numbers close together by counting on –

42 – 38 = 4

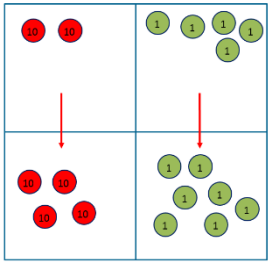
+1 +1 +1 +1
38 39 40 41 42



$$\begin{array}{r} 90\ \ 8 \\ -\,30\ \ 5 \\ \hline 60\ \ 3 \end{array}$$

$$\begin{array}{r} 98 \\ -\,35 \\ \hline 63 \end{array}$$

For some children this will lead to exchanging, modelled using place value counters or Dienes.

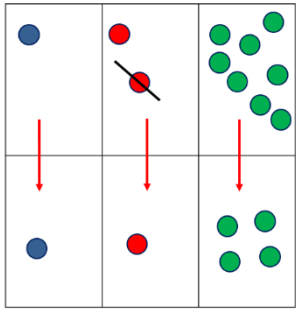


$$\begin{array}{r} \overset{60}{\cancel{70}}\ \ {}^{1}2 \\ -\,40\ \ 7 \\ \hline 20\ \ 5 \end{array}$$

$$\begin{array}{r} \overset{6}{\cancel{7}}\ \overset{1}{2} \\ -\,4\ 7 \\ \hline 2\ 5 \end{array}$$

Some children may begin to use a formal columnar algorithm, initially introduced alongside the expanded method. The formal method should be seen as a more streamlined version of the expanded method, not a new method.

Move on to dealing with 3 digit numbers



$$\begin{array}{r} 200\ \ \overset{20}{\cancel{30}}\ \ {}^{1}2 \\ -\,100\ \ 10\ \ 4 \\ \hline 100\ \ 10\ \ 8 \end{array}$$

= 118

Subtraction

Year 4

Children to subtract with up to 4 digit numbers

Children continue working on missing number/digit problems:

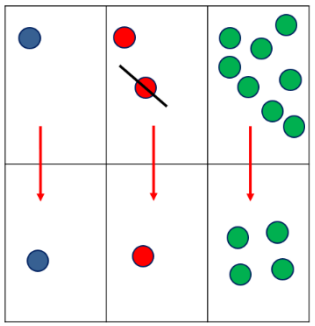
456 + □ = 710;
60 + 99 + □ = 340;
225 - □ = 150;
3450 – 1000 = □;

1□7 + 6□ = 200;
200 – 90 – 80 = □;
□ – 25 = 67;
□ - 2000 = 900

Mental methods – A variety of mental strategies must be taught and practised including counting on to find the difference where numbers are closer together or where it is easier to count on.

Written methods (progressing to 4-digits)
Expanded column subtraction with exchanging (decomposition), modelled with place value counters of Dienes, progressing to calculations with 4-digit numbers.

If understanding of the expanded method is secure, children will move on to the formal method of decomposition, which again can be initially modelled with place value counters.



2 1
2~~3~~2
- 114
118

Partitioned column subtraction with exchanging –

2754 – 1562 = 1192

Year 5

Children should subtract with at least 4 digit numbers including decimals.

Children continue working on missing number/digit problems:

6.45 = 6 + 0.4 + □;
119 - □ = 86;
1 000 000 - □ = 999 000;
600 000 + □ + 1000 = 671 000;
12 462 – 2 300 = □

Mental methods – Practise mental calculations with increasingly large numbers to aid fluency.

Written methods (progressing to more than 4-digits)
Compact column subtraction with exchanging

5 1 2 1
~~6~~2~~3~~2
-4814
1418

Progress to calculating with decimals.

6 10 1 8 1
~~7~~1~~6~~9.0
- 372.5
6796.5

Year 6

Children should subtract with increasingly large and more complex numbers and decimal values

Children continue working on missing number/digit problems:

□ and # each stand for a different number.
= 34. # + # = □ + □ + #.
What is the value of □?
What if # = 28?
What if # = 21

10 000 000 = 9 000 100 + □
7 – 2 x 3 = □; (7 – 2) x 3 = □; (□ - 2) x 3 = 15

Mental methods – Children should be able to apply a range of mental strategies and recall methods to work out subtraction problems.

