Holy Trinity and St John's

Maths & Calculations Policy

Purpose of study

"Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject." *National Curriculum 2014*

Aims

The National Curriculum for mathematics aims to ensure that all pupils:

- 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
- **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

In addition the school aims for all pupils to have equality of opportunity:

- to enjoy Mathematics, be successful and have a positive and enthusiastic attitude to the subject.
- to use Mathematics as part of their everyday life in school and at home.

Intent

At our school, we believe that every child can succeed in mathematics. Our mathematics curriculum is designed to develop confident, resilient and independent learners who are fluent in mathematical knowledge and skills and able to apply them in a wide range of contexts. We aim to provide a broad, balanced and ambitious curriculum that builds on prior learning and ensures progression for all pupils.

Through high-quality teaching, pupils develop a secure understanding of number, calculation, reasoning and problem-solving. We encourage children to think mathematically, explain their thinking using accurate mathematical vocabulary and make connections between different areas of mathematics. Our curriculum promotes positive attitudes towards mathematics, fostering curiosity, perseverance and confidence while preparing pupils for the next stage of their education and everyday life.

We are committed to ensuring that all pupils, regardless of background or starting point, have access to high-quality mathematics teaching. Appropriate support and challenge enable every child to achieve their full potential.

Implementation

Mathematics is taught daily through carefully planned lessons that follow a coherent and progressive curriculum aligned with the National Curriculum. Learning is sequenced to ensure that new concepts build on previously acquired knowledge and skills.

Lessons incorporate the use of concrete resources, pictorial representations and abstract methods to develop conceptual understanding.

Teachers use regular formative assessment to identify misconceptions, adapt teaching and provide timely support or challenge. Retrieval practice and frequent opportunities to revisit previously taught concepts help secure long-term retention.

Mathematical reasoning and problem-solving are embedded throughout lessons, enabling pupils to justify their thinking, explain methods and apply their learning in a variety of contexts. Mathematical vocabulary is explicitly taught and modelled to support pupils in communicating their understanding accurately.

Adaptive teaching ensures that all learners can access the curriculum while providing appropriate challenge for those working at greater depth.

Impact

The impact of our mathematics curriculum is that pupils develop confidence, fluency and competence in mathematics. They demonstrate secure mathematical knowledge, apply efficient calculation strategies and use reasoning and problem-solving skills to tackle tasks.

Pupils are able to articulate their mathematical thinking using appropriate vocabulary and show resilience when faced with challenge..

Teachers use ongoing assessment, pupil discussions, work scrutiny, lesson observations and assessment data to monitor progress and inform future planning. By the time pupils leave our school, they are well prepared for the next stage of their mathematical education, equipped with the knowledge, skills and positive attitudes needed to succeed both academically and in everyday life.

Vision and values

We live out our school vision and values through every aspect of our Maths curriculum at Holy Trinity and St John's. Our classrooms are intentionally designed as safe, compassionate spaces where children feel confident to make mistakes, talk about their thinking, and learn from one another. This culture nurtures resilience and perseverance.

Daily use of manipulatives supports children in developing curiosity and deep conceptual understanding. By exploring concrete resources, pupils make meaningful links to real-life situations and build secure foundations for abstract reasoning.

We promote collaboration and shared problem-solving so that children learn to reason together. Through structured discussion and teamwork, pupils develop the courage to take risks, challenge their own ideas and support one another within a safe, well-managed classroom environment.

Principles of Teaching and Learning

The Mathematics curriculum covers the following areas: Number (place value, four operations, and fractions), Measurement, Geometry (properties of shapes, position and direction) and Statistics.

Our expectation is that all pupils will be Mathematicians who should be able to:

- understand the number system
- manipulate numbers by using
    - the inverse relationship
    - number bonds, times tables and other key facts
    - doubling and halving, estimate, rounding and adjusting
    - partitioning
    - x 10, x 100, x 1000 and divide by 10, 100, 1000
- be able to calculate mentally and using written calculations
- explain methods and reasoning
- to use and understand mathematical language to explain their thinking clearly
- understand that Maths is not just about finding the correct answer or there being only one correct answer
- use appropriate resources and manipulatives
- read tables, diagrams, scales and charts
- know how to answer word problems- using number sentences to support their thinking
- know how to solve a range of Mathematical problems
- develop resilience and perseverance

Enrichment and Additional Educational Needs

Maths is taught in class groups across the school. Every pupil has access to challenging work within their learning group and all children are supported through adaptive teaching ensuring manipulatives and modeling are used. A variety of methods are used to support gaps in learning as appropriately assessed by the teacher.

