Mathematics and Calculation Policy

Approved by Governing Body: 8 July 2025
Date of next Review: July 2027

Edinburgh Primary School

Mathematics and Calculation policy

Introduction

The National Curriculum states that:

Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education, therefore, provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

At Edinburgh Primary, we hope to promote a love of maths for all our pupils, so that they leave us feeling confident and prepared for Secondary School and later life. To do this, all pupils will be delivered a rich and balanced mathematics curriculum that develops their fluency, reasoning and problem solving, as laid out in the National Curriculum.

The purpose of this policy is to outline the teaching and learning of Mathematics at Edinburgh Primary school.

Aims

Mathematics is a language of communication that needs to be explicitly taught and practiced in a variety of contexts, in order to develop the confidence and proficiency of learners. It requires an understanding of the number system as well as calculation methods, strategies for problem solving and practical experience of measurement and data handling activities.

Our aims in teaching mathematics are that all children will:

- develop a love of mathematics and have confidence in their own abilities.
- become numerate and tackle mathematical problems with confidence.
- develop the skills which are needed to meet the demands of adult life.
- develop the ability to think logically and clearly.
- use mathematical language effectively and confidently.
- develop positive attitudes to mathematics, recognising that mathematics can be both useful and enjoyable.
- develop confidence, resilience and independence in problem solving activities.
- be able to use and apply their skills in other curricular areas.

We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching and learning.

Mathematics Environments and Resources

Each class in the school has a designated maths area or working wall, where current topics of work or learning aides are displayed. This area will have a strong focus on language as well as visual strategies to support mathematical learning. Displays are eye-catching and interactive to engage children and support them in their learning.

The use of concrete and visual resources is extremely important to promote the understanding of key mathematical concepts. Concrete resources are a key part of every Maths lessons and are organised in Year group shared areas for teachers to access easily.

Organisation and Teaching of Mathematics

Across the school, Maths lessons take place in the morning for 60 minutes. In EYFS, the teaching and activities for Maths are shorter, but still occur daily. Children will also enhance their arithmetic fluency, through a daily 10-minute practice session. Cross curricular references will always be made to mathematics throughout the school day.

Lessons begin with a mental oral starter. This is an important part of the lesson and creates an energetic, whole class start to enthuse and engage children. It can build upon prior learning or be linked to the lesson for the day. The starter is followed by the main lesson which involves sharing a learning objective, success criteria and key vocabulary before pupils engage in a class-led session. During this time, assessment for learning strategies are utilised such as mini- whiteboards, talk partners and targeted questioning. Following the main teaching, the children have the opportunity to practise the skill being taught and show that they can achieve the learning objective either independently or with support, which will be indicated in Maths books. As with all lessons, differentiation is achieved by skilful questioning and teacher use of assessment for learning to identify how best to involve all pupils in the sessions. At the end of the session, children should be given the opportunity to reflect on their learning against the lesson objective and success criteria.

Planning

We plan with a focus on objective-led learning, ensuring there is a clear progression in learning from year to year. By doing so, we meet the expectations of the National Curriculum. Reasoning is a focus each week so that we can enable our learners to apply their knowledge and understanding and become confident mathematicians.

We use the White Rose Schemes of work to support planning and provide pupils with a range of learning opportunities. Other resources such as the NCTEM and NRICH may be used to support and extend learning. In many cases, staff

work in year groups to create their weekly sequence of lessons, but it is expected that each member of staff differentiates their resources according to the needs of their class. Teaching sessions are planned on Active Inspire slides, showing clear learning objectives, success criteria, key vocabulary and key questions, which are referred to throughout the lesson.

Each pupil has a Times Tables Rockstar login to aid them with learning their tables. This programme can be accessed at home and helps the children to understand the related nature of times tables and division facts.

Recording work

In Y1-6, pupils have the opportunity to record their work in their books, following the success criteria detailed in the teacher modelling.

Work in books will be indicated with the short date and learning objective. This will be followed by the children's working out of mathematical problems. Sometimes photos will be used to show where children have worked practically or in groups.

Marking

All work will be marked following the school marking policy, with opportunities for misconceptions to be addressed and moving on comments to be given.

Assessment

Children are assessed continually throughout all lessons and staff will use this to inform day to day planning. We also utilise a cold task at the start of each new topic to assess prior learning and to inform teacher planning of the topic. At the end of the teaching block, a hot task is completed to monitor children's progress. The White Rose end-of-block assessments questions will be used to plan cold and hot tasks at the appropriate level.