Written methods
As year 5, using compact column method to subtract more complex numbers.

0 14 1 9 1
~~1~~5~~0~~,699
- 89,949
60,750

Secure understanding of using compact column method to subtract money and measures including decimals with different numbers of decimal places.

600 1 2000 +700 + 50 + 4 -1000 +500 + 60 + 2 1000 +100 + 90 + 2 Once children are secure in their understanding they should use compact method for subtraction 6 1 2754 - 1562 1192		0 1 9 1 3 1 105.419 kg -36.080 kg 69.339 kg

Multiplication

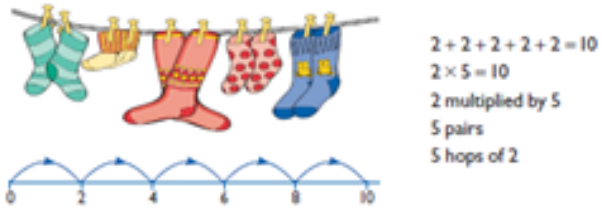
Year 1

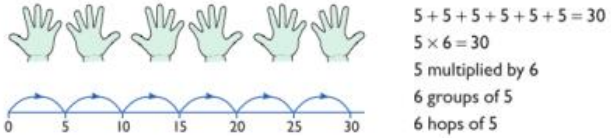
Children should multiply with concrete objects, arrays and pictorial representations.

Children to count in multiples of 2, 5 and 10.

Understand multiplication is related to doubling and combining groups of the same size (repeated addition)

Washing line, and other practical resources for counting. Concrete objects. Numicon; bundles of straws, bead strings





Present practical problem solving activities involving equal sets or groups.

Use arrays to understand multiplication can be done in any order (commutative)

Year 2

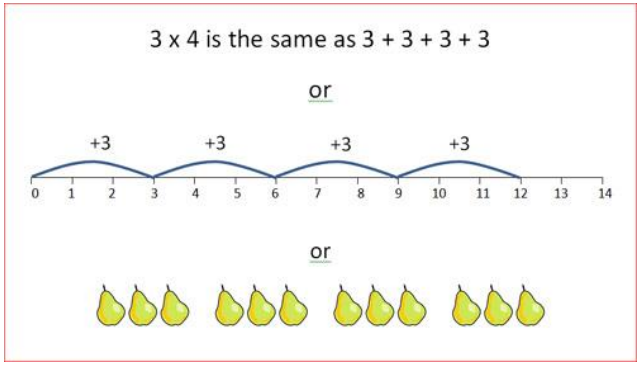
Children to use arrays and repeated addition

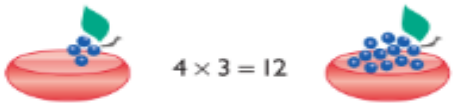
Children should recall multiplication facts from the 2, 5 and 10 multiplication tables.

Expressing multiplication as a number sentence using x
Using understanding of the inverse and practical resources to solve missing number problems.

7 x 2 = □	□ = 2 x 7
7 x □ = 14	14 = □ x 7
□ x 2 = 14	14 = 2 x □

Develop understanding of multiplication using array and number lines (see Year 1). Include multiplications not in the 2, 5 or 10 times tables.





Year 3

Children should multiply 2 digits by a single digit number.

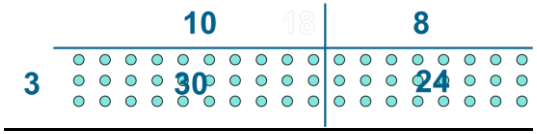
Children should recall multiplication facts for the 2, 3, 4, 5, 8 and 10 multiplication tables.

Missing number problems
Continue with a range of equations as in Year 2 but with appropriate numbers.