Teaching is organised to enable pupils of all abilities are able to access the learning. Pupils are

provided with appropriate challenges to ensure they are able to apply their understanding, through a variety of different means such as reasoning and problem solving. Pupils are given appropriate work and support so they can achieve the Learning Objective and Success Criteria. Homework is appropriately set according to the school's Homework Policy.

Maths lessons

Our three key principles are:

- maths taught every day
- a clear focus on direct, instructional teaching and interactive oral and practical work with the whole class and groups
- learning and applying skills and explaining mathematical thinking including mathematical vocabulary.

Lesson Structure

Daily count (counting stick, use of songs/chants) – 5 minutes.

Mental Arithmetic starter (Flashback 4, arithmetic focused questions, doubles, halving, misconception revisited from previous lesson/unit) – 5 minutes.

Tailored input to include teacher modeling, pupil modeling (this can be verbal or non-verbal) use of manipulatives and slides where necessary. If the manipulatives are on the screen, they need to be being used by the children. - 15 minutes.

Independent learning – this should be done in a we do, you do style. This will allow time for reasoning and mathematical conversation as a whole class. Not all worksheet based, independent recording to be encouraged for all learners. 25/30 minutes

Plenary question- misconceptions addressed with the whole class as needed, consolidation for the lesson, pre-teach for the next day- 5 minutes.

Resources and manipulatives

Frequently used resources such as digit cards, place value cards, number lines, number activities and games are available in each year group. Additional resources are kept within the Maths cupboards in phase areas and the main maths area. EYFS use loose parts to support their mathematical learning.

Lessons must have clear Learning Objectives and Success Criteria's that are communicated to the pupils. The focus is on direct teaching that is interactive and modelled well. It will involve

a variety of teaching methods, from both the staff and pupils. This will be inline with the school's calculation policy.

- Modelling – showing how to and using manipulatives to support thinking. This is consistent across the school. Ensure when modelling written methods that place value headings are used and transferred into the children's books.
- Questioning and reasoning– giving clear examples and the stages of reasoning are used with the children. Ensuring mathematical vocabulary is used to explain by both pupils and staff.
- Discussion & evaluation – explanation of methods and exploring errors and misconceptions.
- Direction – taking care, presenting work clearly and neatly, when needed children to show their working out.

See Teaching and Learning Handbook for all teaching methods used.

A display will be updated by the Maths Lead to share children's learning and achievements.

All classrooms are to have a Maths working wall. See appendix two for display guidance.

Times Tables Rock Stars (TTRS) and Numbots

We expect the children to be accessing Numbots and TTRS at home. This will be part of the children's Home Learning. Once the children have completed the Numbots program they will move onto TTRS. TTRS plays a vital role in preparing the children for their MTC check in Year 4, and further in Year 5 and 6. See image below for how times tables impact all mathematical learning.



Weekly awards are presented for Numbots and TTRS during Friday's Worship.

Assessment, recording and reporting

Teachers are expected to make regular assessments of pupils' progress and record them systematically for future planning and pupil tracking.

Formative assessment is used as part of daily practice in order to understand the children's

knowledge and understanding. This will be through the use of show me boards, hinge questions, cold calling, think, pair share and children's written and verbal responses.

This involves:

- Informal testing of mental recall & calculation, eg times tables, number bonds
- Regular arithmetic tests, introduced in Term 3 for Years 2-5. Year 6 start these from September.
- Daily marking of children's work in books- verbal feedback and marking policy followed.
- Regular low stakes assessments/quizzes in class/ end of block checks/ use of hinge questions.
- Assessment and recording of individual pupil's progress against National Curriculum objectives, stored on Insight.
- 3 x termly assessments in fluency and reasoning in each year group – Term 2, 4 and 6. Use of SMART Grade to support with standardized score system. Each teacher will complete a gap analysis to support gaps ready for adapting learning.
- Summative assessment weeks in May– KS SATs Years 6
- 3x weekly times tables testing in Year 4 ready for MTC.
- Weekly times table checks in years 2,3 and 5. Targeted support given.
- First Class Number intervention program used.
- Baseline time tables by end of week 2, Term 1 for Year 4,5 and 6.
- Termly times table tests for Years 3,4,5 and 6 – recorded on excel spreadsheet.
- Baseline for Year 3 by end of term 1 (2,5s and 10s)
- *NB: Year 3 – by the end of Year 3 test on 2,5,10,3,4,6,8.*

