Maths Policy 2023

Statement of Intent

At Trimley St Mary Primary School, we aim 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. That they **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language. And lastly, that they 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.

AIMS AND OBJECTIVES:

The aims of mathematics and how these contribute to the school's aims.

The school aims to:

- Provide a relevant, challenging and enjoyable curriculum for all pupils;
- Provide a stimulating environment and appropriate resources so that pupils can develop their mathematical skills to their full potential;
- Meet the requirements of the National Curriculum programmes of study;
- Promote mathematics as an essential element of communication, which allows pupils to describe, illustrate, interpret, predict and explain;
- Show pupils the wonder of mathematics and promote ways of doing mathematics which harness their imagination, initiative and flexibility of mind;
- Build pupils' confidence by creating an "I can do this" ethos in the classroom;
- Encourage pupils to work systematically and to show a respect for accuracy and meaning;
- Encourage pupils to work independently and with others.
- Promote subject specific vocabulary.

Curriculum Intent

The 8 Cs – Our curriculum is underpinned by core learning skills that all children need in order to be effective learners. Children use these skills to evaluate themselves as learners, in addition to their knowledge and understanding of concepts within History.

Lesson timings

The main maths lesson is delivered in the morning with KS2 lessons lasting 1 hour 15 mins and kS1 lasting 1 hour. Pupils also participate in short burst maths sessions in the afternoons in and around their other curriculum learning. Content is delivered in blocks of learning, varying in length, dependent upon the nature of the topic and skills being developed. For example, a unit on place value may not last as long as a unit based around fractions. Teachers have the professional scope to make adjustments where they think they are needed. For example, if more than one lesson is needed to embed a skill then this can be done. There is no need for Learning Sequences to begin on a Monday or to be completed on a Friday. This being said, there is an expectation that each stage of the learning process takes place and is evident through books, learning walls, flip charts and planning.

A typical lesson in Years 1 to 6 is structured along the following lines:

- Fluent in Five (about 5 to 10 minutes) focusing on whole-class work to rehearse, sharpen and develop calculation skills.
- Rapid reasoning, a chance to apply calculation skills to challenging problems.
- The main teaching activity (about 40 to 50 minutes) which comprises of a significant amount of direct teaching and pupils' activities involving work with the whole class, groups, pairs or individuals as appropriate. Lessons will give children time to discuss mathematical ideas and their work with their peers and adults.
- Mini – plenaries will take place during a lesson to enable the teacher to address misconceptions and fine-tune the learning.

We endeavour to set work that is challenging, motivating and encourages the pupils to discuss and explain what they are doing. KS1 also have their awesome maths slots each afternoon, this is currently following the NCETM Maths Mastery Teaching Programme, where Rekenreks and other resources and manipulatives are used to explore and investigate number. The use of 'sentence stems' underpins this approach and encourages children to verbalise their learning and reasoning.

Domain Coverage

It is vital that we adjust our mathematical teaching to meet the needs of our pupils in terms of what we use as a stimulus and how we cover each National Curriculum domain. Below are details of the mathematical domains for both Key Stage 1 and Key Stage 2. In all phases, teachers use these domains to frame mathematical learning. Editable SATS style question formats are also utilised so that children become familiar with the layout and requirements of the formal tests.

KEY STAGE ONE

Strand	Substrand	Content domain reference
Number and place value	counting (in multiples)	**N1**
	read, write, order and compare numbers	**N2**
	identify, represent and rounding	**N4**
	number problems	**N6**

Strand	Substrand	Content domain reference
Addition, subtraction, multiplication and division (calculations)	add / subtract mentally	**C1**
	add / subtract using written methods	**C2**
	use inverses and check	**C3**
	add / subtract to solve problems	**C4**
	multiply / divide mentally	**C6**
	multiply / divide using written methods	**C7**
	solve problems based on all four operations and knowledge of the commutative facts	**C8**
	order of operations	**C9**
Fractions	recognise, find, write, name and count fractions	**F1**
	equivalent fractions	**F2**
Measurement	compare, describe and order measures	**M1**
	measure and read scales	**M2**
	money	**M3**
	telling time, ordering time and units of time	**M4**
	solve mathematical problems involving measures	**M9**
Geometry – properties of shape	recognise and name common shapes	**G1**
	describe properties and classify shapes	**G2**
	draw and make shapes and relate 2-D to 3-D shapes	**G3**
Geometry – position and direction	patterns	**P1**
	describe position, direction and movement	**P2**
Statistics	interpret and represent data	**S1**
	solve problems involving data	**S2**

KEY STAGE TWO

Strand	Substrand	Content domain reference
Number and place value	counting (in multiples)	**N1**
	read, write, order and compare numbers	**N2**
	place value; roman numerals	**N3**
	identify, represent and estimate; rounding	**N4**
	negative numbers	**N5**
	number problems	**N6**

Strand	Substrand	Content domain reference
Addition, subtraction, multiplication and division (calculations)	add / subtract mentally	**C1**
	add / subtract using written methods	**C2**
	estimate, use inverses and check	**C3**
	add / subtract to solve problems	**C4**
	properties of number (multiples, factors, primes, squares and cubes)	**C5**
	multiply / divide mentally	**C6**
	multiply / divide using written methods	**C7**
	solve problems (commutative, associative, distributive and all four operations)	**C8**
	order of operations	**C9**
Fractions, decimals and percentages	recognise, find, write, name and count fractions	**F1**
	equivalent fractions	**F2**
	comparing and ordering fractions	**F3**
	add / subtract fractions	**F4**
	multiply / divide fractions	**F5**
	fractions / decimals equivalence	**F6**
	rounding decimals	**F7**
	compare and order decimals	**F8**
	multiply / divide decimals	**F9**
	solve problems with fractions and decimals	**F10**
	fractions / decimal / percentage equivalence	**F11**
	solve problems with percentages	**F12**
Ratio and proportion	relative sizes, similarity	**R1**
	use of percentages for comparison	**R2**
	scale factors	**R3**
	unequal sharing and grouping	**R4**

Strand	Substrand	Content domain reference
Algebra	missing number problems expressed in algebra	**A1**
	simple formulae expressed in words	**A2**
	generate and describe linear number sequences	**A3**
	number sentences involving two unknowns	**A4**
	enumerate all possibilities of combinations of two variables	**A5**
Measurement	compare, describe and order measures	**M1**
	estimate, measure and read scales	**M2**
	money	**M3**
	telling time, ordering time, duration and units of time	**M4**
	convert between metric units	**M5**
	convert metric / imperial	**M6**
	perimeter, area	**M7**
	volume	**M8**
	solve problems (a, money; b, length; c, mass / weight; d, capacity / volume)	**M9**
Geometry – properties of shapes	recognise and name common shapes	**G1**
	describe properties and classify shapes	**G2**
	draw and make shapes and relate 2-D to 3-D shapes (including nets)	**G3**
	angles – measuring and properties	**G4**
	circles	**G5**
Geometry – position and direction	patterns	**P1**
	describe position, direction and movement	**P2**
	co-ordinates	**P3**
Statistics	interpret and represent data	**S1**
	solve problems involving data	**S2**
	mean average	**S3**

Teaching and learning

We provide all pupils with direct teaching every day, which is interactive and stimulating and gives pupils a chance to discuss mathematical ideas with each other. Teaching styles and lesson structure provide opportunities for pupils to consolidate their previous learning, use and apply their knowledge, understanding and skills, pose and ask questions, investigate mathematical ideas, reflect on their own learning and make links with other work.

Our approach to teaching is based on key principles:

- A dedicated mathematics lesson every day;
- Direct teaching and interactive oral work (supported by teacher modelling)
- An emphasis on mental calculation (whilst being able to explain their methods); within a lesson there is an appropriate range of elements in the teaching, namely directing, instructing, demonstrating, explaining and illustrating, questioning and discussing, consolidating, evaluating responses and summarising. Pupils are encouraged to make decisions, communicate their understanding to others and to reason. Teachers aim to create an environment where pupils are secure and feel confident in being able to take risks in their learning.

Teachers are responsible for planning and teaching all elements of the mathematics curriculum to their pupils. Years 1 - 6 use a combination of Inspire, White Rose and Fluent in Five to help plan lessons. Teachers plan weekly and it is adapted to meet the needs of the pupils. The mathematics subject leader provides support and guidance to all teachers. Most teachers are supported by Learning Support Assistants whose work is directed by the teacher. In general, their role is to help the pupils they work with derive as much benefit and make as much progress in lessons as possible.

Our Calculation Policy has been put together in line with the new National Curriculum to outline the progressive calculation skills children need to master.

In class, teachers plan and deliver lessons with flexibility ensure the pitch and pace suit the children within their classes. Teaching will range from whole class, group, paired or individual work. Further information about new approaches to teaching at Trimley St Mary Primary School can be found below under the heading, Mathematical Mastery.

In our Reception classes, teaching also ranges from whole class, group, paired or individual work but with sessions lasting typically 20 minutes depending on the focus. Maths activities are accessible at all times during child initiated learning.

As a school, we use the Big Maths scheme to enhance our number knowledge and recall of number facts using weekly Big Maths Beat That, CLIC and SAFE challenges. These are of differing levels to suit individual pupil needs.

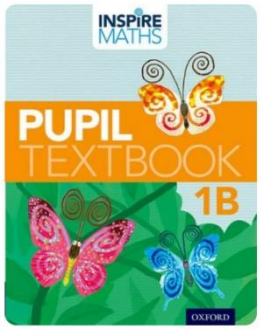
Children whom would benefit from a more personalised, smaller group for maths, have the opportunity to do o in Years 2 and 6 currently, though this can change depending on need. Any children entering year 3 without the firm foundations needed in basic calculation and number skills, access the ‘Breaking Barriers’ intervention scheme. In years 5/6 we also have a specialist support group for children with extreme barriers to access the maths curriculum which builds upon ‘Breaking Barriers’ in lower KS2 and focusses on functional number skills.

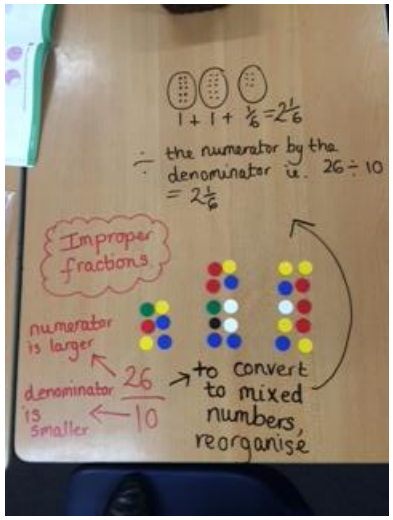
Using concrete, pictorial and abstract representations

To support the 'Singapore approach' to teaching key concepts in mathematics, (see Mathematical Mastery), lessons are planned so that children can use a variety of different representations. Often, learning begins with the use of concrete apparatus to represent a problem; children use the manipulatives to practically explore the problem. Following this, pictorial representations or diagrams can be used to represent problems with or without the apparatus alongside. This approach aims to secure children's understanding of a concept, such as doubling numbers, before they work with the abstract representation of numbers and symbols. The video below show's this theory in practice.

The school has invested heavily in the 'Inspire' maths scheme, with textbooks provided for every year group (1-6) to support teaching and learning alongside many other resources. Inspire Maths is a whole-school primary maths programme that provides everything you need to support a mastery approach to teaching and learning mathematics, and meet the higher expectations of the National Curriculum. It follows world-leading pedagogy based on the *My Pals are Here!* series, a programme used in almost 100% of Singapore's state primary schools.

Each classroom and break out area has access to a range of concrete materials for children to use to support their mathematical understanding including bead strings, counters, numicon, place value cards, compare bears, and multilink to name but a few.





Fluency

Fluency is one of the three aims for the 2014 national curriculum. It is also one of NCETM's 'Five Big Ideas of Teaching for Mastery' where it's defined as "quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics".

Three stages of fluency

1. Simple strategies

Initially, as a child gets to grips with a new skill, they can work out an answer using concrete resources or counting strategies. This will probably help them solve a problem accurately, but it's not the most efficient strategy.

2. Mental calculations

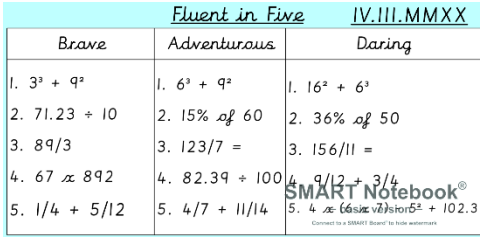
As learners become more proficient with new learning, they reach the second stage of fluency. Learners at this stage can work out an answer in their head. It still requires some thinking and effort as they develop reasoning strategies, but they're well on their way to becoming more efficient.

3. Achieving fluency

Finally, children reach the stage of 'I just knew it'. They can reliably produce accurate answers in an efficient way. This stage often involves using their knowledge flexibly; making connections so that the known can be used to work out the unknown.

In the words of Mark McCourt, "we consider someone to be fluent in a technique, procedure, idea, concept or fact at the point at which they no longer need to give attention".

We pay great attention to our children achieving mathematical fluency and time is set aside in every maths lesson to become more fluent. Children from KS1-KS2 participate in daily 'Fluent in Five' session within their maths lessons to practise key calculation skills. The aim is to build competency and pace with arithmetic.

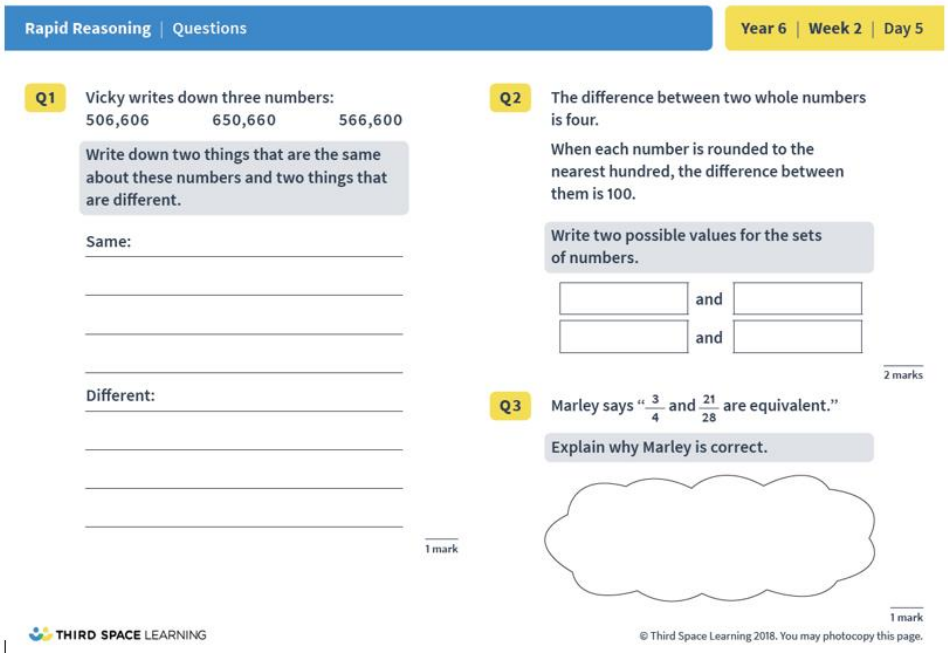


Example of Fluent in Five for lower set Year 6 Maths. Pupils select a level of challenge independently.

Rapid Reasoning provides at least three questions a day for Years 3–6 and is designed to help children develop and practise their reasoning skills. It is designed to complement Third Space Learning's Fluent in Five resource, which provides daily fluency practice. Rapid Reasoning has been carefully structured with progression through the KS2 curriculum in mind.

Regular opportunities for children to practise, recap and apply their reasoning and problem-solving skills are important. Problem solving and reasoning is what makes maths; 'maths' rather than just an exercise in recalling and following instructions or facts. Two of the three aims of the National Curriculum for maths focus on problem solving and reasoning.

At Trimley St Mary, it is the expectation that all children in KS2, take part in some sort of reasoning activity daily within their maths lesson. These may be from Third Space learning or devised by individual staff to complement learning taking place in the main body of the lesson.



Rapid Reasoning | Questions — **Year 6 | Week 2 | Day 5**

Q1 Vicky writes down three numbers:
506,606 650,660 566,600

Write down two things that are the same about these numbers and two things that are different.

Same:

Different:

1 mark

Q2 The difference between two whole numbers is four.

When each number is rounded to the nearest hundred, the difference between them is 100.

Write two possible values for the sets of numbers.

and

and

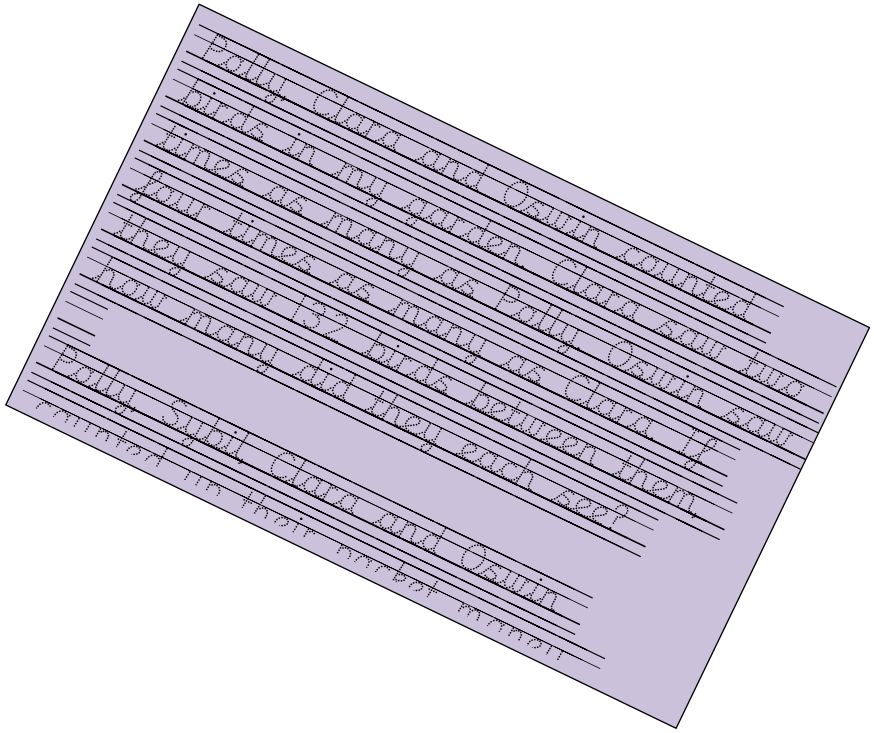
2 marks

Q3 Marley says "$\frac{3}{4}$ and $\frac{21}{28}$ are equivalent."