<u>Mental methods</u>
Doubling 2 digit numbers using partitioning

Demonstrating multiplication on a number line – jumping in larger groups of amounts
13 x 4 = 10 groups of 4 = 40
3 groups of 4 = 12 = 52

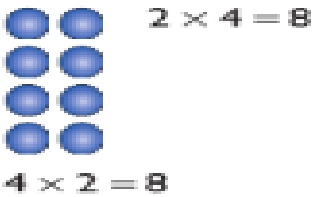
<u>Written methods</u> (progressing to 2d x 1d)
Developing written methods using understanding of visual images



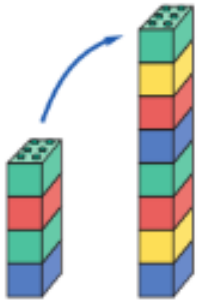
<u>Develop onto the grid method</u>

18 x 3 =

	10	8
3	30	24



Doubling numbers up to 10 + 10
Link with understanding scaling
Using known doubles to work out double 2d numbers
(double 15 = double 10 + double 5)



double 4 is 8
4 × 2 = 8

Towards written methods
Use jottings to develop an understanding of doubling two digit numbers.

16 x 2 =

16
/ \
10 6
x2 x2
20 12 = 32

30
+ 24
54

Give children opportunities for children to explore this and deepen understanding using Dienes apparatus.

When secure children can move onto formal written method of short multiplication

3 2
x 3
9 6

Multiplication

Year 4

Children should multiply 2 and 3 digits by a single digit

Children should know all the multiplication tables up to 12 x 12

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

□5 x 5 = 125

Mental methods
Counting in multiples of 6, 7, 9, 25 and 1000.

Children should solve practical problems with increasingly complex multiplication in a range of contexts. Relate to known number facts. (e.g. how tall would a 25cm sunflower be if it grew 6 times taller?)

Written methods (progressing to 3d x 1d)
Children to embed and deepen their understanding of methods to multiply up 3d x 1d.

Introduce more 'traditional' column method
E.g.

125
x 2
10 (2 x 5)
40 (2 x 20)
200 (2 x 100)
250

Then move to more compact method –

Year 5

Children should multiply up to 4 digits by 1 or 2 digits.

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

Mental methods
X by 10, 100, 1000

Children to explore equivalent statements
(e.g. 4 x 35 = 2 x 35 x 2)

Children should identify multiples and factors, including finding all factor pairs of a number.

Children should solve practical problems involving combinations of operations.

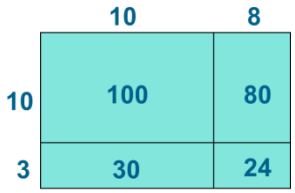
Identify factor pairs for numbers

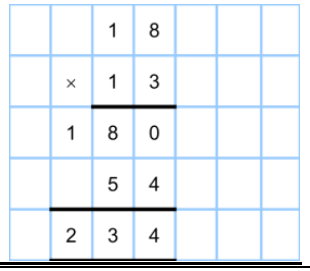
Children need to be taught to approximate first e.g. for 72 x 38 they will use rounding. **72 x 38** is approximately **70 x 40** = 2800. Use this approximation to check the reasonableness of their answer against.

Written methods (progressing to 4d x 2d)

Children to explore how the grid method supports an understanding of long multiplication (for 2d x 2d)

Children can see how steps are related, but notice how there are less steps involved in the column method.





Year 6

Children should use short and long multiplication as in Year 5 and multiply decimals with up to 2 decimal places by a single digit.

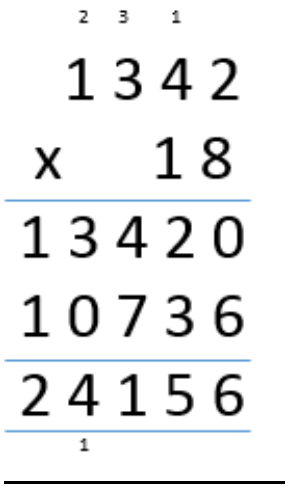
Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

Mental methods
Children should perform mental calculations with mixed operations and large numbers.

Children should solve multi- step problems in a range of contexts, choosing appropriate combinations of operations and methods.

Children should use rounding and place value to make approximations before calculating and use these to check answers against.

Written methods
Continue to refine and deepen understanding of written methods including fluency for using long multiplication



24 x 6 becomes

```
  24
 x  6
 144
   2
```

342 X 7 becomes

```
  342
 x   7
 2394
  2 1
```

Children should be able to approximate before they calculate and make this a regular part of their calculating e.g.

