St Andrew's Church of England Primary School

Mathematics and Calculation Policy

Last update: Summer 2024
Next update: Summer 2026
By: Malcolm Wainford (Maths Lead)

Mathematics @ St Andrew's Church of England Primary School

Our Mathematics Curriculum

At St Andrew's Church of England Primary School, we are committed to the delivery of engaging and interesting math lessons throughout the school and realise the importance of our children having a strong and confident grasp of the four operations. As such, this policy has been produced to ensure consistency and progression in teaching throughout the school and will give an overview of the key written calculation methods that will be taught.

This policy still aims to identify the progression, within each of the four operations, which children at St Andrew's will typically follow. It is not a scheme of work that should be followed prescriptively but recognises that all children are individuals and as such learn at different rates and have their own unique learning styles. However, there are minimum expectations detailed in the new National Curriculum: Mathematics Programme of Study and these have been added to this policy accordingly.

Although the principle focus of this policy is written methods it is important to recognise that mental calculations remain an integral ability for all of our children to develop and calculation skills will be developed through a mixture of practical, oral and mental activities.

This policy also highlights the importance of quality mathematical vocabulary within our classrooms as we recognise that this is key to our children's development of calculation skills. Listed below are a number of key terms generic to calculation that are used consistently at St Andrew's:

Term	**Definition**
number	An integer – i.e. the complete amount being used e.g. 134
digit	An individual component of a number, e.g. 134 = **1**, **3** and **4** are *digits*
number sentence calculation	The sum is the total of addition e.g. the sum of 100 + 34 = 134

We recognise that learning should never just be about arriving at the correct answer and therefore teaching of the four operations will focus on developing firm understanding of the mathematical principles involved. As such particular emphasis will be put on place-value and problem solving throughout the teaching of the methods shown in this policy. Another of our aims is to ensure that children have the confidence to apply their knowledge and understanding across a range of contexts and as such we aim to provide the children with opportunities to use the approaches detailed in this policy in all curriculum areas.

The overall aim of this policy is that when children leave St Andrew's, they:

- have a secure knowledge of number facts and a good understanding of the four operations;
- are able to use this knowledge and understanding to carry out calculations mentally and apply appropriate strategies when using larger numbers;
- have an efficient and reliable written method of calculation for each operation that they can apply with confidence when undertaking calculations that they cannot carry out mentally.

Mathematics @ St Andrew's Church of England Primary School

Mathematics Curriculum Intent, Implementation and Impact (Subject Leader: M R Wainford)

The intent of our mathematics curriculum is to design a curriculum, which is accessible to all and will maximise the development of every child's ability and academic achievement. We deliver lessons that are creative and engaging. We want children to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. We intend for our pupils to be able to apply their mathematical knowledge to science and other subjects. We want children to realise that mathematics has been developed over centuries, providing the solution to some of history's most intriguing problems. We want them to know that it is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. As our pupils progress, we intend for our pupils to be able to understand the world, have the ability to reason mathematically, have an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Intent	Implementation	Impact
We aim to build a Mathematics curriculum which develops independent learning and results in the acquisition of life-long knowledge and skills so that all pupils know more, remember more and understand more. Our curriculum will be stimulating and build confidence in appropriate subject knowledge, skills and understanding in Number, Algebra, Ratio, Measurement, Geometry and Statistics as set out in the National Curriculum. We aim to engage children and help them reach and exceed their potential at St Andrew's Church of England Primary School and beyond. Our curriculum will enable pupils to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competency in solving increasingly sophisticated problems. We intend for our pupils to be able to apply this mathematical knowledge and learning to science and other subjects in a practical way. We aim to encourage a growth mindset approach in mathematics, building self-esteem, resilience and confidence in applying mathematical skills through our Christian values of Love, Trust and Wisdom.	National Curriculum Programmes of Study and Scheme of Work • Mathematics is planned for, following the EYFS Framework and KS1 and KS2 school curriculum. • Mathematics is planned for following the scheme of work, as suggested by VST and White Rose. • Whilst the National Curriculum forms the foundation of our curriculum, we make sure that children learn additional skills, knowledge and understanding and enhance our curriculum as and when necessary. • Mathematics is taught as an exclusive subject in order to promote fluency but children are also provided with real life problems so that they are made aware of the importance of mathematics in everyday life. The systematic teaching of number and place value has a high priority throughout school. • In Foundation Stage, pupil fluency is developed by using a visual, practical base to develop conceptual understanding and recall. Pupil's mathematical reasoning is developed through the use of concrete objects and spoken language to explain and justify. • School has developed a comprehensive Calculation Policy, which enables staff to teach standard methods systematically and progressively across all age groups. • Problem Solving challenges enable varied and frequent practice of mathematical application through increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.	Children will make at least good progress in Mathematics from their last point of statutory assessment of from their starting point in Nursery. Children will use their Mathematics knowledge and skills, in all curriculum areas, to enable them to know more, remember more and understand more. Children will recognise the importance of Mathematics as a facilitating subject to enable them to access other areas of learning and operate successfully is everyday life both now and in the future. Children will have a confident attitude towards mathematics. They will use arithmetic and timetables fluently and make connections in order to solve real life problems. They will recognise that Mathematics is essential for everyday life and make at least good progress in Mathematics with opportunities to make exceptional progress at all stages. Please see below for the unit overviews for each year group.

Introduction

Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. Our aim is to provide a high-quality mathematics education therefore providing a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. In order to achieve this, pupils are encouraged to think mathematically, to apply their knowledge to a range of different activities and are given the opportunity to reason and problem solve.

We want our children to:

- become fluent in the fundamentals of mathematics through varied and frequent practice with complexity increasing over time.
- develop conceptual understanding and ability to recall and apply knowledge rapidly and accurately in a range of contexts and curriculum areas.
- reason mathematically and develop an argument, justification and proof by using mathematical language.
- problem solve by applying knowledge to a variety of routine and non-routine problems, by breaking down problems into simpler steps and persevering in answering.

The National Curriculum sets out year-by-year programmes of study for key stages 1 and 2. This ensures continuity and progression in the teaching of mathematics. In addition to this, at St Andrew's White Rose maths is used to aid planning, curriculum coverage and progression for all.

The EYFS Statutory Framework 2014 sets standards for the learning, development and care of children from birth to five years old and supports an integrated approach to early learning. This is supported by the 'Development matters' non-statutory guidance.

The EYFS Framework in relation to mathematics aims for our pupils to:

- develop and improve their skills in counting;
- understand and use numbers;
- calculate simple addition and subtraction problems;
- describe shapes, spaces, and measures.
- Access to a number line and place value chart relevant to the year group expectations of the class.

Pupils' Records of work

Children are taught a variety of methods for recording their work and are encouraged and helped to use the most appropriate and convenient. Children are encouraged to use mental strategies and their own jottings before resorting to more formal written methods. Children's own jottings to support their work is encouraged throughout all year groups.

Feedback and marking

Children are given regular feedback in line with the school marking and feedback policy.

Wherever possible, live marking and feedback during the lesson is encouraged. This will appear as scaffolded examples or with 'VF' in the margin to show that the child was supported by an adult. Teachers will also write in some next step questions, which the children will be given time to respond to in their polishing pen at the start of the next lesson (or at the earliest opportunity).

Some pieces of work in mathematics can be marked by children themselves, exercises involving routine practice with support and guidance from the teacher. All children are encouraged to reflect on what they believe they have done well or have learnt in the lesson and begin to also consider their next steps at the end of the lesson. This may be written in at the end of the lesson as a reflective comment and can be used to form part of teacher assessment and planning for the next lesson.

Teachers planning and organisation

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number, Shape Space & Measure) provide the long-term planning for mathematics taught in the school. As a school, we follow the National Curriculum but use White Rose Maths as well as other resources to support our teaching (such as NRICH). Years 1-6 use the White Rose Maths schemes of learning as their medium-term planning documents.

The above schemes of learning support daily lesson planning. EYFS planning is based on the medium-term plans and delivered as appropriate to individual children with thought to where the children are now and what steps they need to take next.

Teaching and Learning in Mathematics

All classes have a daily mathematics (topic) lesson and an Arithmetic lesson. In Key Stage One, topic lessons are 45-60 minutes from an additional 5-15 minutes arithmetic focus lesson and in Key Stage Two at least 45 minutes with an additional 15-minute arithmetic focus lesson.

Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child-initiated activities both inside and outside of the classroom.

In all lessons, learning objectives and success criteria are clearly displayed and discussed. The children engage in a range of activities to make their learning challenging, relevant and engaging for all. As a school, we do not set the children into ability groups and we do not pre-determine their level of challenge and so the children decide their level of challenge and confidence on a lesson by lesson basis with guidance from the teacher where necessary.

At St Andrew's, each maths lesson will follow the process outlined on page7.

The children are supported as much as is required in maths lessons, however they are encouraged to develop their independence and to challenge themselves.

Learning Environment

Across every class in the school, there will be a positive, engaging environment for the teaching and promotion of maths. This will include having:

- Resources readily available where the children can independently choose the equipment required for their learning.

- Working Walls – There will be a relevant working wall for the unit that is being covered in maths lessons. This will include modelled examples from the teacher and examples of the children's work and responses.

Assessment

Assessment is an integral part of teaching and learning and is a continuous process. Teachers make assessments of children daily through;

- regular marking of work.

- analysing errors and picking up on misconceptions.

- asking questions and listening to answers.

- facilitating and listening to discussions.

- making observations.

- reading and listening to the children's self-assessment.

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short-term planning is evaluated in light of these assessments.