At the end of each half term, the children will complete a formal assessment from White Rose Maths as part of 'Assessment Week'. This will be a review of the learning for the half term. Teachers will use these formal assessments, alongside work in books and their continued daily assessments to track the overall progress of pupils.

In the Summer term, both Year 2 and Year 6 sit the standard assessment tasks (SATs). These are marked internally in Year 2 and externally in Year 6.

Year 4 will sit the Multiplication Tables Check (MTC) in the Summer term which consists of 25 questions. Each child will sit this test online and will have 6 seconds to answer each question.

Inclusion

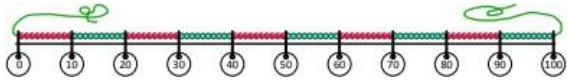
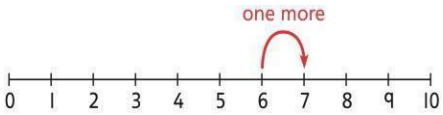
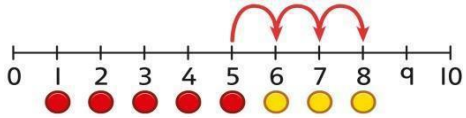
In line with the school's Equality Policy, each child will have an equal entitlement to all aspects of the Maths curriculum and to experience the full range of Maths activities. Therefore, in delivering Maths, care will be taken to ensure that a variety or learning styles are accessed and teaching methods adopted. Intervention groups will take place outside of Maths lessons to provide additional support to some pupils. These sessions may be delivered by the teacher or teaching assistant and may involve individual or small group work.

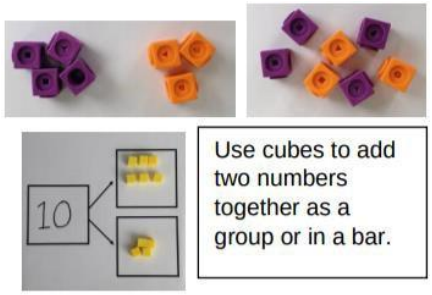
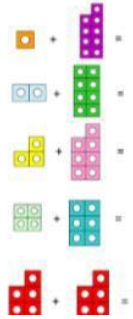
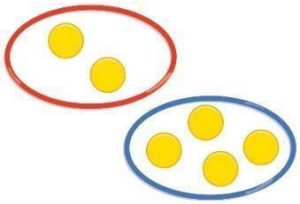
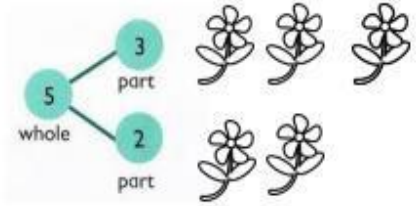
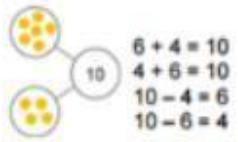
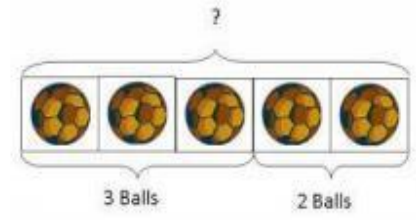
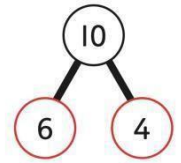
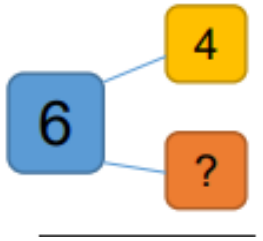
Progression in Calculations

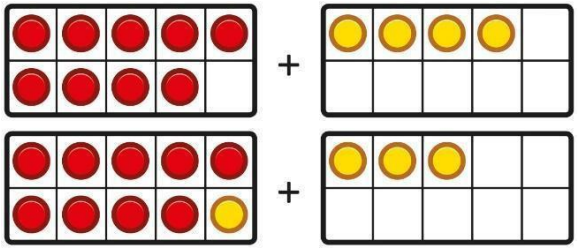
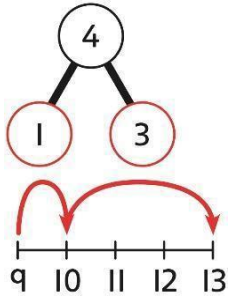
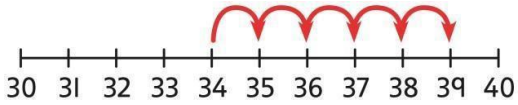
All classes across must follow the following progression in calculation.

