St Mary's Church of England Primary School

Learn. Grow. Achieve. Flourish.

Maths Policy

POLICY: Maths Policy
APPROVED BY: HT
APPROVED DATE: July 2024
REVIEW DATE: July 2025

This policy is non-statutory and recommended to be reviewed.

School Vision

As a Church of England school, we value and are ambitious for all children and are committed to providing a positive, safe, and stimulating environment for them to enjoy and excel in their learning; grow in confidence, resilience, and independence; achieve their full potential and flourish as individuals.

'I instruct you in the way of wisdom and lead you along straight paths'.
(Proverbs 4:11)

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Contents

Curriculum statement

Intent: The National Curriculum (2021) for maths aims to ensure that children:

- become fluent in the fundamentals of mathematics
- reason mathematically
- can solve problems by applying mathematics.

'Mathematics is a creative and highly inter-connected discipline – a high-quality mathematic education should provide 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.' (National Curriculum for Mathematics, 2014)

***Every Child a Mathematician*:** At St Mary's, we aim to promote a love of maths to enable our pupils to become enthusiastic, creative, and articulate mathematicians who use their skills to become great problem solvers. We want children to be fluent with mathematical fundamentals and procedures, be able to recall facts rapidly and accurately, reason mathematically using correct vocabulary and be able to solve increasingly more complex and sophisticated problems. Furthermore, we want our pupils to confidently apply and transfer key knowledge and skills to new contexts and recognise the interconnectedness of maths to other subjects and understand that maths is important in the wider world and serves a real purpose.

Implementation: The content and principles underpinning the 2014 Mathematics curriculum and the maths curriculum at St. Mary's reflect the concrete, pictorial and abstract model in accordance with the White Rose Maths scheme of work. These principles convey how our curriculum is implemented:

- Oracy is embedded into the heart of our learning through shared work, outdoor learning, and class discussions. Use of appropriate vocabulary is modelled throughout lessons by both staff and children, allowing everyone to engage with mathematical language.
- Basic maths skills are taught daily, focussing on key mathematical vocabulary. All lessons embed place value and four operation skills.
- Maths lessons include fluency, reasoning and problem solving, ensuring that prior learning and vocabulary are visible to the children via teaching slides and/or the maths learning wall regularly.
- The maths curriculum ensures full topic coverage, using the White Rose Maths materials.
- The structure and connections within the maths topics are emphasised, so that children develop deep learning that can be sustained.
- Misconception slides are introduced to anticipate known and common misconceptions to aid children in building a secure understanding of mathematical concepts.
- Learning is differentiated to ensure there is appropriate challenge for all learners, including providing smaller steps to extension challenges.
- Children are grouped according to their ability. We promote 'adaptive teaching' whereby children are grouped for the purpose of the lesson's content.
- All children receive 'guided group' support from the teacher x1 a week.
- If a child fails to grasp a concept or procedure, this is identified quickly, and early intervention ensures the pupil is able to 'keep up' with the learning.
- Practice and consolidation play a central in our lessons, providing regular opportunities for retrieval, review and over learning.

- Precise questioning is used to assess conceptual and procedural knowledge.

Impact: As a result of our maths teaching at St Mary's you will see:

- A curriculum that identifies the powerful core knowledge that pupils need to take with them on their journey into the next year, phase and stage of their mathematics education.
- Children who can articulate their learning in maths using key maths vocabulary.
- Strong links made between mathematical topics, the wider curriculum and beyond the school.
- Lessons that use a variety of resources to support learning and different representations of mathematical concepts.
- Reasoning and problem-solving skills taught within each lesson.
- Regular opportunities for retrieval and overlearning within each lesson.
- A curriculum that provides challenge for more able children.
- Regular and ongoing assessment which lends to fluid teaching and play an integral role in identifying interventions needed to support and enable the success of each child.

The school's use of White Rose Maths addresses these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing a growth mindset.

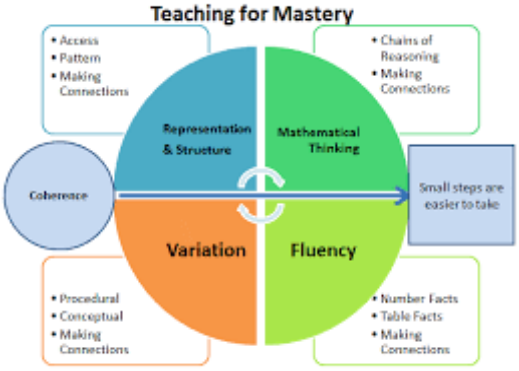
Teaching and Learning

At St Mary's we believe every child can be a competent mathematician. The teaching of mathematics at St Mary's is grounded in National Curriculum objectives and the three key aims: fluency, reasoning and problem solving. Teachers use elements of the 'mastery approach' as applicable to our school, our pupils and the National Curriculum. The five key elements of mastery: fluency; variation; representations and structures; mathematical thinking and coherence – making connections within and across aspects of mathematics, are key to the development of confident, passionate young mathematicians.

The youngest children in the Early Years Foundation Stage are supported, through the guidance given in the White Rose Scheme, to develop a deep understanding of the Early Learning Goals. Curiosity in and passion for maths is fostered through daily adult-led and child-initiated learning opportunities. Mathematics has a high profile in Early Years' learning; connections are drawn between maths and everyday life in both the indoor and outdoor environment.

Curriculum planning

In Years 1-6, planning for the daily one-hour mathematics lesson is based closely on long- and medium-term overviews outlined in the White Rose Mastery Scheme. (http://whiterosemathshub.co.uk/). Each year group covers the objectives in full in the order laid out by the scheme using the example questions given and creating similar as necessary. This ensures coverage in and across year groups is thorough and the approach consistent. In keeping with recommendation by the National Centre for the Teaching of Mathematics (https://www.ncetm.org.uk/) and mastery pedagogy, concepts are taught using a **concrete**, **pictorial** and **abstract** approach with the language of mathematics being emphasised throughout this learning process.



Teachers ensure that, throughout the school, children have the opportunity to explore their understanding of mathematical concepts using the CPA approach.

- **Concrete:** Pupils use concrete objects and manipulatives to help them understand what they are doing.
- **Pictorial:** Pupils then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.
- **Abstract:** With the foundations firmly laid, pupils should be able to move to an abstract approach using numbers and key concepts with confidence.

Problem solving skills are explicitly modelled to the children. Strategies are combinations of facts and methods that can be paired to types of problems including:

- Pattern spotting
- Systematically working through step by step
- Trial and error
- Visualising
- Working backwards

EYFS

White Rose schemes of learning are used to inform teachers' planning so that children are prepared with the appropriate mathematical knowledge required to access the Year 1 curriculum.

We relate the mathematical aspects of the children's work to the Development Matters statements and the Early Learning Goals (ELG).

There are six key areas of early mathematics learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school and beyond:

- Cardinality and Counting

- Comparison
- Composition
- Pattern
- Shape and Space
- Measures

We provide children with opportunities to practise and improve their skills in counting numbers, calculating simple addition and subtraction problems, and to describe shapes, spaces, and measures.

We provide children with opportunities to engage in maths activities both inside and outside of the classroom. Easily accessible, quality maths resources are provided so that children can self-select and engage freely as well as engaging in planned activities. Whenever possible, children's interests are used to support delivering the mathematics curriculum.

KS1

In key stage 1, mathematics is primarily focused on building confidence and fluency with whole numbers, counting and place value. It involves numerals, words, and the four operations, as well as concrete objects, measuring tools, etc. In this stage, pupils are able to recognize, describe, draw, compare, and sort different shapes. Quantities such as length, mass, capacity, and time also be compared using different measures.

By the end of year 2, pupils are expected to know the numbers bonds to 20 and understand place value. Practice at this early stage helps fluency. Reading and spelling mathematical vocabulary at key stage 1 is expected to be consistent with increasing understanding of mathematical terms. Through termly curriculum letters and the homework section of the school website, parents and pupils are informed of the mathematics facts to be tested. Parents are expected to support their child in learning these.

Lower KS2

Mathematical teaching in lower key stage 2 focuses on developing fluency with whole numbers, the four operations, number facts, and place value. In this way, pupils develop efficient written methods and mental calculations with increasingly large whole numbers. It is important for pupils to develop their skills in solving problems, such as fractions and decimal place value. Students also develop mathematical reasoning so they can analyse shapes and their properties and describe their relationships confidently. By using measuring instruments accurately, they can connect numbers to measures. In year 4, pupils are expected to have memorised up to and including the 12-multiplication table and demonstrate precision and fluency.

Students learn to read and spell mathematical vocabulary correctly and confidently, building on their growing word-reading and spelling skills. Through termly curriculum letters and the homework section of the school website, parents and pupils are informed of the mathematics facts to be tested. Parents are expected to support their child in learning these.

Upper KS2

In upper KS2 each daily mathematics lesson begins with guided arithmetic. In addition to this, Times Table Rockstars is used to continue to develop the children's knowledge of times table facts. At this mathematics teaching focuses on extending pupils' understanding of place value and the number system. Pupils learn to connect multiplication and division with fractions, decimals, percentages, and ratios.

Pupils are expected to solve increasingly complex problems requiring efficient written and mental calculation methods at this stage. In algebra, pupils learn to solve problems using arithmetic as a foundation. In geometry and measures, knowledge developed in number is consolidated and extended. Pupils learn how to classify shapes with increasingly complex geometric properties. The pupils learn how to work with fractions, decimals, and percentages by the end of year 6. The correct use of mathematical vocabulary is imperative.

Maths Lesson Design

Part	Lesson Focus	Explanation	Further Information
1	Arithmetic & Flashback recap	Recap of prior learning. Quick task accessible to all pupils without teacher input. Teachers assess fluency and understanding through observation.	Cold calling should be employed during the Arithmetic to encourage participation from various students. Utilise concrete examples during the recap to solidify understanding.
2	New Learning	Introduces main mathematical concepts for the day's lesson. Teachers explicitly teach the **vocabulary** for the day's learning and use visuals and definitions to display on the working wall.	Begin by discussing how the new learning connects with the school values, providing a contextual link for students. Incorporate the use of concrete, abstract, and pictorial representations during instruction for a comprehensive understanding. Use whiteboards for active problem-solving.
3	I DO	Practices new learning through Walkthru Modelling, focusing on key vocabulary, oracy skills, and full sentences.	Integrate concrete examples into the Maths Talk, encouraging students to discuss and visualise mathematical concepts using various representations. Problem-solving and reasoning activities are integral to this segment.
4	WE DO: Develop Learning	Builds on new learning, deepening understanding. Teachers assess and provide additional support as needed. Methods include focus groups, peer teaching, and problem-solving activities.	Emphasise the use of concrete examples to support students who may need additional scaffolding. Link learning to school values during this segment.
5	YOU DO: Independent Learning	Independent task to practice learning through problem-solving.	Fostering active engagement and problem-solving skills during Independent Learning. Encourage the use of concrete, abstract, and pictorial representations in students' independent work.
6	Plenary – SAT Style Question	Recap of the lesson, checking understanding and celebrating success. Includes a reasoning question linked to the lesson's objective. Can be used for AFL and self/peer assessment.	Conclude the lesson with a reflection on how the day's learning aligns with school values, reinforcing the broader context of the mathematical concepts covered. Encourage students to express their understanding using concrete, abstract, and pictorial representations during the recap.
7	Reflection	Refer back to the Learning Intention and success criteria, checking understanding of the knowledge and skills learnt in the lesson.	Use precise questioning to assess knowledge. Ask children to explain learning to their partner. Summative assessment (White Rose Unit Assessment).

At St. Mary's, throughout each year group, there is an emphasis on number and calculation as this is key to developing competent mathematicians.

In addition to the daily maths lesson, every pupil from Year 1 to Year 6 partakes in either a separate arithmetic lesson for 30 minutes or 5 minutes of arithmetic a day at the start of each lesson.

- Arithmetic lessons focus on number calculations including fractions, decimals, and percentages.
- Arithmetic lessons are carefully planned by year group teams.
- Arithmetic lessons support previous learning in the main mathematics lessons and are also a focus on the teaching of mental maths strategies.

Vocabulary must be taught at the beginning of each topic. This is referred to throughout the lesson. Teachers provide opportunities to revisit and practise the vocabulary for at least 5 minutes a day. New vocabulary is recorded in the children's vocabulary books.

White Rose Math – Long Term Plan

	Autumn	Spring	Summer
Y1	Place Value within 10 Addition and Subtraction (within 10) Shape	Place Value within 20 Addition and Subtraction (within 20) Place Value within 50 Length and height Mass and volume	Multiplication and Division Fraction Position and Direction Place Value within 100 Money Time
Y2	Place Value Addition and Subtraction Shape	Money Multiplication and Division Length and height Mass, capacity, and temperature	Fraction Time Statistic Position and Direction
Y3	Place Value Addition and Subtraction Shape Multiplication and Division (A)	Multiplication and Division(B) Length and perimeter Fraction (A) Mass and Capacity	Fraction (B) Money Time Shape Statistic
Y4	Place Value Addition and Subtraction Area Multiplication and Division(A)	Multiplication and Division(B) Length and perimeter Fractions Decimals (A)	Decimals(B) Money Time Shape Statistics Position and Direction
Y5	Place Value Addition and Subtraction Multiplication and Division(A) Fraction (A)	Multiplication and Division(B) Fractions(B) Decimal and Percentages Perimeter and Area Statistics	Shape Position and Direction Decimals Negative Numbers Converting Units Volume
Y6	Place Value Addition and Subtraction Multiplication and Division Fractions Converting units	Ratio Algebra Decimals Fractions Decimal and percentages Area, perimeter and volume Statistics	Shape Position and direction. Themed projects, consolidation and problem solving

Year group progression of Mental Calculation strategies.

It is important that our children learn their times tables, number bonds and facts as a basis for their learning. Not knowing these in maths is like asking a child to read without any phonological awareness in order to decode words.

Year 1 – the children must know their 2- and 10-times tables in and out of order and focus on number bonds to 10 and related subtraction facts.

Year 2 – The children must know their 2-, 3-, 5- and 10-times tables in and out of order and the associated division facts, revise number bonds to 10 and subtraction facts, introduce number bonds to 100 and recall and use addition and subtraction facts to 20.