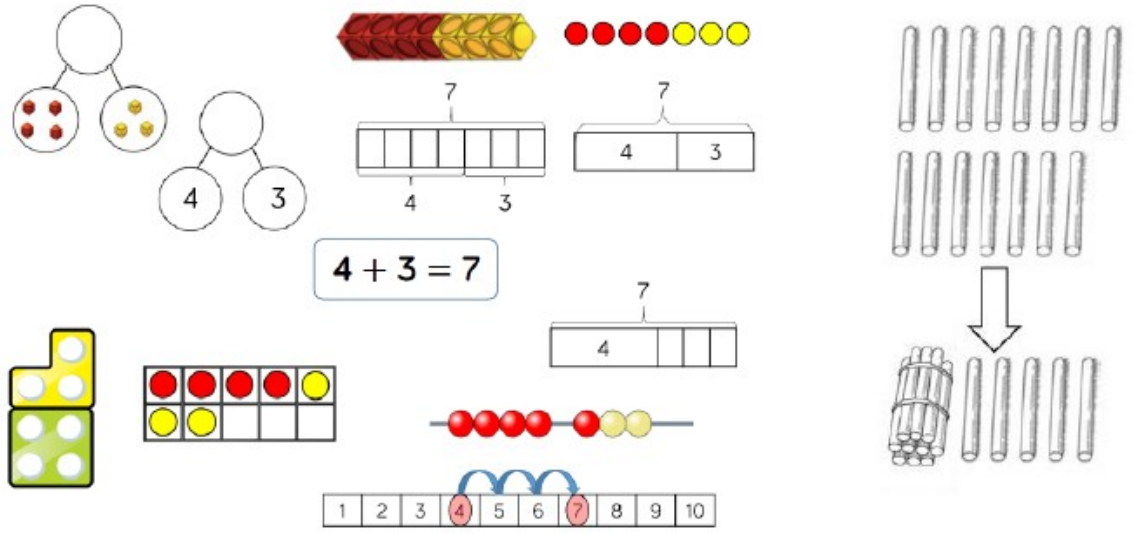
Appendix 1 - Calculations Policy

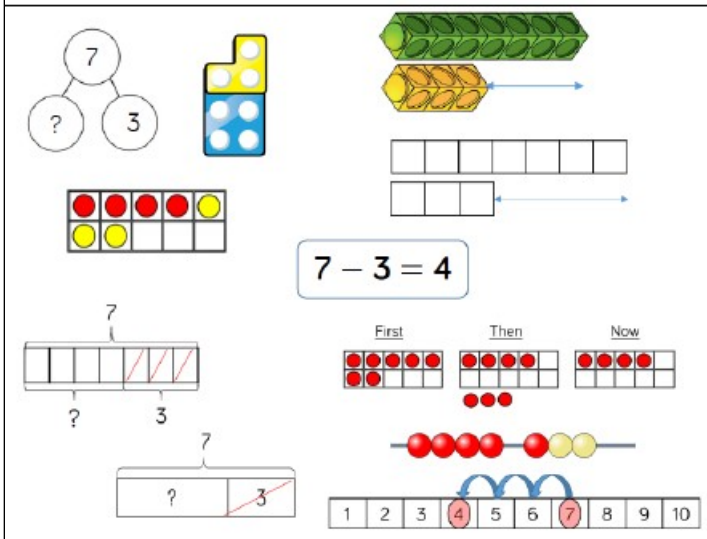
Year 1

Addition and subtraction programme of study

- Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one-digit and two-digit numbers to 20, including zero
- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ... – 9

Examples:





Vocabulary

Add
More
Plus

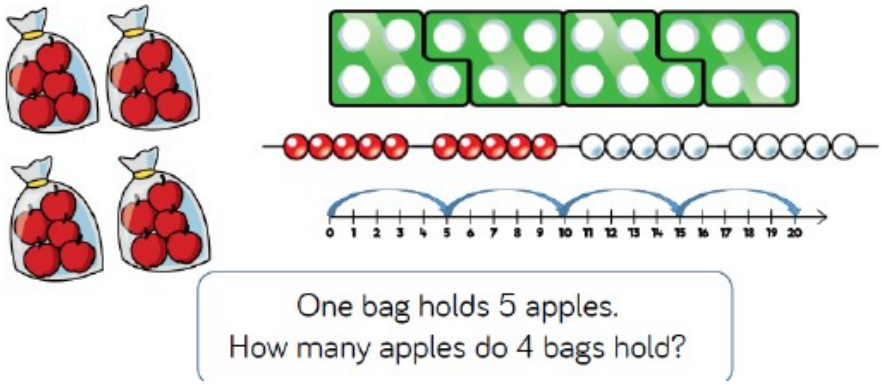
Make
Sum
Total
Altogether
Double
How many more make..?