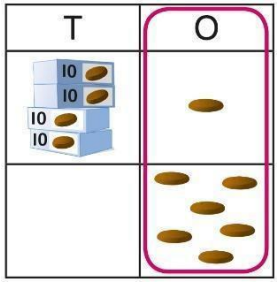
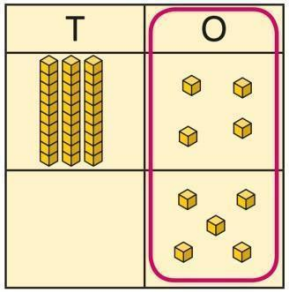
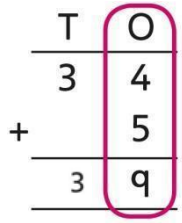
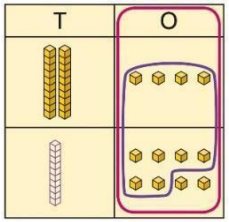
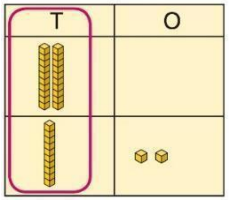
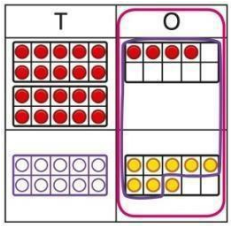
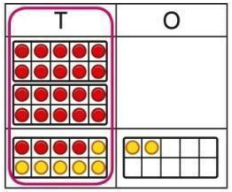
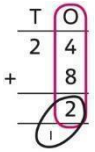
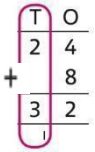
Children must work through the steps to be confident with more formal methods that are now introduced at key year groups in line with the New 2014 curriculum.

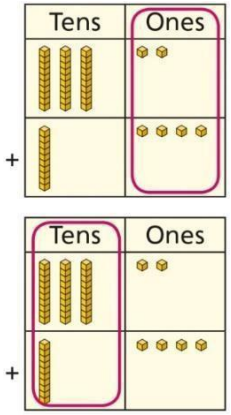
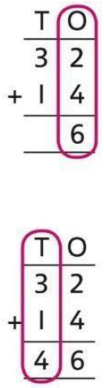
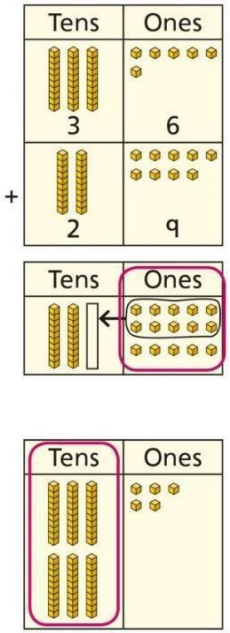
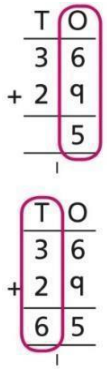
During the first stage of learning (concrete), students use concrete objects to model problems. Next is the pictorial stage, where visual representations of concrete objects are used to model problems. This stage encourages children to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem. Finally, the abstract stage, where children use symbols to model problems.

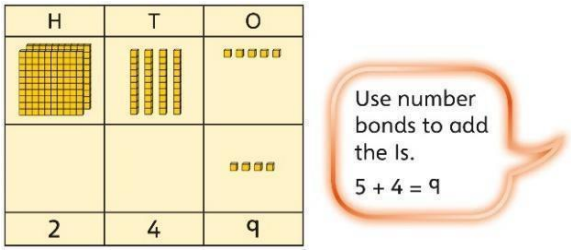
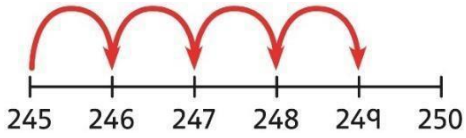
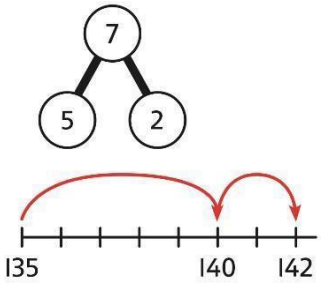
Addition			
Topic	**Concrete**	**Pictorial**	**Abstract**
Year 1 Addition **Counting on and adding more.**	Children add one more person or object to a group to find one more.  Count on in ones or tens using the bead string. Children add one more cube or counter to a group to represent one more.  *One more than 4 is 5.*	Use a number line to understand how to link counting on with finding one more.  *One more than 6 is 7.* *7 is one more than 6.* Learn to link counting on with adding more than one.  *5 + 3 = 8*	5 + 12 = 17 Place the larger number in your head and count on from the smaller number to find your answer.