Explain why Marley is correct.

1 mark

THIRD SPACE LEARNING



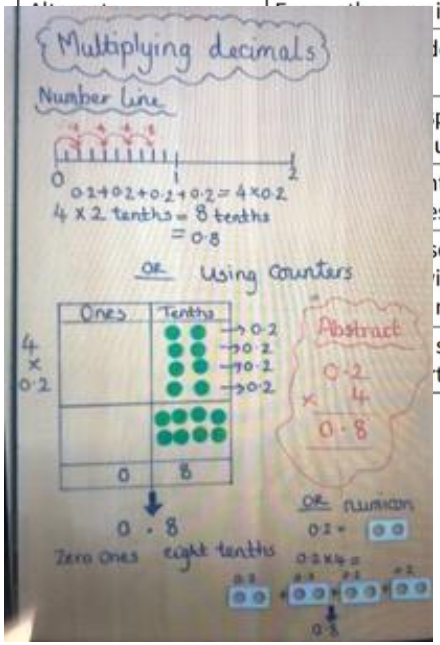
Vocabulary

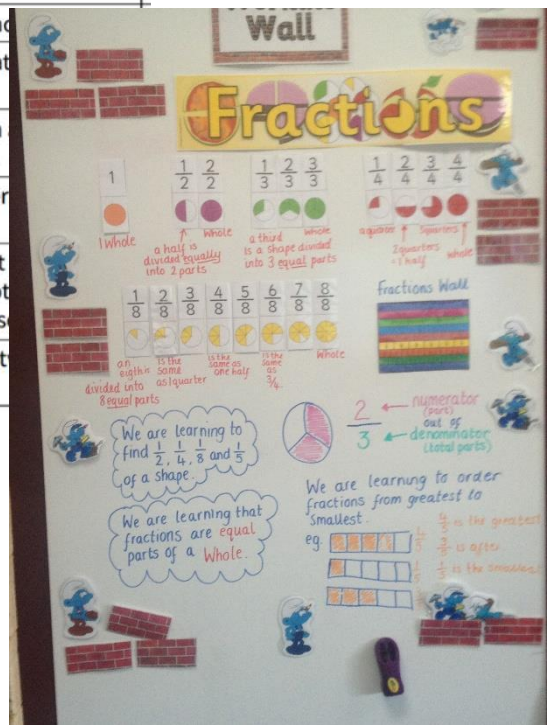
It is vital that pupils are introduced to mathematical vocabulary and that they build upon this knowledge. Without a secure grasp of subject specific vocabulary, reasoning is extremely difficult. Pupils are introduced to new vocabulary with lessons and this is added to working walls for future reference.

Concept	Definition
Acute	Describes angles between 0 and 90 degrees.
Adjacent	Adjoining (as used to describe lines and angles).

Working Walls

All classrooms have a maths working wall which staff and pupils add to regularly. It is expected that pupils will be able to access this daily to support their independent learning.





Resourcing

In addition to the Inspire textbook and online resources, staff make use of White Rose schemes of work, resources from the NCETM, Angles Maths Hub and via our work with maths consultant Liz Gibbs.

Assessment and recording

Pupil progress is regularly monitored. Pupils who are identified as greater depth will be challenged fully, while any children who are struggling will receive appropriate support and will be identified in the year group and subject specific Raising Attainment Plans (RAPs).

Short-term assessments:

Teachers keep their own records of those pupils whose progress is markedly different from that which is expected. Staff have flexibility to assess children as they see fit, using a range of quizzes, SATs papers, formative and summative assessment.

Medium-term assessments:

Each term, children will complete a PUMA test. This will give a scaled score with 100 being average (as in SATS). These scores will form part of the assessment and will give an indication of the progress being made.

End of year curriculum expectations

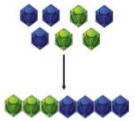
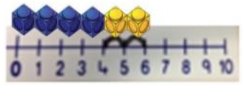
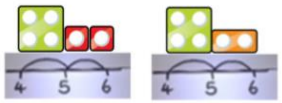
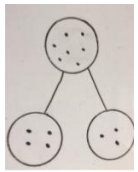
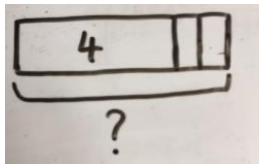
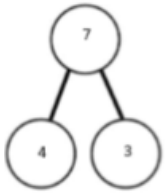
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
♣Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ♣Read and write numbers to 100 in numerals. ♣Identify and represent numbers using objects and pictorial representations including the number line (numbers to at least 30). ♣Use the language of: equal to, more than, less than (fewer), most, least. ♣Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. ♣Add and subtract one-digit and two-digit numbers to 20, including zero (using concrete objects and pictorial representations). ♣Recall and use doubles of	♣Recognise the place value of each digit in a two-digit number (tens, ones). ♣Partition numbers in different ways (e.g. 23 = 20 + 3 and 23 = 10 + 13). ♣Compare and order numbers from 0 up to 100; use and = signs. ♣Find 1 or 10 more or less than a given number. ♣Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (bonds totalling 5, 10 and 20). ♣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	♣Read and write numbers up to 1000 in numerals and in words. ♣Identify, represent and estimate numbers using different representations (including the number line). ♣Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). ♣Partition numbers in different ways (e.g. 146 = 100+ 40+6 and 146 = 130+16). ♣Compare and order numbers up to 1000. ♣Find 1, 10 or 100 more or less than a given number. ♣Round numbers to at least 1000 to the nearest 10 or 100. ♣Find the effect of multiplying a one- or two-digit number by 10 and 100, identify the value of the digits in the answer. ♣Choose an appropriate	♣Read and write numbers to at least 10 000. ♣Recognise the place value of each digit in a four-digit number. ♣Identify the value of each digit to two decimal places. ♣Partition numbers in different ways (e.g. 2.3 = 2+0.3 & 1+1.3). ♣Identify, represent and estimate numbers using different representations (including the number line). ♣Order and compare numbers beyond 1000. ♣Order and compare numbers with the same number of decimal places up to two decimal places. ♣Find 0.1, 1, 10, 100 or 1000 more or less than a given number. ♣Round any number to the nearest 10, 100 or 1000. ♣Find the effect of dividing a one- or	♣ Add and subtract numbers mentally with increasingly large numbers and decimals to two decimal places. ♣ Add and subtract whole numbers with more than 4 digits and decimals with two decimal places, including using formal written methods (columnar addition and subtraction). ♣ Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ♣ Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. ♣ Use partitioning to double or halve any number, including decimals to two	♣Perform mental calculations including with mixed operations and large numbers and decimals. ♣Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction). ♣Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ♣Perform mental calculations, including with mixed operations and large numbers. ♣Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. ♣Multiply one-digit numbers with up to two decimal places by

all numbers to 10 and corresponding halves. ♣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. ♣Understand that a fraction can describe part of a whole. ♣Recognise, find and name a half as one of two equal parts of an object shape or quantity (including measure). ♣Recognise and name common 2-D shapes, including rectangles (including squares), circles and triangles. ♣Recognise and name common 3-D shapes, including cuboids (including cubes), pyramids and spheres. ♣Compare, describe and solve practical problems for: - lengths and heights (for example, long / short, longer / shorter. tall / short, double / half). - mass/weight (for example, heavy / light, heavier than, lighter than). - capacity and volume (for example, full/empty, more than, less than, half, half full, quarter). - time (for example, quicker, slower, earlier, later). ♣Recognise and use language relating to dates, including days of the week, weeks, months	numbers. ♣Solve problems with addition and subtraction including with missing numbers: - using concrete objects and pictorial representations, including those involving numbers quantities and measures. ♣Understand multiplication as repeated addition and arrays. ♣Understand division as sharing and grouping and that a division calculation can have a remainder. ♣Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. ♣Derive and use doubles of simple two-digit numbers (numbers in which the ones total less than 10). ♣Derive and use halves of simple two-digit even numbers (numbers in which the tens are even). ♣Calculate mathematical statements for multiplication using repeated addition) and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. ♣Understand that a fraction can describe part of a set. ♣Understand that the larger the denominator	strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method). ♣Recall/use addition/subtraction facts for 100 (multiples of 5 and 10). ♣Add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. ♣Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. ♣Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ♣Derive and use doubles of all numbers to 100 and corresponding halves. ♣Write and calculate mathematical statements for multiplication and 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. ♣Understand that finding a fraction of an amount relates to division. ♣Recognise that tenths arise from dividing objects	two-digit number by 10 and 100, identifying the value of the digits in the answer. ♣Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method). ♣Recall and use addition and subtraction facts for 100. ♣Recall and use +/- facts for multiples of 100 totalling 1000. ♣Add and subtract mentally combinations of two and three digit numbers and decimals to one decimal place. ♣Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate. ♣Estimate; use inverse operations to check answers to a calculation. ♣Recall multiplication and division facts for multiplication tables up to 12 × 12. ♣Use partitioning to double or halve any number, including decimals to one decimal place. ♣Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ♣Divide numbers up to 3 digits by a	decimal places. ♣ Multiply and divide numbers mentally drawing upon known facts. ♣ Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. ♣ 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. ♣ 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. ♣Recognise mixed numbers and improper fractions and convert from one form to the other. ♣Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. ♣Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. ♣Add and subtract fractions with denominators that are the same and that are multiples of the same number (using diagrams). ♣Recognise the per cent	whole numbers. ♣Divide numbers up to 4 digits by a two-digit whole number using the formal written methods of short or long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. ♣Use written division methods in cases where the answer has up to two decimal places. ♣Solve problems involving all four operations, including those with missing numbers. ♣Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. ♣Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. ♣Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ♣Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. 1 4 x 1 2 = 1 8 ♣Solve problems involving the calculation of percentages (e.g. of measures and such as 15% of 260) and the use of percentages for comparison ♣Draw 2-D

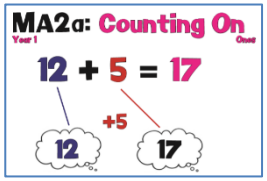
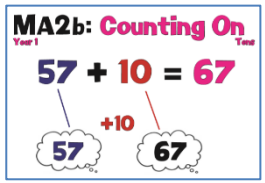
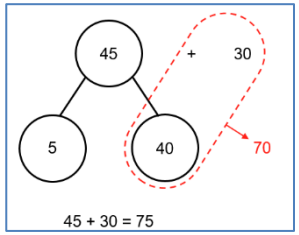
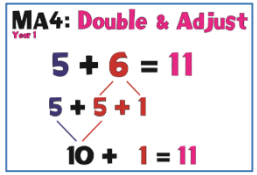
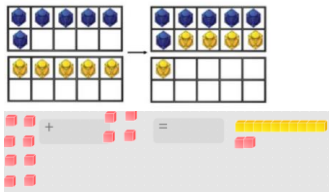
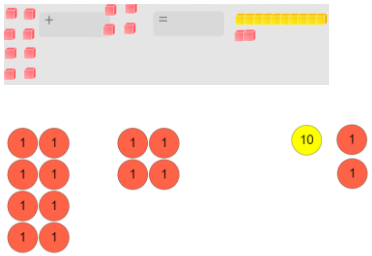
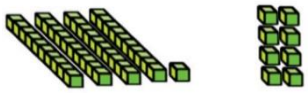
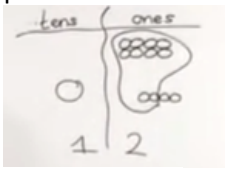
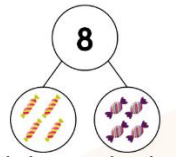
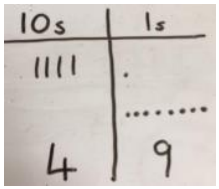
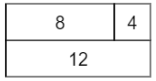
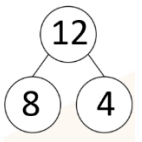
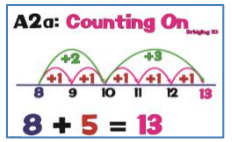
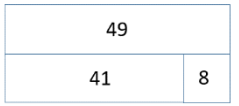
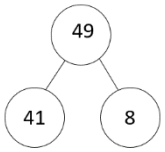
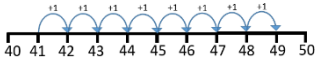
and years. ♣Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. ♣Recognise and know the value of different denominations of coins and notes. ♣Sort objects, numbers and shapes to a given criterion and their own.	is, the more pieces it is split into and therefore the smaller each part will be. ♣Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. ♣Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces ♣Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). ♣Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity and volume (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels (within children's place value competence). ♣Find different combinations of coins that equal the same amounts of money. ♣Tell and write the time to five minutes, including quarter	into 10 equal parts and in dividing one-digit numbers or quantities by 10. ♣Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. ♣Recognise and show, using diagrams, equivalent fractions with small denominators. ♣Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. ♣Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. ♣Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. ♣Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). ♣Understand perimeter is a measure of distance around the boundary of a shape. ♣Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks ♣Record/compare time in	one-digit number using the formal written method of short division and interpret remainders appropriately for the context. ♣Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. ♣Recognise, find and write fractions of a discrete set of objects including those with a range of numerators and denominators. ♣Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. ♣Recognise and show, using diagrams, families of common equivalent fractions. ♣Recognise and write decimal equivalents of any number of tenths or hundredths. ♣Add and subtract fractions with the same denominator (using diagrams). Compare and classify geometric shapes, including quadrilaterals and triangles,	symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. ♣Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. ♣Plot specified points and complete shapes. ♣Draw given angles, and measure them in degrees (°). ♣Identify: angles at a point and one whole turn (total 360°), angles at a point on a straight line and half a turn (total 180°). ♣Estimate (and calculate) volume ((e.g., using 1 cm3 blocks to build cuboids (including cubes) and capacity (e.g. using water). ♣Convert between different units of metric measure. ♣Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. ♣Calculate and compare the area of rectangle, use standard units square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes ♣Use all four operations to solve problems involving	shapes using given dimensions and angles. ♣Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. ♣Find unknown angles in any triangles, quadrilaterals, regular polygons. ♣Describe positions on the full coordinate grid (all four quadrants). ♣Express missing number problems algebraically. ♣Find pairs of numbers that satisfy an equation with two unknowns ♣Use, read and write standard units of length, mass, volume and time using decimal notation to three decimal places. ♣Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. ♣Interpret and construct pie charts and line graphs and use these to solve problems.

	past/to the hour and draw the hands on a clock face to show these times. ♣Know the number of minutes in an hour and the number of hours in a day.	terms of seconds, minutes, hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon, midnight. ♣Know the number of seconds in a minute and the number of days in each month, year and leap year. ♣Add and subtract amounts of money to give change, using both £ and p in practical contexts.		measure using decimal notation, including scaling. ♣Complete, read and interpret information in tables and timetables	

CALCULATION POLICY
EYFS Addition

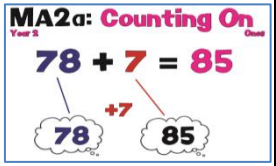
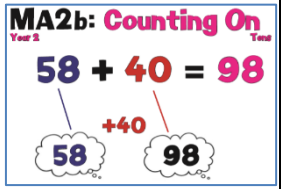
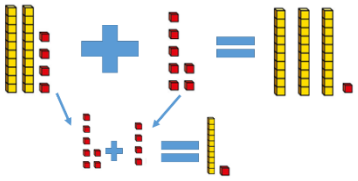
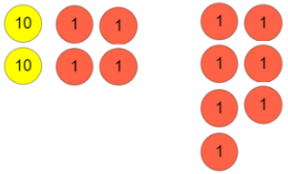
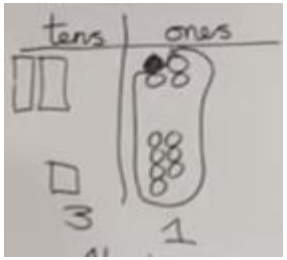
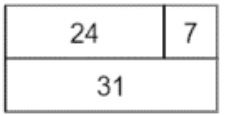
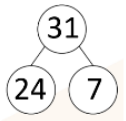
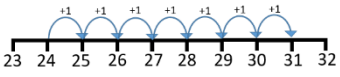
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	If available, Numicon shapes are introduced straight away and can be used to : Identify 1 more/less Combine pieces to add Find number bonds Add without counting	 Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars).  Counting on using number lines using cubes or Numicon.  	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.  A bar model which encourages the children to count on, rather than count all. 	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven.  The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? 4 + 2 	Add More And Make Sum Total Altogether Score Double One more, two more, ten more How many more to make ….? How many more is … than …?	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