Termly assessments are carried out across the school using the assessment materials for each year group provided by White Rose. These are through knowledge checkers and end of unit assessments. These help to inform interventions and boosters for identified gaps in learning.

At the end of each year, the children are also assessed using NFER in line with the schemes of learning. These materials used alongside judgements made from class work support teachers in making a steps assessment for each child which in line with the assessment policy they enter onto Pupil Asset.

Pupil Progress meetings are timetabled each term for all classes. Progress of pupils is discussed and appropriate intervention considered and put in place where appropriate.

Resources

Each class has a stock of core resources that are age appropriate. Additional mathematical equipment and resources are stored centrally in the Curriculum Resources room.

Special educational needs & disabilities (SEND)

Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's IEP's incorporate suitable objectives from the National Curriculum for Mathematics or development Matters and teachers keep these in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the mathematics lesson.

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

Equal Opportunities

Positive attitudes towards mathematics are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for whom English is a second language, develop an enjoyment and confidence with mathematics.

The aim is to ensure that everyone makes progress and gains positively from lessons and to plan inclusive lessons. Lessons involving lots of visual, aural and kinaesthetic elements will benefit all children including those for whom English is an additional language (EAL).

Differentiated questions are used in lessons to help children and planned support from Teaching Assistants and other adults.

Role of the Maths Subject Leader

- To lead in the development of maths throughout the school.
- To monitor the planning, teaching and learning of mathematics throughout the school.
- To help raise standards in maths.
- To provide teachers with support in the teaching of mathematics.
- To provide staff with CPD opportunities in relation to maths within the confines of the budget.

Maths Learning: The Teaching Sequence

Each Week:

5 Maths Topic learning sessions (1-a-day, up to 45 minutes) – to include White Rose Small Steps based upon the Maths Road map. 1 of the sessions can be a consolidation session based upon the learning for the week. At least one of the sessions should be an active maths session (i.e. scenario or investigation) that can be linked to your main term topic (e.g. Romans) AND the current maths topic. THESE ARE COMPLETED AT THE FRONT OF MATHS BOOKS.

4 Arithmetic learning sessions (10-15 minutes and at anytime of the day) –

1 – Times tables session

2 – games, challenges etc… linked to any topic, i.e. 4 Operations, decimals, grouping, counting etc…

1 – assessment or assessment challenge replicating NFER asessments or SATs layout.

THESE ARE COMPLETED AT THE BACK OF MATHS BOOKS.

Learning Delivery – using a Mastery approach. After your input all children start the same task and extension is provided as the initial tasks are completed. This will allow you to focus on misconceptions early. All tasks will include elements of fluency, problem-solving and reasoning. An initial starter task can be included as well as a plenary task if you wish.

Curriculum Coverage – the teaching Roadmap for your year group MUST to followed, including keeping within timeframes. Any concerns with this, speak to the Subject leader in the first instance. During learning sessions reference must be made to progress in, and prior learning in the particular maths topic you are delivering.

Manipulatives (Part of Ordinarily Available provision) –

EYFS/KS1 – MUST be available for every maths learning session.

Lower KS2 – are available for each topic and links are made to pictorial representations.

Upper KS2 – are available and accessible for all children when required.

Assessment/Presentation – live marking should take place each session with children involved in assessing their own (self) our other (peer) learning. At least 2 next steps should be provided each week. All topics should have knowledge assessments taking place on at least 2 occasions. Poor presentation MUST be challenged at all times and support provided to the child to complete or present learning in a coherent manner.

Practical Maths: Methods of Calculation

When attempting to bridge the gap between concrete and abstract it is vital that children are given the opportunity to use structural apparatus as it is essential to develop their fundamental understanding. When learning the algorithms for addition and subtraction children need to model with different manipulatives before recording.
The progression at St Andrew's CofE Primary School in practical resources is as follows:

Numicon
Place Value rods
Dienes/Base 10
Place Value Counters

All 4 resources should be used with place-value grids.

↓

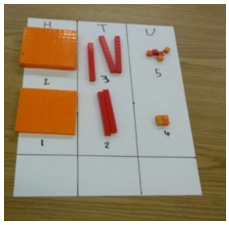
Efficient written methods

Dienes follow as they are a representation that can be linked easily to hundreds, tens and ones by the divisions on the pieces of equipment. Place value counters could be used when the children have an understanding of the size of hundreds, tens and ones and can cope with a more abstract representation.

Older children, currently using the column method for addition, will be encouraged to explain and demonstrate how their written method work using the manipulatives. This is also a good assessment opportunity to find out if they really understand the procedure that they use.

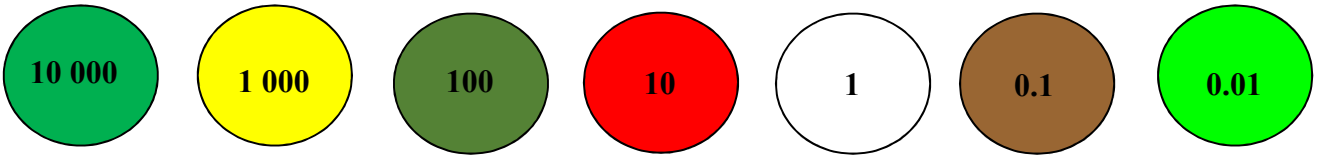
Before the children are expected to use this equipment for calculation, they need to be familiar with it and so it is important that they have the opportunity to work with it informally through play or through games/activities as part of warm-ups and starters.

Dienes /Base 10



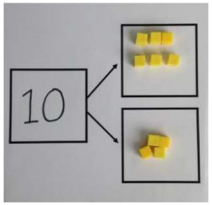
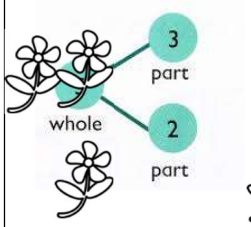
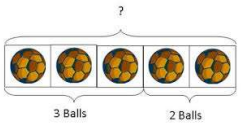
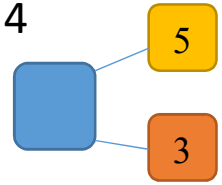
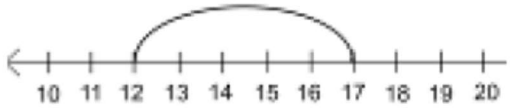
Place Value Counters

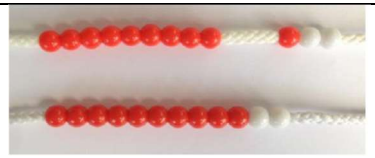
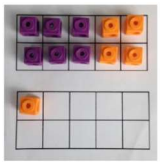
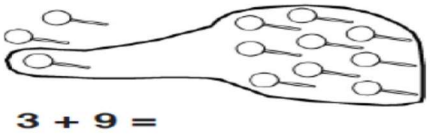
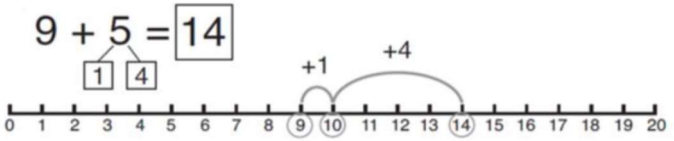
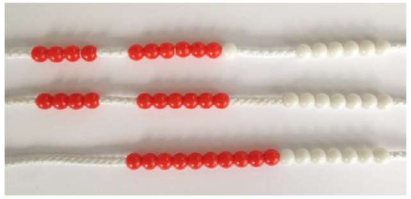
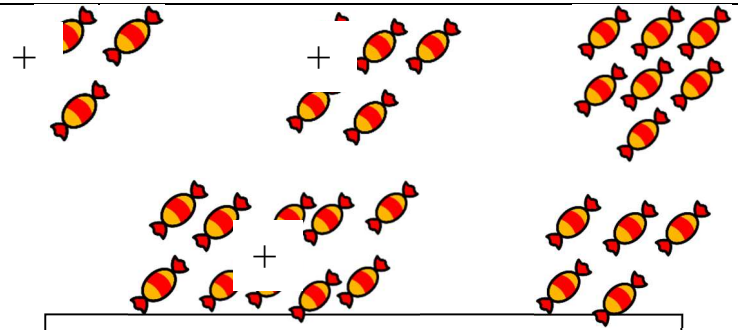
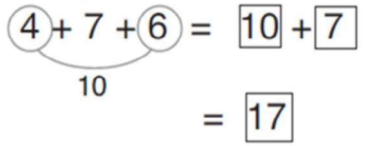
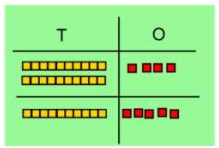
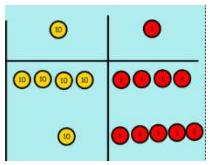
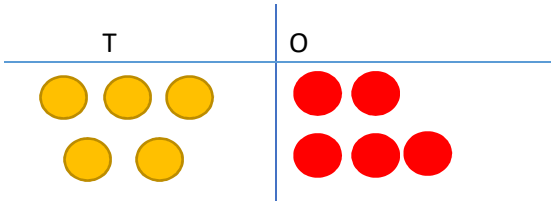
Some of the counters have the denomination written on them (i.e. 10, 1, 100, 0.1 etc) - but any counters can be used. It is important however, that we adopt a consistent approach throughout the school as to which colour represents which denomination. Therefore, this will be policy:

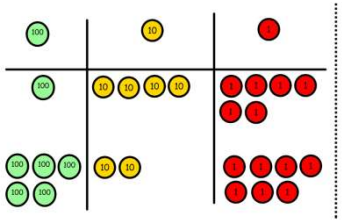
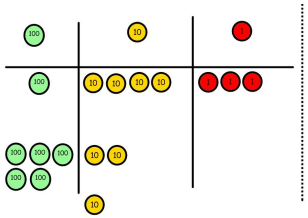
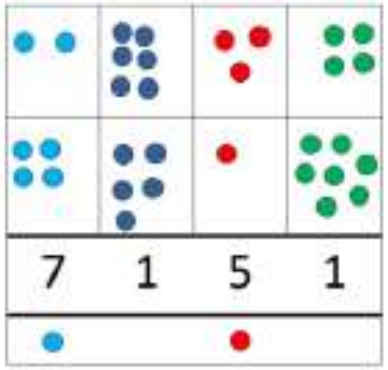


Ten thousands | Thousands | Hundreds | Tens | Units | Tenths | Hundredths

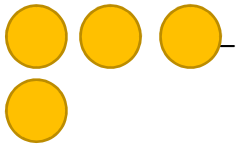
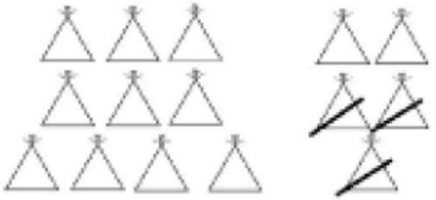
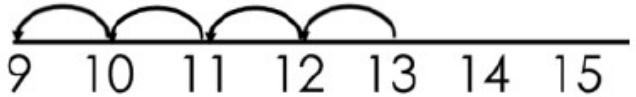
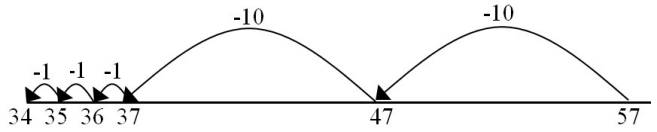
Calculation Methods, Progression in Calculations using apparatus: EYFS though to KS2 – Addition

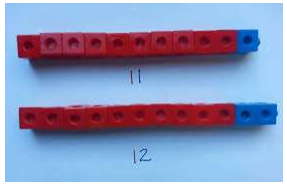
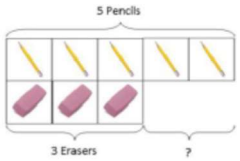
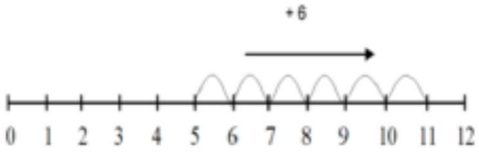
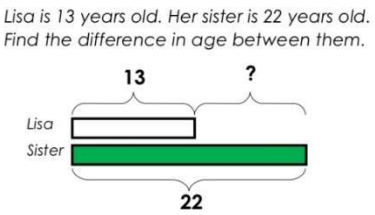
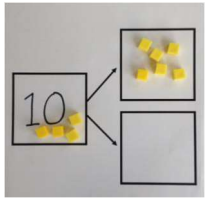
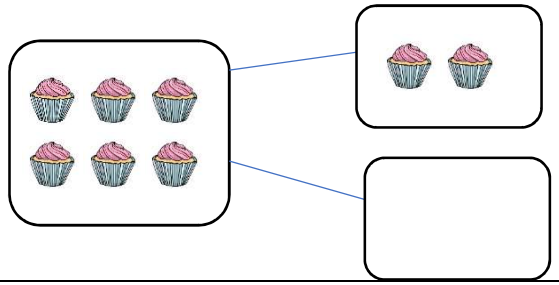
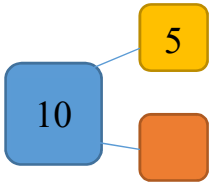
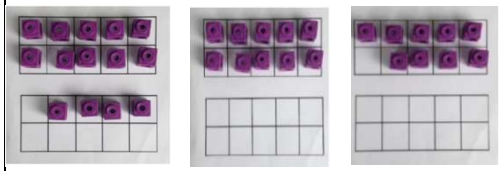
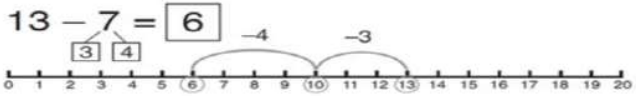
Strategies	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	 Use cubes to add two numbers together as a group or in a bar.	  Use pictures to add two numbers together as a group or in a bar.	4 + 3 = 7 10= 6 + 4  Use the part-part whole diagram as shown above to move into the abstract.
Starting at the bigger number and counting on	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer.

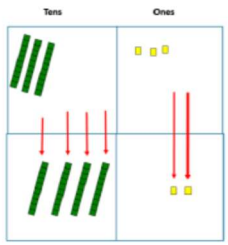
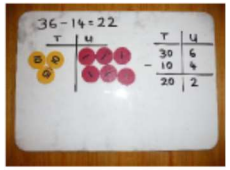
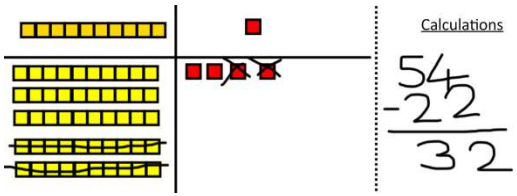
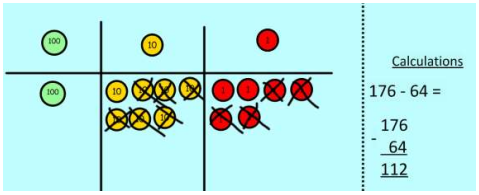
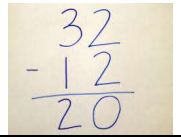
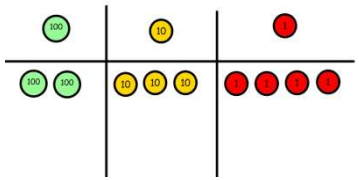
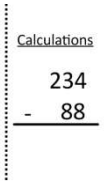
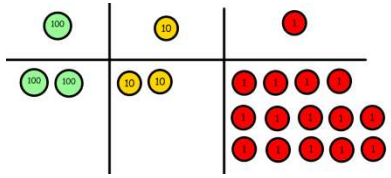
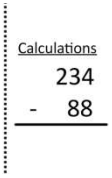
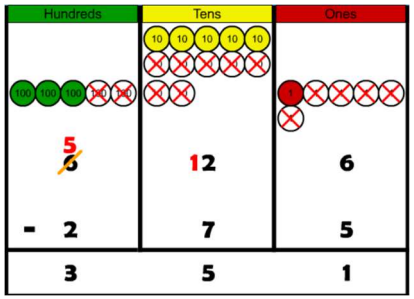
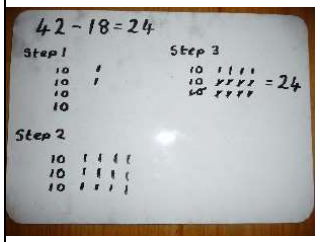
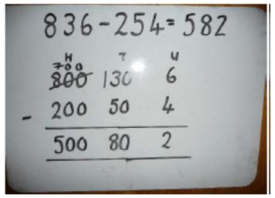
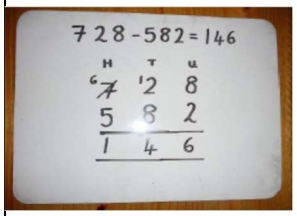
Strategies	Concrete	Pictorial	Abstract
Regrouping to make 10.	 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10.	 Use pictures or a number line. Regroup or partition the smaller number to make 10. 	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?
Adding three single digits	4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.
Column method- no regrouping	24 + 15= Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters.  	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions. 	Calculations 21 + 42 = 21 + 42

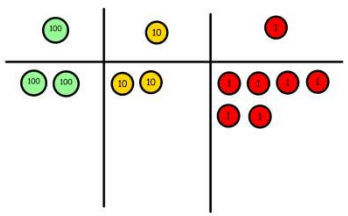
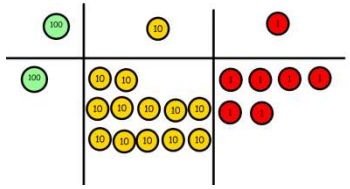
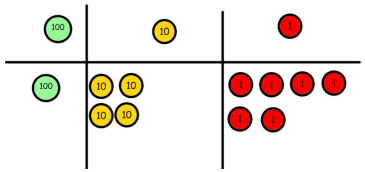
Strategies	Concrete	Pictorial	Abstract
Column method- regrouping	Make both numbers on a place value grid.  146 + 527 Add up the units and exchange 10 ones for one 10.  146 + 527 Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added. This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100. As children move on to decimals, money and decimal place value counters can be used to support learning.	Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding.  	Start by partitioning the numbers before moving on to clearly show the exchange below the addition. 20 + 5 40 + 8 60 + 13 = 73 As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here. 536 + 85 621 1 1 72.8 + 54.6 127.4 1 1 £ 2 3 . 5 9 + £ 7 . 5 5 £ 3 1 . 1 4 1 1 1 2 3 . 3 6 1 9 . 0 8 0 5 9 . 7 7 0 + 1 . 3 0 0 9 3 . 5 1 1 2 1 2

Calculation Methods, Progression in Calculations using apparatus: EYFS though to KS2 – Subtraction