346 x 9 is approximately 350 x 10 = **3500**

Children can then check the final answer against their approximation.

Children to use formal written methods as show below.

24 × 16 becomes

```
      2
      2 4
  ×   1 6
  -------
  2 4 0
  1 4 4
  -------
  3 8 4
```

Answer: 384

124 × 26 becomes

```
      1 2
      1 2 4
  ×     2 6
  -------
  2 4 8 0
      7 4 4
  -------
  3 2 2 4
  1 1
```

Answer: 3224

124 × 26 becomes

```
      1 2
      1 2 4
  ×     2 6
  -------
      7 4 4
  2 4 8 0
  -------
  3 2 2 4
  1 1
```

Answer: 3224

24 × 6 becomes

```
      2 4
  ×     6
  -------
  1 4 4
    2
```

Answer: 144

342 × 7 becomes

```
      3 4 2
  ×       7
  -------
  2 3 9 4
    2 1
```

Answer: 2394

2741 × 6 becomes

```
      2 7 4 1
  ×         6
  -----------
  1 6 4 4 6
    4 2
```

Answer: 16 446

Extend to decimals with up to two decimal places.

```
  12.5
 x 2.5
  1.25   (2.5 x 0.5 )
  5.00   (2.5 x 2.0 )
 25.00   (2.5 x 10.0 )
 31.25
```

When secure children move to formal methods of multiplication for decimals, carrying numbers across.

3.19 x 8 =

```
   3.19
 X 8
  25.52
   1 7
```

Ensure children line up the decimal points in the question and answer.

Remind children that the single digit belongs to the unit column.

This works well for multiplying money and measures.

Division

Year 1

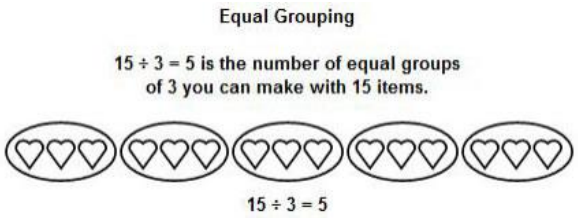
Children should be able to group and share small quantities.

Children should be able to count in 2s, 5s and 10s.

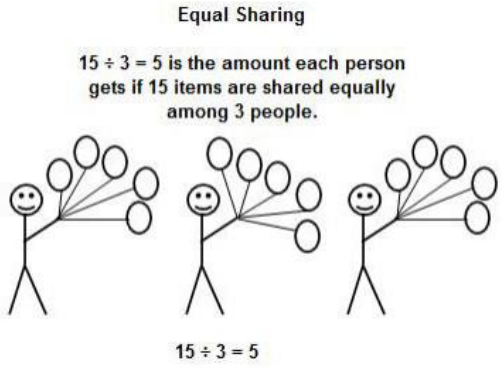
Use objects, diagrams and pictorial representations to solve problems involving both grouping and sharing.

Group AND share small quantities- understanding the difference between the two concepts.

Grouping



Sharing



Use of arrays as a pictorial representation for division.
15 ÷ 3 = 5 There are 5 groups of 3.
15 ÷ 5 = 3 There are 3 groups of 5.

Year 2

Children should group and share using the ÷ and = sign

Children should use division facts for 2, 5 and 10 multiplication tables.

10 ÷ 2 = □	□ = 10 ÷ 2
10 ÷ □ = 5	5 = 10 ÷ □
□ ÷ 2 = 5	5 = □ ÷ 2
□ ÷ ∇ = 2	2 = □ ÷ ∇

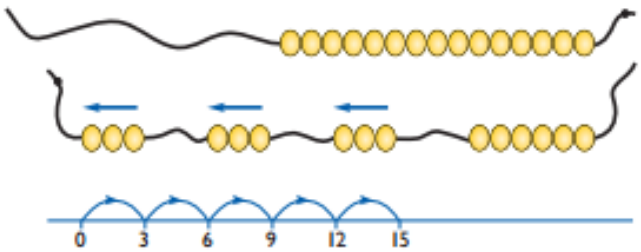
Know and understand sharing and grouping- introducing children to the ÷ sign.

Children should continue to use grouping and sharing for division using practical apparatus, arrays and pictorial representations.