Year One Addition

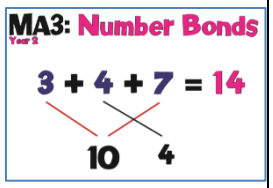
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Add a pair of single-digit numbers, including crossing 10, e.g. 5 + 8 Add one-digit number to a teens number, e.g. 13 + 5  Add one-digit to 10, and a multiple of 10 to a one-digit number, e.g. 10 + 7, 7 + 30   Add one-digit and two-digit numbers to 20 (9 + 9, 18 - 9), including zero Add near doubles, e.g. 6 + 7  Represent and use number bonds to 20 (&2,3,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19)	**Regrouping to make 10** using ten frames and counters/cubes or using Numicon. 6 + 5    **TO + O not crossing 10s** Using base 10. Continue to develop understanding of partitioning and place value. 41 + 8 	**Regrouping to make 10** Children to draw the ten frame and counters/cubes. Also draw counters in place value frames   **TO + O not crossing 10s** Children to represent the base 10 e.g. lines for tens and dot/crosses for ones. 	**Regrouping to make 10** Children to develop an understanding of equality 6 + □ = 11 6 + 5 = 5 + □ 6 + 5 = □ + 4 Use a bar model    **TO + O not crossing 10s** Use a part whole model 41+8 = 49   	Add Total More Tens Ones Digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones

		Solve simple one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems. Explain methods & reasoning Use the 100 square to add 10 to a single digit number Record addition by: - showing jumps on prepared number lines - recording number sentences Eg 6 + 5 = 11 Read, write and interpret mathematical statements involving addition (+) and equals (=) signs		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

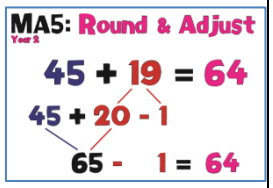
Year Two Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	Add numbers using concrete objects, pictorial representations, and mentally, including: add a single-digit number to a two-digit number, including crossing the tens boundary, e.g. 23 + 5,, then 28 + 5  add a multiple of 10 to any two-digit number, e.g. 27 + 60 add two two-digit numbers 	TO + O bridging the tens. e.g. 24 added to 7   	TO + O bridging the tens. e.g. 24 added to 7 	TO + O bridging the tens. e.g. 24 added to 7  7 + 24 = 31 24 + 7 = 31 31 = 24 + 7 31 = 7 + 24  	Add Sum More than Total Altogether Plus Digit Partition into tens and ones	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire

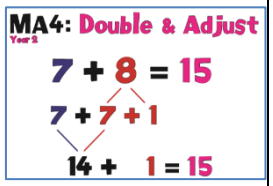
adding three one-digit numbers



add 9, 19, 29, … or 11, 21, 31, …



add near doubles, e.g. 13 + 14, 39 + 40



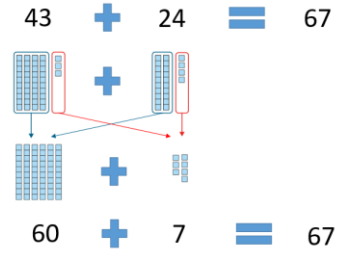
Recall number bonds to 20 fluently and derive and use related facts to 100

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

TO + TO

Not crossing the tens

E.g. 43 + 24

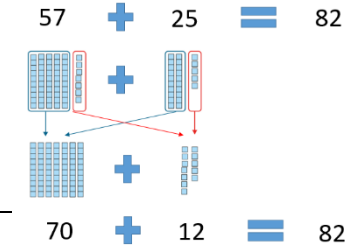


Can also use Numicon and place value counters

TO + TO

Crossing the tens

57 added to 25



TO + TO

Not crossing the tens

10s	1s
// //	///
//	////

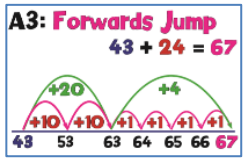
TO + TO

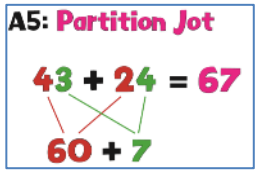
Crossing the tens

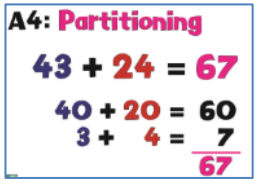
10s	1s
/////	///////
//	/////

TO + TO

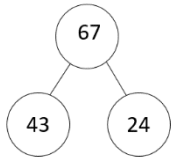
Not crossing the tens





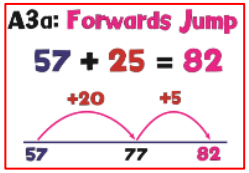


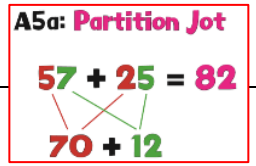
67	
43	24



TO + TO

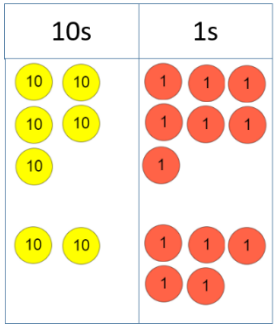
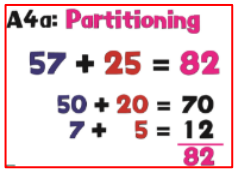
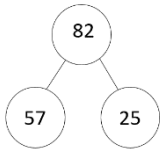
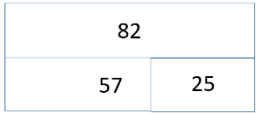
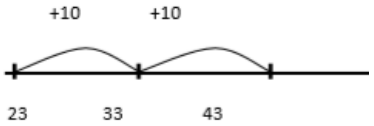
Crossing the tens





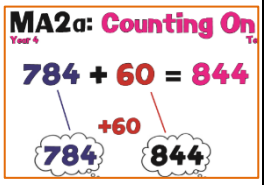
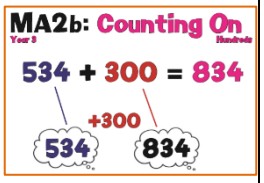
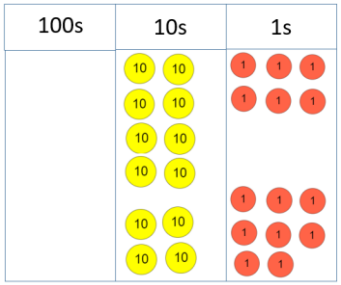
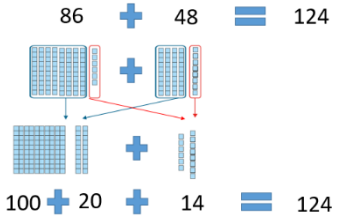
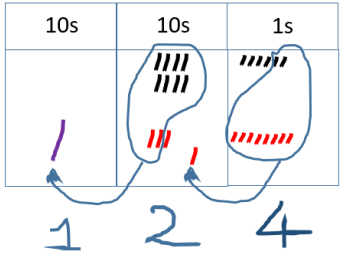
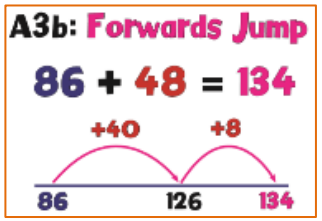
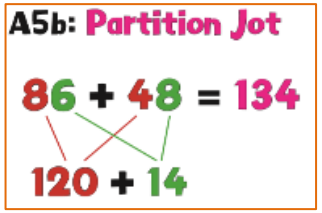
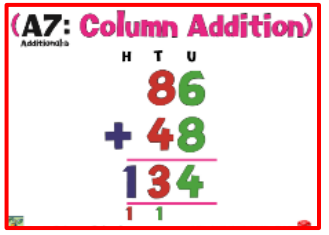
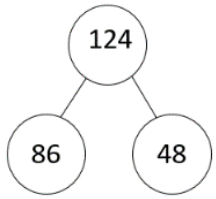
Base hundreds tens and ones

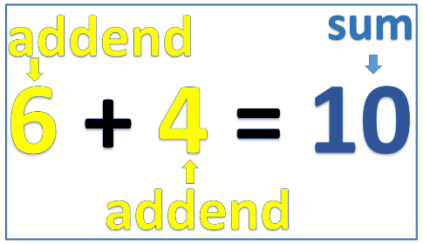
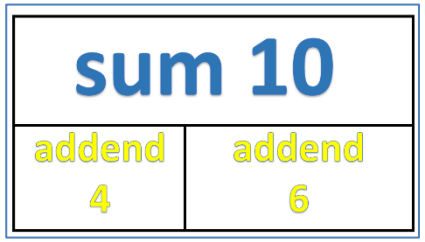
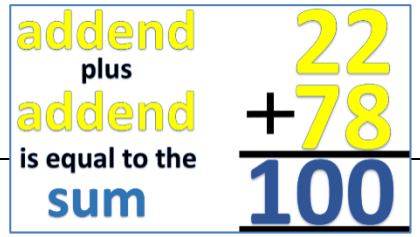
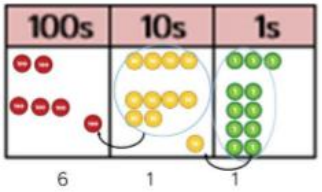
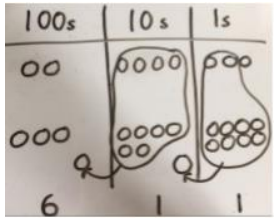
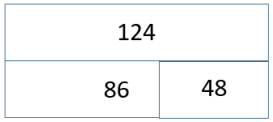
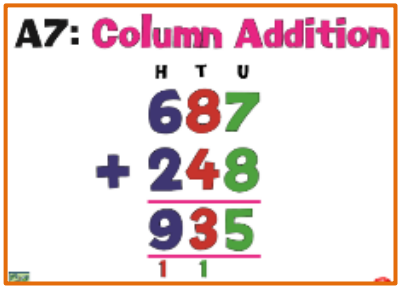
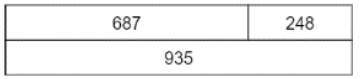
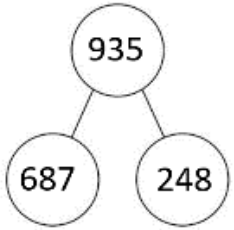
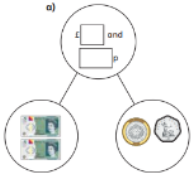
Arrow Cards

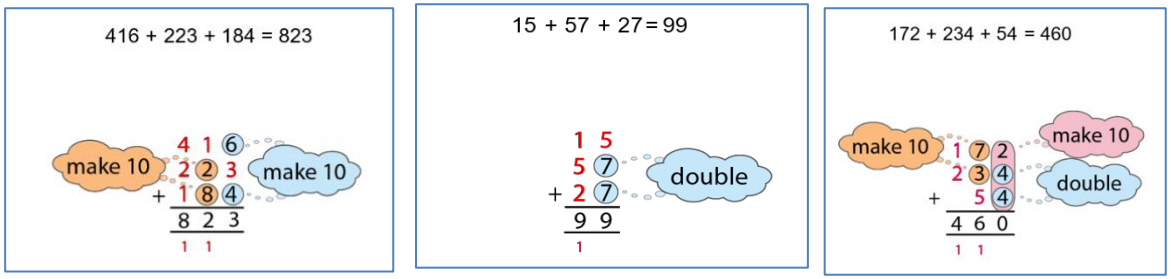
		Can also use Numicon and place value counters 		  		
		Count or add in multiples of 10 using 100 square number line  or Add by using partitioning of tens and ones – see above Solve simple one-step problems with addition: using concrete objects and pictorial representations, involving numbers, quantities and measures - see above Recognise and use the inverse relationship between addition and subtraction to check calculations and missing number problems. Check by adding numbers in a different order eg. 5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5. Begin recording addition in columns to support place value and prepare for efficient written methods - see above			
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar				

		https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html

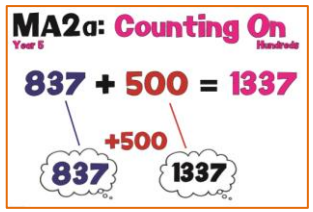
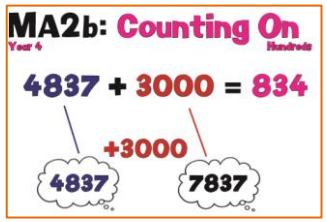
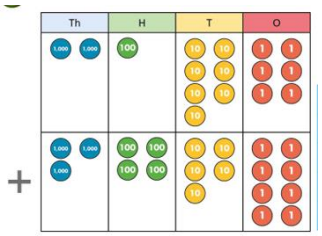
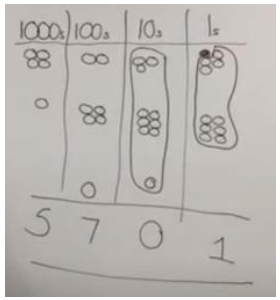
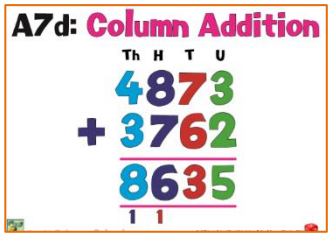
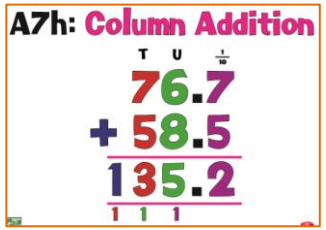
Year 3 Addition

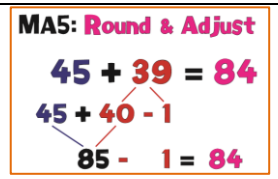
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Use number bonds to 20 and links to bonds of multiples of 10 to 100, complements to 100 e.g. 45 + 55 = 100 Practise solving varied addition questions mentally with two-digit numbers, the answers could exceed 100. Add numbers mentally, including: a three-digit number and ones a three-digit number and tens  a three-digit number and hundreds 	TO + TO See Y2 and now crossing 100s and carrying  	TO + TO See Y2 and now crossing 100s 	TO + TO See Y2 and now crossing 100s    	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten addend	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

	Recall number bonds to 20 fluently and derive and use related facts to 100 Partition numbers in different ways Eg: 62 = 60 + 2 , 50+12, 40+22 etc Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. Know the related vocabulary for addition   	**HTO + HTO** e.g. 243 + 368 	**HTO + HTO** e.g. 243 + 368 	 **HTO + HTO**     		

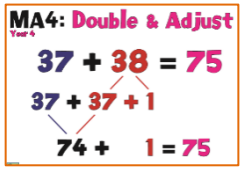
				£3 and 45p + £4 and 34p £3 + £4 = £7 45p + 34p = 79p £7 and 79p ***Decimal point for money is in Y4***		
		Add numbers with up to three digits, using the efficient written methods. Use understanding of place value and partitioning – see above Estimate the answer to a calculation and use inverse operations to check Solve problems, including missing number problems, using number facts, place value, and more complex addition. Add by using : 1) partitioning TU + TU, HTU + TU or HTU + HTU 2) Expanded columnar addition 3) Compact columnar addition Where there are more than 2 addends in a column –add up the digits efficiently 		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html					

Year 4 Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 4	Practise mental methods with increasingly large numbers to aid fluency Add numbers mentally, including: A 3-digit number and hundreds  A 4-digit number and thousands  Add any pair of two-digit numbers, including crossing the tens and 100 boundary, e.g. 47 + 58 add a near multiple of 10, e.g. 45 + 39	Use of place value counters to add TH H T O and also money to 	Use of place value grid 	TH H T O + TH H T O  Decimals - same number of digits  Money up to 4 digits	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten Carry 100 Two digit three digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

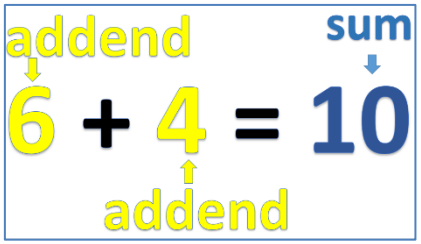


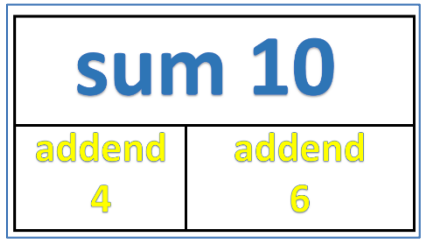
Add near doubles of two-digit numbers, e.g. 38 + 37

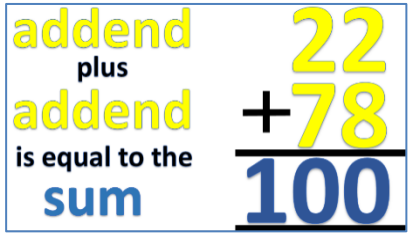


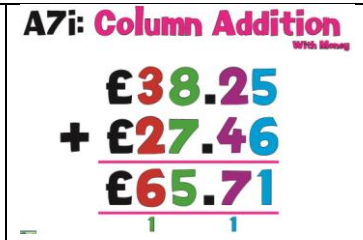
Understand addition as inverse of subtraction

Know the related vocabulary for addition









Crossing tens boundary

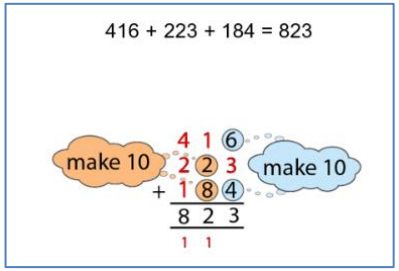
Inverse

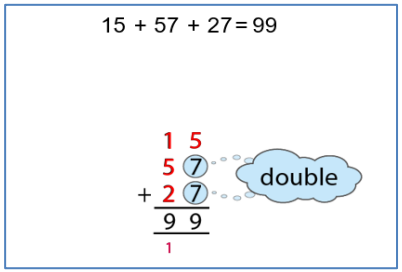
addend

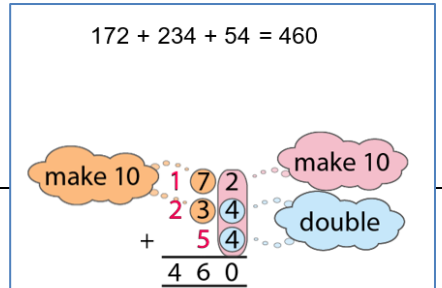
Compact columnar addition
Add numbers with up to 4 digits using the efficient written column method Practise with increasingly large numbers to aid fluency.