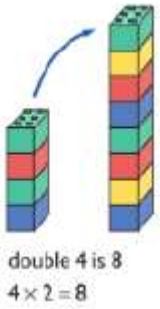
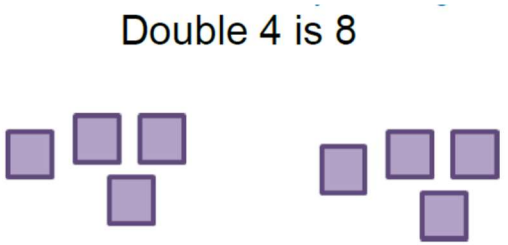
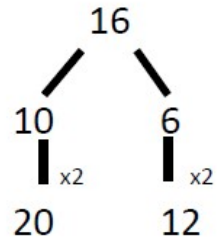
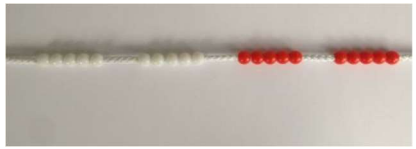
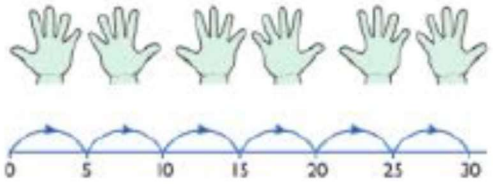
Strategies	Concrete	Pictorial	Abstract
Taking away ones	Use physical objects, counters, cubes etc to show how objects can be taken away.  – 2 = 4 	Cross out drawn objects to show what has been taken away.  15 – 3 = 12	18 -3= 15 8 – 2 = 6
Counting back	Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones. 13 – 4 Use counters and move them away from the group as you take them away counting backwards as you go. 	Count back on a number line or number track  9 10 11 12 13 14 15 Start at the bigger number and count back the smaller number showing the jumps on the number line.  -1 -1 -1 -10 -10 34 35 36 37 47 57 This can progress all the way to counting back using two 2 digit numbers.	Put 13 in your head, count back 4. What number are you at? Use your fingers to help.

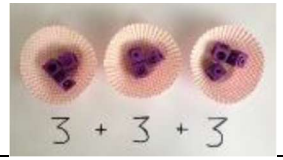
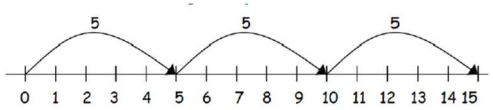
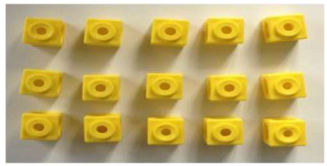
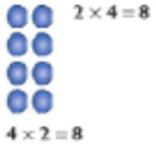
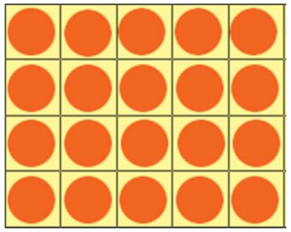
Strategies	Concrete	Pictorial	Abstract
Find the difference	Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference  Use basic bar models with items to find the difference	 Count on to find the difference. Draw bars to find the difference between 2 numbers. 	Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches.
Part Part Whole Model	 Link to addition- use the part whole model to help explain the inverse between addition and subtraction. If 10 is the whole and 6 is one of the parts. What is the other part? 10 - 6 =	Use a pictorial representation of objects to show the part part whole model. 	 Move to using numbers within the part whole model.
Make 10	14 – 9 =  Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.	 Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.	16 – 8= How many do we take off to reach the next 10? How many do we have left to take off?

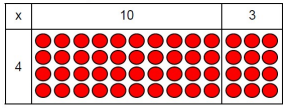
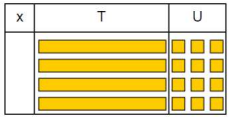
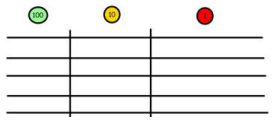
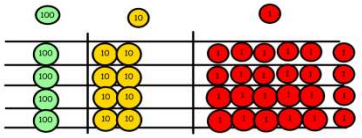
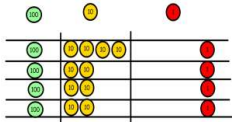
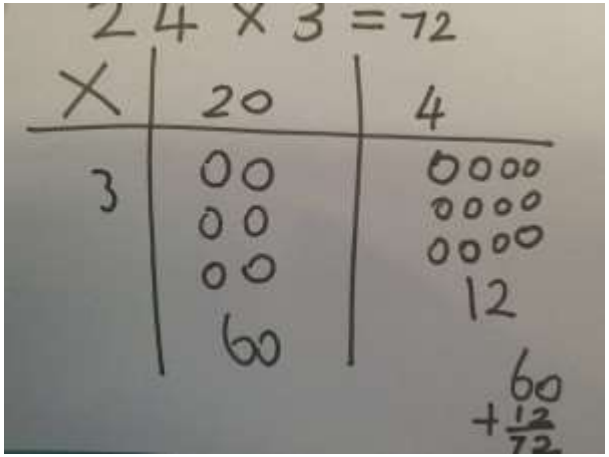
Strategies	Concrete	Pictorial	Abstract
Column method without regrouping	 Use Base 10 to make the bigger number then take the smaller number away. Show how you partition numbers to subtract. Again, make the larger number first. 	 Draw the Base 10 or place value counters alongside the written calculation to help to show working. 	47 − 24 = 23 40 + 7 − 20 + 4 20 + 3 This will lead to a clear written column subtraction. 
Column method with regrouping	Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges. Make the larger number with the place value counters   Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.  	 Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.  When confident, children can find their own way to record the exchange/regrouping. Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.	 Children can start their formal written method by partitioning the number into clear place value columns. 

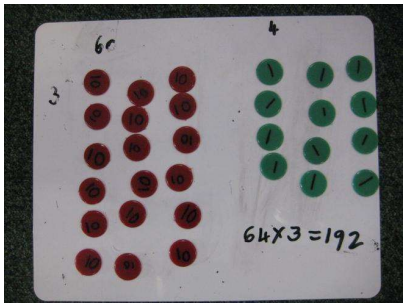
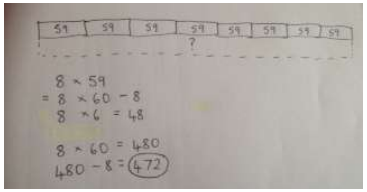
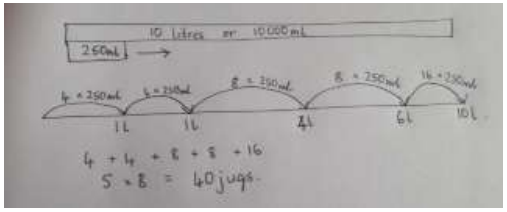
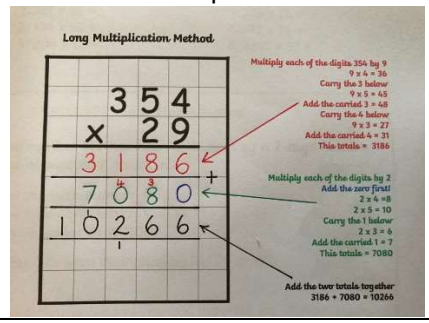
	Now I can subtract my ones.  Calculations 234 - 88 Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.  Calculations 234 - 88 Now I can take away eight tens and complete my subtraction  Calculations ~~2~~ ~~3~~ 4 - 88 146 Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.		Moving forward the children use a more compact method. This will lead to an understanding of subtracting any number including decimals. 5 12 1 2 ~~6~~ ~~3~~ . 0 - 2 6 . 5 2 3 6 . 5

Calculation Methods, Progression in Calculations using apparatus: EYFS though to KS2 – Multiplication

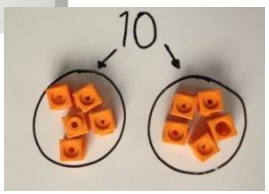
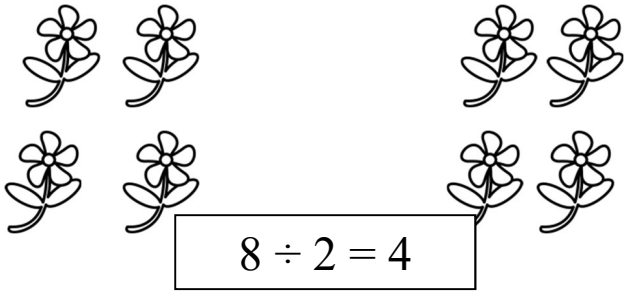
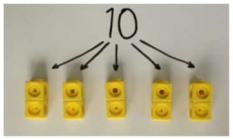
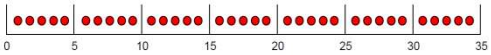
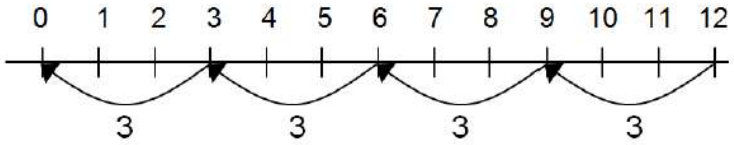
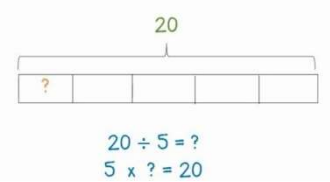
Strategies	Concrete	Pictorial	Abstract
Doubling	Use practical activities to show how to double a number.  	Draw pictures to show how to double a number.  	 Partition a number and then double each part before recombining it back together.
Counting in multiples	 Count in multiples supported by concrete objects in equal groups.	 Use a number line or pictures to continue support in counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30