Year 3 – The children must know their 2,3,4,6,8 and 11 times tables in and out of order and the associated division facts, apply addition and subtraction facts to 20 to other numbers, revise number bonds to 100 and introduce them to 1000.

Year 4 – The children must learn their 7,9 and 12(and all other) times tables in and out of order and the associated division facts so that by the end of Year 4 the children should know all their times tables and the associated division facts. Know number bonds to 100, 1000, 10,000 and 1 million.

Year 5 – Revise all times tables and associated division facts. Revise number bonds to 1000, 10,000 and introduce to 100,000 and 1 million.

Year 6 – Revise all times tables and the associated division facts and revise number bonds to 10,000, 100,000 and 1 million.

A Summary of Year Group Written Calculation Expectations and Methods

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	Combining two parts to make a whole: part whole model. Starting at the bigger number and counting on. Regrouping to make 10.	Adding three single digits. Column method – no regrouping.	Column method- regrouping. (up to 3 digits)	Column method- regrouping. (up to 4 digits)	Column method- regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)	Column method- regrouping. (Decimals- with different amounts of decimal places)
Subtraction	Taking away ones Counting back Find the difference Part whole model Make 10	Counting back Find the difference Part whole model Make 10 Column method- no regrouping	Column method with regrouping. (up to 3 digits)	Column method with regrouping. (up to 4 digits)	Column method with regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)	Column method with regrouping. (Decimals- with different amounts of decimal places)
Multiplication	Doubling Counting in multiples Arrays (with support)	Doubling Counting in multiples Repeated addition Arrays- showing commutative multiplication	Counting in multiples Repeated addition Arrays- showing commutative multiplication Grid method	Column multiplication (2 and 3 digit multiplied by 1 digit)	Column multiplication (up to 4 digit numbers multiplied by 1 or 2 digits)	Column multiplication (multi digit up to 4 digits by a 2 digit number)
Division	Sharing objects into groups Division as grouping	Division as grouping Division within arrays	Division within arrays Division with a remainder Short division (2 digits by 1 digit- concrete and pictorial)	Division within arrays Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)	Short division (up to 4 digits by a 1 digit number interpret remainders appropriately for the context)	Short division Long division (up to 4 digits by a 2 digit number- interpret remainders as whole numbers, fractions or round)

Children are taught how to lay out their written calculations in a way that is clear and precise. Their work needs to be clear enough to be followed by themselves and others. Through taking care with presentation in accordance with St. Mary's 'Presentation Policy', recording calculations in books aids retrieval and overlearning. Children are also more likely to develop pride in their work, as well as to be able to spot errors as they arise.

Equal Opportunities

Our policy is rooted in the belief that every student, regardless of their background or abilities, deserves a positive and enriching mathematical education. We recognize the importance of creating a classroom culture that values and welcomes the diversity of our learners.

Special Educational Needs & Disabilities (SEN)

A curriculum that engineers success from the start ensures that more pupils are able to keep up. At St. Mary's, there is no automatic assumption that pupils identified as having SEN cannot achieve. Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's support plans incorporate suitable objectives from the National Curriculum for Mathematics and teachers keep these in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the mathematics lesson. Maths focused intervention in school helps children with gaps in their learning and mathematical understanding.

Within the daily mathematics lesson teachers have a responsibility to not only provide differentiated activities and scaffolds to support children with SEN but also activities that provide sufficient challenge for children who are high achievers. It is the teachers' responsibility to ensure that all children are challenged at a level appropriate to their ability.

Inclusion:

Equitable Access: We ensure that all students have equal access to quality mathematical education, employing differentiated instruction and flexible teaching strategies.

Collaborative Environment: We cultivate a collaborative and supportive classroom culture that encourages active participation and engagement for all students.

Resources and Support: We provide diverse resources and support mechanisms to accommodate the varied needs of our students, fostering an environment where every child can thrive.

Continuous Improvement: We are committed to continuous improvement, regularly reviewing, and adjusting our practices to enhance inclusivity in mathematics education.

SEN pupils may be supported by additional adults, different resources, scaffolded activities. They may also complete additional activities outside of the mathematics lesson (Pre-teaching and Same Day Intervention). We have high expectations of all children and strongly believe that all children can achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

In accordance with the National Curriculum, "Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on." This 'consolidation' can form the basis for in class differentiation and for participation in 'catch up' and 'keep up' intervention groups. Additional support can be given through small after school tuition sessions. For some children, mathematics targets also form part of their Individual Education Plan. For children who are new to English, mathematical language is specifically taught.

Those pupils who develop fluency at a faster rate and have applied this to the reasoning and problem-solving opportunities outlined in the White Rose Mastery Scheme, are encouraged to deepen their understanding through more challenging longer problems e.g. by Nrich (http://nrich.maths.org/).

Extracurricular opportunities through clubs and through external events to motivate and broaden the experiences or more able mathematicians, are provided where possible.

Assessment and Recording

At St. Mary's we recognise that AFL lies at the heart of promoting learning and in raising standards of attainment in accordance with the school's 'Assessment Policy'.

Different forms of assessment are appropriate for different purposes:

Assessment can be:
AS learning (memory building)
FOR learning (formative assessment to identify gaps)
OF learning (summative assessment to create data)

Formative assessment

- Teachers use pre and post unit assessments in alignment with White Rose Maths to develop a secure understanding of pupils' starting points.
- Daily ongoing formative assessment enables teachers to adjust plans and target teaching to address specific misconceptions and next steps. Assessment includes marking, verbal feedback to guide progress, recorded responses, and observations.
- Previous taught concepts are regularly reviewed using White Rose Maths 'Flashback 4' at the beginning of each lesson.
- For each pupil, targets are set termly and shared at parent consultations.
- Sonar (the online platform for assessment) is used to identify any gaps in the children's learning.
- Year Reception to Year 6, teachers use SONAR curriculum objectives for formative assessment in maths.

Summative assessment

- In Year Reception children are formally assessed every half term against White Rose objectives.
- In Year Reception children are assessed against ELG objectives at the end of the academic Year.
- Teachers administer a termly arithmetic paper and reasoning and problem-solving paper from Year 1 to Year 6. (NFER). This links to the coverage for that term. Diagnostic analysis of these informs future planning and the selection of children for structured intervention and support groups. These also help to inform discussion at termly Pupil Progress Meetings and inform teacher assessment. Assessment data in maths is reviewed throughout the year to enable optimum progress and achievement.
- Sonar is used to record teacher assessment for effective pupil progress tracking on regular basis.
- In year 2 and year 6 children take national standard assessment tests.
- In year 4 children take the national multiplication times table check.
- At the end of the lesson, the children review their work and self and peer assessment are used consistently as outlined in the school's 'Presentation, Marking and Feedback policy.'
- Opportunities for additional practice and correction are provided by the teacher, as appropriate, during marking, with a focus on achieving a growth mindset approach in this subject.

Interventions

At St. Mary's, 'Catch Up Numeracy' is delivered to learners who have been identified during pupil progress meetings as needing further intervention through the analysis of data. This is a structured one-to-one intervention for learners who find numeracy difficult. It enables learners to achieve more than double the progress of typically developing learners. Catch Up Numeracy involves 15-minute individual sessions delivered twice a week. It is grounded in academic research and addresses 10 key components of numeracy:

- Counting verbally
- Counting objects
- Reading and writing
- Hundreds, tens and ones
- Estimation
- Word problems
- Translation
- Remembered facts
- Derived facts
- Ordinal numbers

Monitoring

The mathematics team, together with the school leadership team, are responsible for monitoring the standard of pupil's work, the quality of the teaching and evaluating impact. The work of the team involves supporting colleagues in the teaching of mathematics and being aware of current developments in the subject. The mathematics team provide a strategic lead and direction for the subject in the school so that it remains high profile. The school leadership team (& maths team) will observe mathematics lessons and give feedback, staff will be directed to relevant CPD to develop and refine their skills and support and improve their practice. Work scrutinises take place termly to monitor progress and standards and for the purpose of moderation. The school participates in external moderation. A very comprehensive Maths Policy has been set up by the maths subject leader and placed on the school network for all staff to access. It provides detailed support with planning, assessment, and resources.

Marking and feedback

Marking of mathematics books must be completed in line with the St Mary's Marking and Feedback policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all marking picks up and addresses any misconceptions/mistakes and thorough questioning ensures children have clarified their thinking clearly. Same day Interventions for those pupils are then used to address any misconceptions/mistakes before the next lesson.

Maths learning environment and resources.

Our curriculum is supported by a rich learning environment. All classrooms have:

- mathematics working walls which are in constant use throughout individual lessons and across weeks focusing on a particular skill.
- Key vocabulary is displayed with definitions and visual representations.
- Reasoning question stems are on show and used to model reasoning.
- Worked examples are displayed for reference (including concreate and pictorial representations).
- Resource tables which are easily accessible for all children to support their learning. Resources displayed include number lines and appropriate small apparatus, Numicon, Dienes, place value counters and Cuisenaire. These are selected in relation to the aspect of the concept that is being taught and are familiar and consistent in its use.
- KS2: maths dictionaries
- KS2: maths vocabulary books

A range of mathematics software, including Mathletics, and TTRS (Times Table Rock Star) is also available.

Information and Communication Technology.

In accordance with the school's 'Computing policy', ICT is used in various ways to support teaching and motivate children's learning. ICT involves children working on laptops to access the maths software in school and the use of audio-visual interactive whiteboards to deliver teaching.

Enrichment

To raise the profile of maths beyond classroom learning, opportunities for learning and celebration outside of the classroom are identified by:

- Trips and workshops – where children experience mathematics in modern technology, engineering, and scientific discovery.
- Studying key figures in mathematics – children benefit from knowing where mathematics can take them in terms of career.
- Clubs and competitions – times table club, TTRS national competitions and maths competitions against local schools.
- Rewards – celebrating top scorers on Mathletics and TTRS in class.
- Participating in Number week and World Book Day.

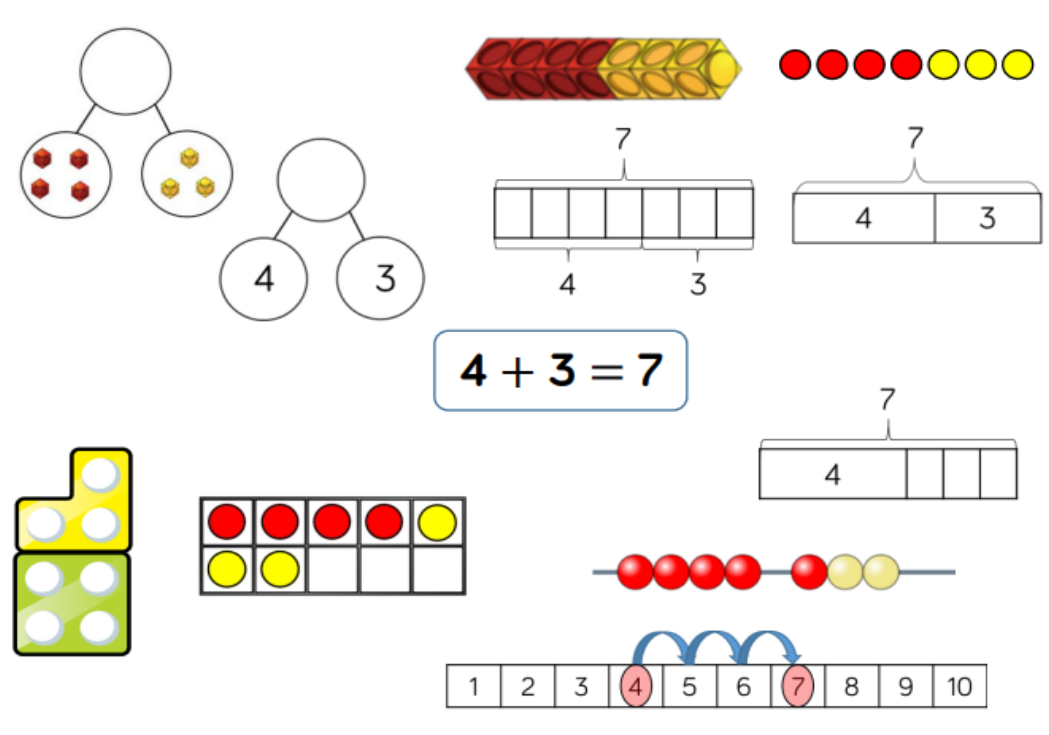
Home/School Link

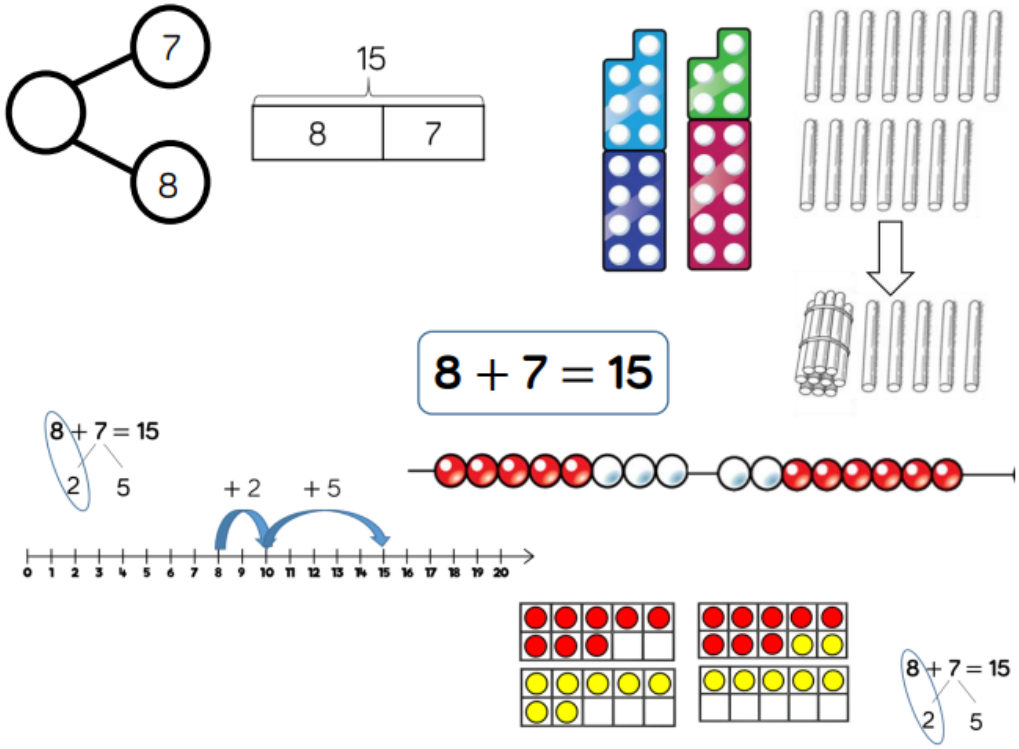
At St Mary's, we encourage parents to be involved in mathematics curriculum by:

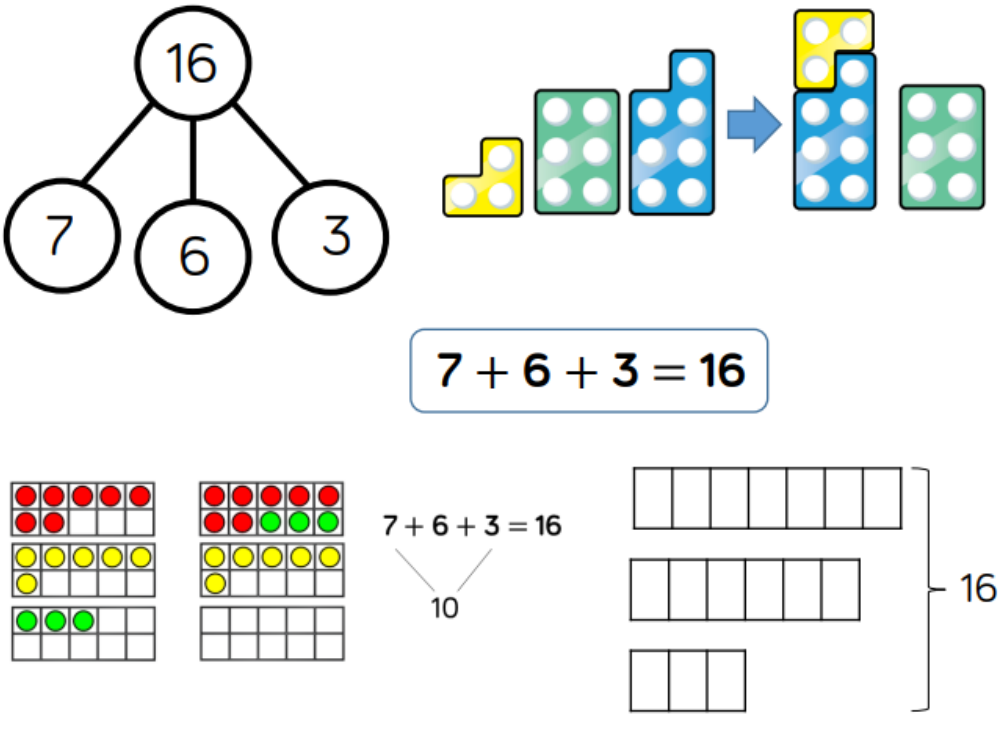
- Providing parents/carers with a curriculum map each half term in Key Stage 1 and 2, detailing knowledge, skills and strategies that will be taught in class that term.
- Sending home information about Times Tables and Key Instant Recall Facts to be practised each half term, alongside activities and guidance for supporting with these at home.
- Mathletics and TTRS logins provided by the school.
- Inviting parents/carers to maths open days to take part in lessons during Maths week.
    - Inviting parents/carers to parent workshops to inform them about KS1 and KS2 SATs
    - Inviting parents/carers to parent workshop to inform them of MTC (multiplication tables check) in year 4.
- Inviting parents/carers in for parents evening to discuss their child's progress and informal meetings are encouraged when needed.
- Reporting on mathematical progress in their child's report
- Using our Year group/class page on the school website to provide information about how we teach the four calculations as pupils move through the school.

White Rose Maths Addition

Skill	Year	Representations and models
Add two 1-digit numbers to 10	1	Part-whole model, Bar model, Number shapes, Ten frames (within 10), Bead strings (10), Number tracks.
Add 1 and 2-digit numbers to 20	1	Part-whole model, Bar model, Number shapes, Ten frames (within 20), Bead strings (20), Number tracks, Number lines (labelled), Straws.
Add three 1-digit numbers	2	Part-whole model, Bar model, Ten frames (within 20), Number shapes.
Add 1 and 2-digit numbers to 100	2	Part-whole model, Bar model, Number lines (labelled), Number lines (blank), Straws, Hundred square.
Add two 2-digit numbers	2	Part-whole model, Bar model, Number lines (blank), Straws, Base 10, Place value counters.
Add with up to 3-digits	3	Part-whole model, Bar model, Base 10, Place value counters, Column addition.
Add with up to 4-digits	4	Part-whole model, Bar model, Base 10, Place value counters, Column addition.
Add with more than 4 digits	5	Part-whole model, Bar model, Place value counters, Column addition.
Add with up to 3 decimal places	5	Part-whole model, Bar model, Place value counters, Column addition.

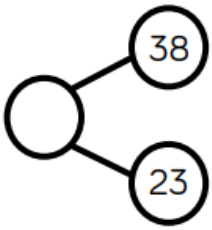
Skill: Add 1-digit numbers within 10	Year: 1
	When adding numbers to 10, children can explore both aggregation and augmentation. The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation. The combination bar model, ten frame, bead string and number track all support augmentation.

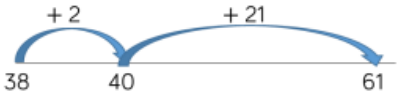
Skill: Add 1 and 2-digit numbers to 20	Year: 1/2
	When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten. In Year 1, this is only done just by counting on. From Year 2, use different manipulatives can be used to represent this exchange alongside number lines to support children in understanding how to partition their jumps.

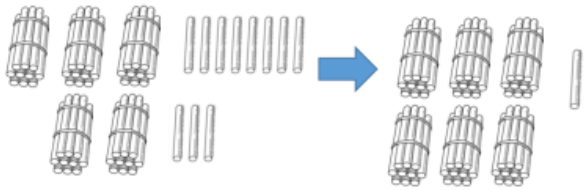
Skill: Add three 1-digit numbers	Year: 2
	When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently. This supports children in their understanding of commutativity. Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.

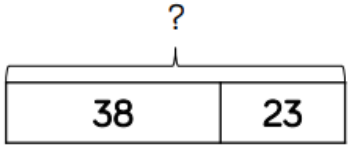
Skill: Add two 2-digit numbers to 100

Year: 2/3

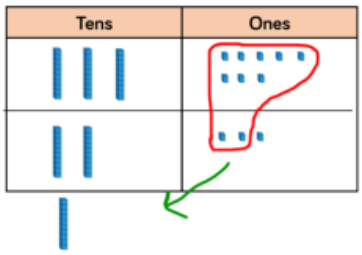




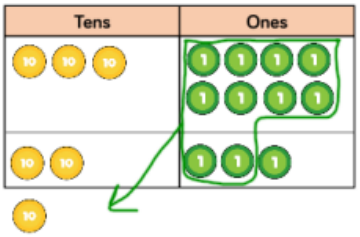




38 + 23 = 61



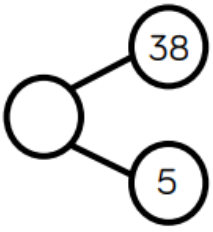
$$\begin{array}{r} 38 \\ +\ 23 \\ \hline 61 \\ \hline 1 \end{array}$$

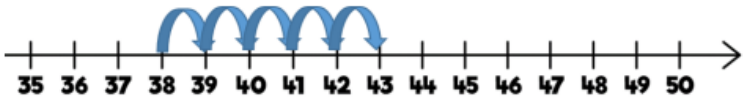


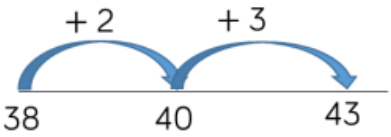
Children can use a blank number line and other representations to count on to find the total. Encourage them to jump to multiples of 10 to become more efficient.
From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

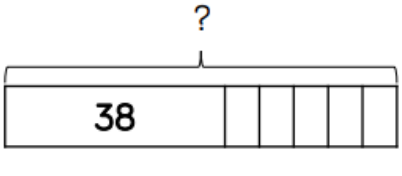
Skill: Add 1-digit and 2-digit numbers to 100

Year: 2/3

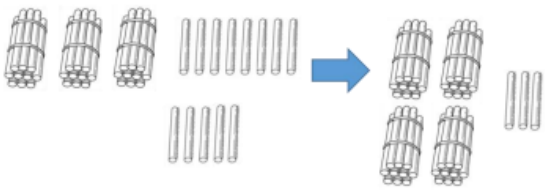








38 + 5 = 43

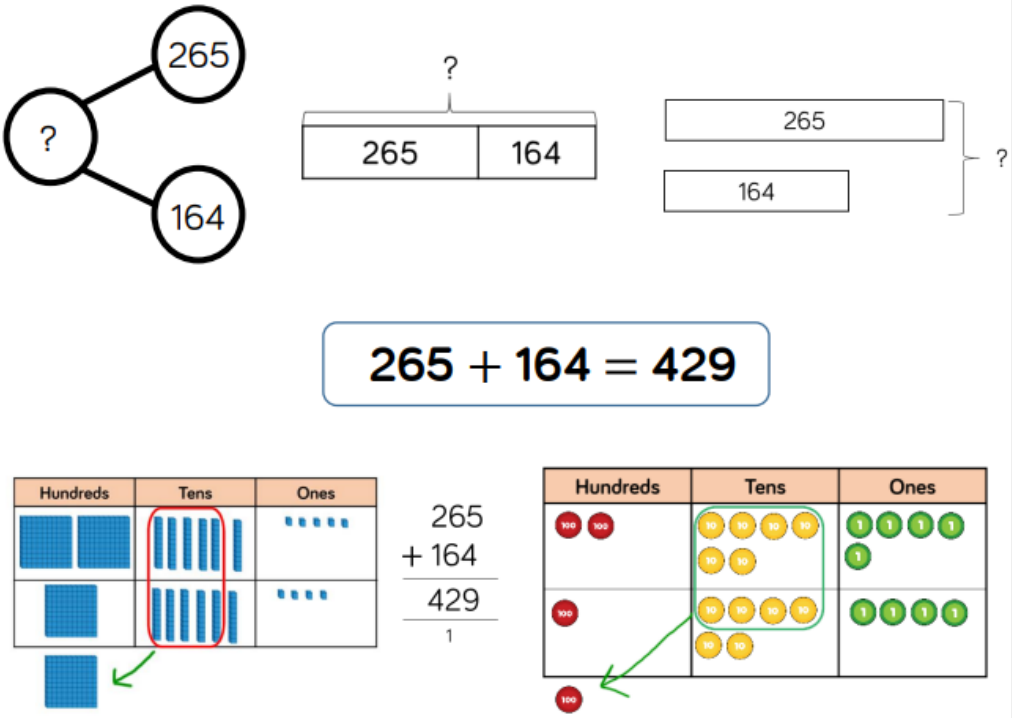


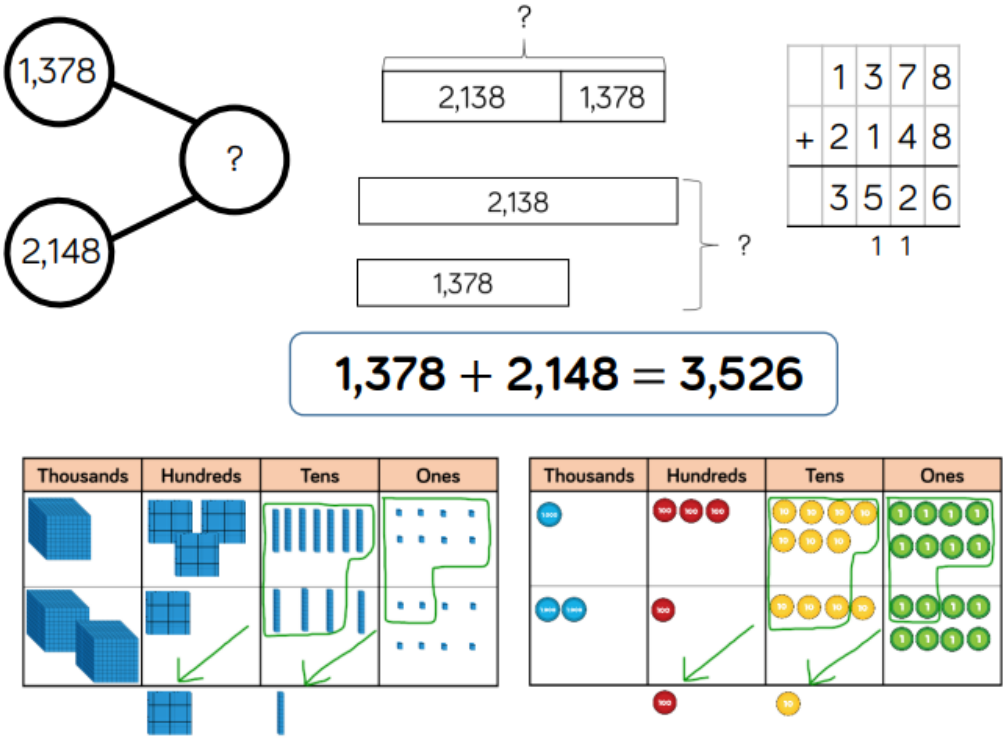
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

They should also apply their knowledge of number bonds to add more efficiently e.g. 8 + 5 = 13 so 38 + 5 = 43.

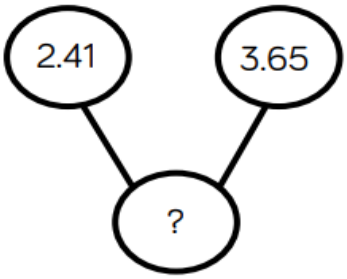
Hundred squares and straws can support children to find the number bond to 10.