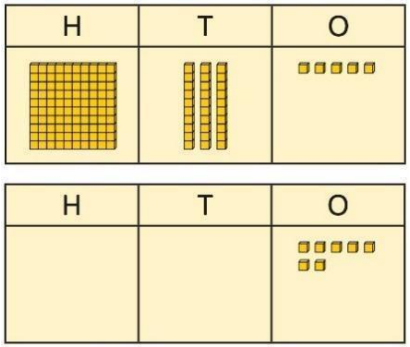
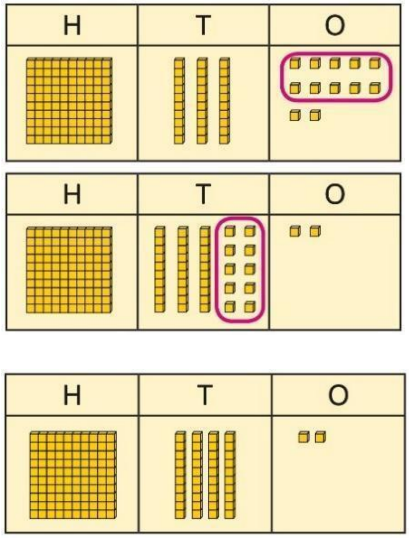
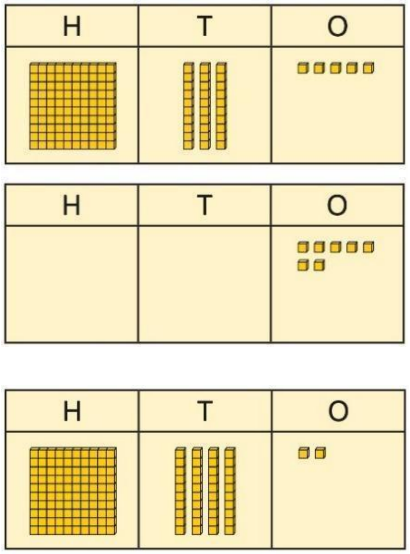
Using the part whole model.	Sort people and objects into parts and understand the relationship with the whole.  *The parts are 2 and 4. The whole is 6.*     	Children draw to represent the parts and understand the relationship with the whole.  *The parts are 2 and 4. The whole is 6.*    Use the part-part whole diagram as shown above to move onto more abstract problems. Use part, part whole model. Use picures to add two numbers together as a group or in a bar.  	Use a part-whole model to represent the numbers.  6 + 4 = 10 *6 + 4 = 10* □ = 4 + 2 4 + □ = 6 2 + □ + □ = 6 

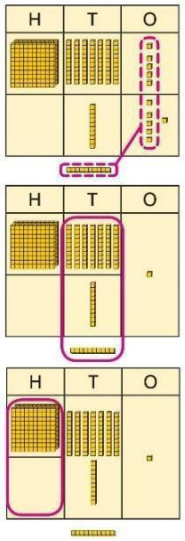
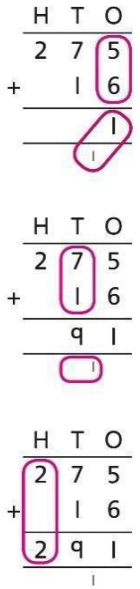
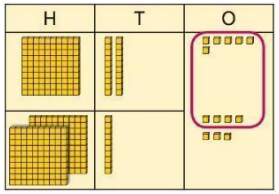
Bridging the 10 using number bonds	Children use a bead string to complete a 10 and understand how this relates to the addition.  *7 add 3 makes 10.* *So, 7 add 5 is 10 and 2 more.*	Children use counters to complete a ten frame and understand how they can add using knowledge of number bonds to 10. 9 + 4 = 13 So 9 + 1 = 10 and add 3 more.  .	Use a part-whole model and a number line to support the calculation.  *9 + 4 = 13*
Year 2 Addition			
Adding a 1-digit number to a 2-digit number not bridging a 10	Add the 1s to find the total. Use known bonds within 10.  *41 is 4 tens and 1 one.* *41 add 6 ones is 4 tens and 7 ones.* This can also be done in a place value grid.	Add the 1s.  *34 is 3 tens and 4 ones.* *4 ones and 5 ones are 9 ones.* *The total is 3 tens and 9 ones.*	Add the 1s. Understand the link between counting on and using known number facts. Children should be encouraged to use known number bonds to improve efficiency and accuracy.  This can be represented horizontally or vertically.