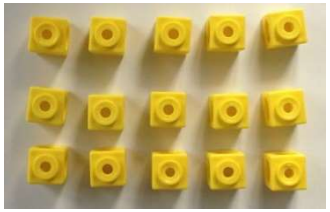
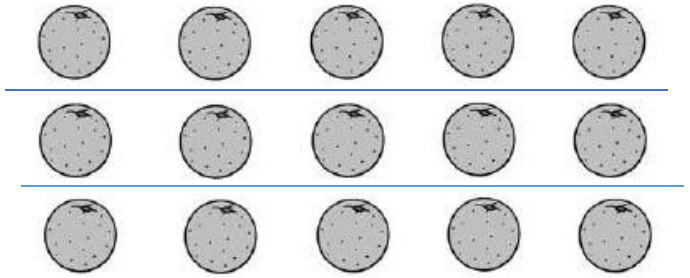
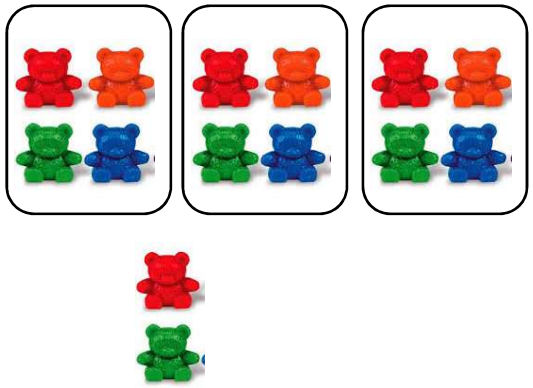
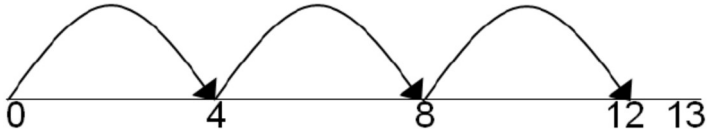
Strategies	Concrete	Pictorial	Abstract
Repeated addition	Use different objects to add equal groups. 	There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there? 2 add 2 add 2 equals 6  5 + 5 + 5 = 15	Write addition sentences to describe objects and pictures.
Arrays- showing commutative multiplication	Create arrays using counters/ cubes to show multiplication sentences. 	Draw arrays in different rotations to find **commutative** multiplication sentences.   Link arrays to area of rectangles.	Use an array to write multiplication sentences and reinforce repeated addition. 5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15

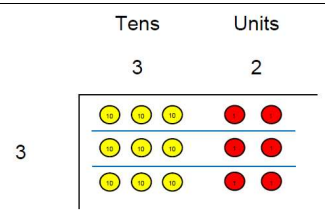
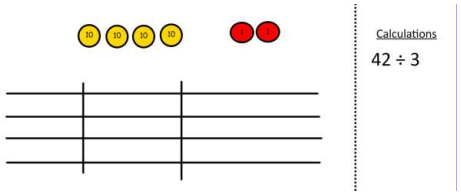
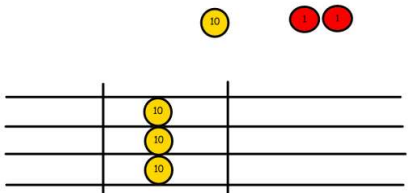
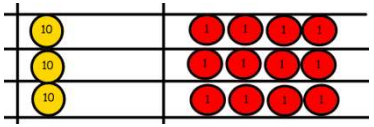
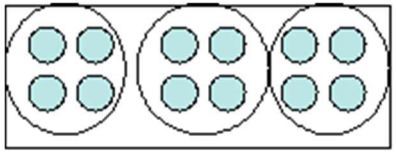
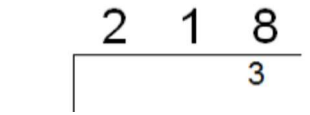
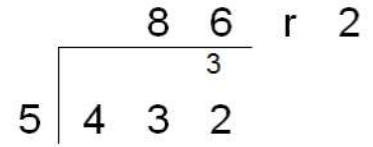
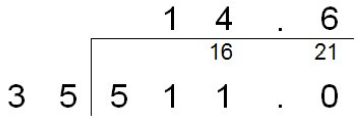
Strategies	Concrete	Pictorial	Abstract
Grid Method	Show the link with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3 Move on to using Base 10 to move towards a more compact method.  4 rows of 13 Move on to place value counters to show how we are finding groups of a number.We are multiplying by 4 so we need 4 rows.  Calculations 4 x 126 Fill each row with 126.  Calculations 4 x 126 Add up each column, starting with the ones making any exchanges needed.  Then you have your answer.	Children can represent the work they have done with place value counters in a way that they understand. They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.  	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. | × | 30 | 5 | | --- | --- | --- | | 7 | 210 | 35 | **210 + 35 = 245** Moving forward, multiply by a 2 digit number showing the different rows within the grid method. | | 10 | 8 | | --- | --- | --- | | 10 | 100 | 80 | | 3 | 30 | 24 | | X | 1000 | 300 | 40 | 2 | | --- | --- | --- | --- | --- | | **10** | 10000 | 3000 | 400 | 20 | | **8** | 8000 | 2400 | 320 | 16 |

Strategies	Concrete	Pictorial	Abstract
Column multiplication	Children can continue to be supported by place value counters at the stage of multiplication.  It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.	Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.  	Start with long multiplication, reminding the children about lining up their numbers clearly in columns. If it helps, children can write out what they are solving next to their answer. 32 x 24 8 (4 x 2) 120 (4 x 30) 40 (20 x 2) 600 (20 x 30) 768 74 × 63 12 210 240 + 4200 4662 This moves to the more compact method. 

Calculation Methods, Progression in Calculations using apparatus: EYFS though to KS2 – Division

Strategies	Concrete	Pictorial	Abstract
Sharing objects into groups	I have 10 cubes, can you share them equally in 2 groups? 	Children use pictures or shapes to share quantities.  $8 \div 2 = 4$	Share 9 buns between three people. $9 \div 3 = 3$
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.   96 ÷ 3 = 32	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. 	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

Strategies	Concrete	Pictorial	Abstract
Division within arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7
Division with a remainder	14 ÷ 3 = Divide objects between groups and see how much is left over 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.  Draw dots and group them to divide an amount and clearly show a remainder. 	Complete written divisions and show the remainder using r.

Strategies	Concrete	Pictorial	Abstract
Short division	 Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.  We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	Begin with divisions that divide equally with no remainder.  Move onto  divisions with a remainder. Finally move into decimal places to divide the total accurately. 

Calculation Methods, Progression in Addition: Written Methods to Year 6
Vocabulary: add, adding, addition, total, plus, more than, and, altogether, increase, equals, sum

Foundation Stage

- I can recognise numbers and their quantities
- I can use 1-to-1 correspondence
- I can recognise signs and know what a number sentence is
- I can count sets of objects
- I can use a number line to help me add numbers up to 20

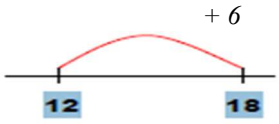
1. I can use bead strings or bead bars to illustrate addition

8 + 2

8 + 2 = 10

2. I can use a number line to count on in units

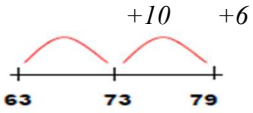
12 + 6



12 + 6 = 18

3. I can use a number line to count on in tens and units by partitioning

63 + 16

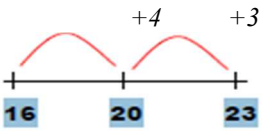


63 + 10 + 6 = 79

63 + 16 = 79

4. I can partition a number to bridge through a multiple of ten

16 + 7

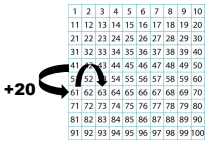


16 + 4 + 3 = 23

16 + 7 = 23

5. I can use a hundred-square to add larger numbers by counting on in tens and units

41 + 22

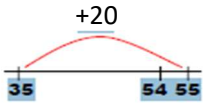


41 + 20 + 2 = 63

41 + 22 = 63

6. I can add near multiples of ten by adding in tens and then adjusting

35 + 19



35 + 20 - 1 = 54

35 + 20 - 1 = 54

7. I can use the expanded method to add amounts

21 + 17

21
+ 17
8 (1 + 7)
30 (10 + 20)
38

21 + 17 = 38

8. I can use the expanded method to add larger amounts

215 + 176

215
+ 176
11 (5 + 6)
80 (10 + 70)
300 (200 + 100)
391

215 + 176 = 391

9. I can add whole numbers using formal written methods of columnar addition

625 + 48

625
+ 48
673
1

625 + 48 = 673

Statutory requirements for addition
Year 3 Add whole numbers with up to three digits, using formal written methods of columnar addition.
Year 4 Add numbers with up to 4 digits using the formal written methods of columnar addition.
Year 5 Add whole numbers with more than 4 digits, including using formal written methods (columnar addition).