Estimate and use inverse operations to check answers

Solve addition two-step problems in contexts, deciding which operations and methods to use and why. Include problems involving decimals in money or measures eg. 6.3m + 3.7m = 10m
Where there are more than 2 addends in a column –add up the digits efficiently

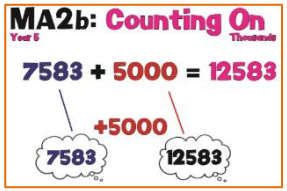
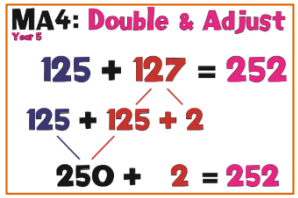
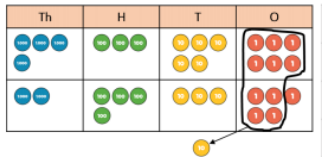
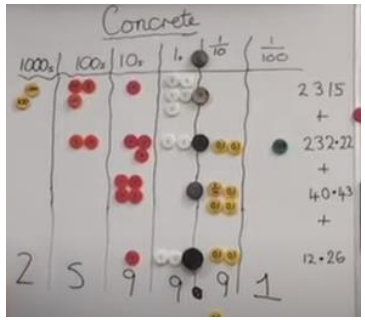
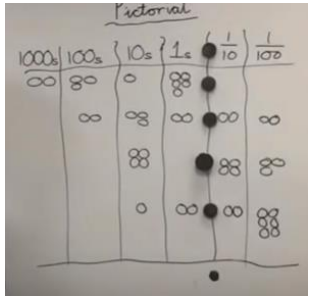
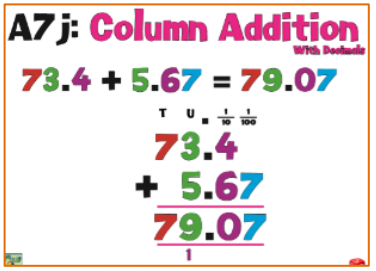
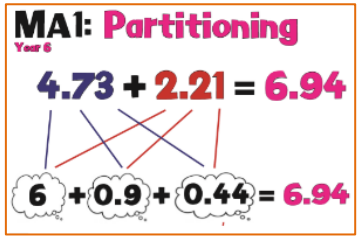
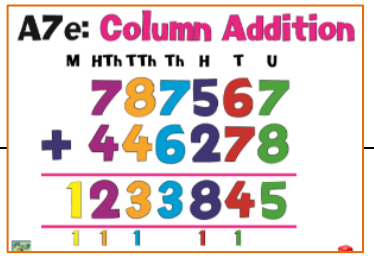




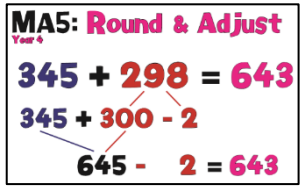


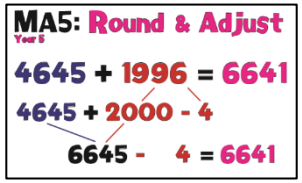
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html

Year 5 and 6 Addition

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 And Year 6	**Y5** Add numbers mentally with increasingly large numbers to aid fluency e.g. 12 462 + 2 300 = 14 762  Use rounding to check answers and determine, levels of accuracy Add a pair of two or three-digit multiples of 10, e.g. 30 + 80, 35 +36 and 350+ 360 	Use of place value counters to add up to 6 digits  	Use of place value grid 	Varied sized numbers up to millions or 3DP added using compact method. Includes measures and money Decimals - same and different number of digits   	Add Sum More than Total Altogether Plus Partition into tens and ones Empty number line Count on Carry ten Carry 100 Two digit	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

Add a near multiple of 10, 100 and 1000 to any two-digit, three-digit number or four-digit number, e.g. 235 + 198

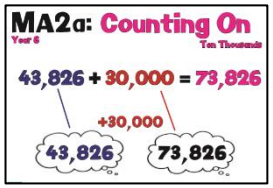




Add pairs of decimal fractions each with units and tenths, e.g. 5.7 + 2.5, 6.3 + 4.8

Y6

Calculate mentally with increasingly large numbers and more complex calculations. Including Counting on in multiples

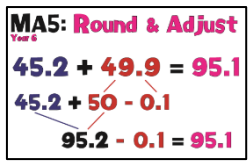


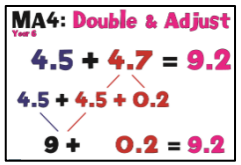
Addition facts for multiples of 10 to 1000 and decimal numbers with one decimal place,

e.g.

650 + __ = 930

___ + 1.4 = 2.5





Compact columnar addition

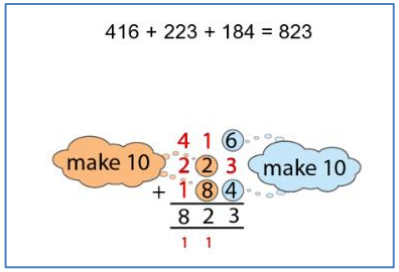
Add numbers with up to 4 digits using the efficient written column method Practise with increasingly large numbers to aid fluency.

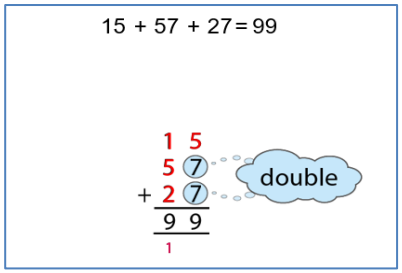
Estimate and use inverse operations to check answers

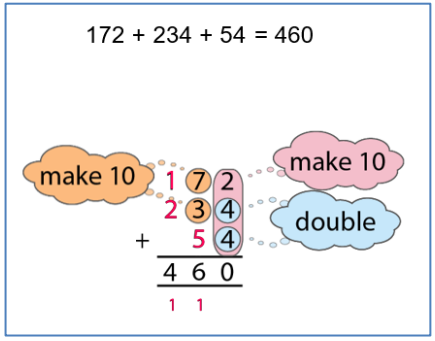
Solve addition two-step problems in contexts, deciding which operations and methods to use and why. Include problems involving decimals in money or measures eg. 6.3m + 3.7m = 10m

Practise addition for larger numbers, using the efficient written methods of columnar addition.

Where there are more than 2 addends in a column –add up the digits efficiently







three digit

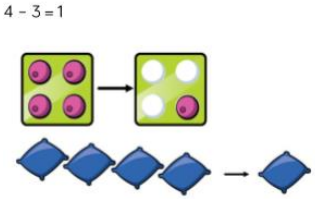
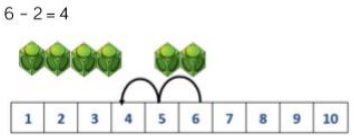
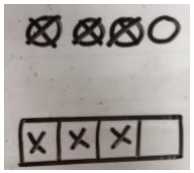
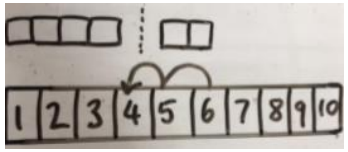
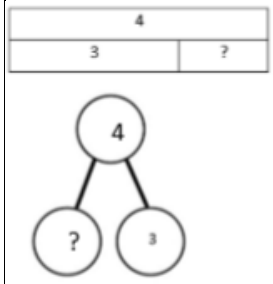
Crossing tens boundary

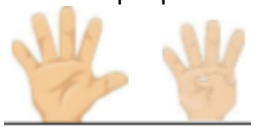
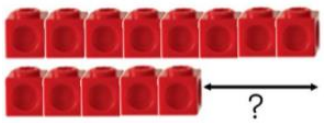
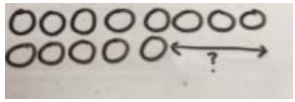
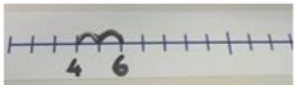
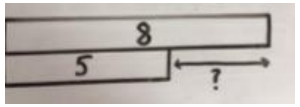
Inverse

addend

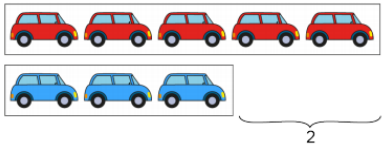
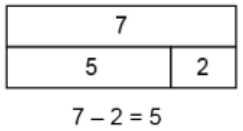
	Know the related vocabulary for addition See the images from Y4			
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

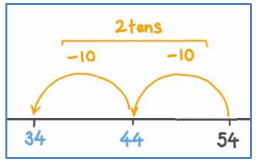
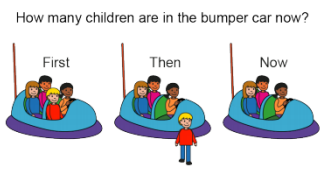
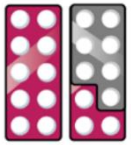
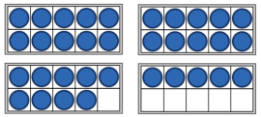
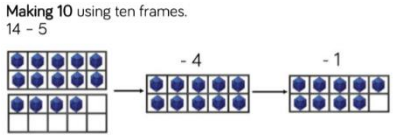
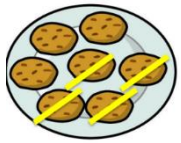
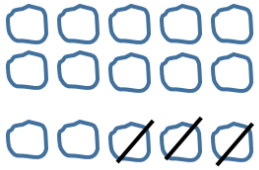
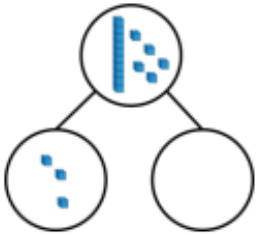
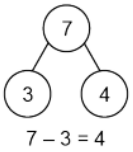
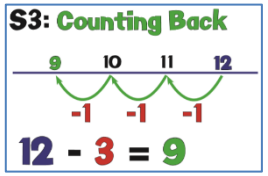
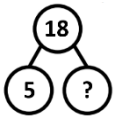
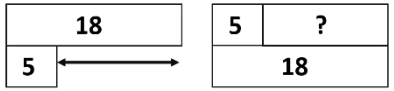
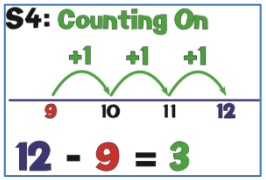
EYFS Subtraction

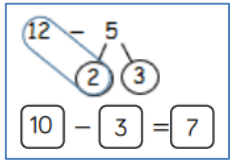
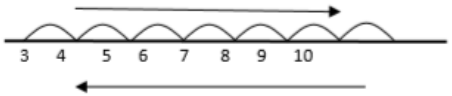
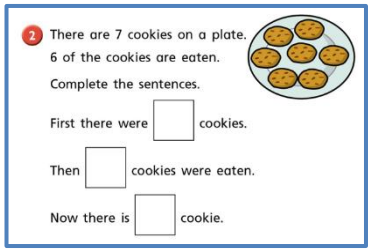
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	If available, Numicon shapes are introduced straight away and can be used to :  Concrete apparatus is used to relate subtraction to taking away and counting how many objects are left. 5 – 1 =4 Concrete apparatus models the subtraction of 2 objects from a set of 5. Construct number sentences verbally or using cards to go with practical activities. Children are encouraged to read number sentences aloud in different ways “five subtract one leaves four” “four is equal to five subtract one”	Physically taking away and removing objects from a whole  Counting back (using number lines or number tracks) children start with 6 and count back 2. 	Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.  Children to represent what they see pictorially e.g. 	 Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line	Take (away) Leave How many are left/left over? How many have gone? One less, two less … ten less…	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire

	Children make a record in pictures, words or symbols of subtraction activities carried out. Solve simple problems using fingers 	Finding the difference (using cubes, Numicon or Cuisenaire rods, other objects can also be used). Calculate the difference between 8 and 5. 	Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate. 	  Can represent difference in a bar model 	How many fewer is … than Difference between Is the same as	Base tens and ones
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html					

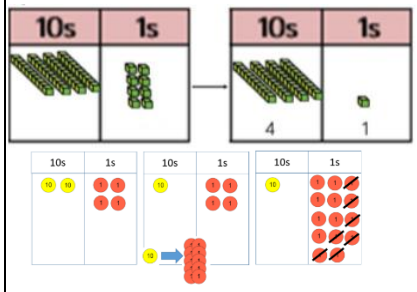
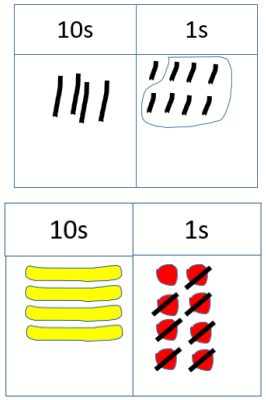
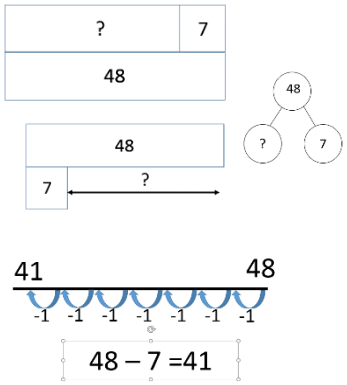
Year One Subtraction

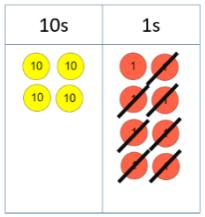
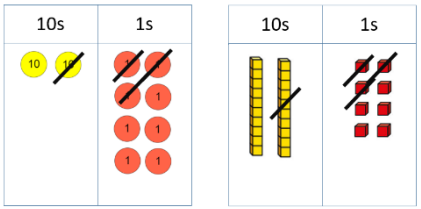
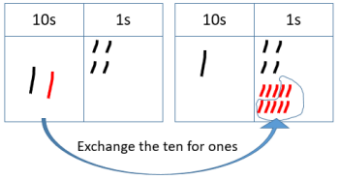
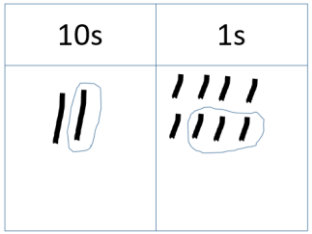
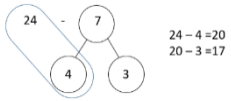
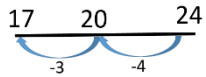
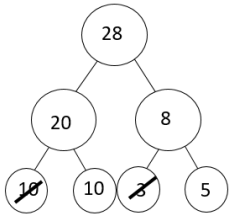
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Subtract a pair of one digit numbers e.g. 9 -5 – see EYFS Subtract a single-digit number from a teens	**Subtraction within 10** 	**Subtraction within 10** Draw 7 cookies and cross out 4 Draw a first, then, now	**Subtraction within 10**  7 – 2 = 5	As above Count back Count on	100 square Number lines Number tracks

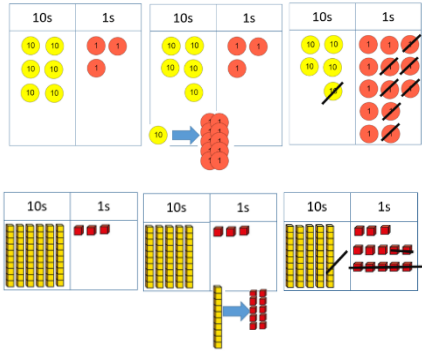
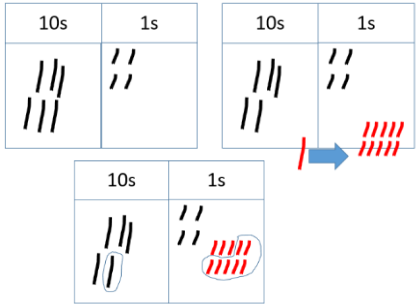
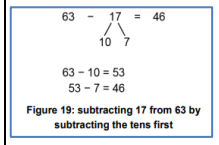
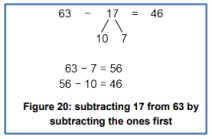
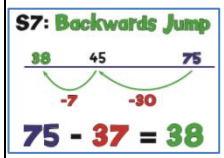
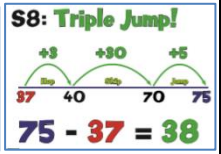
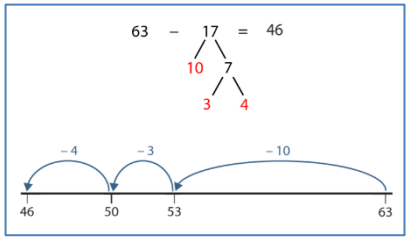
	number, including crossing 10, e.g. 15 – 8 – see CPA → Represent and use number bonds to 20 Begin to subtract a multiple of 10 from a two-digit number e.g. 54 – 20 Model on a number line – lots of chanting counting back in tens. 	 **Subtracting not crossing ten** 20 – 7 using numicon  18 – 5 using counters  15 – 2 using base ten  19 – 4 using tens frame  **Subtracting crossing 10** Making 10 using ten frames. 14 – 5  Can also use base ten, counters, numicon – as shown above	  **Subtracting not crossing 10** 15 – 3   **Subtracting crossing 10** draw the jam tarts 13 – 5  Can also draw the counters and cross out – as above	 **Subtracting not crossing 10** 12-3 number line – count back  18 -5 use a part whole model  18 – 5 – bar modelling  18 – 5 - number equation 18 – 5 = 13 13 = 18 - 5 **Subtracting crossing 10** 12- 9 – number line count on  12 – 5	Less than Difference Take away Subtract Part – whole First Then Now	Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones

				Making 10 by partitioning the single digit  Bar models, number equations and part whole models as shown above.		
		Count back orally or use a marked or partly marked number line to find the difference by counting on in ones. E.g. 9 – 4 = 5 (counting back) and when secure 9 – 4 = 5 (counting on)  Use the three stem sentences - First, then, now.  Solve simple one-step problems and missing number problems involving subtraction using practical equipment, concrete objects and pictorial representations, Explain methods & reasoning				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html					