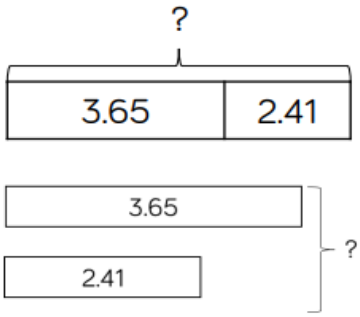
Skill: Add numbers with up to 3 digits	Year: 3
	Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Plain counters on a place value grid can also be used to support learning.

Skill: Add numbers with up to 4 digits	Year: 4
	Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Plain counters on a place value grid can also be used to support learning.

Skill: Add with up to 3 decimal places

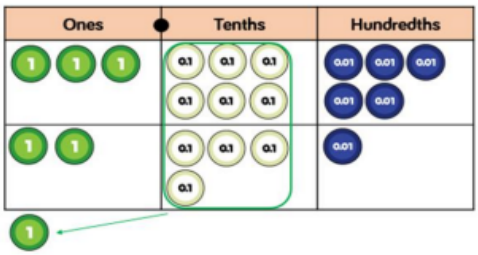
Year: 5

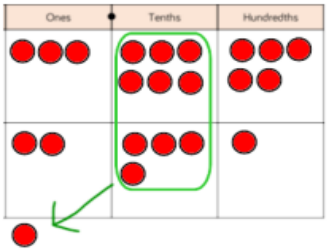




$$\begin{array}{r} 3.65 \\ +\ 2.41 \\ \hline 6.06 \\ \hline 1 \end{array}$$

3.65 + 2.41 = 6.06



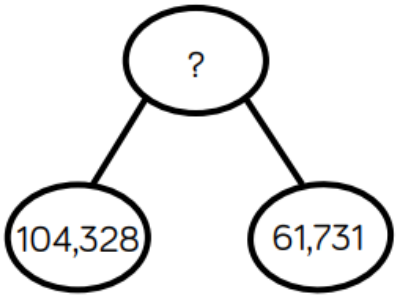


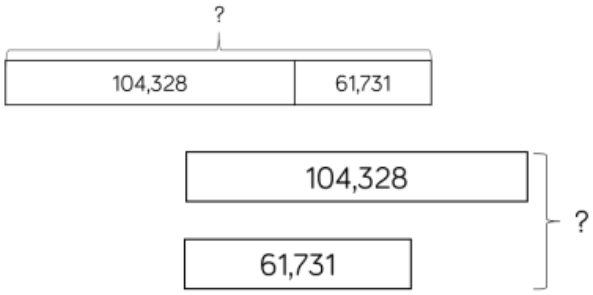
Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.

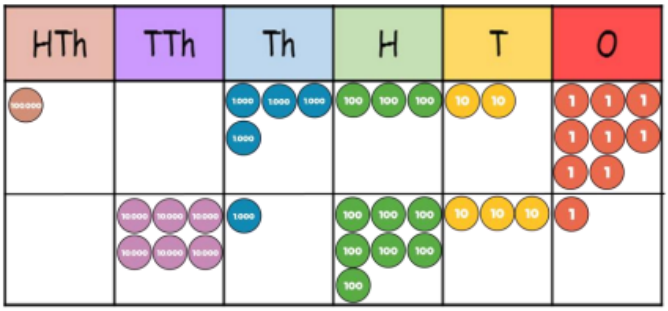
Skill: Add numbers with more than 4 digits

Year: 5/6





104,328 + 61,731 = 166,059



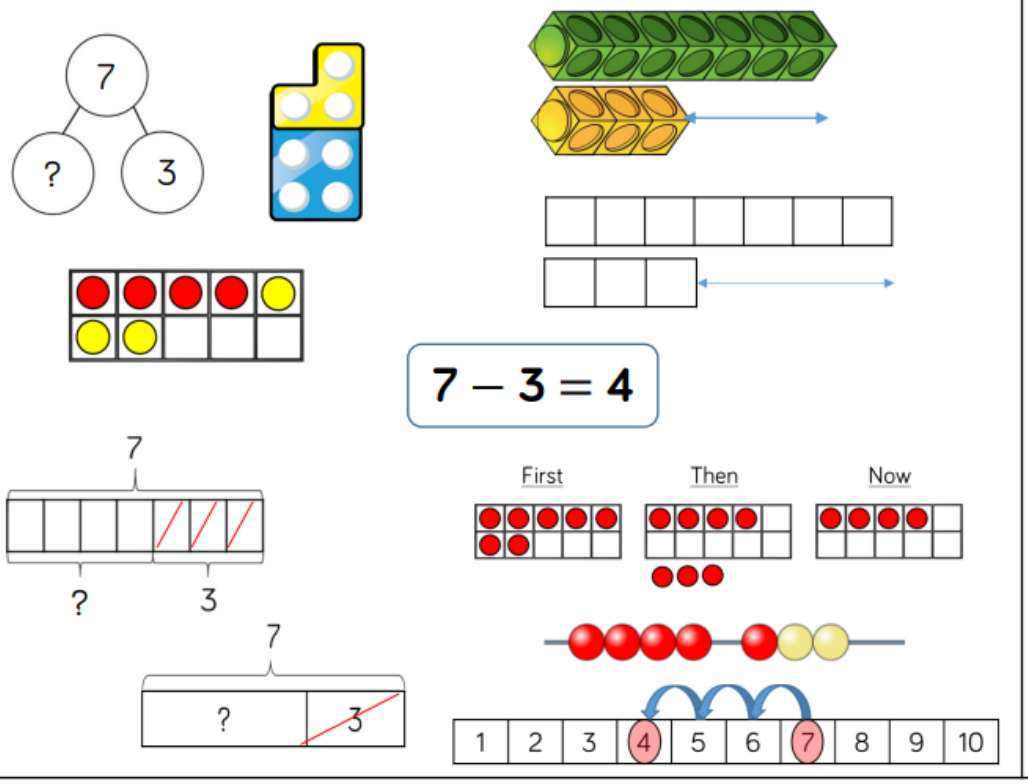
1	0	4	3	2	8
+	6	1	7	3	1
1	6	6	0	5	9
			1		

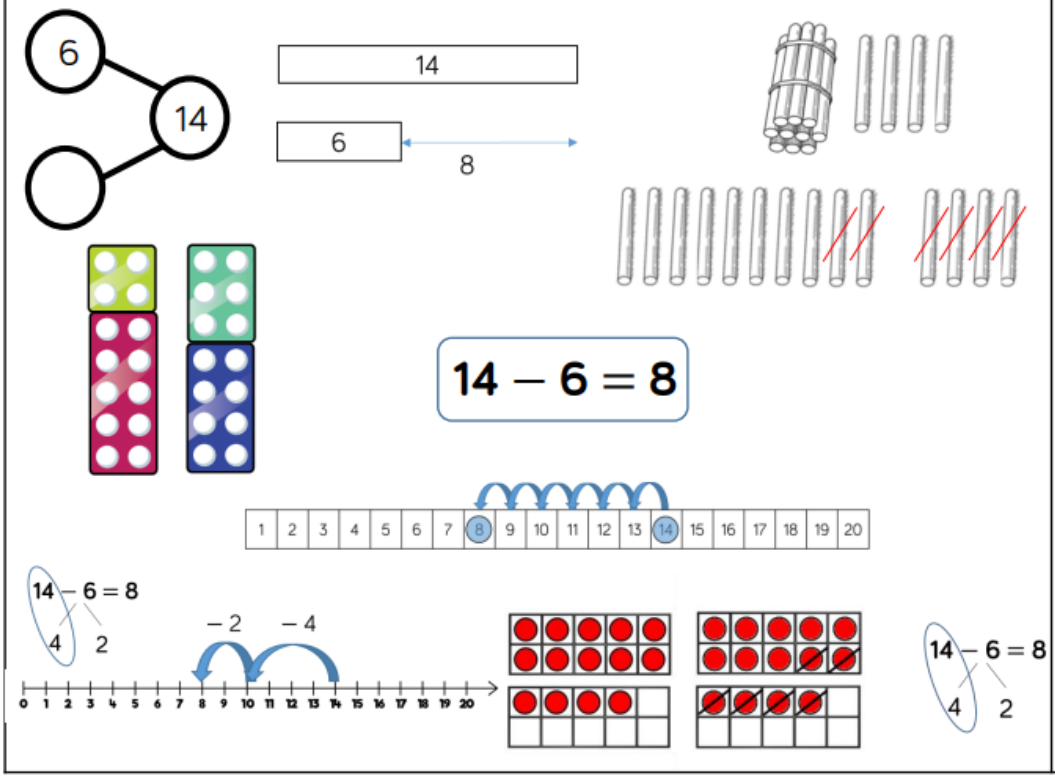
Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

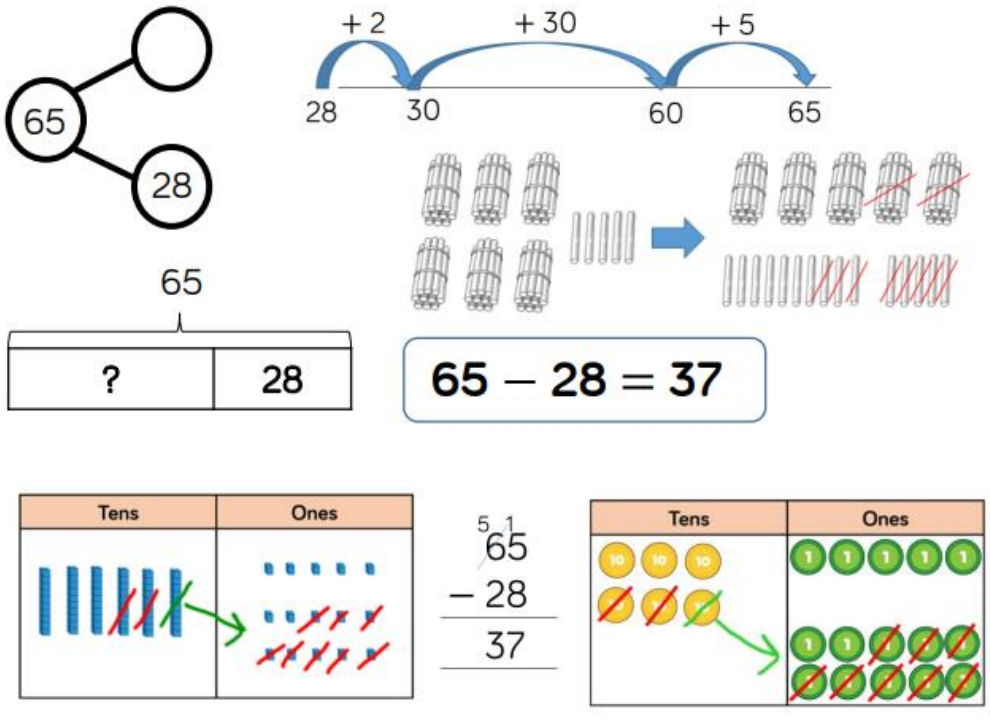
At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.

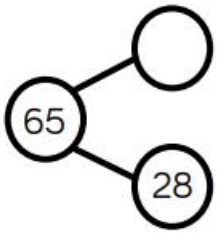
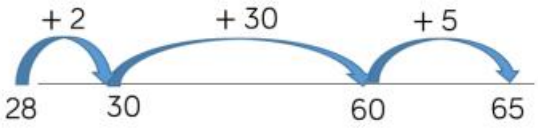
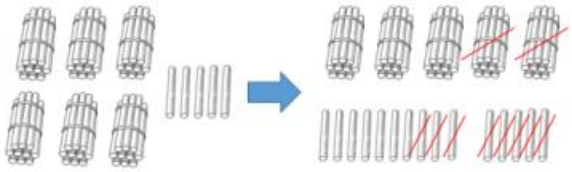
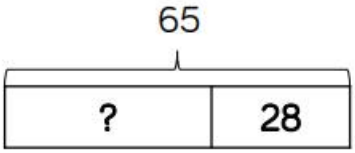
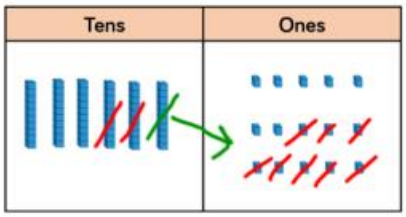
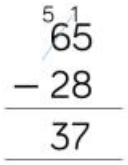
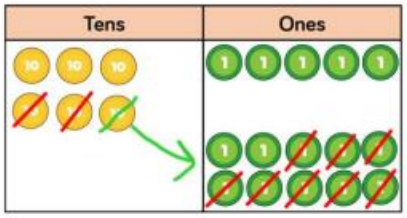
White Rose Maths Subtraction

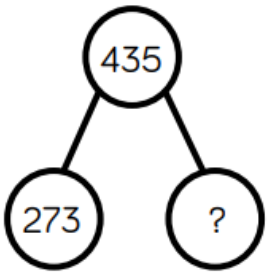
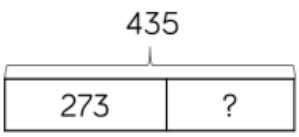
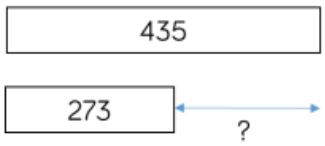
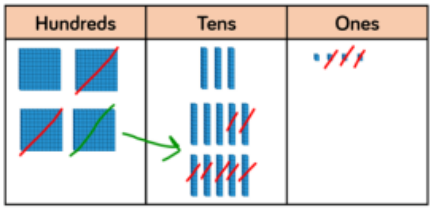
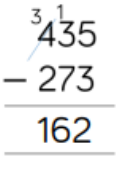
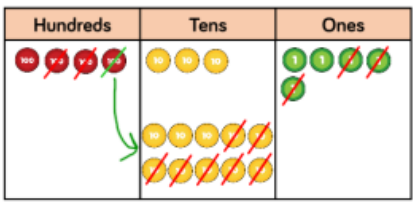
Skill	Year	Representations and models
Subtract two 1-digit numbers to 10	1	Part-whole model, Bar model, Number shapes, Ten frames (within 10), Bead strings (10), Number tracks.
Subtract 1 and 2-digit numbers to 20	1	Part-whole model, Bar model, Number shapes, Ten frames (within 20), Bead strings (20), Number tracks, Number lines (labelled), Straws.
Subtract three 1-digit numbers	2	Part-whole model, Bar model, Ten frames (within 20), Number shapes.
Subtract 1 and 2-digit numbers to 100	2	Part-whole model, Bar model, Number lines (labelled), Number lines (blank), Straws, Hundred square.
Subtract two 2-digit numbers	2	Part-whole model, Bar model, Number lines (blank), Straws, Base 10, Place value counters.
Subtract with up to 3-digits	3	Part-whole model, Bar model, Base 10, Place value counters, Column addition.
Subtract with up to 4-digits	4	Part-whole model, Bar model, Base 10, Place value counters, Column addition.
Subtract with more than 4 digits	5	Part-whole model, Bar model, Place value counters, Column addition.
Subtract with up to 3 decimal places	5	Part-whole model, Bar model, Place value counters, Column addition.