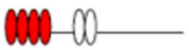
Calculation Methods, Progression in Subtraction: Written Methods to Year 6
Vocabulary: subtract, subtracting, subtraction, take away, minus, less than, difference, decrease, leave, how many left, borrowing

Foundation Stage

- I can recognise numbers and their quantities
- I can use 1-to-1 correspondence
- I can recognise signs and know what a number sentence is
- I can count sets of objects
- I can use a number line to help me subtract single digit from a teen number (e.g. 12 – 2)

1. I can use bead strings or bead bars to illustrate subtraction

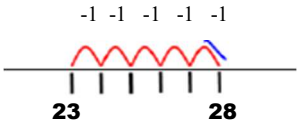
6 – 2



6 - 2 = 4

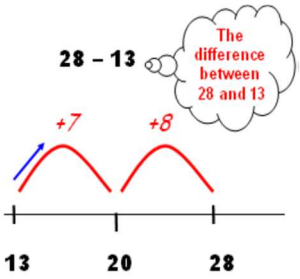
2. I can use a number line to count back when subtracting

28 - 5



28 - 5 = 23

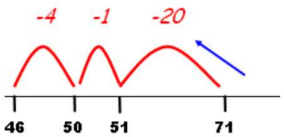
3. I can count on using a number line to solve a subtraction number sentence



28 – 13 = 15

4. I can bridge through a multiple of ten when counting back

71 - 25

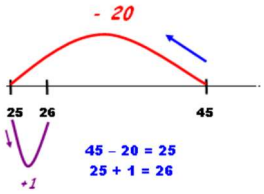


71 – 20 = 51
51 – 1 = 50
50 – 4 = 46

71 – 25 = 46

5. I can subtract near multiples of 10 by taking away in tens and adjusting

45 - 19



45 – 19 = 26

6. I can subtract whole numbers using formal written methods of columnar subtraction without exchange

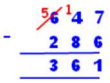
452 - 131

4 5 2
1 3 1
3 2 1

452 – 131 = 321

7. I can subtract whole numbers using formal written methods of columnar subtraction with exchange

647 - 286



647 – 286 = 361

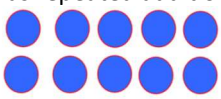
Statutory requirements for subtraction
Year 3 Subtract whole numbers with up to three digits, using formal written methods of columnar subtraction.
Year 4 Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction.
Year 5 Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction).

Calculation Methods, Progression in Multiplication: Written Methods to Year 6
Vocabulary: multiply, multiplying, multiplication, multiple, times, lots of, groups of, product, doubling, 10 times….

Foundation Stage

- I can recognise signs and know what a number sentence is
- I can skip count in 2's and 10's
- I can use repeated addition to count groups of objects

1. I can understand and record multiplication as repeated addition



5 X 2

= 2 + 2 + 2 + 2 + 2

=10

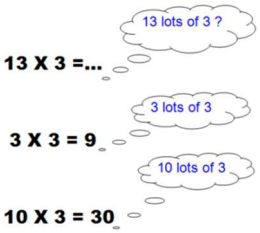
2. I can use my times tables knowledge to solve simple number sentences

4 x 5

1 x 5 = 5
2 x 5 = 10
3 x 5 = 15
4 x 5 = 20

6 x 5 = 30

2. I can partition numbers to simplify multiplication



13 X 3 = 39

4. I can multiply numbers by 10, 100 and 1000

10 Thousand	Th	H	T	U
			9	4
		9	4	0
	9	4	0	0
9	4	0	0	0

X 10 ⟵ ⟶ ÷ 10

94 X 10 = 940
94 X 100 = 9400
94 X 1000 = 94000

5. I can use the grid method to solve multiplication problems

23 X 8 =

X	20	3
8	160	24

	1	6	0
+		2	4
	1	8	4

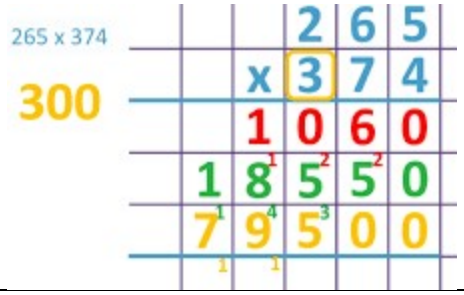
23 X 8 = 184

6. I can use short multiplication to multiply whole numbers by any one-digit number

2 3
x 8
1 8 4
2

23 x 8 = 184

8. I can use long multiplication



Statutory requirements for multiplication
Year 3 Write and calculate mathematical statements using multiplication tables, including two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
Year 4 Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
Year 5 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.
Year 6 Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.

Calculation Methods, Progression in Division: Written Methods to Year 6

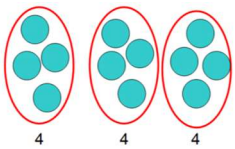
Vocabulary: divide, dividing, division, divided by, shared, sharing, equally, how many, remainder, factor, chunking

Foundation Stage

- I can recognise signs and know what a number sentence is
- I can group objects practically

1.I can read a number sentence and share items into equal groups

12 ÷ 3 =

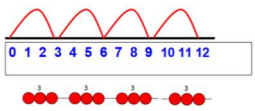


12 shared between 3 is 4

12 ÷ 3 = 4

2. I can understand division as repeated subtraction

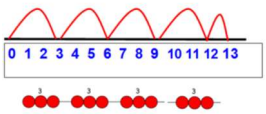
12 ÷ 3 =



12 ÷ 3 = 4

3. I can understand division as repeated subtraction (with remainders)

13 ÷ 3 =



12 ÷3 = 4 r 1

4. I understand that division is the inverse of multiplication and can use my times tables knowledge to solve number sentences

20 ÷ 4 =

How many 4's in 24?

1 x 4 = 4
2 x 4 = 8
3 x 4 = 12
4 x 4 = 16
5 x 4 = 20

20 ÷ 4 = 6

5. I can partition a number to solve division problems

70 ÷ 5 =

50 ÷ 5 = 10
20 ÷ 5 = 4

70 ÷ 5 = 14

6. I can divide numbers by 10, 100 and 1000

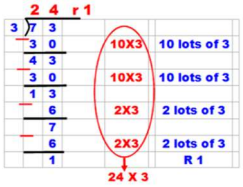
T	U.	t	h	th
9	4			
	9.	4		
	0.	9	4	
	0.	0	9	4

X 10 ← → ÷ 10

94 ÷ 10 = 9.4
94 ÷ 100 = 0.94
94 ÷ 1000 = 0.094

7. I can use chunking to solve number sentences (including those with remainders)

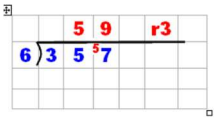
73 ÷ 3 =



73 ÷ 3 = 24 r1

8. I can use short division

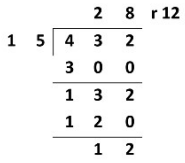
357 ÷ 6 =



357 ÷ 6 = 59 r3

9. I can use long division

432 ÷15 =



432 ÷ 15 = 28 r12

Statutory requirements for division	
Year 3 Write and calculate mathematical statements for division using multiplication tables, including two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	**Year 6** Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division.
Year 5 Divide numbers up to 4 digits by a one-digit number using the formal written method of short division.	

I am most proud of being able to... because ...

I have made progress because...

I can explain to someone else that...

I feel more confident about...

I now able to...

At the start of the lesson, I did not know...
Now I can...

This reminded of the lesson we did on ..... because .....

I used my knowledge of ..... to help me with today's lesson.

National Curriculum Progression

Place Value - Counting

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. ✓ I can count, read and write numbers to 100 in numerals. ✓ I can count in multiples of twos, fives and tens.	✓ I can count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	✓ I can count from 0 in multiples of 4, 8, 50 and 100. ✓ I can find 10 or 100 more or less than a given number.	✓ I can count in multiples of 6, 7, 9, 25 and 1000. ✓ I can find 1000 more or less than a given number. ✓ I can count backwards through zero to include negative numbers.	✓ I can count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. ✓ I can interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	✓ I can use negative numbers in context, and calculate intervals across zero.

Place Value – Place Value

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	✓ I can recognise the place value of each digit in a two-digit number. ✓ I can compare and order numbers from 0 up to 100; use <, > and = signs.	✓ I can recognise the place value of each digit in a three-digit number. ✓ I can compare and order numbers up to 1000.	✓ I can recognise the place value of each digit in a four-digit number. ✓ I can order and compare numbers beyond 1000. ✓ I can round any number to the nearest 10, 100 or 1000.	✓ I can read, write, order and compare numbers up to 1 000 000 and determine the value of each digit. ✓ I can round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.	✓ I can read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. ✓ I can round any whole number to a required degree of accuracy.

Place Value – Representing number

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can identify and represent numbers using objects and pictorial representations including the number line, & use language of: equal to, more than, less than (fewer), most, least. ✓ I can read and write numbers from 1 to 20 in numerals and words. ✓ I can read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs.	✓ I can identify, represent and estimate numbers using different representations, including the number line. ✓ I can read and write numbers to at least 100 in numerals and in word.	✓ I can identify, represent and estimate numbers using different representations. ✓ I can read and write numbers up to 1000 in numerals and in words.	✓ I can identify, represent and estimate numbers using different representations. ✓ I can read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	✓ I can count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. ✓ I can interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	✓ I can read Roman numerals to 1000 (M) and recognise years written in Roman numerals. ✓ I can recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³).

Place Value – Number Facts

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can identify one more and one less of a given number. ✓ I can represent and use number bonds and related subtraction facts within 20.	✓ I can use place value and number facts to solve problems. ✓ I can recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. ✓ I can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	✓ I can recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	✓ I can recall multiplication and division facts for multiplication tables up to 12 × 12.	✓ I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. ✓ I can know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. ✓ I can establish whether a number up to 100 is prime and recall prime numbers up to 19.	✓ I can identify common factors, common multiples and prime numbers.

Place Value – Mental and Written Arithmetic

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can add and subtract one-digit and two-digit numbers to 20, including zero.	✓ I can add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U. ✓ I can how that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. ✓ I can calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. ✓ I can show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.	✓ I can add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H. ✓ I can add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. ✓ I can 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 methods. ✓ I can progress to formal written methods calculations as above.	✓ I can add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. ✓ I can use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. ✓ I can recognise and use factor pairs and commutativity in mental calculations. ✓ I can multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	✓ I can add and subtract numbers mentally with increasingly large numbers. ✓ I can add and subtract whole numbers with more than 4 digits, including using formal written methods. ✓ I can multiply and divide numbers mentally drawing upon known facts. ✓ I can multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ✓ I can 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. ✓ I can 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.	✓ I can perform mental calculations, including with mixed operations and large numbers. ✓ I can perform mental calculations, including with mixed operations and large numbers. ✓ I can multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. ✓ I can divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. ✓ I can divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to context.