Year Two Subtraction

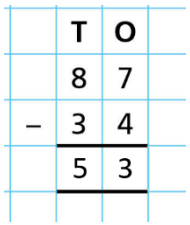
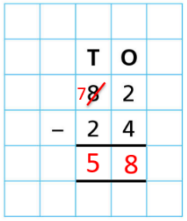
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	Subtract numbers using concrete objects, pictorial representations, and mentally, including: subtract a single-digit number from a two-digit number, including crossing tens boundary, e.g. 26 - 5, then 22 - 5 subtract a multiple of 10 from any two-digit number, e.g. 67 -20	**Subtracting not crossing ten** 48 -7 	**Subtracting not crossing ten** 48 -7 – children draw them 	**Subtracting not crossing ten** 48 -7 – bar models, part whole models, number lines, number sentence 	Count back Count on Less than Difference Take away subtract Part – whole	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon

	subtract two two-digit numbers subtract 9, 19, 29, … or 11, 21, 31… Recall number bonds to 20 fluently and derive and use related facts to 100 (and 11,12,13,14, 15,16,17, 18,19) Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	Tens frames and Numicon can also be used (see Y1 examples)  **Subtracting a single digit crossing 10** 24 -7 – using base ten and exchanging a tens rod for ones  Tens frames and Numicon can also be used (see Y1 examples) **Subtracting a 2-digit from a 2-digit number not crossing the tens** 28 – 13 – use counters or base ten  Tens frames and Numicon can also be used (see Y1 examples)	**Subtracting a single digit crossing 10** 24 -7 - children draw them  **Subtracting a 2-digit from a 2-digit number not crossing the tens** 28 – 13 – can draw in the place value grid  	**Subtracting a single digit crossing 10** 24 - 7 Can use the bar model, part whole model and number lines as shown above. Also partitioning the subtrahend – see below.   24 – 7 = 17 **Subtracting a 2-digit from a 2-digit number not crossing the tens** 28 – 13 – can draw in the place value grid Can use the bar model, part whole model and number lines as shown above. Part whole below.  28 – 13 = 15 CURRENT GUIDANCE STATES WE SHOULD NOT USE COLUMN METHOD.	Minus Decrease	Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

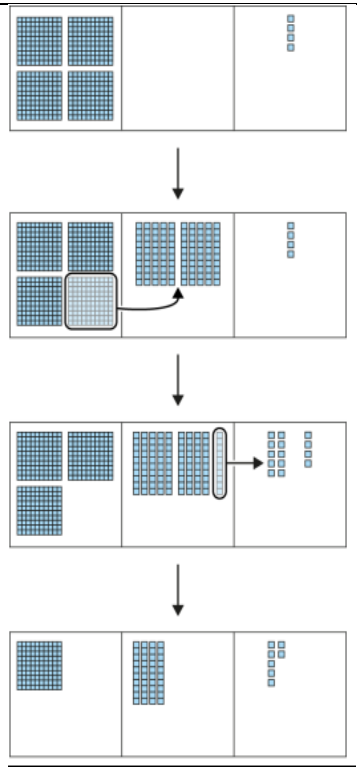
		Subtracting a 2-digit from a 2-digit number crossing the tens 63-17  Tens frames and Numicon can also be used (see Y1 examples)	**Subtracting a 2-digit from a 2-digit number crossing the tens** 63-17 – can be drawn in place value grids  	**Subtracting a 2-digit from a 2-digit number crossing the ten**  Figure 19: subtracting 17 from 63 by subtracting the tens first  Figure 20: subtracting 17 from 63 by subtracting the ones first    		
		Understand when it is sensible to count back (take away) and when to count on (find the difference) Use empty number lines to bridge through multiple of 10 Subtract by using partitioning of TU - TU Solve simple one-step problems involving numbers, quantities and measures using concrete objects and pictorial representations, Recognise and use the inverse relationship between addition and subtraction to check calculations and missing number problems. Begin recording subtraction in columns to support understanding of place value and prepare for efficient written methods				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/				

		http://www.ictgames.com/mobilePage/tenFrame/index.html

Year 3 Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Recall number bonds to 20 and links to bonds of multiples of 10 to 100 , complements to 100 e.g. 100 – 55 = 45 Practise solving varied subtraction questions mentally with two-digit numbers, the answers could exceed 100 Subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds groups of small numbers, e.g. 9 – 3 – 2 a two-digit number from a multiple of 10, eg. 50 - 38, 90 – 27, 68 – 35 Children know the vocabulary below Minuend minus subtrahend equals the difference	**Subtracting a 2-digit from a 2-digit number not crossing the tens** Please see Y2 examples **Subtracting a 2-digit from a 2-digit number crossing the tens** Please see Y2 examples **Subtracting 3 digit numbers crossing tens and hundreds** Use base 10 or counters. Here is an example with base ten.	**Subtracting a 2-digit from a 2-digit number not crossing the tens** Please see Y2 examples **Subtracting a 2-digit from a 2-digit number crossing the tens** Please see Y2 examples **Subtracting 3 digit numbers crossing tens and hundreds** Represent the place value counters pictorially; remembering to show what has been exchanged.	**Subtracting a 2-digit from a 2-digit number not crossing the tens** Please see Y2 examples  Can now move to formal column methods **Subtracting a 2-digit from a 2-digit number crossing the tens**  Please see Y2 Can now move to formal column methods examples **Subtracting 3 digit numbers crossing tens and hundreds** Use formal written methods where exchange is also required.	Subtraction Partition into hundreds, tens and ones Empty number line Count on Carry back First Then Now Empty number line Subtrahend Minuend Difference	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

	£	5	8	← minuend
-	£	1	3	← subtrahend
		4	5	← difference

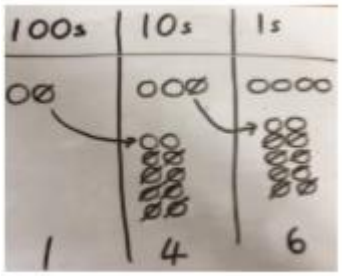


Subtracting money - no decimals

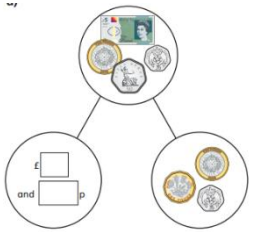
Tommy has £5 and 75p in his pocket.

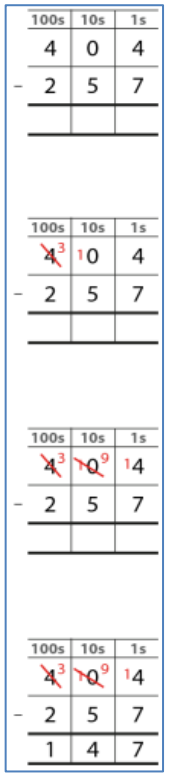
He puts £2 and 50p in his money box.

How much is left in his pocket?



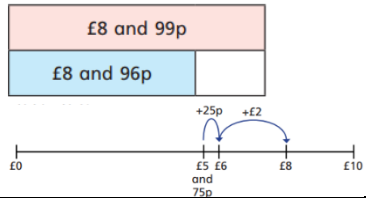
Subtracting money - no decimals





Subtracting money - no decimals

Formal part whole and counting backwards on a numberline also.

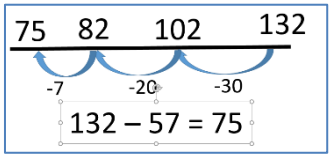
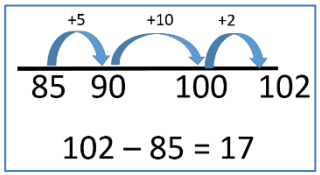
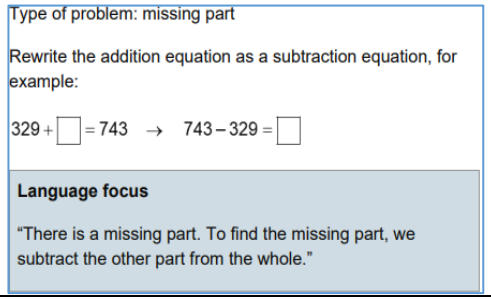
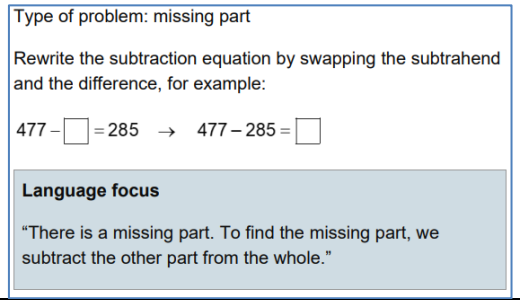


Solve problems, including missing number problems, using number facts, place value, and more complex subtraction

Subtract with up to three digits, using the efficient written methods of columnar subtraction.

Find the difference

Decrease by

		Use understanding of place value and partitioning Estimate answers calculations and use inverse operations to check Children will continue to use empty number lines with increasingly large numbers. Count back from the largest number 132- 75  Count on or find the difference 102-89  Missing-addend problems  Missing-subtrahend problems  		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html			

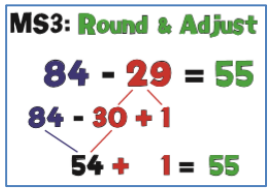
Year 4 Subtraction

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources

<table>
<tr>
<td>Year 4</td>
<td>Practise mental methods with increasingly large numbers to aid fluency

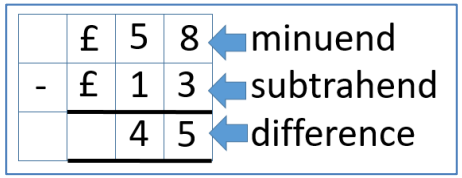
Subtract any pair of two-digit and three-digit numbers, including crossing the 10 and 100 boundary, e.g. 58 - 23

Count on and back in 10s from any number

Subtract a near multiple of 10, e.g. 84 - 29
 

Understand subtraction as inverse of addition

Children know the vocabulary below

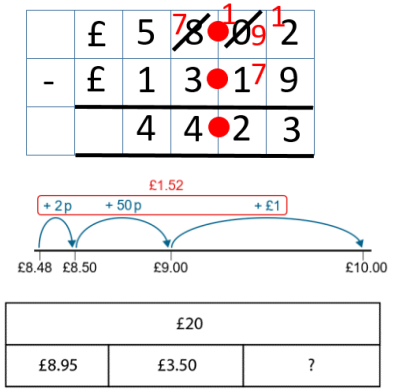
Minuend minus subtrahend equals the difference
 
</td>
<td><u>Subtracting 4 digit numbers crossing tens and hundreds</u>
See Y3 guidance for 3 digit numbers – it is the same principle.

<u>Subtracting with money up to 4 digits using decimals</u>
Use with real money to show how to find differences</td>
<td><u>Subtracting 4 digit numbers crossing tens and hundreds</u>

See Y3 guidance for 3 digit numbers – it is the same principle.

<u>Subtracting with money up to 4 digits using decimals</u>
Children can draw the coins and notes and show the exchange.</td>
<td><u>Subtracting 4 digit numbers crossing tens and hundreds</u>

See Y3 guidance for 3 digit numbers – it is the same principle.

<u>Subtracting with money up to 4 digits using decimals</u>
 
</td>
<td>Subtraction

Partition into hundreds, tens and ones

Empty number line

Count on

Carry back

First
Then
Now

Subtrahend

Minuend

Difference

Find the difference

Decrease / reduced by</td>
<td>100 square

Number lines

Number tracks

Bead strings (for children)

Bead bar

Tens Frame

Numicon

Place Value Disks

Cuisenaire

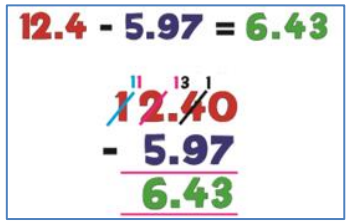
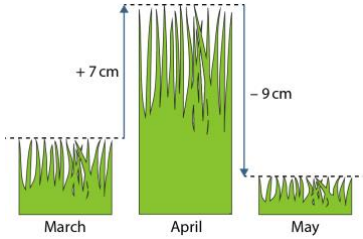
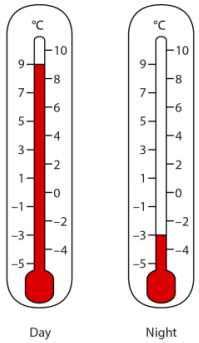
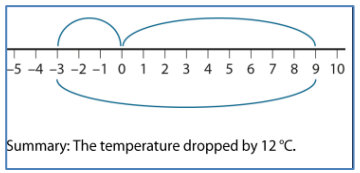
Base hundreds tens and ones

Arrow Cards</td>
</tr>
<tr>
<td colspan="4">Subtract numbers with up to 4 digits using efficient written column method with increasingly large numbers to aid fluency.

Estimate and use inverse operations to check answers

Solve subtraction of two-step problems in contexts, deciding which operations and methods to use and why.
See Y3 missing subtrahend and addend problems.</td>
<td colspan="2"></td>
</tr>
<tr>
<td></td>
<td>Useful IWB links for manipulatives</td>
<td colspan="4">https://www.coolmath4kids.com/manipulatives/base-ten-blocks
https://mathsbot.com/manipulatives/placeValueCounters
https://mathsbot.com/manipulatives/bar
https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/
https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/
http://www.ictgames.com/mobilePage/tenFrame/index.html</td>
</tr>
</table>

<u>Year 5 and Year 6 Subtraction</u>

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 And Year 6	Subtract numbers with increasingly large numbers to aid fluency e.g. 12 462 - 2 300 = 10 162 Use rounding to check answers and determine, levels of accuracy Subtract a pair of two or three-digit multiples of 10, e.g. 80 - 30, 45 -36 and 450 – 360 Subtract a near multiple of 10 or 100 from any two-digit or three-digit number, e.g. 235 - 199 Subtract pairs of decimal fractions each with ones and tenths, e.g. 5.7 - 2.5, 6.3 - 4.8  See Y3 missing subtrahend and addend problems.	Subtract whole numbers with more than 4 digits and increasingly large numbers using efficient column written methods with decomposition to aid fluency Please see the Year 3 and Year 4 examples as they have the same principles Negative numbers First it was seven Then 9 was cut off Now there 2cm less than the start Use practical apparatus to show change First it was 9 degrees Now it is -3 degrees What was the change?	Subtract whole numbers with more than 4 digits and increasingly large numbers using efficient column written methods with decomposition to aid fluency Please see the Year 3 and Year 4 examples as they have the same principles Negative numbers Negative numbers represent change  'The temperature was 9 °C in the day, then it dropped to –3 °C at night. What was the change in temperature?' 	Subtract whole numbers with more than 4 digits and increasingly large numbers using efficient column written methods with decomposition to aid fluency Please see the Year 3 and Year 4 examples as they have the same principles Negative numbers 7 – 9 = -2 There is a negative difference of 2 The difference between 9 and -3. 	Subtraction Partition into hundreds, tens and ones Empty number line Count on Carry back First Then Now Subtrahend Minuend Difference Find the difference Decrease / reduced by Negative change	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

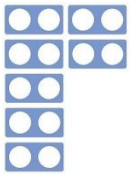
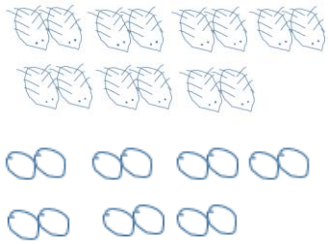
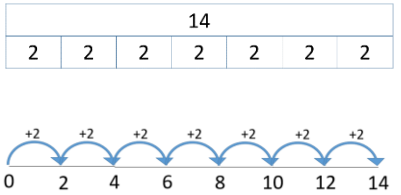
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

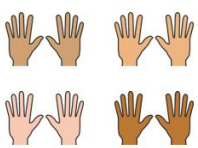
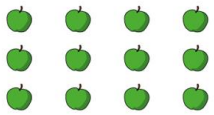
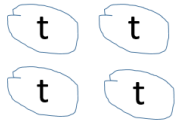
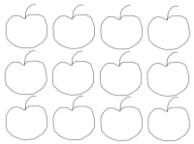
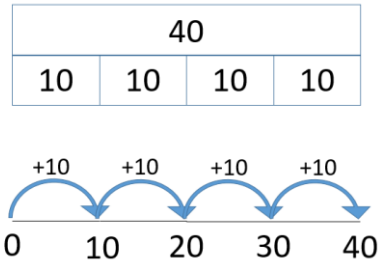
EYFS Multiplication

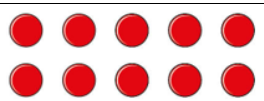
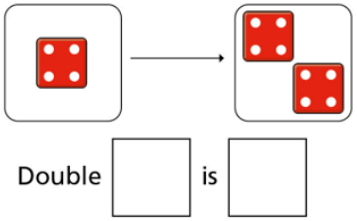
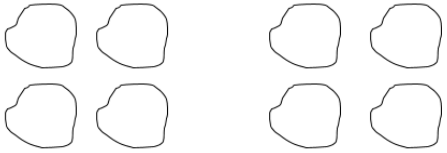
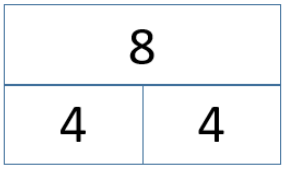
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	The link between addition and multiplication should be introduced though doubling. If available, Numicon is used to visualise the repeated adding of the same number. These can then be drawn around or printed as a way of recording.  Real life contexts and use of practical equipment to count in repeated groups of the same size: How many wheels are there altogether?	Repeated grouping/repeated addition 	Children to draw the concrete resources they are using. 	Write the number sentence 2 + 2 + 2 = 6	Lots of Groups of Times Repeated addition Double	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon

	 Count in twos; fives; tens both aloud and with objects.	Children are given multiplication problems set in a real life context. Children are encouraged to visualise the problem. How many fingers on two hands? How many sides on three triangles? How many legs on four ducks? Children are encouraged to read number sentences aloud in different ways “five times two makes ten” “ten Is equal to five multiplied by two”		Place Value Disks Cuisenaire Base tens and ones
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html			

Year One Multiplication

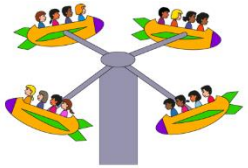
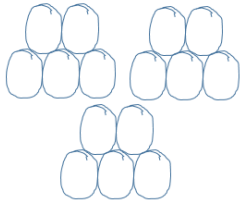
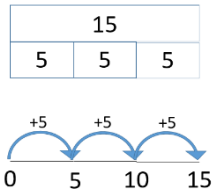
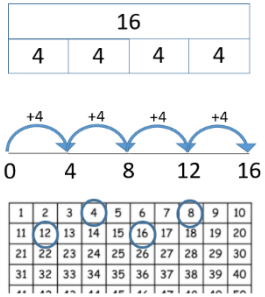
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Count on from and back to zero in ones, twos, fives or tens Make connections between arrays, number patterns, and counting in twos, fives and tens.	**Repeated Addition – Counting in 2s** Use images of different objects  There are 7 groups of 2  **Repeated addition – Counting in Tens**	**Repeated Addition - – Counting in 2s** Draw the objects  There are 7 groups of 2 **Repeated addition – Counting in Tens**	**Repeated Addition - – Counting in 2s** Can use bar model, number line and equation  2 + 2 + 2 + 2 + 2 + 2 + 2 = 14 **Repeated addition – Counting in Tens**	Lots of Groups of Times Repeated addition Double Sets Groups, Pairs	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon

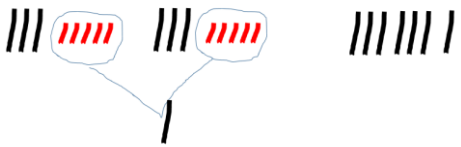
		Use images of different objects – including Numicon  4 groups of 10 (fingers and thumbs)  4 groups of 10 pens 18 – 5 using counters **Repeated addition – Counting in Fives** Please follow the guidance from counting in 2s and 10s – exactly the same principle **Using arrays** Explain the language of columns and rows. Use concrete apparatus.  There are 3 apples in each column. There are 4 columns. There are 12 apples altogether.	Draw the objects  4 groups of ten (t represents ten)  Try to avoid pupils drawing out ALL ten objects 4 times. **Repeated addition – Counting in Fives** Please follow the guidance from counting in 2s and 10s – exactly the same principle **Using arrays** Explain the language of columns and rows. Children can draw the arrays  There are 3 apples in each column. There are 4 columns. There are 12 apples altogether. 	As above  10 + 10 + 10 + 10 = 40 **Repeated addition – Counting in Fives** Please follow the guidance from counting in 2s and 10s – exactly the same principle **Using arrays** Explain the language of columns and rows 3 + 3 + 3 + 3 = 12 5 + 5 = 10	Array	Place Value Disks Cuisenaire Base tens and ones

		 There are 5 counters in each row. There are 2 rows. There are 10 counters altogether. **Doubling** Use lots of different manipulatives to support doubling numbers  	There are 5 counters in each row. There are 2 rows. There are 10 counters altogether. **Doubling** Children can draw it 	**Doubling** Use a bar model and equation  4 + 4 = 8		
		Solve simple one-step problems, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. Understanding multiplication as an array: see above. Practical problem solving activities involving equal sets or groups. Through grouping small quantities, pupils should begin to understand multiplication; doubling numbers and quantities.				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html					

Year Two Multiplication

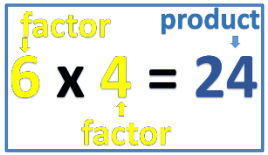
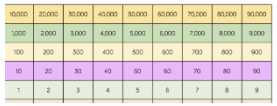
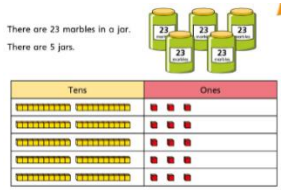
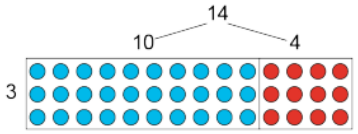
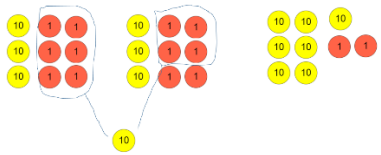
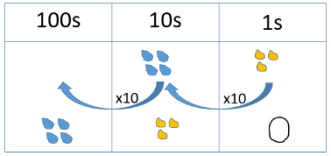
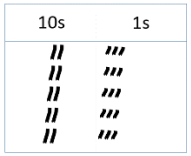
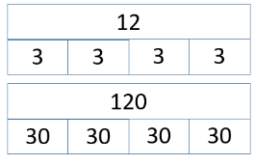
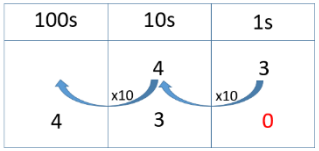
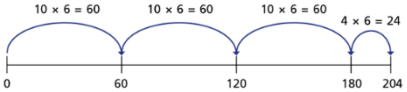
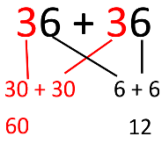
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources

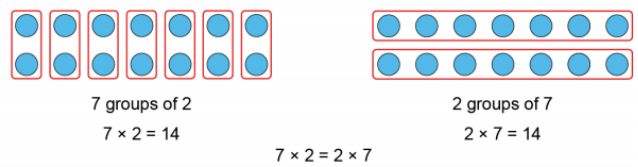
Year 2						
	Practise to become fluent in recall and use of multiplication facts for the 2, 5 and 10 multiplication tables, (connect the 10x table to place value, and the 5x table to the divisions on the clock face) Double any multiple of 5 up to 50, eg. double 35 Find the total number of objects when they are organised into groups of 2, 5 or 10 Recognise odd and even numbers Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Introduce the symbol for multiplication	**Fluent in the recall and calculations of 2, 5 and 10 multiplication tables** Please see the guidance for Year 1 Here is one example  3 equal groups of 5 equals 15 eggs **Using arrays** Please see the guidance for Year 1 and using arrays below **Recognising Multiplication with other factors**  four groups of four children Numicon can be used too. **Doubling**	**Fluent in the recall and calculations of 2, 5 and 10 multiplication tables** Please see the guidance for Year 1 Here is one example – hand drawn  **Using arrays** Please see the guidance for Year 1 and using arrays below **Recognising Multiplication with other factors**  four groups of four children **Doubling**	**Fluent in the recall and calculations of 2, 5 and 10 multiplication tables** Please see the guidance for Year 1  Introduce the multiplication symbol 5 + 5 + 5 = 5 x 3 = 15 **Using arrays** Please see the guidance for Year 1 and using arrays below **Recognising Multiplication with other factors**  4 + 4 + 4 + 4 = 4 x 4 **Doubling**	Lots of Groups of Times Repeated addition Double Sets Groups, Pairs Array symbol x times as big …as wide …as long	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards

		See Y1. Children need to double multiples of 10 to 100, then double multiples of 5 to 100 E.g. 35 doubled – use counters – 	See Y1. Children need to double multiples of 10 to 100, then double multiples of 5 to 100 E.g. 35 doubled Can be drawn 	See Y1. Children need to double multiples of 10 to 100, then double multiples of 5 to 100 E.g. 35 doubled 35 + 35 30 + 30 5 + 5 60 10		
		Calculate mathematical statements and write them using the multiplication (×) and equals (=) signs Solve one-step x problems using materials, arrays, repeated addition and x facts, include problems in contexts. Understand multiplication as repeated addition Begin recording subtraction in columns to support understanding of place value and prepare for efficient written methods				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html					

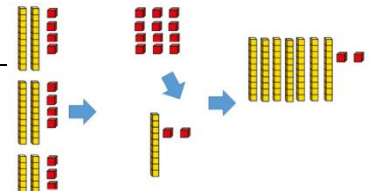
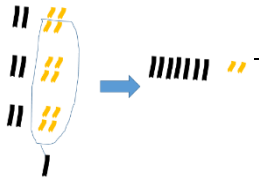
Year 3 Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Recall and use multiplication facts for the 4, 8 and 3 multiplication tables Practise mental recall of x tables to improve fluency. Use doubling to connect	**Consolidate 2, 5 10 times table** Please see Y2 examples **4, 8 then 3 times table** Please see Y2 examples as they hold the same principles **Make connections x10**	**Consolidate 2, 5 10 times table** Please see Y2 examples **4, 8 then 3 times table** Please see Y2 examples as they hold the same principles **Make connections x10**	**Consolidate 2, 5 10 times table** Please see Y2 examples **4, 8 then 3 times table** Please see Y2 examples as they hold the same principles **Make connections x10**	Lots of Groups of Times Repeated addition	100 square Number lines Number tracks Bead strings (for children)

	the 2, 4 and 8 x tables. Use x facts to derive related facts and write mathematical statements e.g. using 3 × 2 = 6 to derive 30 × 2 =60 Develop efficient mental methods using commutativity e.g. 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) Double any two-digit number, e.g. double 39 and any multiple of 5 , 10 or 100, e.g. double 340, double 800, Multiply one-digit or two-digit numbers by 10 or 100 and understand the effect e.g. 7 × 100, 46 × 10, 54 x 100 Know the vocabulary below Factor multiplied by factor equals product 	4 x 3, 4 x 30, 4 x 300 – use counters  Also use the Gattegno Chart to help  **Simple 2 digit by one digit** Use dienes or counters   **Doubling all two digit numbers** 	4 x 30 = 120 – draw it Draw on a place value grid  **Simple 2 digit by one digit** Draw it in a grid  Draw it in a grid See above **Doubling all two digit numbers** 	4 x 3 = 12 4 x 30 =120  Use place value grid  **Simple 2 digit by one digit** 23 x 5 23 x 5 = 20 x 5 + 3 x 5 = 100 + 15 = 115  14 x 3 14 x 3 = 10 x 3 + 4 x 3 = 30 + 12 = 42 **Doubling all two digit numbers** 	Double Sets Groups, Pairs Array symbol x times as big …as wide …as long factor product multiple ten times the size hundred times the size a tenth the size a hundredth the size	Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards Gattegno chart Place Value Grid
	Solve problems in context decide which operation to use and why, including missing number problems integer scaling problems eg double or treble 50p or 5 x 60cm					

		Correspondence problems in which m objects are connected to n objects eg finding all possibilities '3 hats and 4 coats, how many different outfits?' Understand multiplication represented as an array and the concept of commutativity. "The order of the factors does not affect the product."  		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

Year 4 Multiplication

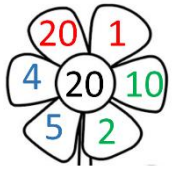
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 4	Recall and practise multiplication facts for tables up to 12 × 12 to aid fluency. Use place value, known and derived facts to multiply mentally, including multiplying by 0 and 1	**Consolidate 3, 4, 8 times table** See Y3 guidance - same principle **Learn the remaining tables to x 12** See Y3 guidance - same principle **Multiply 2 digit by one digit** 24 x 3 – Use Dienes or counters 	**Consolidate 3, 4, 8 times table** See Y3 guidance - same principle **Learn the remaining tables to x 12** See Y3 guidance - same principle **Multiply 2 digit by one digit** 24 x 3 – Draw it 	**Consolidate 3, 4, 8 times table** See Y3 guidance - same principle **Learn the remaining tables to x 12** See Y3 guidance - same principle **Multiply 2 digit by one digit** Informal partition as in Y3 2 4 x 3 1 2 3 x 4 ones = 12 ones 6 0 3 x 2 tens = 6 tens 7 2	Lots of Groups of Times Repeated addition Double	100 square Number lines Number tracks Bead strings (for children) Bead bar

TU by 4 or 8, eg. 26 × 4 by doubling
three numbers together
two digit by a unit eg. 17 × 3
numbers to 1000 by 10 and 100 (whole-number answers) eg. 325 × 10, 42 × 100

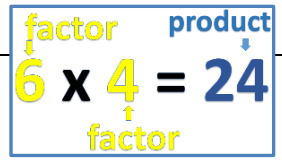
Extend mental methods to HTU to derive facts e.g. 200 × 3 = 600 into 600 ÷ 3 = 200

Recognise and use factor pairs e.g. give the factor pair associated with a multiplication fact, (if 2 x 3 = 6 then 6 has the factor pair 2 and 3)

Factor flower for 20



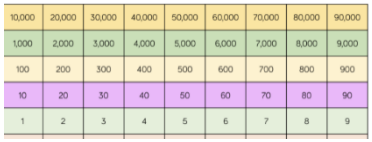
Know the vocabulary below
Factor multiplied by factor equals product



Make connections x10 x 100

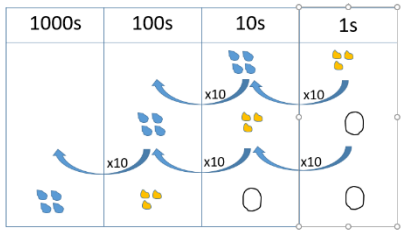
4 x 3, 4 x 30, 4 x 300 – use counters

Also use the Gattegno Chart to help

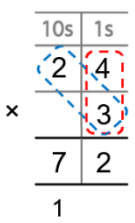


Make connections x10 x 100

The counters can be drawn also



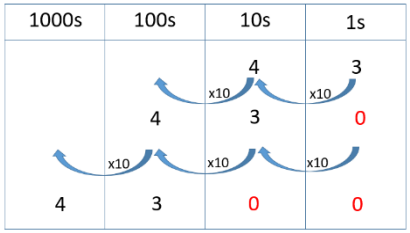
Formal sho ɔn



Make connections x10 x 100

43 x 100 = 43 x 10 x 10

Use Place Value charts



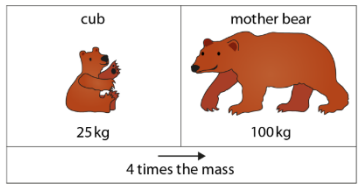
Multiply using partitioning
Develop fluency in efficient written method of short multiplication
Write statements using the distributive law 39 × 7 = 30 × 7 + 9 × 7 and associative law (2 × 3) × 4 = 2 × (3 × 4)

Solve two step problems with increasingly harder numbers and in which n objects are connected to m objects eg. finding all possibilities '6 hats and 5 coats, how many different outfits?'

Understand multiplication as scaling,
not just repeated addition.
E.g. "23, made 100 times the size, is 2,300."
Then they can solve simple equations

The wardrobe is 3 times the width of the cabinet. How wide is the wardrobe?

40 cm × 3 = 120 cm



25 kg × 4 = 100 kg

Sets

Groups,

Pairs

Array

symbol x

times as big …as wide …as long

factor

product

multiple

ten times the size

hundred times the size

a tenth the size

a hundredth the size

scaling

Tens Frame

Numicon

Place Value Disks

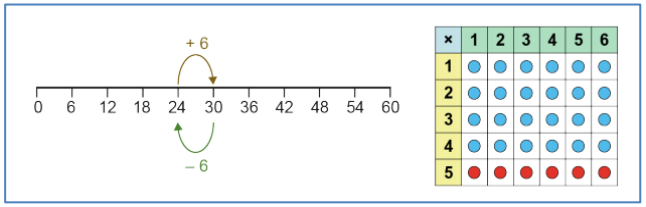
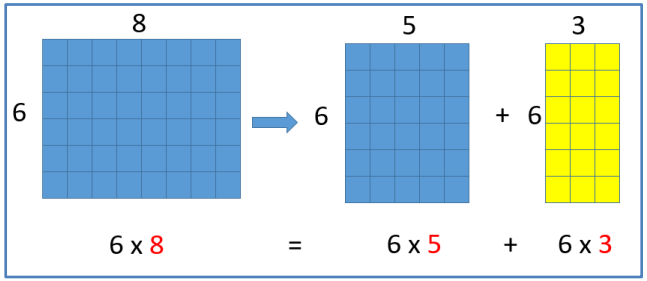
Cuisenaire

Base hundreds tens and ones

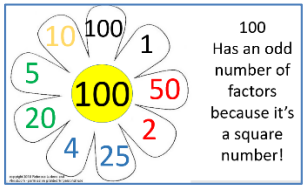
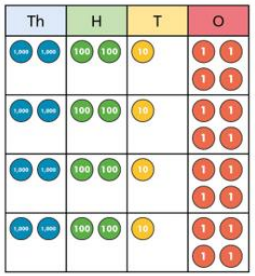
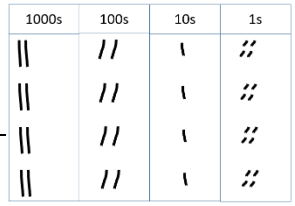
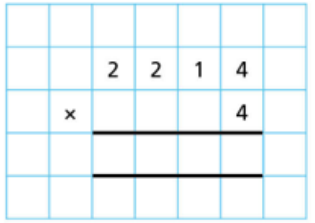
Arrow Cards

Gattegno chart

Place Value Grid

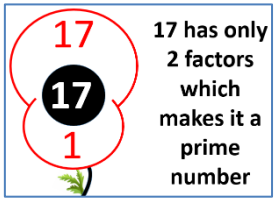
	 Use divisibility tests to identify multiples of 2, 4, 10 and 5	Understand that adjacent multiples of a times table have a difference of the multiplication table. E.g. adjacent multiples of 6, have a difference of 6. Understand the distributive law. Where a factor can be partitioned and multiplied out. $a \times (b+c) = a \times b + a \times c$ and $a \times (b-c) = a \times b - a \times c$	 	adjacent multiples	
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html			

Year 5 and Year 6 Multiplication

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5 6	Multiply TU X U mentally using known facts for all multiplication tables to 12 x 12 numbers Identify multiples and factors, including finding all factor pairs for numbers 	**Multiply up to 4 digits by a one- number** 2214 x 4 – use counters 	**Multiply up to 4 digits by a one- number** 2214 x 4 – can draw in a place value grid 	**Multiply up to 4 digits by a one- number** Use formal short method 	As above factor product multiple	100 square Number lines Number tracks Bead strings (for children)

to 100, e.g. 30 has the factor pairs 1 × 30, 2 × 15, 3 × 10 and 5 × 6

Establish whether a number up to 100 is prime and recall prime numbers up to 19



Recognise and use square and cube numbers, and relevant notation.