Grouping using a number line

Group from zero in jumps of the divisor to find our 'how many groups of 3 are there in 15?'.

15 ÷ 3 = 5



Year 3

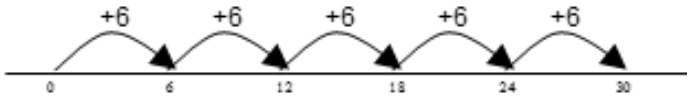
Children should divide 2 digit numbers by a single digit (where there is no remainder in the final answer)

÷ = signs and missing numbers

Continue using a range of equations as in year 2 but with appropriate numbers.

Grouping on a number line

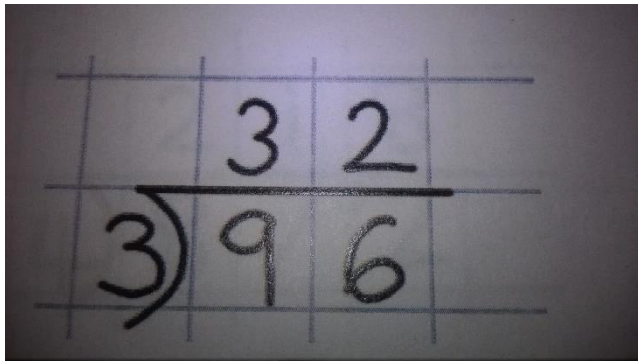
How many 6's are in 30?

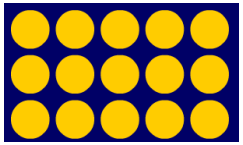


30 ÷ 6 = 5

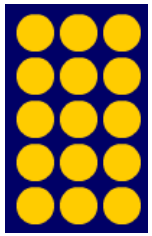
Formal written method

Once children are secure with division as grouping and can use a number line move on to short division for larger 2 digit numbers. Ensuring no remainders (each digit must be a multiple of the divisor)



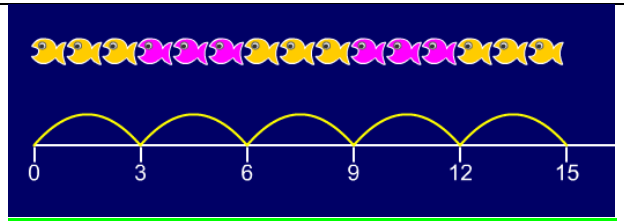


15 ÷ 3 = 5



15 ÷ 5 = 3

Children should find ½ of a group of objects by sharing into 2 equal groups.

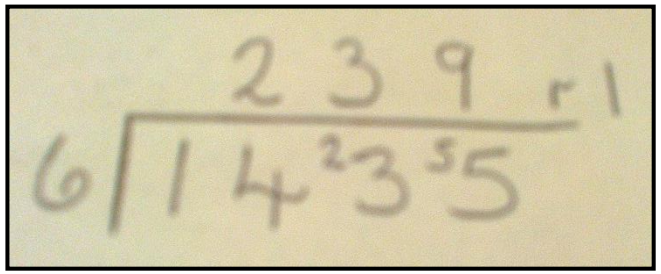
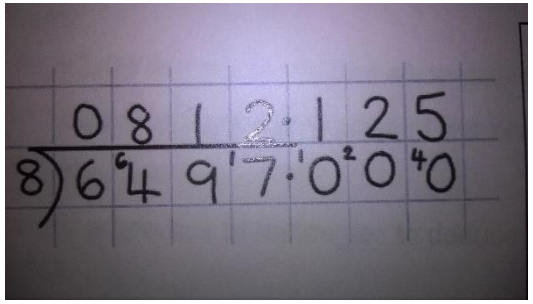


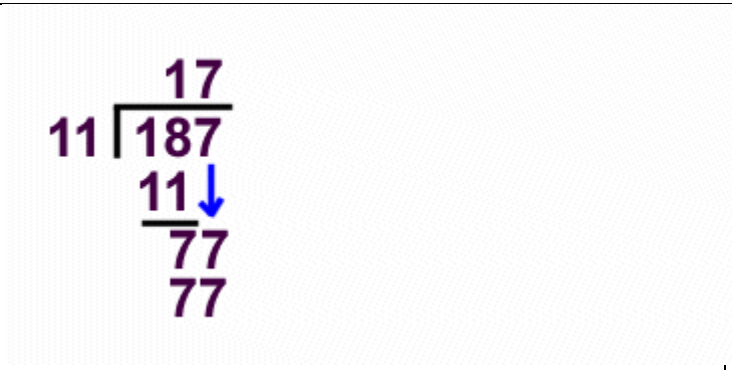
Continue work on arrays. Support children to understand how multiplication and division are inverse. Look at an array – what do you see?