Skill: Subtract 1-digit numbers within 10	Year: 1
	Part-whole models, bar models, ten frames and number shapes support partitioning. Ten frames, number tracks, single bar models and bead strings support reduction. Cubes and bar models with two bars can support finding the difference.

Skill: Subtract 1 and 2-digit numbers to 20	Year: 1/2
	In Year 1, subtracting one-digit numbers that cross 10, is done by counting back, using objects, number tracks and number lines. From Year 2, children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this.

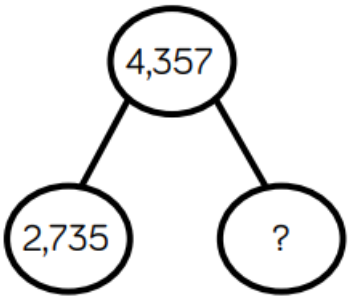
Skill: Subtract 1 and 2-digit numbers to 100	Year: 2/3
	Children can also use a blank number line to count back to find the difference. Encourage them to jump to multiples of 10 to become more efficient. From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

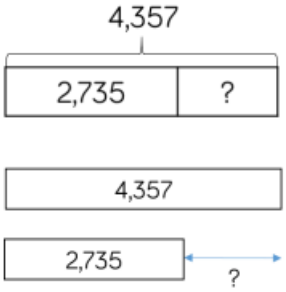
Skill: Subtract 1 and 2-digit numbers to 100	Year: 2/3
    **65 − 28 = 37**   	Children can also use a blank number line to count back to find the difference. Encourage them to jump to multiples of 10 to become more efficient. From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

Skill: Subtract numbers with up to 3 digits	Year: 3
   **435 − 273 = 162**   	Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Plain counters on a place value grid can also be used to support learning.

Skill: Subtract numbers with up to 4 digits

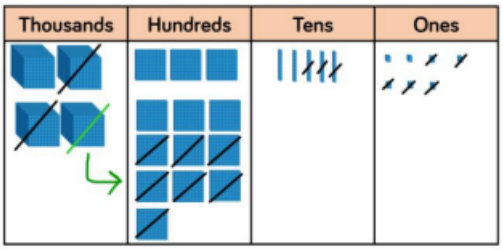
Year: 4

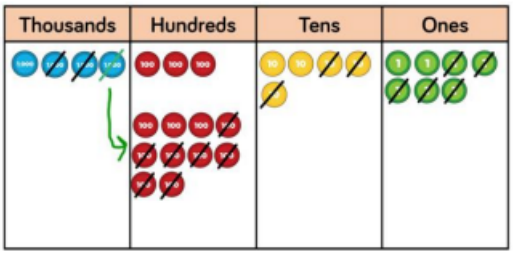




$$\begin{array}{r} {}^{3}\cancel{4}\,{}^{1}357 \\ -\ 2735 \\ \hline 1622 \end{array}$$

4,357 − 2,735 = 1,622





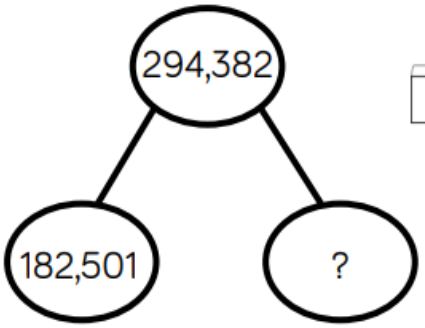
Base 10 and place value counters are the most effective manipulatives when subtracting numbers with up to 4 digits.

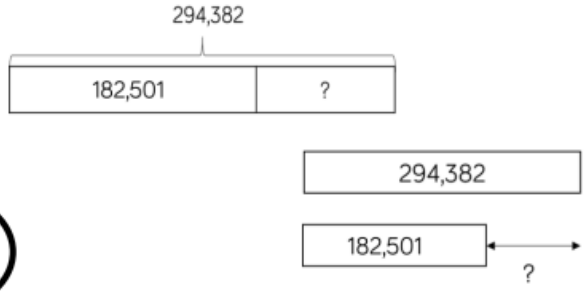
Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

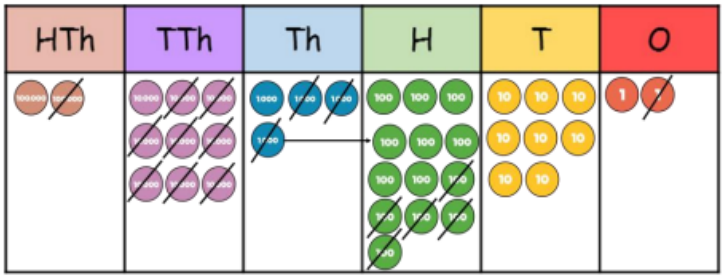
Skill: Subtract numbers with more than 4 digits

Year: 5/6





294,382 − 182,501 = 111,881

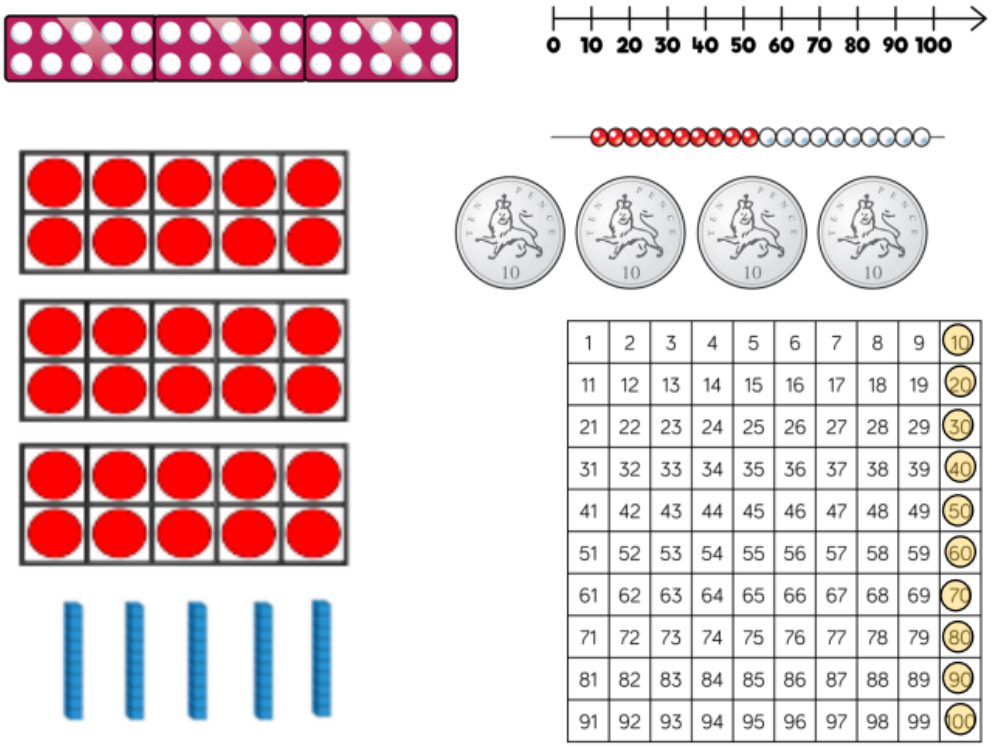


	2	9	$^{3}\cancel{4}$	$^{1}3$	8	2
−	1	8	2	5	0	1
	1	1	1	8	8	1

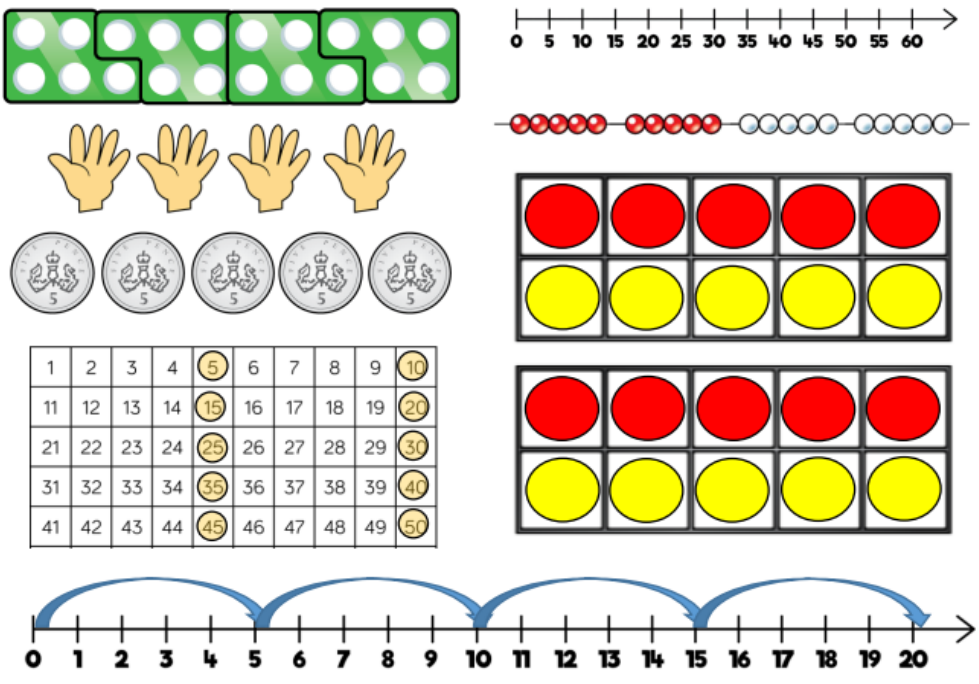
Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.

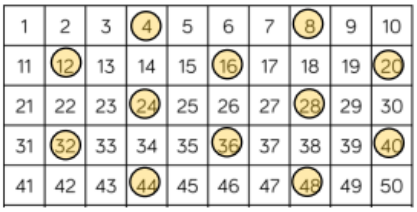
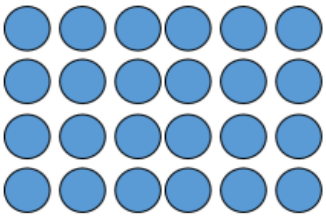
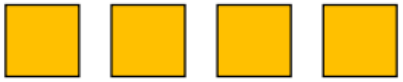
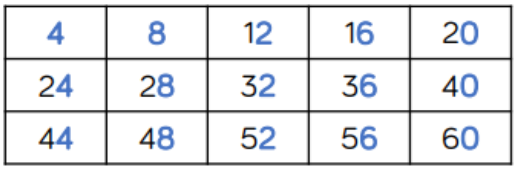
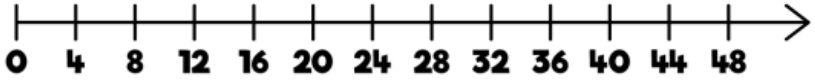
Times tables

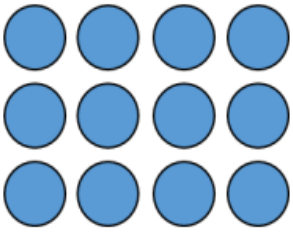
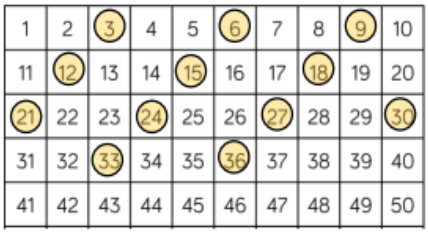
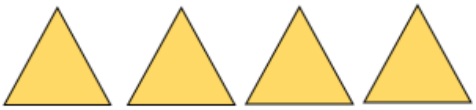
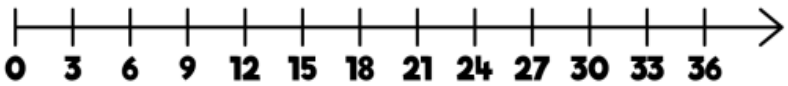
Skill: 10 times table	Year: 2
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the ten times table, using concrete manipulatives to support. Notice the pattern in the digits- the ones are always 0, and the tens increase by 1 ten each time.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

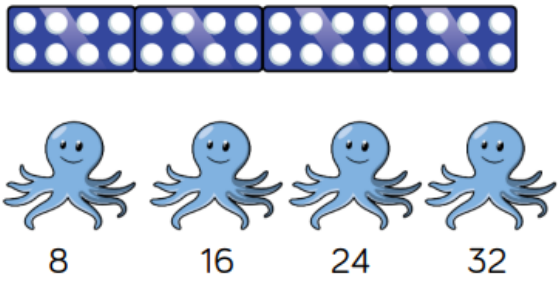
Skill: 5 times table	Year: 2
	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the five times table, using concrete manipulatives to support. Notice the pattern in the ones as well as highlighting the odd, even, odd, even pattern.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Skill: 4 times table	Year: 3
    4 8 12 16    0 4 8 12 16 20 24 28 32 36 40 44 48	Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the four times table, using manipulatives to support. Make links to the 2 times table, seeing how each multiple is double the twos. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

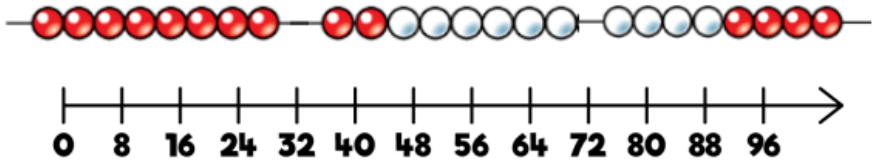
Skill: 3 times table	Year: 3
    3 6 9 12   0 3 6 9 12 15 18 21 24 27 30 33 36	Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square. Look for patterns in the three times table, using concrete manipulatives to support. Notice the odd, even, odd, even pattern using number shapes to support. Highlight the pattern in the ones using a hundred square.