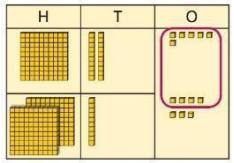
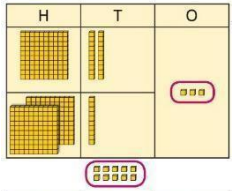
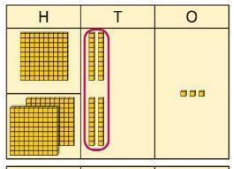
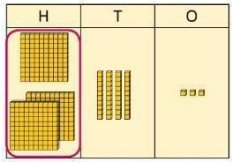
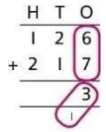
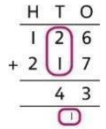
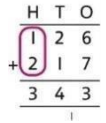
			*34 + 5 = 39* *or* 
Adding a 1-digit number to a 2-digit number using exchange	Exchange 10 ones for 1 ten.   24 + 8 = 32 First add the ones using counters and a place value grid. 4 + 8 = 12 Exchange ten ones for one ten.	Exchange 10 ones for 1 ten.  	Exchange 10 ones for 1 ten.  
Adding two 2-digit numbers using a place value grid	Add the 1s. Then add the 10s. Add the ones first. Add the tens.		Add the 1s. Then add the 10s.

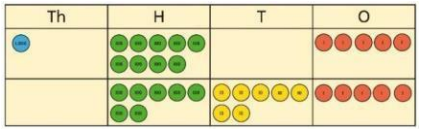
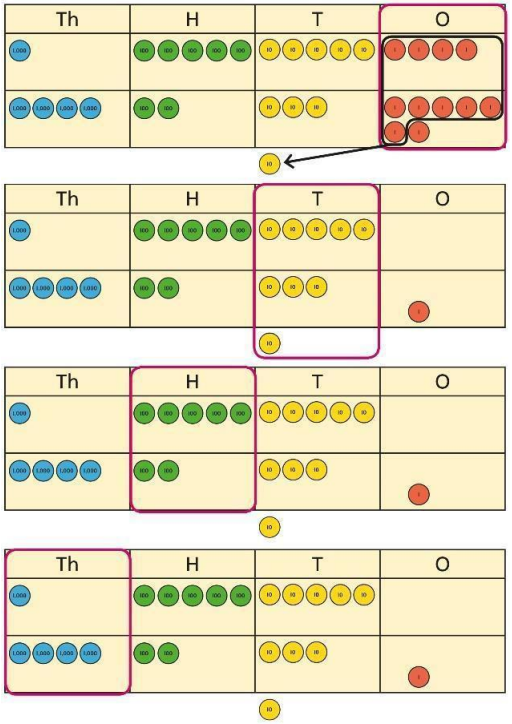
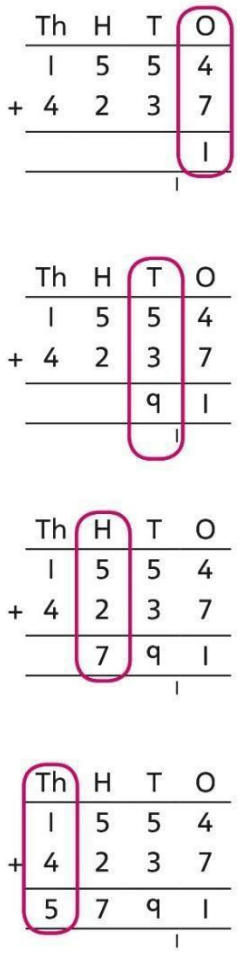
			
Adding two 2-digit numbers with exchange	Add the 1s. Exchange 10 ones for a ten. Then add the 10s.  36 + 29 = 65 6 + 9 = 15 Exchange ten ones for one ten and add to the tens column. Add the tens and ones.		Add the 1s. Exchange 10 ones for a ten. Then add the 10s. 