Place Value – Maths Problems

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9. ✓ I can 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.	✓ I can solve problems with addition and subtraction, using concrete, pictorial and abstract representations. ✓ I can recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. ✓ I can solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	✓ I can estimate the answer to a calculation and use inverse operations to check answers. ✓ I can solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. ✓ I can solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	✓ I can estimate and use inverse operations to check answers to a calculation. ✓ I can solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. ✓ I can solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	✓ I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. ✓ I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ✓ I can solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes ✓ I can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. ✓ I can solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	✓ I can use their knowledge of the order of operations to carry out calculations involving the four operations. ✓ I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ✓ I can solve problems involving addition, subtraction, multiplication and division. ✓ I can use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions – Recognising fractions and problems

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can recognise, find and name a half as one of two equal parts of an object, shape or quantity. ✓ I can recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	✓ I can recognise, find, name and write fractions 1/3, 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity.	✓ I can count up and down in tenths. ✓ I can recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. ✓ I can solve problems using all fraction knowledge.	✓ I can count up and down in hundredths. ✓ I can recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. ✓ I can solve simple measure and money problems involving fractions and decimals to two decimal places.	✓ I can recognise mixed numbers & improper fractions & convert from one form to the other & write statements > 1 as a mixed number. ✓ I can solve problems involving number up to three decimal places. ✓ I can solve problems which require knowing percentage & decimal equivalents of ½ , ¼ , 1/5 , 2/5 , 4/5 & those fractions with a denominator of a multiple of 10 or 25.	✓ I can solve problems which require answers to be rounded to specified degrees of accuracy. ✓ I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Fractions – Comparing fractions

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓ I can compare and order unit fractions, and fractions with the same denominators. ✓ I can recognise and show, using diagrams, equivalent fractions with small denominators.	✓ I can recognise and show, using diagrams, families of common equivalent fractions.	✓ I can compare and order fractions whose denominators are all multiples of the same number. ✓ I can identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	✓ I can use common factors to simplify fractions. ✓ I can use common multiples to express fractions in the same denomination. ✓ I can compare and order fractions, including fractions > 1.

Fractions – Finding fractions of an amount

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓ I can recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. ✓ I can recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.	✓ I can solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.	✓	✓

Fractions – Calculations

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓ I can write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.	✓ I can add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7].	✓ I can add and subtract fractions with the same denominator.	✓ I can add and subtract fractions with the same denominator and denominators that are multiples of the same number. ✓ I can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	✓ I can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ✓ I can multiply simple pairs of proper fractions, writing the answer in its simplest form. ✓ I can divide proper fractions by whole numbers.

Decimals – Fractions, ordering and calculating

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓	✓ I can recognise and write decimal equivalents of any number of tenths or hundredths. ✓ I can recognise and write decimal equivalents to ¼, ½ and ¾. ✓ I can find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths. ✓ I can round decimals with one decimal place to the nearest whole number. ✓ I can compare numbers with the same number of decimal places up to two decimal places.	✓ I can read and write decimal numbers as fractions. ✓ I can recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. ✓ I can round decimals with two decimal places to the nearest whole number and to one decimal place. ✓ I can read, write, order and compare numbers with up to three decimal places.	✓ I can associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction. ✓ I can identify the value of each digit in numbers given to three decimal places. ✓ I can multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. ✓ I can multiply one-digit number with up to two decimal places by whole numbers. ✓ I can use written division methods in cases where the answer has up to two decimal places.

Percentages

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓	✓	✓ I can recognise the per cent 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.	✓ I can solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison.

Ratio, Proportion and Algebra

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓	✓	✓	✓ I can solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. ✓ I can solve problems involving similar shapes where the scale factor is known or can be found. ✓ I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. ✓ I can use simple formulae. ✓ I can generate and describe linear number sequences. ✓ I can express missing number problems algebraically. ✓ I can find pairs of numbers that satisfy an equation with two unknowns. ✓ I can enumerate possibilities of combinations of two variables.

Measures

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time. ✓ I can measure and begin to record length/height, weight/mass, capacity/volume & time.	✓ I can choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. ✓ I can compare and order lengths, mass, volume/capacity and record the results using >, < and =.	✓ I can measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	✓ I can convert between different units of measure. ✓ I can estimate, compare and calculate different measures, including money in pounds and pence.	✓ I can convert between different units of metric measure. ✓ I can understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. ✓ I can estimate volume and capacity.	✓ I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. ✓ I can use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. ✓ I can convert between miles and kilometres.

Mensuration

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓ I can measure the perimeter of simple 2-D shapes.	✓ I can measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. ✓ I can find the area of rectilinear shapes by counting squares.	✓ I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. ✓ I can calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes.	✓ I can recognise that shapes with the same areas can have different perimeters and vice versa. ✓ I can recognise when it is possible to use formulae for area and volume of shapes. ✓ I can calculate the area of parallelograms and triangles. ✓ I can calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units.

Money

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can recognise and know the value of different denominations of coins and notes.	✓ I can recognise and use symbols for pounds (£) & pence (p); combine amounts to make a particular value. ✓ I can find different combinations of coins that equal the same amounts of money. ✓ I can solve simple problems in a practical context involving addition & subtraction of money of the same unit, including giving change.	✓ I can add and subtract amounts of money to give change, using both £ and p in practical contexts.	✓	✓ I can use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	✓

Time

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can sequence events in chronological order using language. ✓ I can recognise and use language relating to dates, including days of the week, weeks, months and years. ✓ I can tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	✓ I can compare and sequence intervals of time. ✓ I can tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. ✓ I can know the number of minutes in an hour and the number of hours in a day.	✓ I can tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour & 24-hour clocks. ✓ I can estimate and read time with increasing accuracy to the nearest minute; record & compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon & midnight. ✓ I can know the number of seconds in a minute and the number of days in each month, year and leap year. ✓ I can compare durations of events.	✓ I can convert between different units of measure (e.g. Hours to minutes). ✓ I can read, write and convert time between analogue and digital 12- and 24-hour clocks. ✓ I can solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	✓ I can solve problems involving converting between units of time.	✓

Shape - Vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can recognise and name common 2-D shapes (e.g. Square, circle, triangle). ✓ I can recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres).	✓ (vertices, edges, faces, symmetry)	✓ I can identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	✓	✓	✓ I can illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

Shape – Properties of 2D Shapes

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓ I can identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. ✓ I can compare and sort common 2-D and 3-D shapes and everyday objects.	✓ draw 2-D shapes	✓ I can compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes. ✓ I can identify lines of symmetry in 2-D shapes presented in different orientations. ✓ I can complete a simple symmetric figure with respect to a specific line of symmetry.	✓ I can use the properties of rectangles to deduce related facts and find missing lengths and angles. ✓ I can distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	✓ I can draw 2-D shapes using given dimensions and angles. ✓ I can compare and classify geometric shapes based on their properties and sizes.

Shape – Properties of 3D Shapes

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓ I can identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. ✓ I can identify 2-D shapes on the surface of 3-D shapes. ✓ I can compare and sort common 2-D and 3-D shapes and everyday objects.	✓ I can make 3-D shapes using modelling materials. ✓ I can recognise 3-D shapes in different orientations and describe them.	✓	✓ I can identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	✓ I can recognise, describe and build simple 3-D shapes, including making nets. ✓ I can find unknown angles in any triangles, quadrilaterals, and regular polygons.

Shape – Angles

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓	✓ I can recognise angles as a property of shape or a description of a turn. ✓ I can identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. ✓ I can identify whether angles are greater or less than right angle.	✓ I can identify acute and obtuse angles and compare and order angles up to two right angles by size.	✓ I can know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. ✓ I can draw given angles, and measure them in degrees (°). ✓ I can identify angles at a point and one whole turn (total 360°); at a point on a straight line and ½ a turn (total 180°). ✓ I can identify other multiples of 90°.	✓ I can recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Position and Direction

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓ I can describe position, direction and movement, including whole, half, quarter and three-quarter turns.	✓ I can order and arrange combinations of mathematical objects in patterns and sequences. ✓ I can 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 ¾ turns.	✓	✓ I can describe positions on a 2-D grid as coordinates in the first quadrant. ✓ I can describe movements between positions as translations of a given unit to the left/right and up/down. ✓ I can plot specified points and draw sides to complete a given polygon.	✓ I can identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	✓ I can describe positions on the full coordinate grid (all four quadrants). ✓ I can draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

Statistics – Interpreting Data

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓ I can interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	✓ I can interpret and present data using bar charts, pictograms and tables.	✓ I can interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	✓ I can complete, read and interpret information in tables, including timetables.	✓ I can interpret and construct pie charts and line graphs. ✓ I can calculate and interpret the mean as an average.

Statistics – Extracting info from data

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
✓	✓ I can ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. ✓ I can ask and answer questions about totalling and comparing categorical data.	✓ I can solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	✓ I can solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	✓ I can solve comparison, sum and difference problems using information presented in a line graph.	✓ I can use pie charts and line graphs to solve problems.