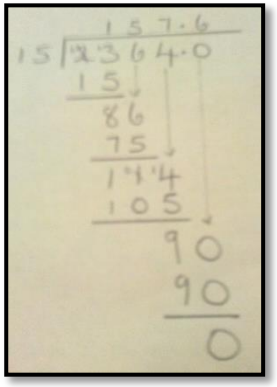
Include problem solving opportunities.

Then demonstrate short division with no remainders in the final answer but with remainders occurring within the calculation. Children should be taught to ‘carry’ the remainder onto the next digit.

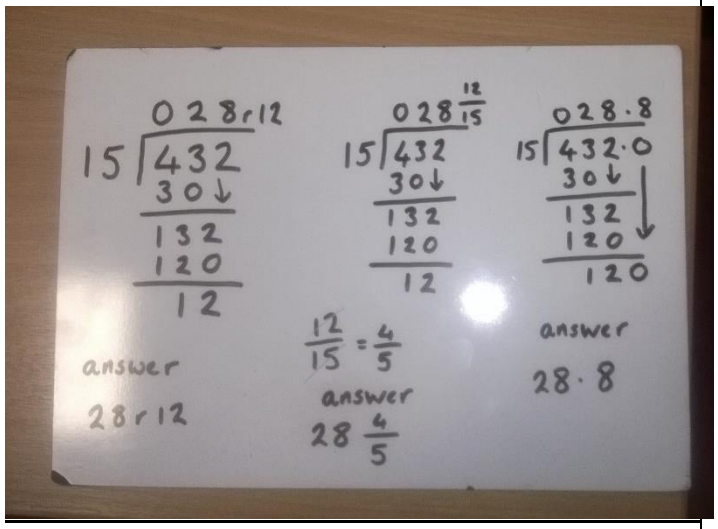
$$\begin{array}{r|l} & 12 \\ \hline 8 & 9^{1}6 \end{array}$$

Division		
Year 4	**Year 5**	**Year 6**
Children should divide up to 3 digit numbers by a single digit (without remainders initially) **<u>÷ = signs and missing numbers</u>** Continue using a range of equations as in year 3 but with appropriate numbers. Continue to develop short division Children to move on to dividing numbers up to 3 digits by a single digit. Also introduce calculations which give an answer zero in the first column. $\begin{array}{r} 0\ 3\ 5 \\ 5\overline{)\,1^{1}\,7^{2}\,5} \end{array}$ Children who exceed this expectation may progress to year 5 level showing remainders in the answer.	**Children should divide up to 4 digits by a single digit, including those with remainders.** <u>Formal Written Methods</u> Continue as shown in Year 4 but with larger numbers and remainders. E.g. 1435 ÷ 6  Now that children are introduced to examples that give rise to remainder answers, division needs to have a real life problem solving context, where **pupils consider the meaning of the remainder and how to express it.** If children are confident and accurate introduce long division for pupils who are ready to divide any number by a 2 digit number.	**Children should divide at least 4 digits by both single digit and 2 digit numbers, including decimal numbers.** <u>Formal Written Methods – short division for dividing by a single digit.</u> E.g. 6497 ÷ 8 =  <u>Calculating a decimal remainder</u> In the above example rather than expressing the remainder as r1 a decimal point is added after the units because there is still a remainder and the one remainder is carried onto zeros after the decimal point. Keep dividing it on to 3 decimal places. <u>Formal Written Methods – long division for dividing by 2 digit numbers.</u>





Quotients should be expressed as decimals and fractions



Where remainders occur pupils should express them as fractions, decimals or use rounding depending on the problem.