Skill: 8 times table	Year: 3



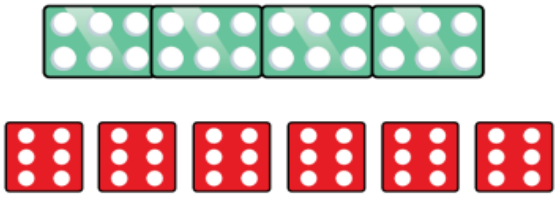
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

8	16	24	32	40
48	56	64	72	80



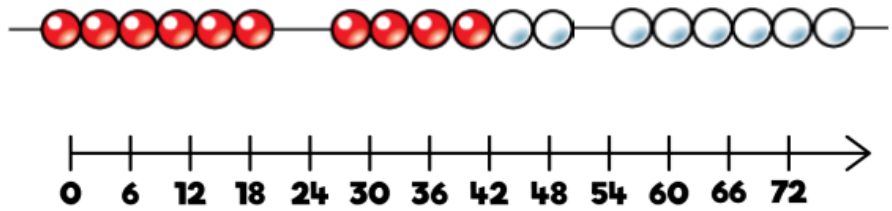
Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the eight times table, using manipulatives to support. Make links to the 4 times table, seeing how each multiple is double the fours. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

Skill: 6 times table	Year: 4



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

6	12	18	24	30
36	42	48	54	60
66	72	78	84	90



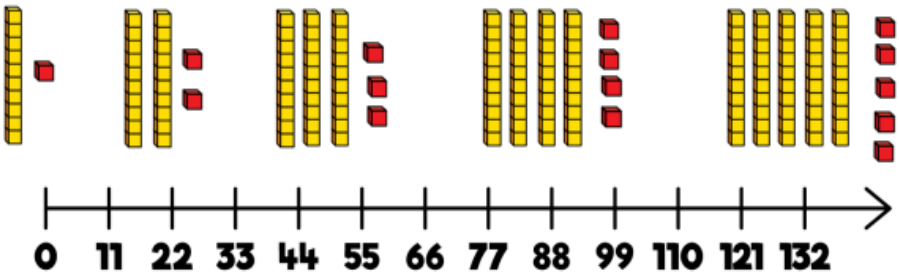
Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the six times table, using manipulatives to support. Make links to the 3 times table, seeing how each multiple is double the threes. Notice the pattern in the ones within each group of five multiples. Highlight that all the multiples are even using number shapes to support.

Skill: 11 times table

Year: 4

11	22	33	44	55	66
77	88	99	110	121	132

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.

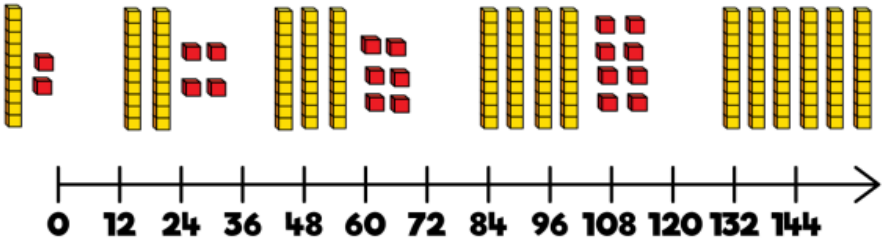
Look for patterns in the eleven times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support. Also consider the pattern after crossing 100

Skill: 12 times table

Year: 4

12	24	36	48	60
72	84	96	108	120
132	144			

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



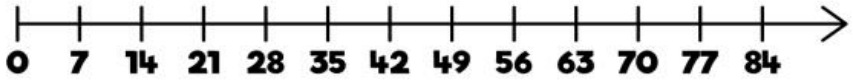
Encourage daily counting in multiples, supported by a number line or a hundred square. Look for patterns in the 12 times table, using manipulatives to support. Make links to the 6 times table, seeing how each multiple is double the sixes. Notice the pattern in the ones within each group of five multiples. The hundred square can support in highlighting this pattern.

Skill: 7 times table

Year: 4

7	14	21	28	35
42	49	56	63	70

1	2	3	4	5	6	**7**	8	9	10
11	12	13	**14**	15	16	17	18	19	20
21	22	23	24	25	26	27	**28**	29	30
31	32	33	34	**35**	36	37	38	39	40
41	**42**	43	44	45	46	47	48	**49**	50
51	52	53	54	55	**56**	57	58	59	60
61	62	**63**	64	65	66	67	68	69	**70**
71	72	73	74	75	76	**77**	78	79	80
81	82	83	**84**	85	86	87	88	89	90
91	92	93	94	95	96	97	**98**	99	100



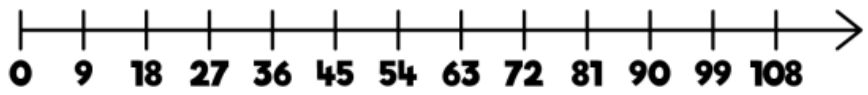
Encourage daily counting in multiples both forwards and backwards, supported by a number line or a hundred square.
The seven times table can be trickier to learn due to the lack of obvious pattern in the numbers, however they already know several facts due to commutativity.
Children can still see the odd, even pattern in the multiples using number shapes to support.

Skill: 9 times table

Year: 4

9	18	27	36	45
54	63	72	81	90

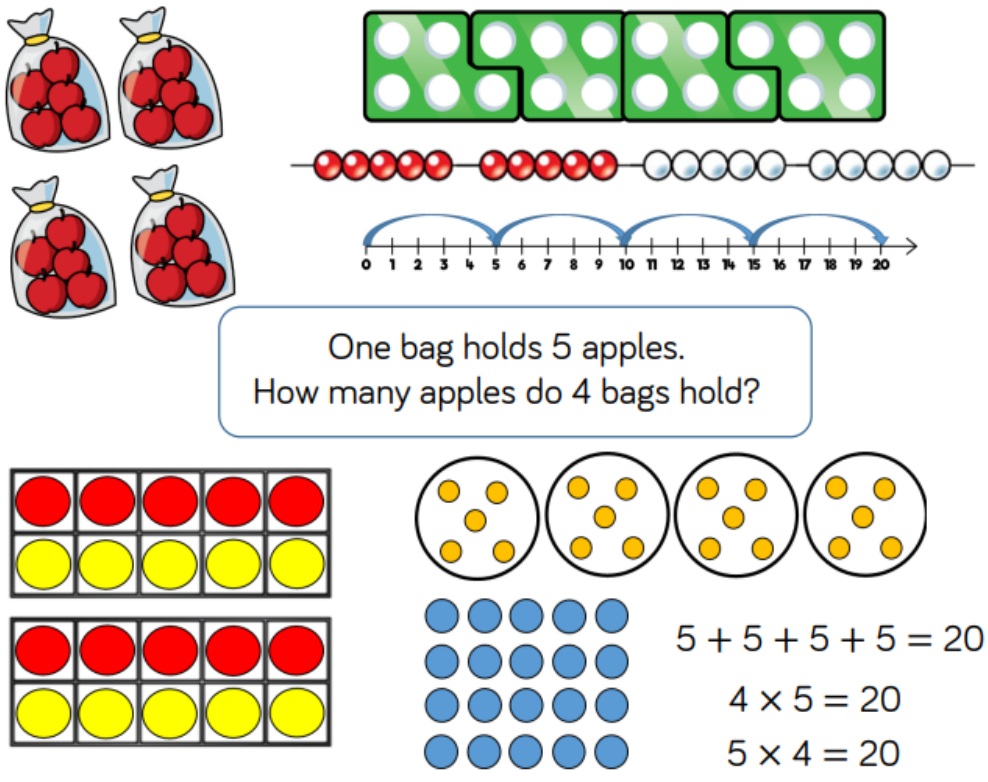
1	2	3	4	5	6	7	8	**9**	10
11	12	13	14	15	16	17	**18**	19	20
21	22	23	24	25	26	**27**	28	29	30
31	32	33	34	35	**36**	37	38	39	40
41	42	43	44	**45**	46	47	48	49	50
51	52	53	**54**	55	56	57	58	59	60
61	62	**63**	64	65	66	67	68	69	70
71	**72**	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	**90**
91	92	93	94	95	96	97	98	**99**	100



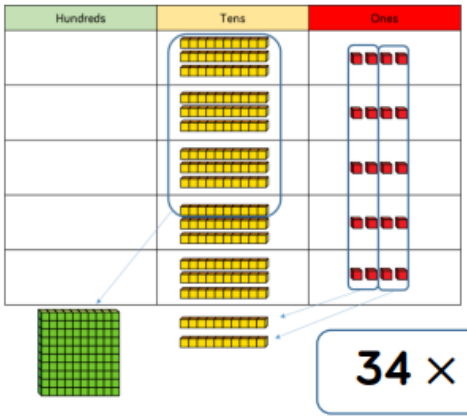
Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.
Look for patterns in the nine times table, using concrete manipulatives to support. Notice the pattern in the tens and ones using the hundred square to support as well as noting the odd, even pattern within the multiples.

White Rose Maths Multiplication

Skill	Year	Representations and models
Solve one-step problems with multiplication	1/2	Bar model, Number shapes, Counters, Ten frames, Bead strings, Number lines
Multiply 2-digit by 1-digit numbers	3/4	Place value counters, Base 10, Expanded written method, Short written method
Multiply 3-digit by 1-digit numbers	4	Place value counters, Base 10, Short written method
Multiply 4-digit by 1-digit numbers	5	Place value counters, Short written method
Multiply 2-digit by 2- digit numbers	5	Place value counters, Base 10, Short written method , Grid method
Multiply 2-digit by 3- digit numbers	5	Place value counters, Short written method, Grid method
Multiply 2-digit by 4- digit numbers	5/6	Formal written method

Skill: Solve 1-step problems using multiplication	Year: 1/2
	Children represent multiplication as repeated addition in many different ways. In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally. In Year 2, children are introduced to the multiplication symbol.

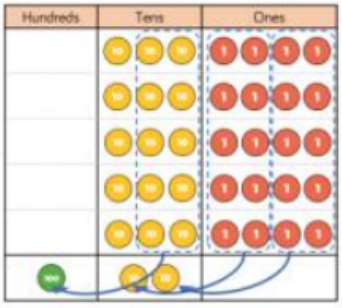
Skill: Multiply 2-digit numbers by 1-digit numbers	Year: 3/4



	H	T	O	
		3	4	
×			5	
		2	0	(5 × 4)
+	1	5	0	(5 × 30)
	1	7	0	

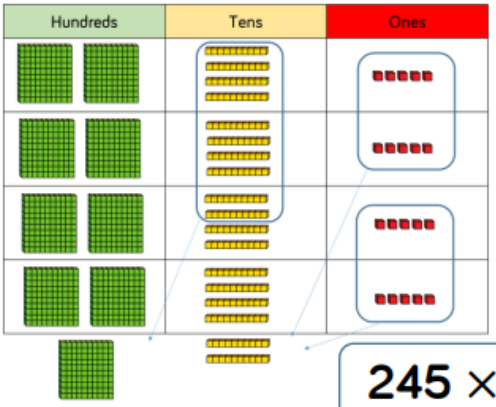
$34 \times 5 = 170$

	H	T	O	
		3	4	
×			5	
	1	7	0	
	1	2		



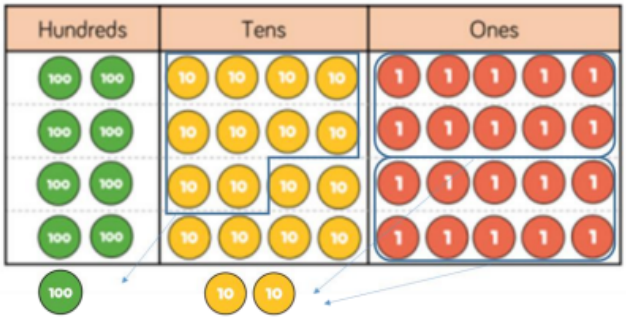
Informal methods and the expanded method are used in Year 3 before moving on to the short multiplication method in Year 4.
Place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge.

Skill: Multiply 3-digit numbers by 1-digit numbers	Year: 4



	H	T	O
	2	4	5
×			4
	9	8	0
	1	2	

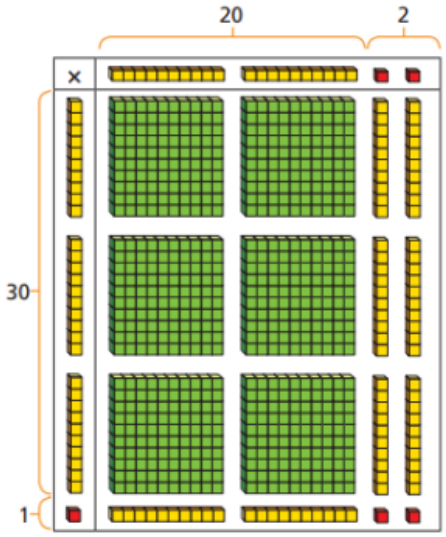
$245 \times 4 = 980$

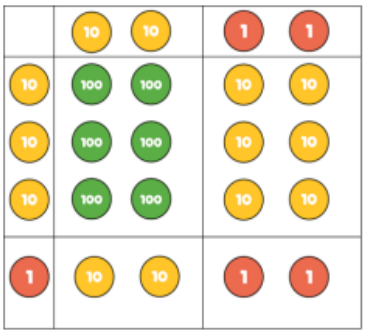


When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method.
Base 10 and place value counters continue to support the understanding of the written method.
Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.