Multiply by 25 or 50, e.g. 48 × 25, 32 × 50
Multiply whole numbers decimals by 10, 100 and 1000 e.g. 4.3 × 10, 0.75 × 100

Multiply pairs of multiples of 10, e.g. 60 × 30, and a multiple of 100 by a single digit number, e.g. 900 × 8

$$30 \times 80 = 3 \times 8 \times 10 \times 10$$
$$= 3 \times 8 \times 100$$
$$= 2{,}400$$

Use divisibility tests to identify multiples of 3, 6, 9 8 and revise 2, 4, 10 and 5

Year 6
Multiply two-digit decimals such as 0.8 × 7 and pairs of multiples of 10 and 100, e.g. 50 × 30, 600 × 20

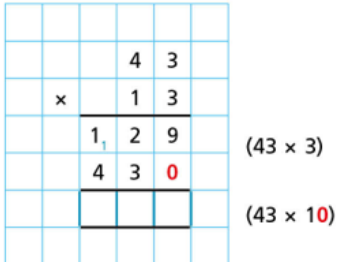
Multiply up to 4 digits by a two- number

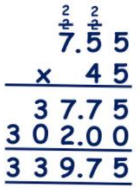
If children are working at this level – moving straight to a formal method is the best approach.

Multiply up to 4 digits by a two- number

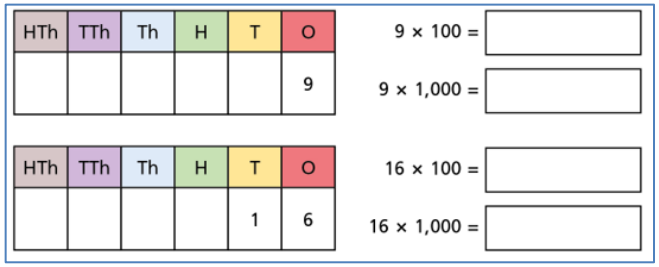
If children are working at this level – moving straight to a formal method is the best approach.

Multiply up to 4 digits by a two- number





Multiplying whole numbers by 10, 100 and 1000 using place value grids



Multiplying decimals by 10 and 100 using place value grids

ten times the size

hundred times the size

a tenth the size

a hundredth the size

scaling

adjacent multiples

prime
square
cubed

Bead bar

Tens Frame

Numicon

Place Value Disks

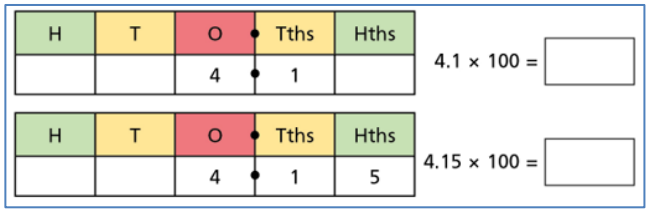
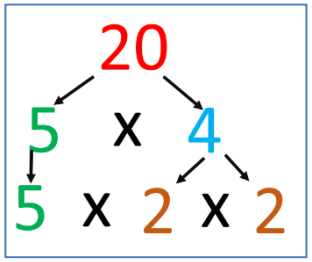
Cuisenaire

Base hundreds tens and ones

Arrow Cards

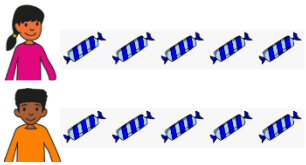
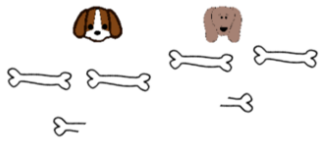
Gattegno chart

Place Value Grid

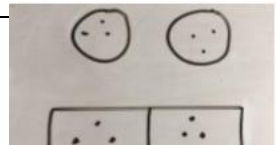
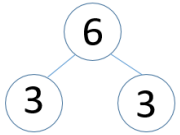
	Double decimals with units and tenths, e.g. double 7.6 Scale up and down using known facts, e.g. given that three oranges cost 24p, find the cost of four oranges Identify numbers with an odd number of factors (square numbers), even numbers of factors and no factor pairs other than 1 and themselves (prime numbers) Explore the order of operations using brackets; eg. 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9. Use multiplication facts to solve ratio and proportion problems.	 Express a product as a multiple of three factors 		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

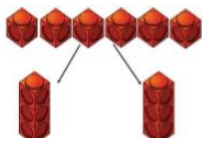
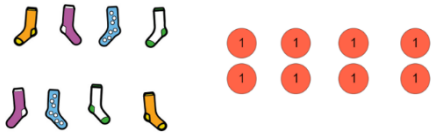
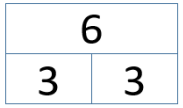
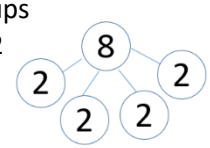
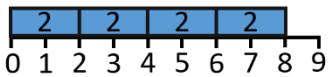
EYFS Division

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
EYFS	The ELG states that children solve problems, including doubling, halving and sharing.	**Grouping Model** *Rose has 6 socks. She grouped them into pairs – how many pairs did she make?*	**Grouping Model** Children to draw the concrete resources they are using.	**Grouping Model** Write the number sentence 6 socks make 3 groups of 2	Share Sharing grouping	100 square Number lines Number tracks

	Children need to see and hear representations of division as both grouping and sharing. Division can be introduced through halving. Count in twos; fives; tens both aloud and with objects.	 **Sharing Model** *I have 10 sweets. I want to share them with my friend. How many will we have each?* 	 **Sharing Model** Children to draw the concrete resources they are using. 	**Sharing Model** 	Equal groups Left over Half halving	Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones
		Although not explicit in the Development Matters document, the sharing model is a useful way of introducing young children to simple halves as fractions. Setting the problems in real life context and solving them with concrete apparatus will support children's understanding. "I have got 5 bones to share between my two dogs. How many bones will they get each?" 				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html					

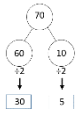
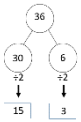
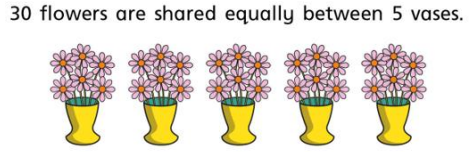
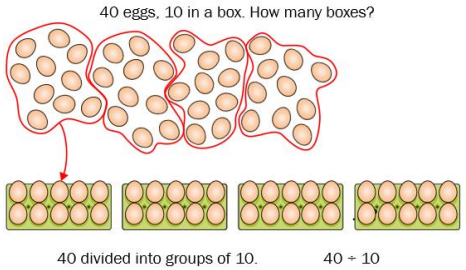
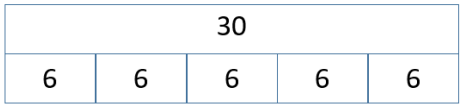
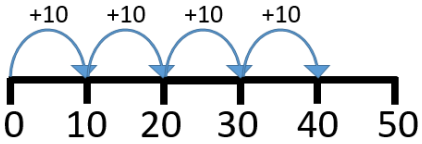
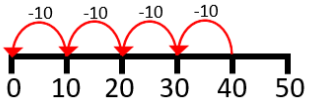
Year One Division

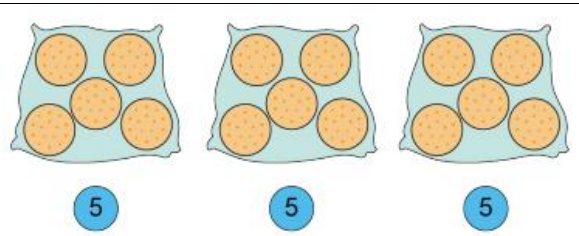
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 1	Share objects into equal groups and count how	**Sharing using a range of objects.** Focus on EQUAL groups 6 shared by 2 	**Sharing using a range of objects.** Focus on EQUAL groups 6 shared by 2 	**Sharing using a range of objects.** Focus on EQUAL groups 6 shared by 2 	Share Sharing	100 square Number lines

	many in each group and consider 'left over'. Count on from and back to zero in ones, twos, fives or tens Make connections between arrays, number patterns, and counting in twos, fives and tens.	 **Put small numbers into groups** Focus on EQUAL groups Put 8 into groups of 2 	**Put small numbers into groups** Focus on EQUAL groups Put 8 into groups of 2 	 **Put small numbers into groups** Focus on EQUAL groups Put 8 into groups of 2  	grouping Equal groups Left over Half halving	Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base tens and ones
		Practical problem solving activities involving equal sets or groups. Begin to understand division through grouping and sharing and halving small quantities *Can you cut the cake in half? How many pieces are there? How many cakes are there in the box? Take half of them out.* Solve simple one-step problems using concrete objects, pictorial representations and finding simple fractions of objects, numbers and quantities. with the support of the teacher				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

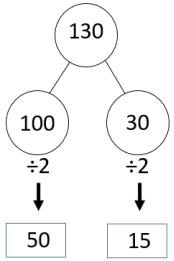
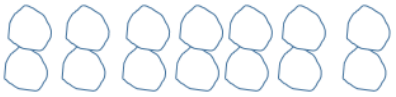
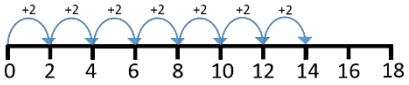
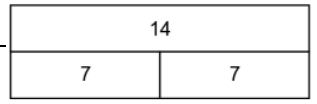
Year Two Division

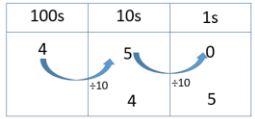
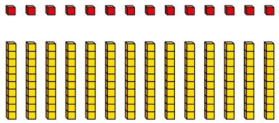
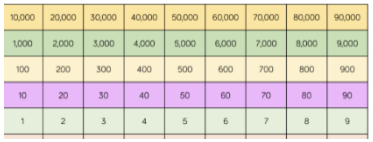
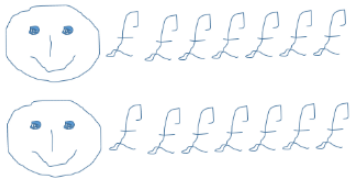
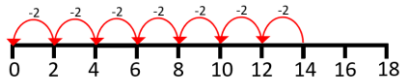
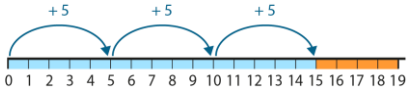
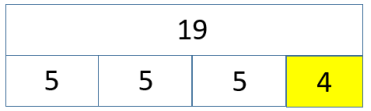
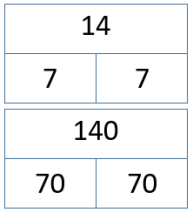
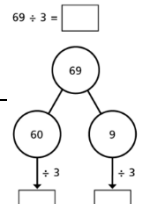
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 2	Practise to become fluent in recall and	**Sharing using a range of objects.**	**Sharing using a range of objects.**	**Sharing using a range of objects.**	Divide	100 square

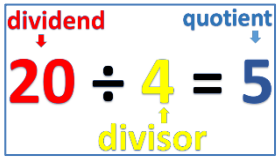
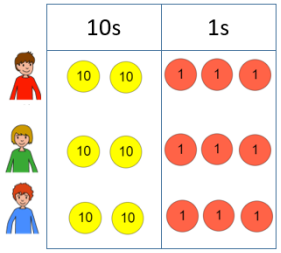
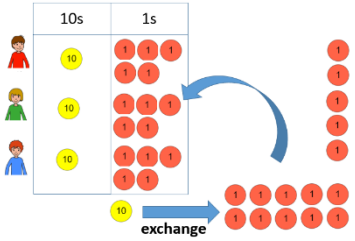
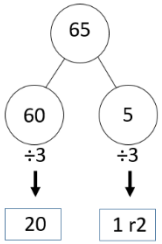
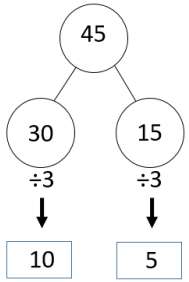
	use of multiplication and division facts for the 2, 5 and 10 multiplication tables, Halve any multiple of 10 up to 100,  Find half of even numbers to 40  Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Introduce the symbol for division ÷	Please see the guidance for Year 1 Here is one example  Cubes and other manipulatives can be used also **Grouping using times tables 2 5 10**  	Please see the guidance for Year 1 Here is one example – hand drawn  **Grouping using times tables 2 5 10** Children can draw the groups of 10	Please see the guidance for Year 1  30 ÷ 5 = 6 **Grouping using times tables 2 5 10** See bar model or part whole model above  40 ÷ 10 = 4  	Share equally, one each, two each…, Grouping equal groups, how many lots of, groups of… half of halved symbol ÷	Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards
		Pupils need to be able to represent problems where the total quantity and group size is known, using multiplication equations with missing factors. For example, “There are 15 biscuits. If I put them into bags of 5, how many bags will I need?’’ can be represented by the following equation: …..× 5 = 15 Pupils can use skip counting or their emerging 2, 5 and 10 multiplication table fluency tocalculate the missing factor.				

		 Begin to use other x tables and division facts to perform written calculation. Relate to fractions and measures eg. 40÷2 =20, 20 is a half of 40 Check calculations using the inverse relationship between x and ÷		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		

Year 3 Division

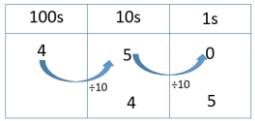
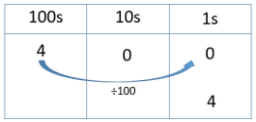
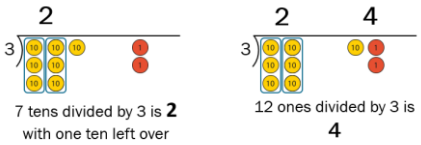
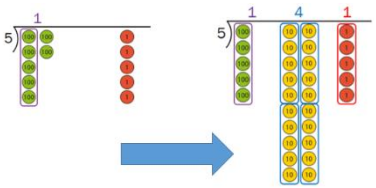
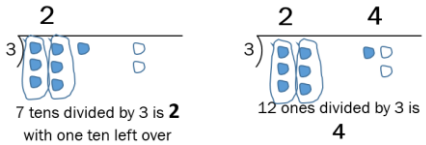
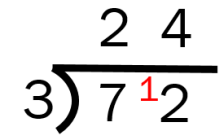
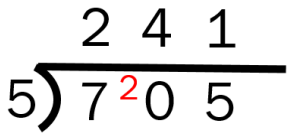
	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 3	Halve any multiple of 10 up to 200, e.g. halve 170  Recall and use division facts for the 3, 4 and 8 x tables,	**Apply division facts for 2, 4, 8, 5, 10 and 3 in both contexts of grouping and sharing** *I need 14 ping-pong balls. There are 2 ping-pong balls in a pack. How many packs do I need?*  *£14 is shared between 2 children. How much money does each child get?*	**Apply division facts for 2, 4, 8, 5, 10 and 3 in both contexts of grouping and sharing** *I need 14 ping-pong balls. There are 2 ping-pong balls in a pack. How many packs do I need?*  *£14 is shared between 2 children. How much money does each child get?*	**Apply division facts for 2, 4, 8, 5, 10 and 3 in both contexts of grouping and sharing** *I need 14 ping-pong balls…* 14 ÷ 2 = 7   *How much money does each child get?* 14 ÷ 2 = 7 	Divide Share equally, one each, two each…, Grouping equal groups,	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon

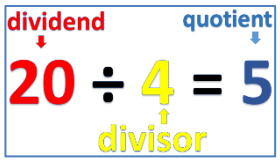
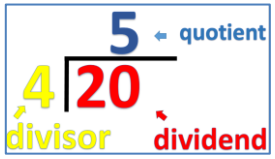
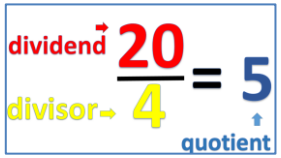
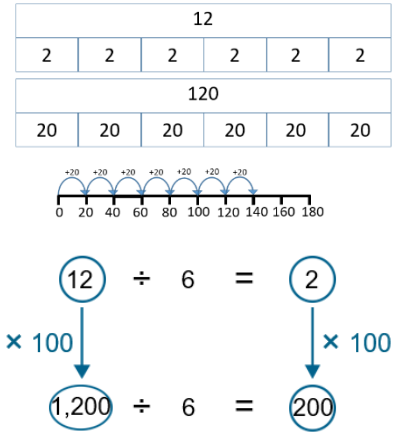
	use halving to derive division by 2, 4 and 8 Calculate and write mathematical statements for division using related x tables facts, including for TU ÷ U mentally Develop efficient mental methods using facts e.g 6 ÷ 3 = 2 and 2 = 6 ÷ 3 to derive related facts 60 ÷ 3 = 20 and 20 = 60 ÷ 3 Divide TU and HTU numbers by 10, understand the effect of ÷10 e.g. 700 ÷ 10,  Also use the Gattegno Chart to help Identify remainders when dividing by 2, 5 or 10 Know the vocabulary for division equations	 **Division with remainders** *19 cars shared between 5 children*  **Related Calculations**  14 ÷ 2 = 7 140 ÷ 2 = 70 Also use the Gattegno Chart to help 	 **Division with remainders** *19 cars shared between 5 children*  **Related Calculations** 4 x 30 = 120 – draw it **2 2 digit divided by 1 digit no exchange or remainders**	 **Division with remainders** *19 cars shared between 5 children*   19 ÷ 5 = 3r4 **Related Calculations** 14 ÷ 2 = 7 140 ÷ 2 = 70  **2 digit divided by 1 digit no exchange or remainders** *£69 is shared between 3 …* 	how many lots of, groups of… half of halved symbol ÷ Remainder Left over Repeated subtraction dividend divisor quotient a tenth of the size	Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards Gattegno chart Place Value Grid

	see below  	**2 digit divided by 1 digit no exchange or remainders** *£69 is shared between 3 children. How much money does each child get?*  **2 digit divided by 1 digit with no exchange but remainders** *£65 is shared between 3 children. How much money does each child get?*  **2 digit divided by 1 digit with exchange but no remainders** *£45 is shared between 3 children. How much money does each child get?*  	*£69 is shared between 3 children. How much money does each child get?*  **2 digit divided by 1 digit with no exchange but remainders** *£65 is shared between 3 children. How much money does each child get?*  **2 digit divided by 1 digit with exchange but no remainders** *£45 is shared between 3 children. How much money does each child get?* Can be drawn – please see above example	69 ÷ 3 = 33 Can also count back on numberlines (repeated subtraction) or count on. See above. **2 digit divided by 1 digit with no exchange but remainders** *£65 is shared between 3…* 65 ÷ 3 = 23 r 2  **2 digit divided by 1 digit with exchange but no remainders** *£45 is shared between 3…* 45 ÷ 3 = 15  **2 digit divided by 1 digit with exchange with remainders**		

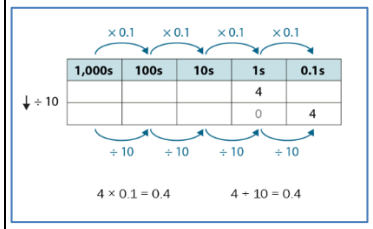
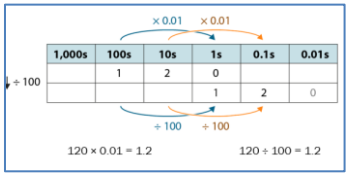
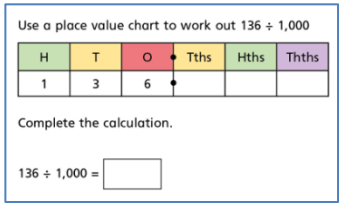
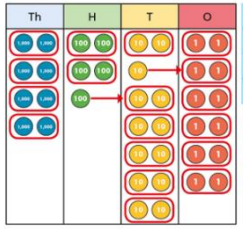
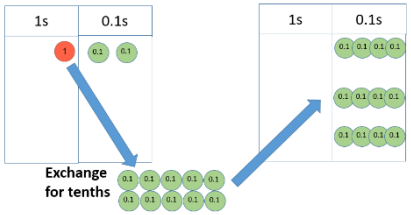
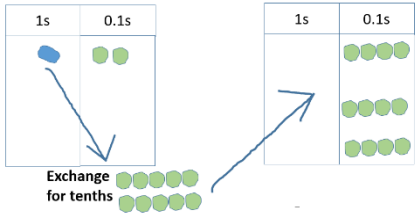
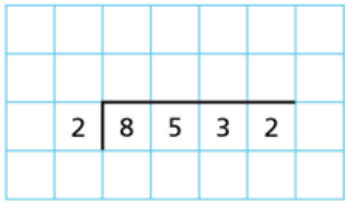
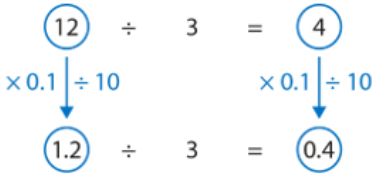
		2 digit divided by 1 digit with exchange with remainders Please see above worked examples – exactly the same principle, with a remainder and the need for exchanging tens for ones.	**2 digit divided by 1 digit with exchange with remainders** Please see above worked examples – exactly the same principle, with a remainder and the need for exchanging tens for ones.	Please see above worked examples – exactly the same principle, with a remainder and the need for exchanging tens for ones.		
		Solve problems in context deciding which method to use and why, including missing number problems measuring and money context correspondence problems in which m objects are connected to n objects eg 12 sweets shared equally between 4 children; 40 cakes shared equally between 8. Use practical methods and jottings, including remainders				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

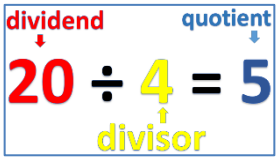
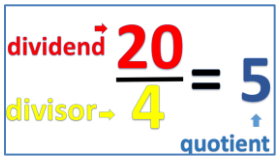
Year 4 Division

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 4	Practise and extend mental methods to three-digit numbers to derive facts e.g. 200 × 3 = 600 into 600 ÷ 3 = 200 Divide multiples of 10 up to 1000 by 10 E.g. 120 ÷ 10  Divide multiples of 100 up to 10, 000 by 100 e.g. 600 ÷ 100 or 2800 ÷ 100  Divide two-digit numbers by 4 or 8, e.g. 296 ÷ 8 Identify remainders when dividing by 1 to 12 Find halves of multiples of 10 , even numbers to 200 and three-digit multiples of 10 to 500 e.g. 760 ÷ 2	**Apply division facts for all multiplication tables in contexts of grouping and sharing – including remainders** See Y3 guidance - same principle **2 digit divided by 1 digit all 4 possibilities – moving to short division layout** For all 4 informal possibilities – please see Year 3 examples as it is the same principle. £72 shared between three using short division layout  **3 digit divided by 1 digit all 4 possibilities – moving to short division layout** £705 shared between three using short division layout  	**Apply division facts for all multiplication tables in contexts of grouping and sharing – including remainders** See Y3 guidance - same principle **2 digit divided by 1 digit all 4 possibilities – moving to short division layout** For all 4 informal possibilities – please see Year 3 examples as it is the same principle. £72 shared between three using short division layout  **3 digit divided by 1 digit all 4 possibilities – moving to short division layout** £705 shared between three using short division layout **Can be drawn just like the worked example above**	**Apply division facts for all multiplication tables in contexts of grouping and sharing – including remainders** See Y3 guidance - same principle **2 digit divided by 1 digit all 4 possibilities – moving to short division layout** For all 4 informal possibilities – please see Year 3 examples as it is the same principle. £72 shared between three using short division layout  **3 digit divided by 1 digit all 4 possibilities – moving to short division layout** £705 shared between three using short division layout  	Divide Share equally, one each, two each…, Grouping equal groups, how many lots of, groups of… half of halved symbol ÷ Remainder Left over Repeated subtraction dividend divisor	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards Gattegno chart Place Value Grid

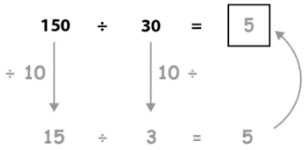
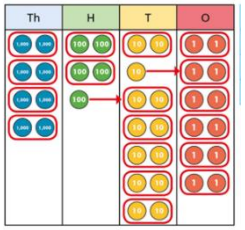
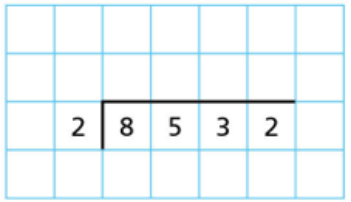
	Know the vocabulary for division equations see below    	**Related Calculations** E.g. 1200 pencils shared between 6 classes  	**Related Calculations** E.g. 1200 pencils shared between 6 classes **Can be drawn out**	**Related Calculations** E.g. 1200 pencils shared between 6 classes  	quotient a tenth of the size	
		Develop fluency in efficient written method of short division with exact answers when dividing by a one-digit number. (eg. 11 ÷ 2 expressed as 5 ½ or 5.5 not 5 remainder 1) Solve two step problems with increasingly harder numbers including correspondence questions such as three cakes shared equally between 10 children. Introduce dividing using subtracting 10 lots of divisor and asking 'how many more left over?' 52 ÷ 4 I know that 10 lots of 4 are 40, there will be 12 left over which is another 3 lots of 4 so there are 13 lots of 4 in 52				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

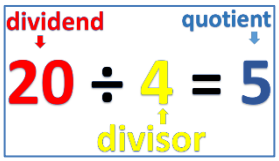
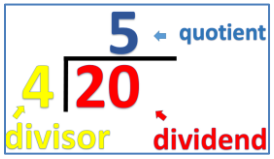
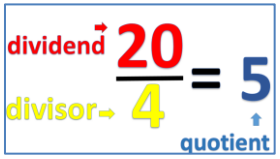
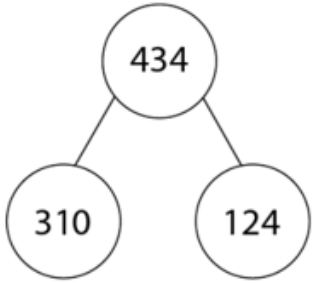
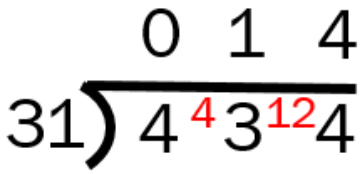
Year 5 Division

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 5	Divide numbers mentally using known facts for all multiplication tables to 12 x 12 Divide whole numbers and decimals by 10, 100 or 1000, e.g. 25 ÷ 10, 673 ÷ 100, 74 ÷ 100 Some examples using place value charts    	**Apply division facts for all multiplication tables in contexts of grouping and sharing – including remainders** See Y3 guidance - same principle **4 digit divided by 1 digit all 4 possibilities – moving to short division layout** Children should be confident enough to work in the abstract with this due . If needed, place value systems can still be used. 8,532 ÷ 2  **Related Calculations** Division involving decimals 1.2 ÷ 3  	**Apply division facts for all multiplication tables in contexts of grouping and sharing – including remainders** See Y3 guidance - same principle **4 digit divided by 1 digit all 4 possibilities – moving to short division layout** Children should be confident enough to work in the abstract with this due. If needed, place value systems can still be used and drawings to represent the values **Related Calculations** Division involving decimals 1.2 ÷ 3  	**Apply division facts for all multiplication tables in contexts of grouping and sharing – including remainders** See Y3 guidance - same principle **4 digit divided by 1 digit all 4 possibilities – moving to short division layout**  **Related Calculations** Division involving decimals 1.2 ÷ 3  	Divide Share equally, one each, two each…, Grouping equal groups, how many lots of, groups of… half of halved symbol ÷ Remainder Left over Repeated subtraction dividend divisor	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards Gattegno chart Place Value Grid

	Find the whole number remainder after dividing a two-digit number by a single-digit number, e.g. 27 ÷ 4 = 6 R 3 Know the vocabulary for division equations see below   				quotient a tenth of the size	
		Practise and extend efficient written methods applying X tables and related facts confidently for larger calculations. Divide up to ThHTU by U number using efficient short division Solve problems including scaling by simple fractions Use x and ÷ as inverses to support dividing by powers of 10 in scale drawings or in converting units e.g km to m				
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html				

Year 6 Division

	Mental Strategies	Concrete	Pictorial	Abstract	Vocabulary	Models, Images and resources
Year 6	Divide TU by U number, eg. 68 ÷ 4 divide by 25 or 50, eg. 480 ÷ 25, 3200 ÷ 50 Divide two-digit decimals eg. 4.8 ÷ 6 and find halves of decimals with units and tenths, eg. half of 15.2 Divide multiples of 100 by a multiple of 10 or 100 (whole number answers), e.g. 600 ÷ 20, 800 ÷ 400, 2100 ÷ 300 Plus related facts e.g. 150 ÷ 30  Scale up and down using known facts, e.g. given that six oranges cost 24p, find the cost of four oranges	**Multiple digit divided by 1 digit with all 4 possibilities** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used. 8,532 ÷ 2  **Use short division to convert remainders to decimals** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used. **Dividing with a two-digit number using factors** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used.	**Multiple digit divided by 1 digit with all 4 possibilities** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used and drawings to represent the values **Use short division to convert remainders to decimals** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used. **Dividing with a two-digit number using factors** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used.	**Multiple digit divided by 1 digit with all 4 possibilities**  **Use short division to convert remainders to decimals** 109 ÷ 4 = 27.25 $4\overline{)1\,0^{2}9{\cdot}^{1}0^{2}0}$ (2 7 · 2 5) **Dividing with a two-digit number using factors** 2560 ÷ 16 = 2560 ÷ 4 ÷ 4 $4\overline{)2^{2}5^{1}6\,0}$ (0 6 4 0) → $4\overline{)6^{2}4\,0}$ (1 6 0)	Divide Share equally, one each, two each…, Grouping equal groups, how many lots of, groups of… half of halved symbol ÷ Remainder Left over Repeated subtraction dividend	100 square Number lines Number tracks Bead strings (for children) Bead bar Tens Frame Numicon Place Value Disks Cuisenaire Base hundreds tens and ones Arrow Cards Gattegno chart Place Value Grid

	Know the vocabulary for division equations see below    	**Dividing with a two-digit number using partitioning** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used. Counters can also be used to create the multiplication table to support the division. **Dividing with a two-digit number using short division** Children should be confident enough to work in the abstract with this. If needed, place value counters can still be used. Counters can also be used to create the multiplication table to support the division.	**Dividing with a two-digit number using partitioning** When undertaking a division using two-digit numbers. Create a multiple chart first – start with 10 and 5, then 2, 4, 8. If other multiples are required, calculate when needed. **Dividing with a two-digit number using short division** When undertaking a division using two-digit numbers. Create a multiple chart first – start with 10 and 5, then 2, 4, 8. If other multiples are required, calculate when needed.	**Dividing with a two-digit number using partitioning** **See adjacent column to support this**  310 ÷ 31 = 10 124 ÷ 31 = 4 434 ÷ 31 = 14 **Dividing with a two-digit number using short division** **See adjacent column to support this**  	divisor quotient a tenth of the size	

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x1	31	x1
x2	62	double 31
x3	93	add 31 to 62
x4	124	double 62
x5	155	half of 310
x6	186	double 93
x7	217	186 + 31
x8	248	double 124
x9	279	248 + 31
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Dividing with a two-digit number using long division

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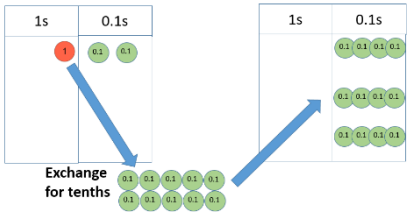
Related Calculations

Division involving decimals
1.2 ÷ 3



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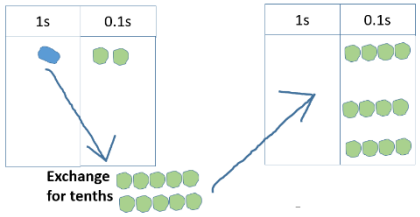

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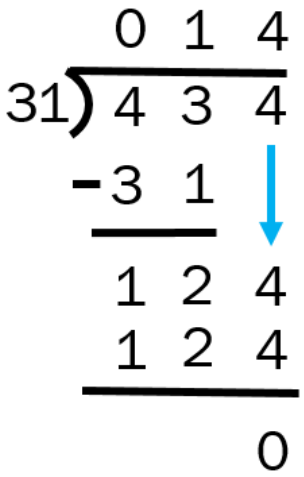

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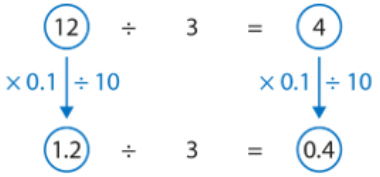
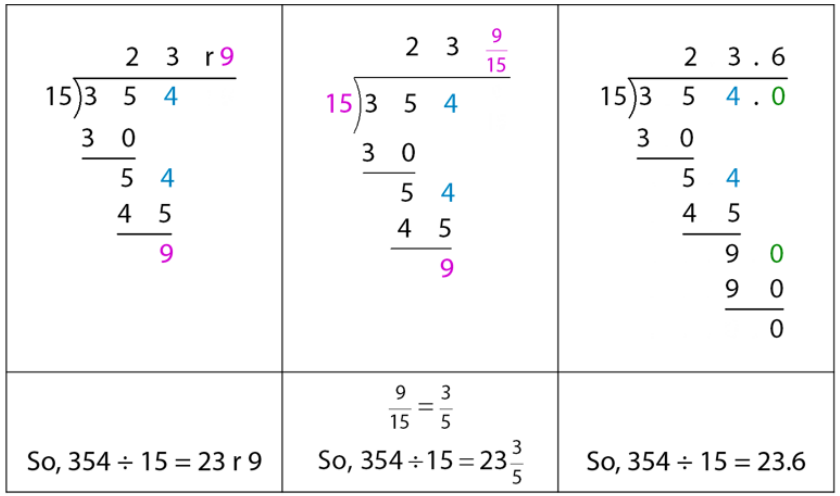


		Divide numbers up to ThHTU by a TU whole number using efficient written method of long division, and interpret remainders as whole numbers, fractions, decimals fractions or by rounding as appropriate for the context Other worked examples of formal written division methods – with a remainder 354 ÷ 15 = ?  		
	Useful IWB links for manipulatives	https://www.coolmath4kids.com/manipulatives/base-ten-blocks https://mathsbot.com/manipulatives/placeValueCounters https://mathsbot.com/manipulatives/bar https://classroomsecrets.co.uk/free-year-1-part-whole-model-iwb-addition-and-subtraction-activity/ https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Ten-Frame/ http://www.ictgames.com/mobilePage/tenFrame/index.html		