Mathematics Vocabulary Progression

NUMBER AND PLACE VALUE VOCABULARY						
EYFS	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
One more One less Place Order Number Count Numbers up to twenty Number line Pictorial Answer Equals Read Write	Same as EYFS, plus: Forwards Backwards Numerals Words Multiples Equal to More than Less than Fewer Most Least Identify Represent Digit Calculate Odd Even Pattern Numbers up to one hundred	Same as EYFS & Year 1, plus: Ones Tens Two- digit Estimate Place Value Solve Problems Greater than > Less than < Nearest ten Number facts Partition Count in steps Zero Compare Determine Value	Same as EYFS & KS1, plus: Hundreds Three-digit ten more one hundred more ten less one hundred less Roman numeral Numbers up to one thousand	Same as previous year groups, plus: Thousands Four- digit Negative number One thousand more One thousand less Decimal Decimal place Rounding Place holder Nearest ten Nearest hundred Nearest thousand One place Whole number Integer Tenths Hundredths	Same as previous year groups, plus: Ten thousands Hundred thousands Millions Context Steps of powers Decimal equivalents Two decimal places Thousandths Numbers up to one million	Same as previous year groups, plus: Intervals across zero Three decimal places Hundredths Thousandths Ten thousandths Numbers up to ten million

ADDITION AND SUBTRACTION VOCABULARY						
EYFS	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
Add Subtract Addition Subtraction Adding Subtracting Number Number line Single digit Count on Count back Answer Doubling Halving Sharing Numbers to twenty Check	Same as EYFS, plus: One step problem Concrete object Pictorial representation Missing number Problem Read Write Interpret Equals = Signs One-digit Two-digit Ones Mental Mentally	Same as EYFS & Year 1, plus: Columnar addition Columnar Subtraction Tens Order Inverse Relationship Calculation Solve problems Missing number problems Quantities Measures Formal Written method Mental method Method Operation Apply Whole number	Same as EYFS & KS1, plus: Three-digit number Hundreds Estimate Number facts	Same as previous year groups, plus: Two step problems Context Four-digit	Same as previous year groups, plus: Increasingly large numbers More than 4 digits Rounding Determine Context Multi-step problems	Same as previous year groups, plus: Estimation Mixed operations

MULTIPLICATION AND DIVISION VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Multiples Twos Fives Tens Number Multiply Divide Multiplication Division One step problem Answer Concrete object Pictorial representation Arrays Count Equals Write	Same as EYFS & Year 1, plus: Multiplication facts Division facts Multiplication tables Odd numbers Even numbers Share Equally Repeated division Calculate	Same as EYFS & KS1, plus: Missing number problem Estimate Inverse Formal written method Mathematical statement Recall Integer Two- digit One- digit	Same as previous year groups, plus: Derived facts Factors Factor pairs Scaling problems Three-digit	Same as previous year groups, plus: Decimals Four-digit Long multiplication Short division Remainders Context Common factors Common multiples Prime numbers Prime factors Composite numbers Square number Cube number Notation Squares Cubes	Same as previous year groups, plus: Scale factor Long division Whole number remainders Fractions Rounding Mixed operations

FRACTIONS (INCLUDING DECIMALS AND PERCENTAGES) VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Fraction Half Equal parts One whole Object Shape Quantity Quarter	Same as EYFS & Year 1, plus: Simple fractions Equivalent equivalence Count	Same as EYFS & KS1, plus: Tenths Unit fractions Non- unit fractions Numerator Denominator Compare Order Add Subtract Solve problems	Same as previous year groups, plus: Hundredths Decimal Decimal place One decimal place Two decimal places Round decimals Whole number Common equivalent fractions Decimal equivalents Dividing Ones Tenths Hundredths Simple measure Money problems	Same as previous year groups, plus: Thousandths Multiples Three decimal places Per cent Number of parts per hundred Percentages Decimal fraction Mixed numbers Improper fraction Proper fraction Convert Mathematical statements Multiply Percentage and decimal equivalents	Same as previous year groups, plus: Common factors Common multiples Decimal fraction equivalents Simplest form

MEASUREMENT VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Measure Measurement Size Weight Capacity Compare Solve Problems Object Time	Same as EYFS, plus: Length Height Long Short Longer Shorter Tall Double Half Mass Heavy Light Heavier than Lighter than Volume Full Empty More than Less than Half Half full Quarter Quicker Slower Earlier Later Sequence events Chronological order Before	Same as EYFS & Year 1, plus: Greater than >
Less than < Equals = Intervals Standard units Estimate Direction Temperature Unit Scales Rulers Thermometers Measuring vessels Metres Centimetres Kilograms Grams Degrees Celsius Litres Millilitres Symbols Money Pounds (£) Pence (p) Different combinations Change Five past	Same as EYFS & KS1, plus: Duration Time taken Nearest minute Record Seconds a.m. p.m. noon midnight kilometre add subtract millimetres perimeter simple 2-D shapes analogue clock roman numerals 12-hour 24-hour Leap year	Same as previous year groups, plus: Estimate Rectilinear figure Area Rectilinear shapes Convert	Same as previous year groups, plus: Square centimetres (cm2) Square metres (m2) Irregular shapes Volume (cm3) Cubes Cuboids Square numbers Cube numbers Metric measure Metric units Imperial units Inches Pounds Pints	Same as previous year groups, plus: Decimal notation Cubic centimetres (cm3) Cubic metres (m3) Cubic millimetre (mm3) Cubic kilometre (Km3) Decimal places formulae Miles

	After Next First Today Yesterday Tomorrow Morning Afternoon Evening Record Hours Minutes Hour Half past O clock Hands Clock face Seconds Coins Notes Dates Days Weeks Months Years	Ten past Quarter past Twenty past Twenty-five past Half past Twenty-five to Twenty to Quarter to Ten to Five to				

GEOMETRY: PROPERTIES OF SHAPES VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Shape Square Rectangle Circle Triangle Sides Straight side Curved side	Same as EYFS, plus: 2-D Shapes 3-D Shapes Two- Dimensional Three- Dimensional Cuboid Cube Pyramid Cone Cylinder Sphere	Same as EYFS & Year 1, plus: Properties Compare Common Line symmetry Vertical line Edges Faces Vertices Pentagon Hexagon Heptagon Octagon Nonagon Decagon	Same as EYFS & KS1, plus: Angle Turn Right angles Quarter of a turn Half-turn Three quarters of a turn Complete turn Horizontal lines Vertical lines Perpendicular lines Parallel lines	Same as previous year groups, plus: Lines of symmetry Symmetric figure Classify Geometric shapes Quadrilaterals Acute angle Obtuse angle	Same as previous year groups, plus: Angles Measure Degrees Missing lengths Missing angles Regular polygons Irregular polygons Degrees Estimate compare Reflex angle Point Straight line Multiples	Same as previous year groups, plus: Radius Diameter Circumference Nets

		Kite Rhombus Polygon Square-based pyramid Triangular pyramid Triangular prism Rectangular prism Pentagonal prism Hexagonal prism Octagonal prism Octahedron Dodecahedron Tetrahedron Rectangular pyramid Pentagonal pyramid Hexagonal pyramid Octagonal pyramid				

GEOMETRY: POSITION AND DIRECTION VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Position Distance Direction Move Movement Patterns	Same as EYFS, plus: Half turn Quarter turn Three-quarter turn Left Right Up Down	Same as EYFS & Year 1, plus: Rotation Right angle Clockwise Anti-clockwise Order Arrange Sequence	Same as EYFS & KS1, plus:	Same as previous year groups, plus: Co-ordinates Quadrant Grid Translate Translation Axis X- axis Y-axis Spaces Unit Plot Point Polygon	Same as previous year groups, plus: Reflection	Same as previous year groups, plus: Four quadrants

STATISTICS VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
		Interpret Construct Pictogram Tally chart Block diagrams Horizontal Vertical x- axis y-axis key title chart title Simple tables Ask Answer Questions Counting Objects Category Sort Quantity Total Compare Data	Same as KS1, plus: Present Presented Graph Statistics Bar charts Tables Solve One- step questions Two- step questions Information	Same as previous year groups, plus: Time graphs Comparison Problems	Same as previous year groups, plus: Timetables Line graph	Same as previous year groups, plus: Pie chart Calculate Mean Average

ALGEBRA VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Same as EYFS, plus: Solve One-step problem Missing number Check Calculate problem Sequence Chronological	Same as EYFS & Year 1, plus: Inverse Relationship Compare Order Arrange Pattern	Same as EYFS & KS1, plus:	Same as previous year groups, plus: Perimeter Algebra Algebraically	Same as previous year groups, plus: Properties Rectangles Deduce Related facts Missing lengths Missing angles	Same as previous year groups, plus: Missing number Problem Pairs Number sentence Variables Combination Possibility Enumerate Equation Formulae Generate Linear number sequence

RATIO AND PROPORTION VOCABULARY						
EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
						Ratio Proportion Size Quantity Missing value Integer Multiplication Division Multiply Divide Solve Problem Calculate Percentage Comparison Unequal sharing Grouping Fractions Multiples

Next Step Questions

How do you know?	What strategy did you use?	How can you check your answer?
How did you get that answer?	Tell me everything that you know about ....?	Can you explain what you've done so far?
Can you draw a picture to prove that?	Can you prove that ___'s answer is correct?	Can you explain what I thought in a different way?
Explain why you think that ___'s answer is wrong.	What's the difference between...?	Represent this in another way
Find the pattern/next number	What do you notice about...?	Find and correct x mistakes
What have you forgotten?	Write and solve your own	How could we check this?
Which step did you miss?	Write as a word problem	Find the missing number
How else could you do?	Is there a quicker way?	Explain how this works
Is there another way?	Can you make a rule?	Which one is wrong?
Look for the pattern	Spot the mistake(s)	What went wrong?
How do you know?	Explain the rule (E)	Why didn't you...?
Show an example	Redo and explain	What is missing?
Why did you...?	True or False?	Explain (E)
Prove this		