Manipulatives
Numicon
Cubes
Base 10
Number beads
Straws/ everyday objects
Tens frame
Counters

Multiplication and division programme of study

- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Examples



Vocabulary

How many times?
Lots of
Groups of
Multiple of
Multiply by
Repeated addition
Array, row and column.
Group in

Manipulatives

Counters
Bead strings
Everyday objects
Number lines

Year 2

Addition programme of study

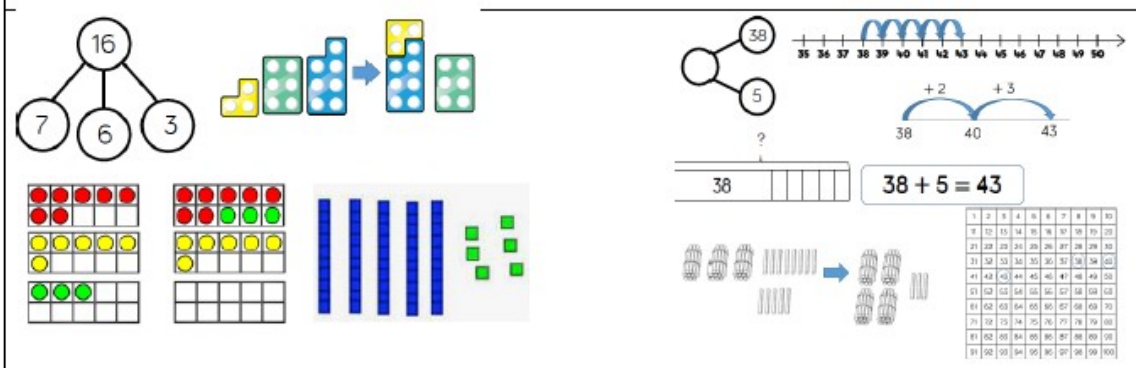
Solve problems with addition (and subtraction) using concrete objects and pictorial representations - including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods.

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 (and subtraction from one number of another cannot).

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Examples:



Vocabulary

Add
Plus
Sum
Inverse

Manipulatives
Base Ten
Tens Frames
Counters
Straws
Everyday items
Numicon

Subtraction programme of study

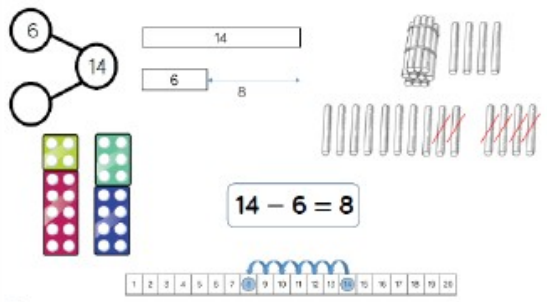
Solve problems with (addition and) subtraction using concrete objects and pictorial representations - including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods.

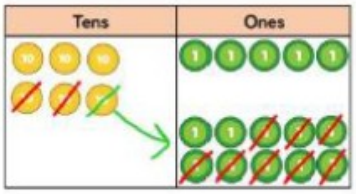
(Add and) subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one-digit numbers.

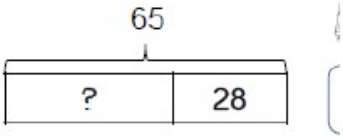
Show that addition of two numbers can be done in any order and subtraction from one number of another cannot.

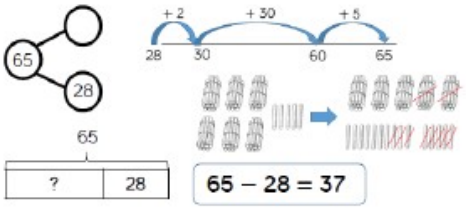
Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