Skill: Multiply 2-digit numbers by 2-digit numbers

Year: 5





×	20	2
30	600	60
1	20	2

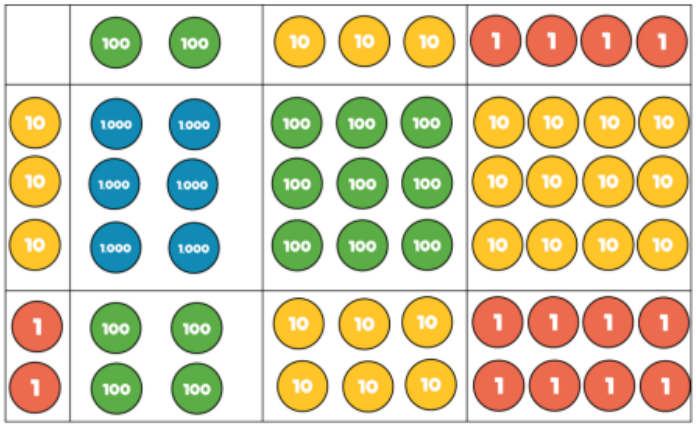
	H	T	O
		2	2
×		3	1
		2	2
	6	6	0
	6	8	2

$22 \times 31 = 682$

When multiplying a multi-digit number by 2-digits, use the area model to help children understand the size of the numbers they are using. This links to finding the area of a rectangle by finding the space covered by the Base 10.
The grid method matches the area model as an initial written method before moving on to the formal written multiplication method.

Skill: Multiply 3-digit numbers by 2-digit numbers

Year: 5



Th	H	T	O
	2	3	4
×		3	2
	4	6	8
$^{1}7$	$^{1}0$	2	0
7	4	8	8

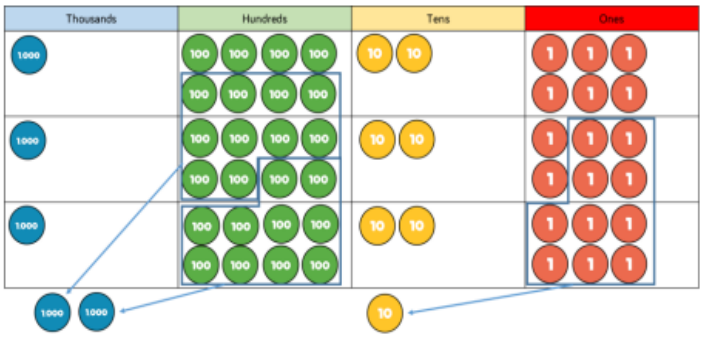
×	200	30	4
30	6,000	900	120
2	400	60	8

$234 \times 32 = 7{,}488$

Children can continue to use the area model when multiplying 3-digits by 2-digits. Place value counters become more efficient to use but Base 10 can be used to highlight the size of numbers.

Children should now move towards the formal written method, seeing the links with the grid method.

Skill: Multiply 4-digit numbers by 1-digit numbers	Year: 5



1,826 × 3 = 5,478

	Th	H	T	O
	1	8	2	6
×				3
	5	4	7	8
	2		1	

When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method.
If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.

Skill: Multiply 4-digit numbers by 2-digit numbers	Year: 5/6

TTh	Th	H	T	O
	2	7	3	9
×			2	8
2 (2)	1 (5)	9 (3)	1 (7)	2
5 (1)	4	7 (1)	8	0
7	6	6	9	2
		1		

2,739 × 28 = 76,692

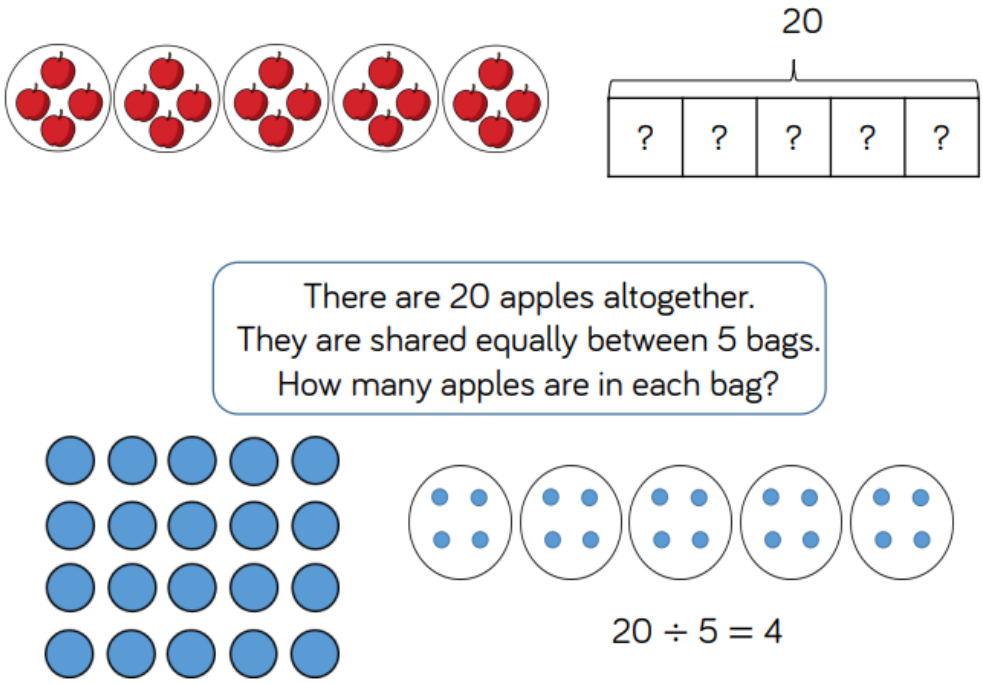
When multiplying 4-digits by 2-digits, children should be confident in using the formal written method.

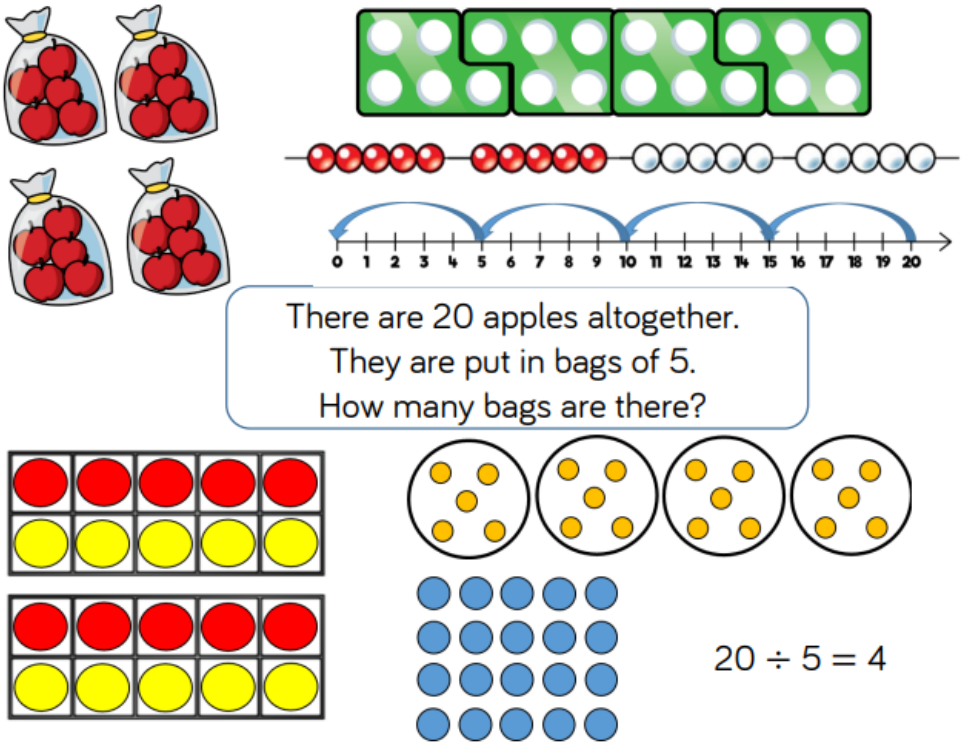
If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method.

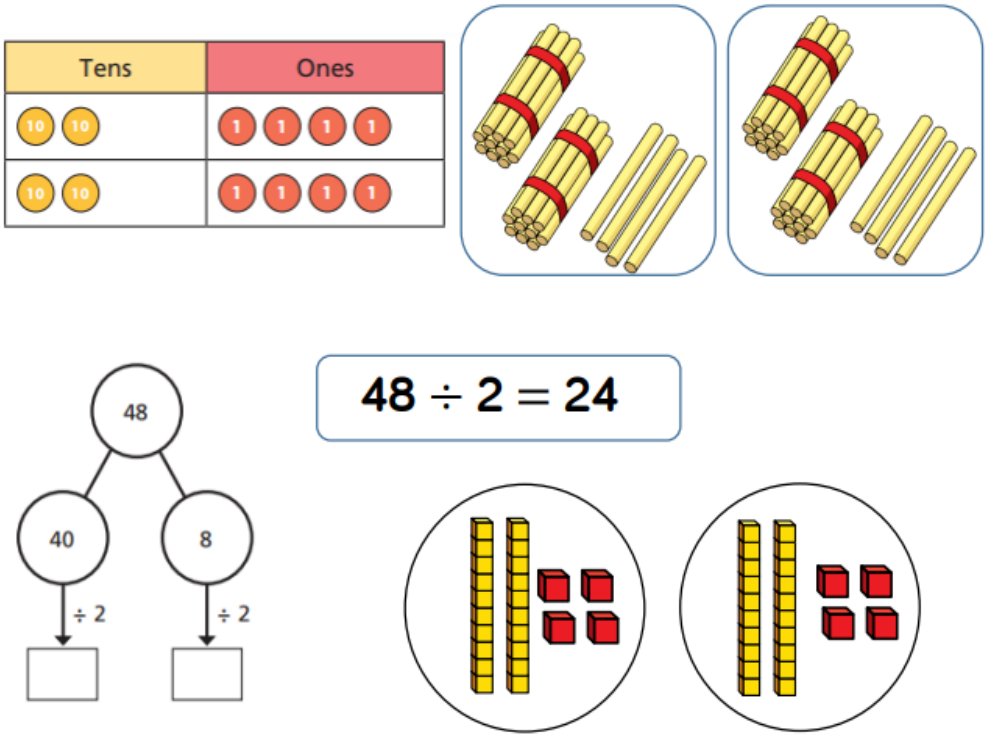
Consider where exchanged digits are placed and make sure this is consistent.

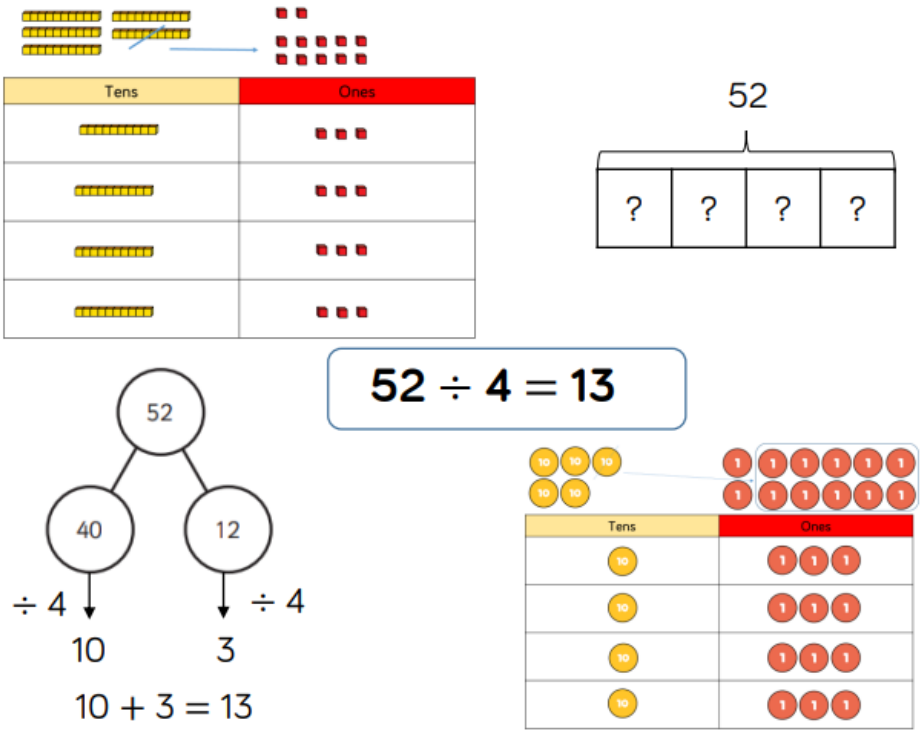
White Rose Maths Division

Skill	Year	Representations and models
Solve one-step problems with division (sharing)	1/2	Bar model, Real life objects, Arrays, Counters
Solve one-step problems with division (grouping)	1/2	Real life objects, Number shapes, Bead strings, Ten frames, Number lines, Arrays, Counters
Divide 2-digits by 1-digit (no exchange sharing)	3	Straws, Base 10, Bar model, Place value counters, Part-whole model
Divide 2-digits by 1-digit (sharing with exchange)	3	Straws, Base 10, Bar model, Place value counters, Part-whole model
Divide 2-digits by 1-digit (sharing with remainders)	3/4	Place value counters, Base 10, Straws, Part-whole model
Divide 2-digits by 1-digit (grouping)	4/5	Place value counters, Short written method, Grid method
Divide 3-digits by 1-digit (sharing with exchange)	4	Base 10, Bar model, Place value counters, Part-whole model
Divide 3-digits by 1- digit (grouping)	4/5	Place value counters, Counters, Place value grid, Written short division
Divide 4-digits by 1-digit (grouping)	5	Place value counters, Counters, Place value grid, Written short division
Divide multi-digits by 2-digits (short division)	6	Written long division, List of multiples
Divide multi-digits by 2-digits (long division)	6	Written long division, List of multiples

Skill: Solve 1-step problems using multiplication (sharing)	Year: 1/2
	Children solve problems by sharing amounts into equal groups. In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally. In Year 2, children are introduced to the division symbol.

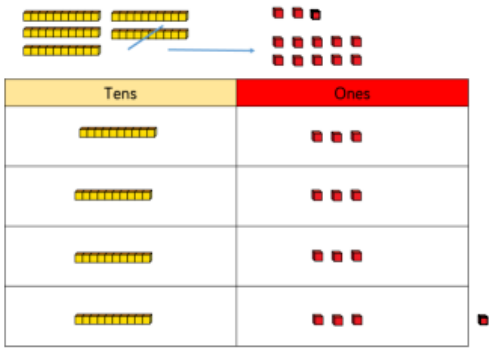
Skill: Solve 1-step problems using division (grouping)	Year: 1/2
	Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.