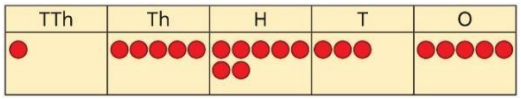
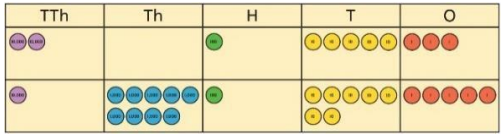
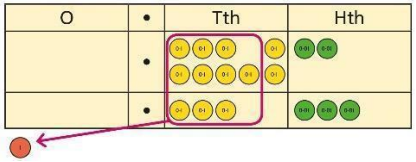
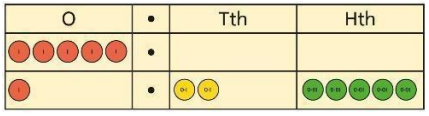
Year 3 Addition			
3-digit number + 1s, no exchange or bridging. **Moving to 3 digit number plus 10s no exchange and 3 digit number plus 100s no exchanging.**	Use number bonds to add the 1s.  *214 + 4 = ?* *Now there are 4 + 4 ones in total.* *4 + 4 = 8* *214 + 4 = 218* ***214 + 20 = ?*** ***214 + 100 = ?***	Use number bonds to add the 1s.  *245 + 4* *5 + 4 = 9* *245 + 4 = 249* ***Use knowledge of place value to add tens and hundreds where there is no exchanging.***	Understand the link with counting on. *245 + 4*  Use number bonds to add the 1s and understand that this is more efficient and less prone to error. *245 + 4 = ?* *I will add the 1s.* *5 + 4 = 9* *So, 245 + 4 = 249*
3-digit number + 1s with exchange. **Moving to 3 digit numbers plus 10s with exchanging.**	Understand that when the 1s sum to 10 or more, this requires an exchange of 10 ones for 1 ten. Children should explore this using objects or physical apparatus.	Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding. *135 + 7 = 142*	Understand how to bridge by partitioning to the 1s to make the next 10. 

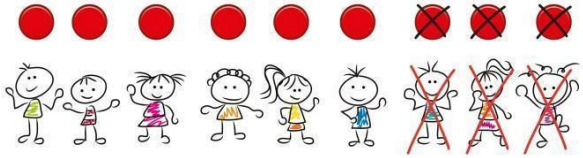
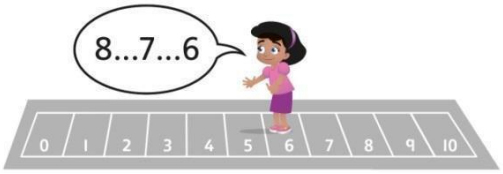
	 Add the ones. Move ten ones and exchange for for 1 ten. 		*135 + 7 = ?* *135 + 5 + 2 = 142* Ensure that children understand how to add 1s bridging a 100. *198 + 5 = ?* *198 + 2 + 3 = 203*
3-digit number + 2-digit	Use place value equipment to model addition and understand where exchange is required.	Represent the required exchange on a place value grid using equipment.	Use a column method with exchange. Children must understand how

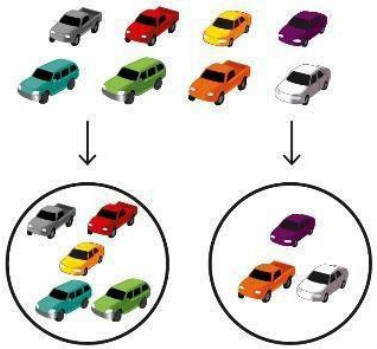
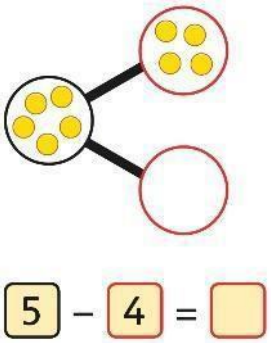
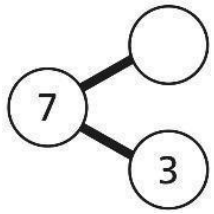
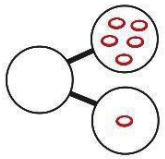
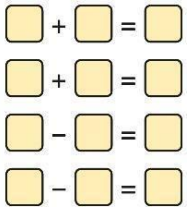
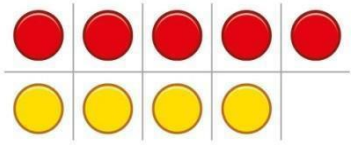
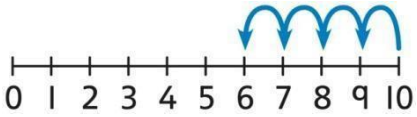
number, exchange required	*Use place value counters to represent 154 + 72.* *Use this to decide if any exchange is required.* *There are 5 tens and 7 tens. That is 12 tens so I will exchange.*	*275 + 16 = ?*  *275 + 16 = 291*	themethod relates to place value at each stage of the calculation.  *275 + 16 = 291*
Add 3 digit numbers and 3 digit numbers with and without exchanging.	Use place value equipment to enact the exchange required. 126 + 217 = 343  *There are 13 ones.* *I will exchange 10 ones for 1 ten.*	Model the stages of column addition using place value equipment on a place value grid.	Use column addition, ensuring understanding of place value at every stage of the calculation.