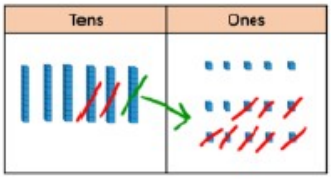
Examples











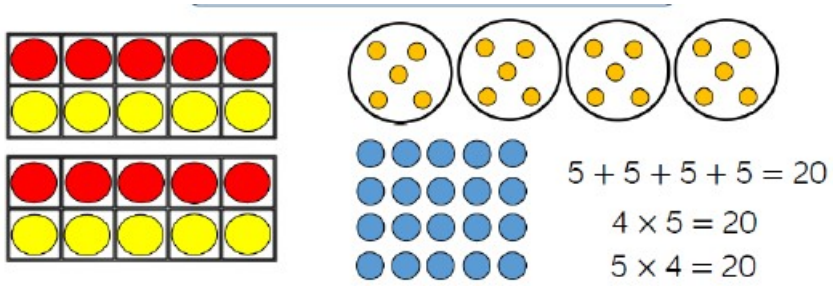
Vocabulary

Less than
Take away
Subtract
Inverse
How many fewer?
Difference between
Minus

Multiplication programme of study

- 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.

Examples



Vocabulary

How many times?
Lots of
Groups of
Multiple of
Multiply by
Repeated addition
Array, row and column.

Manipulatives

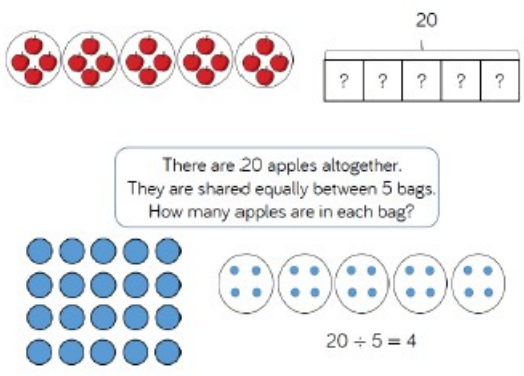
Counters
Cubes
Tens frames

Division programme of study

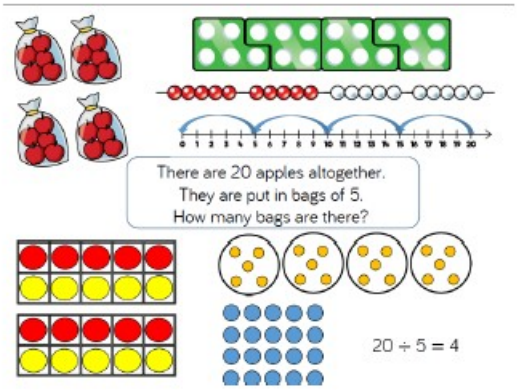
- Recall and use (multiplication and) division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for (multiplication and) division within the multiplication tables and write them using the (multiplication (×),) division (÷) 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.

Examples

Sharing



Grouping



Vocabulary

Divided by
Sharing
Grouping

Manipulatives

Counters
Cubes
Tens frames

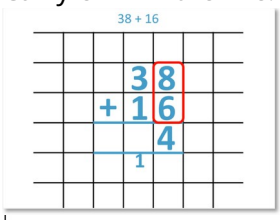
Year 3

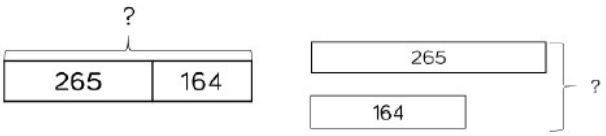
Addition programme of study

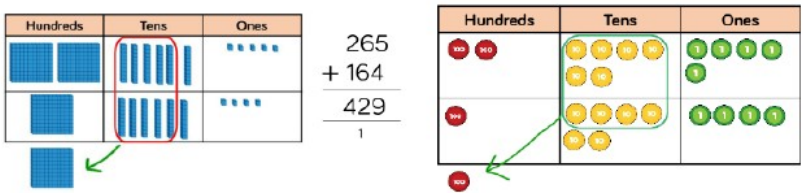
- Add numbers with up to three digits, using formal written methods of
- columnar addition.
- Estimate the answer to a calculation and use inverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition.

Examples:

Carry UNDER the line.