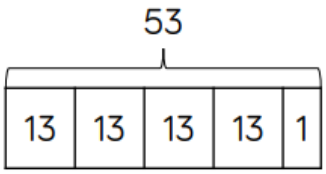
Skill: Divide 2-digits by 1-digit (sharing with no exchange)	Year: 3
	When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones. Straws, Base 10 and place value counters can all be used to share numbers into equal groups. Part-whole models can provide children with a clear written method that matches the concrete representation.

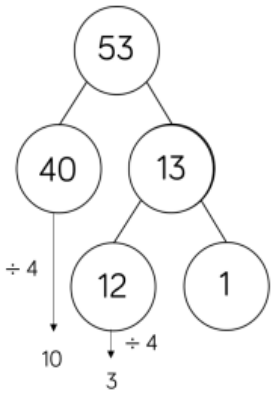
Skill: Divide 2-digits by 1-digit (sharing with exchange)	Year: 3/4
	When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones. Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows. Flexible partitioning in a part-whole model supports this method.

Skill: Divide 2-digits by 1-digit (sharing with remainders)

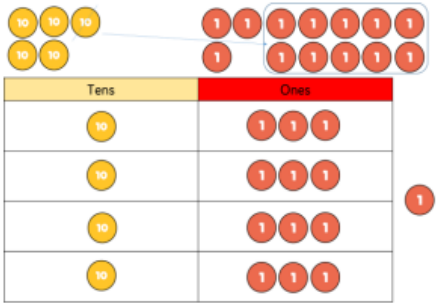
Year: 3/4







53 ÷ 4 = 13 r1

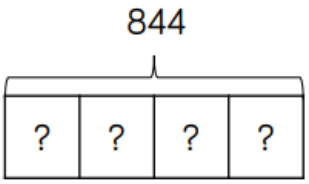


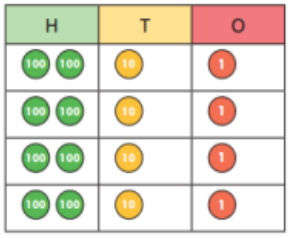
When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones.
Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made.
Flexible partitioning in a part-whole model supports this method.

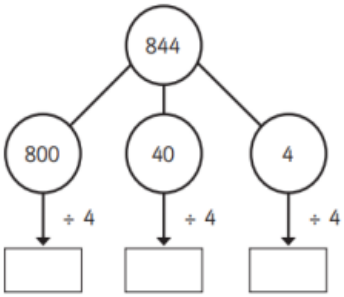
Skill: Divide 3-digits by 1-digit (sharing)

Year: 4

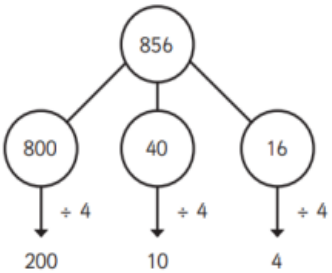
844 ÷ 4 = 211

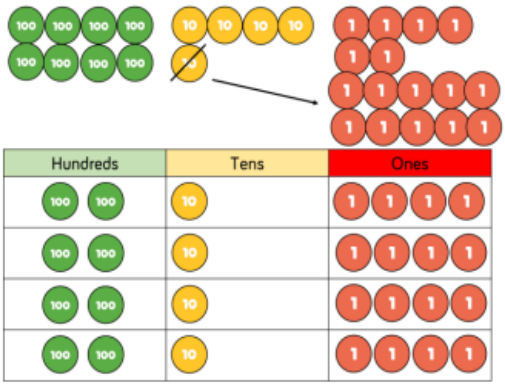




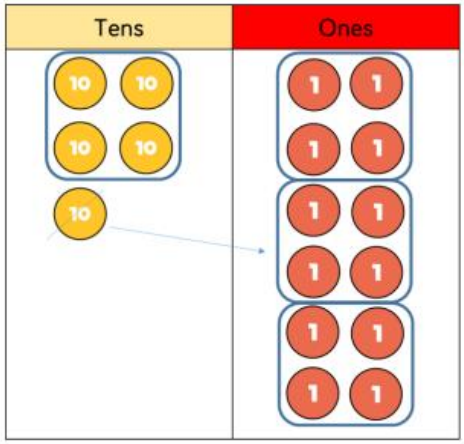
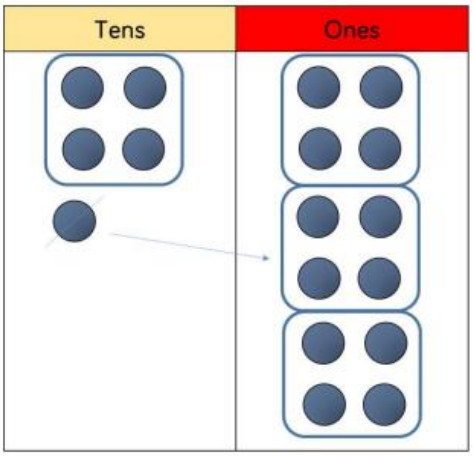


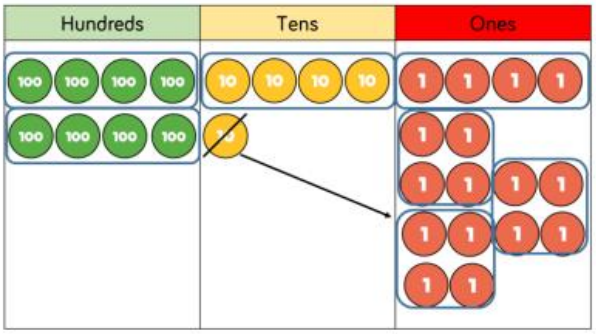
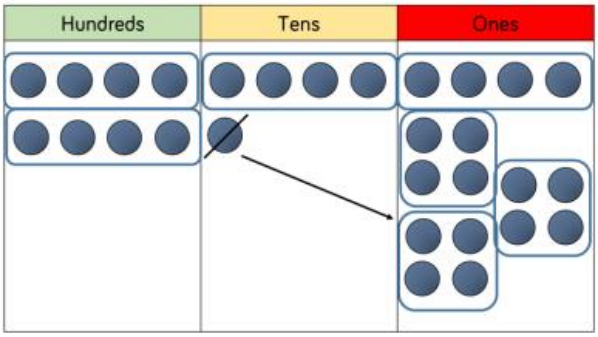
856 ÷ 4 = 214

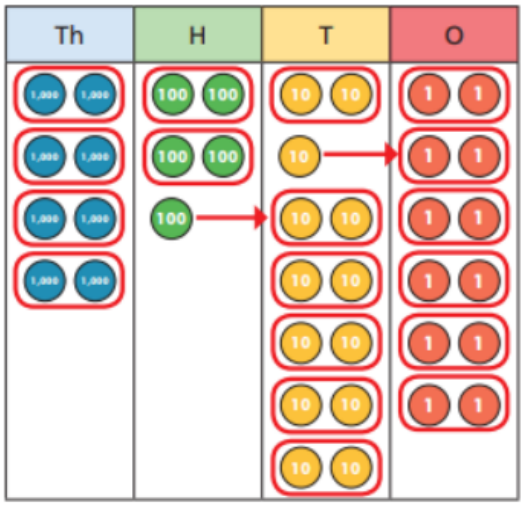




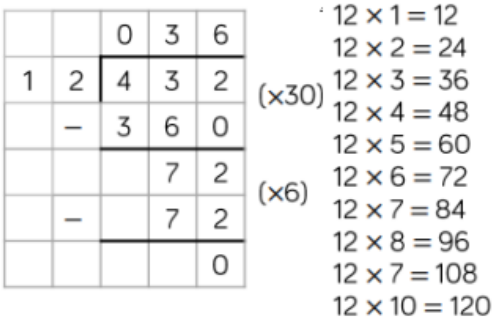
Children can continue to use place value counters to share 3-digit numbers into equal groups.
Children should start with the equipment outside the place value grid before sharing the hundreds, tens and ones equally between the rows.
This method can also help to highlight remainders.
Flexible partitioning in a part-whole model supports this method.

Skill: Divide 2-digits by 1-digit (grouping)	Year: 5
   $52 \div 4 = 13$	When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor. Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?' Remainders can also be seen as they are left ungrouped.

Skill: Divide 3-digits by 1-digit (grouping)	Year: 5
   $856 \div 4 = 214$	Children can continue to use grouping to support their understanding of short division when dividing a 3-digit number by a 1-digit number. Place value counters or plain counters can be used on a place value grid to support this understanding. Children can also draw their own counters and group them through a more pictorial method.

Skill: Divide 4-digits by 1-digit (grouping)	Year: 5
 **8,532 ÷ 2 = 4,266**	Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit. Children can also draw their own counters and group them through a more pictorial method. Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges.

		4	2	6	6
	2	8	5	$^{1}3$	$^{1}2$

Skill: Divide multi-digits by 2-digits (long division)	Year: 6
 (x30) (x6) 12 × 1 = 12 12 × 2 = 24 12 × 3 = 36 12 × 4 = 48 12 × 5 = 60 12 × 6 = 72 12 × 7 = 84 12 × 8 = 96 12 × 7 = 108 12 × 10 = 120 **432 ÷ 12 = 36** **7,335 ÷ 15 = 489**	Children can also divide by 2-digit numbers using long division. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate.

		0	3	6
1	2	4	3	2
	–	3	6	0
			7	2
	–		7	2
				0

	0	4	8	9	
15	7	3	3	5	
–	6	0	0	0	(×400
	1	3	3	5	
–	1	2	0	0	(×80)
		1	3	5	
–		1	3	5	(×9)
				0	

1 × 15 = 15
2 × 15 = 30
3 × 15 = 45
4 × 15 = 60
5 × 15 = 75
10 × 15 = 150

Skill: Divide multi digits by 2-digits (short division)

Year: 6

		0	3	6
	12	4	$^{4}3$	$^{7}2$

$$432 \div 12 = 36$$

$$7{,}335 \div 15 = 489$$

	0	4	8	9
15	7	$^{7}3$	$^{13}3$	$^{13}5$

15	30	45	60	75	90	105	120	135	150

When children begin to divide up to 4-digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate.

Skill: Divide multi digits by 2-digits (long division)

Year: 6

$$372 \div 15 = 24 \text{ r}12$$

			2	4	r	1	2
1	5	3	7	2			
	–	3	0	0			
			7	2			
	–		6	0			
			1	2			

$1 \times 15 = 15$
$2 \times 15 = 30$
$3 \times 15 = 45$
$4 \times 15 = 60$
$5 \times 15 = 75$
$10 \times 15 = 150$

					$\frac{4}{5}$
			2	4	
1	5	3	7	2	
	–	3	0	0	
			7	2	
	–		6	0	
			1	2	

$$372 \div 15 = 24\frac{4}{5}$$

When a remainder is left at the end of a calculation, children can either leave it as a remainder or convert it to a fraction.
This will depend on the context of the question.

Children can also answer questions where the quotient needs to be rounded according to the context.

Appendix

Recommendations and teaching ideas.

Listed below are a range of recommendations and teaching ideas aimed at informing and enhancing the teaching of primary mathematics:

- **Developing children's understanding of the = symbol**

The = symbol is an assertion of equivalence. If we write 3 + 4 = 6 + 1 then we are saying that what is on the left of the = symbol is equivalent to what is on the
right of the symbol. But many children interpret = as always being an instruction to work out the value of a calculation. This is as a result of always seeing it
used as follows:
3 + 4 =
5 × 7 =
16 – 9 =
If children only think of = as meaning "Work out the answer to this calculation" then they are likely to get confused by empty box questions such as:
3 + □ = 8 and are are very likely to struggle with even simple algebraic equations, such as: 3y = 18. This can be overcome by doing the following:
 Vary the position of the = symbol e.g. 24 = 4 x 6
 Include lots of empty box problems e.g. 12 - □ = 4; □ x 6 = 24
 Teach inequality alongside equality e.g. 5 + 9 □ 3 x 5 (< > or =?)

- **Recognizing the value of ones, tens, hundreds etc. in a number.**

Many children are able to recognise the value of each digit in a number like 347 but find it harder to explain, for example, how many tens there are in 347.
Once they are able to recognise that there are 34 tens (rather than 4 tens), it makes it much easier to be able to carry out a calculation such as 347 + 30 as
they are adding 3 tens to the 34 tens. Traditionally, children often struggle when tackling a calculation involving crossing over a hundred e.g. 293 + 10 but
using this method takes much of the difficulty away as they only need to add 1 ten to the 29 tens to give 30 tens and an answer of 303. It is equally effective.
when subtracting e.g. for 112 – 20, we subtract 2 tens from the 11 tens to leave is with 9 tens and an answer of 92.
when subtracting e.g. for 112 – 20, we subtract 2 tens from the 11 tens to leave is with 9 tens and an answer of 92.

- **Reasoning about mathematical relationships.**

Children need to be exposed to images and structures that help them to make links between inverse operations from an early age.

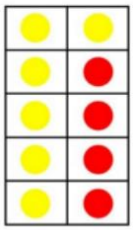
Opportunities should be taken wherever possible to demonstrate how children can use what they already know to work out a related fact.
e.g.:
. - if 6 + 4 = 10, then 6 tens + 4 tens = 10 tens i.e. 60 + 40 = 100
- If you know 3 + 5, you can use this to work out 23 + 5

- **Developing children's fluency with basic number facts.**

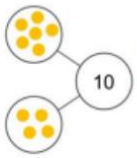
Fluent computational skills are dependent on accurate and rapid recall of basic number bonds to 20 and times-tables facts. Research has shown that spending.
a short time every day on these basic facts quickly leads to improved fluency.

- **Developing fluency in mental calculations (The Magic 10)**

Although the Magic 10 already has a place in this calculation policy, it is worth emphasizing the importance of this approach. Children who learn to 'make 10'
to create an easier calculation are able to develop mental fluency and an ability to look for patterns. Using knowledge of number bonds that make 10, they can.
see that 9 + 6 = 9 + 1 + 5 = 10 + 5 = 15

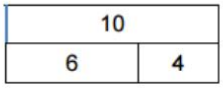


6 + 4 = 10
4 + 6 = 10
10 – 4 = 6
10 – 6 = 4



6 + 4 = 10
4 + 6 = 10
10 – 4 = 6
10 – 6 = 4

Part Whole Model



6 + 4 = 10
4 + 6 = 10
10 – 4 = 6
10 – 6 = 4

Bar Model