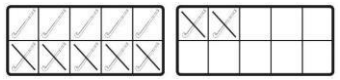
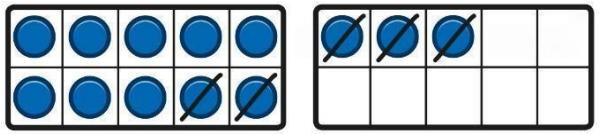
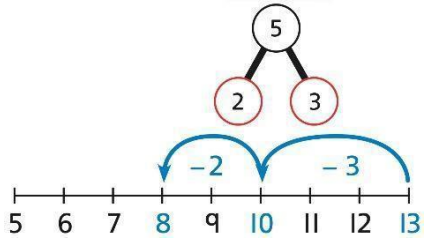
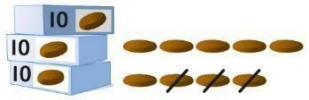
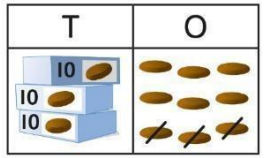
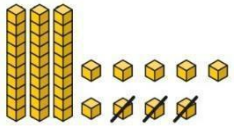
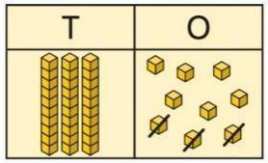
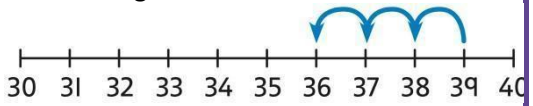
		    126 + 217 = 343	   *126 + 217 = 343* Children should also study examples where exchange is required in more than one column, for example *185 + 318 = ?*
Yearn 4 Addition			
Column addition with exchange	Use place value equipment on a place value grid to organise thinking. Ensure that children understand how the columns relate to place value and what to do if the numbers are not all 4-digit numbers. *Use equipment.to show 1,905 + 775.*	Use place value equipment to model required exchanges. 1554 + 4237 =	Use a column method to add, including exchanges.

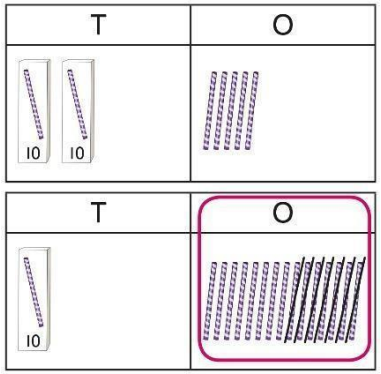
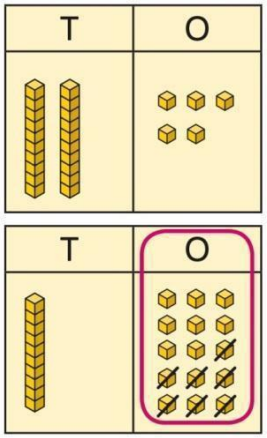
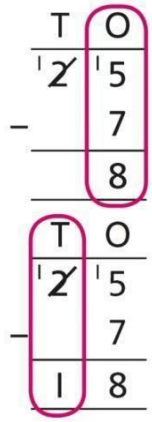
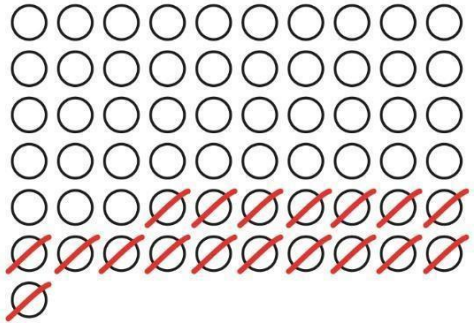
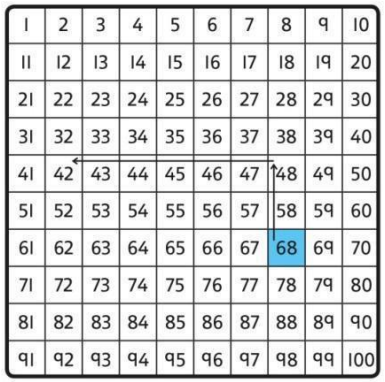
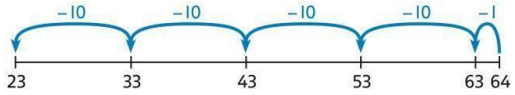
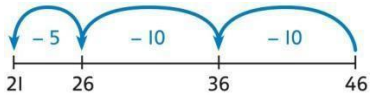
	 *Why have only three columns been used for the second row? Why is the Thousands box empty?* *Which columns will total 10 or more?*	 Include examples that exchange in more than one column.	 Include examples that exchange in more than one column.
Year 5 **Addition**			