Vocabulary

Add
Sum
Plus
Inverse
Operation

Manipulatives

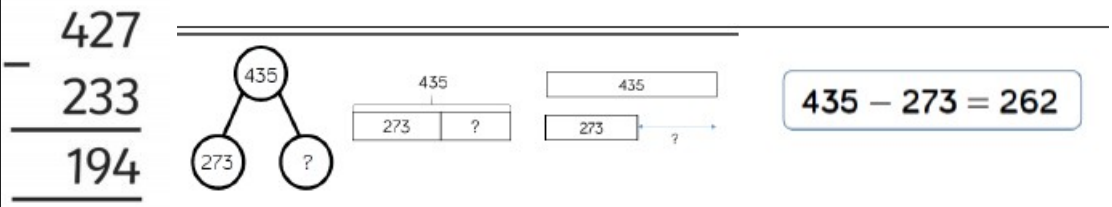
Base Ten
Place Value Counters

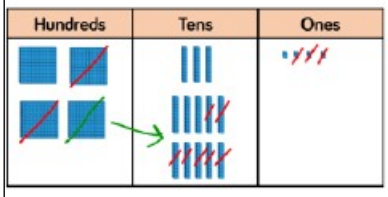
Subtraction programme of study

- Subtract numbers with up to three digits, using formal written methods of
- columnar subtraction
- Estimate the answer to a calculation and use inverse operations to check answers

- Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.

Examples





Vocabulary

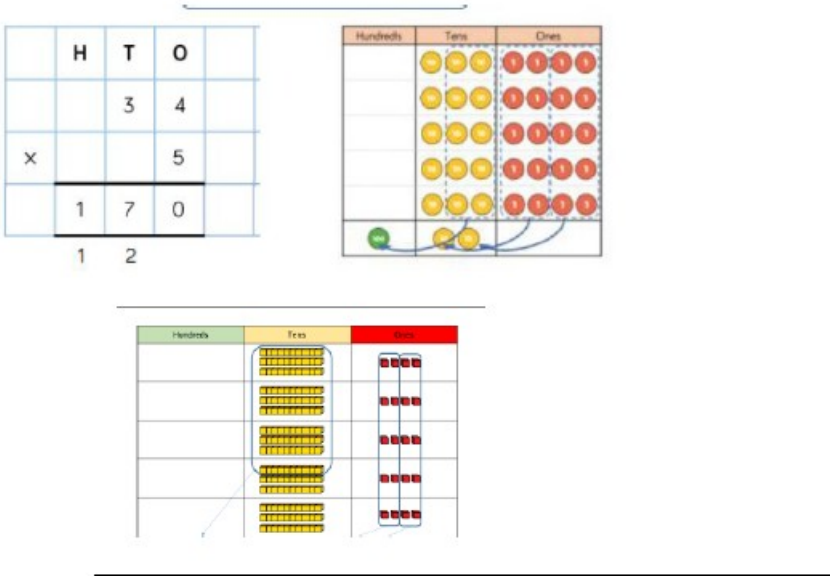
Take away
Subtract
Column subtraction
Minus

Manipulatives
Base Ten
Place Value Counters

Multiplication programme of study

- Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are
connected to m objects.

Examples



Vocabulary

Product
Scale up
Multiples

Manipulatives

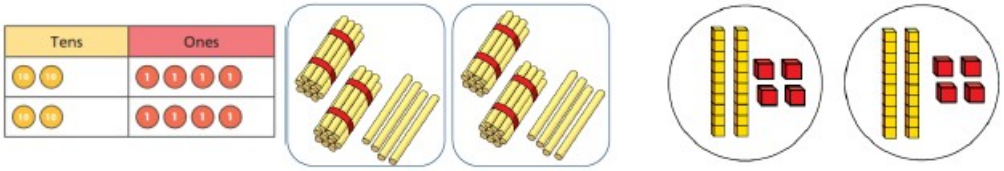
Base Ten
Counters
Multiplication grid

Division programme of study

- Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Solve problems, including missing number problems, involving division, including positive integer scaling problems and correspondence problems in which n objects
are connected to m objects.

Examples

Sharing



+ Number line

Vocabulary
Divide
Sharing

Grouping

Manipulatives

Straws

Counters

Place value counters

Year 4

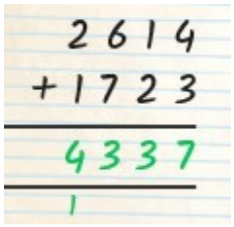
Addition programme of study

- Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Examples:

	2	4	2	0
+	3	2	5	1
	5	6	7	1

	Th	H	T	O
	3	3	5	6
+	2	4	3	5
	5	7	9	1
			1	



Vocabulary
Add
Sum
Plus
Inverse
Operation

Column

Manipulatives

Place value counters

Base Ten
Counters

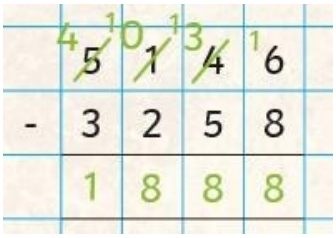
Subtraction programme of study

- Subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Examples

	Th	H	T	O
	3	4	5	4
–	1	2	2	4
	2	2	3	0

	Th	H	T	O
	5	6	3 ~~4~~	1 3
–	4	3	1	6
	1	3	2	7



Vocabulary

Subtract

Inverse

Take away

column

Manipulatives

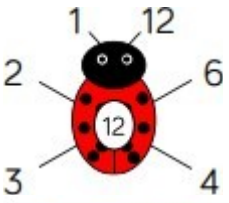
Place value counters

Base Ten
Counters

Multiplication programme of study

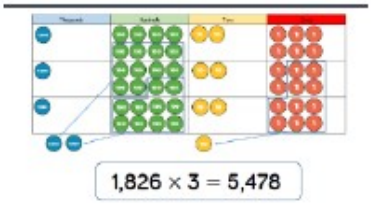
- Recall multiplication facts for multiplication tables up to 12 × 12.
- Use place value, known and derived facts to multiply mentally.
- Recognise and use factor pairs and commutativity in mental calculations.
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
- Solve problems involving multiplying.

Examples



	H	T	O
		3	4
×			5
	1	7	0
	1	2	

	H	T	O
	2	4	2
×			4
	9	6	8
	1		



Vocabulary

Product
Scale up
Multiples
Multiply

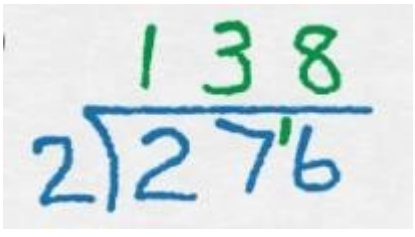
Manipulatives

Base Ten
Counters
Place Value counters
Number lines
Multiplication square

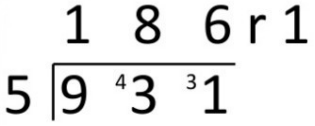
Division programme of study

- Recall division facts for multiplication tables up to 12 × 12.
- Use place value, known and derived facts to divide mentally.
- Recognise and use factor pairs and commutativity in mental calculations.
- Introduce short division method by dividing numbers up to 3 digits by a one-digit.
- Solve problems involving dividing.

Examples







Vocabulary

Divide

Groups

Sharing

Remainder

Manipulatives

Place value counters

Counters

Base Ten

Year 5

Addition programme of study

- add whole numbers with more than 4 digits, including using formal written methods (columnar addition)
- solve addition (and subtraction) multi-step problems in contexts deciding which operations and methods to use and why.

Examples.

789 + 642 becomes

```
   7  8  9
+  6  4  2
-----------
1  4  3  1
   1  1
```

Answer: 1431

```
  72.8
+ 54.6
------
 127.4
  1 1
```

Vocabulary

Add
Sum
Plus
Inverse
Operation

Column

Manipulatives

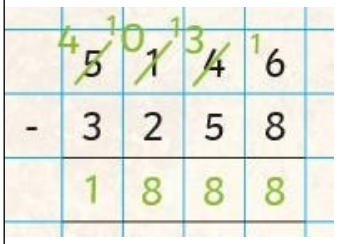
Place value counters

Base Ten
Counters

Subtraction programme of study

- subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- solve subtraction (and addition) multi-step problems in contexts, deciding which operations and methods to use and why.

Examples



Vocabulary

Subtract

Inverse

Take away

column

Manipulatives

Place value counters

Base Ten
Counters

Multiplication programme of study

- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Examples

12

1	12

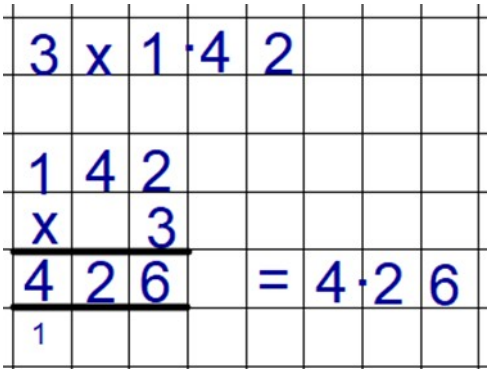
2 6

3 4

2741 × 6 becomes

	2	7	4	1
×				6
1	6	4	4	6
	4	2		

Answer: 16 446



Vocabulary
Product
Scale up
Multiples
Multiply

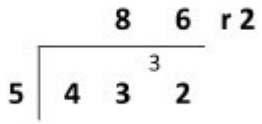
Manipulatives
Base Ten
Counters
Place Value counters
Number lines
Multiplication square

Division programme of study

- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding
  (for example, 98 ÷ 4 = 98/4 = 24 r 2 = 24 ½ = 24.5 ≈ 25).

Examples

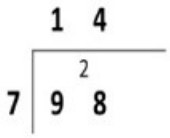
432 ÷ 5 becomes



Answer: 86 remainder 2

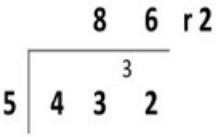
Short division

98 ÷ 7 becomes



Answer: 14

432 ÷ 5 becomes



Answer: 86 remainder 2

Vocabulary

Divide

Groups

Sharing

Remainder

Manipulatives

Place value counters

Counters

Base Ten

Year 6

Addition programme of study

- Solve addition (and subtraction) multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving addition (subtraction, multiplication and division).
- Pupils practise addition, for larger numbers, using the formal written methods of columnar addition.

Examples.

789 + 642 becomes

$$\begin{array}{r} 7\ 8\ 9 \\ +\ 6\ 4\ 2 \\ \hline 1\ 4\ 3\ 1 \\ \hline 1\ \ 1 \end{array}$$

Answer: 1431

$$\begin{array}{r} 72.8 \\ +54.6 \\ \hline 127.4 \\ \hline 1\ \ 1 \end{array}$$

Vocabulary

Add
Sum
Plus
Inverse
Operation

Column

Manipulatives

Place value counters

Base Ten
Counters

Subtraction programme of study

- Solve (addition and) subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Solve problems involving (addition) subtraction (multiplication and division).
- Pupils practise (addition) subtraction (multiplication and division) for larger numbers, using the formal written methods of columnar addition and subtraction,

Examples

	Th	H	T	O
	5	6	3 ~~4~~	1 3
−	4	3	1	6
	1	3	2	7

Vocabulary

Subtract

Inverse

Take away

column

Manipulatives

Place value counters

Base Ten
Counters

Multiplication programme of study

- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Solve problems involving (addition, subtraction) multiplication (and division).
- Pupils practise multiplication for larger numbers, using the formal written methods including short and long multiplication.
- Multiply one-digit numbers with up to two decimal places by whole numbers.

Examples

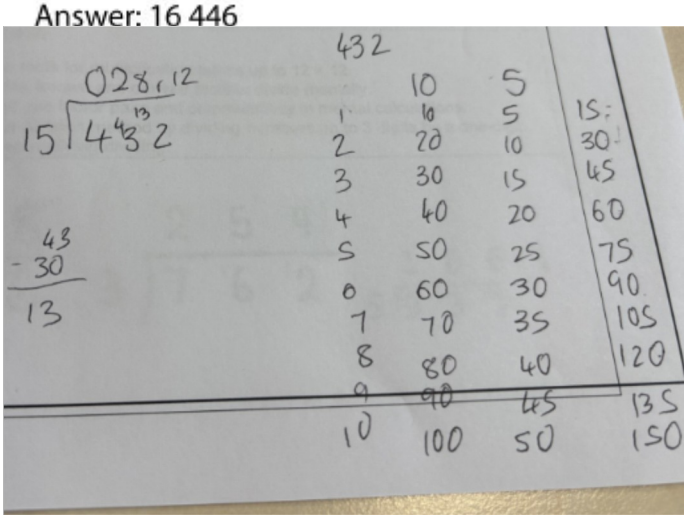
12

1	12
2	6
3	4

2741 × 6 becomes

	2	7	4	1
×				6
1	6	4	4	6
	4	2		

Answer: 16 446



Vocabulary

Product
Scale up
Multiples
Multiply

Manipulatives

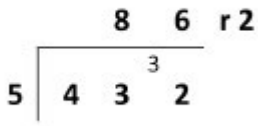
Base Ten
Counters
Place Value counters
Number lines
Multiplication square

Division programme of study

- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Solve problems involving (addition, subtraction, multiplication and) division
- Pupils practise division for larger numbers, using short and long division.
- Use written division methods in cases where the answer has up to two decimal places.

Examples

432 ÷ 5 becomes



Answer: 86 remainder 2

Vocabulary

Divide

Groups

Sharing

Remainder

Manipulatives

Place value counters

Counters

Base Ten