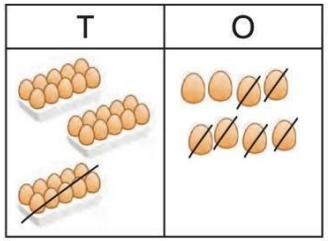
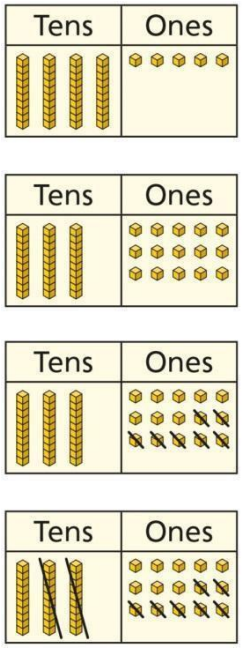
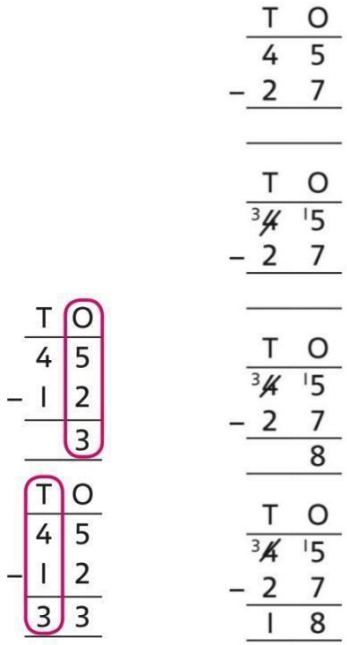
Column addition with whole numbers	Use place value equipment to represent additions. *Add a row of counters onto the place value grid to show 15,735 + 4,012.*  	Represent additions, using place value equipment on a place value grid alongside written methods.  *I need to exchange 10 tens for a 100.* TTh Th H T O 2 0 1 5 3 + 1 9 1 7 5 3 9 3 2 8	Use column addition, including exchanges. TTh Th H T O 1 9 1 7 5 + 1 8 4 1 7 3 7 5 9 2
Adding decimals using column addition	Use place value equipment to represent additions. *Show 0·23 + 0·45 using place value counters.*	Use place value equipment on a place value grid to represent additions. Represent exchange where necessary.  O · Tth Hth 0 · 9 2 + 0 · 3 3 1 · 2 5 Include examples where the numbers of decimal places are different.  O · Tth Hth 5 · 0 0 + 1 · 2 5 6 · 2 5	Add using a column method, ensuring that children understand the link with place value. O · Tth Hth 0 · 2 3 + 0 · 4 5 0 · 6 8 Include exchange where required, alongside an understanding of place value. O · Tth Hth 0 · 9 2 + 0 · 3 3 1 · 2 5 Include additions where the numbers of decimal places are different. *3.4 + 0.65 = ?*

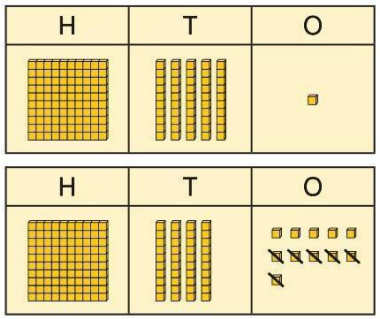
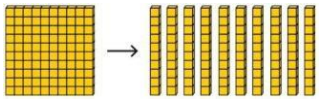
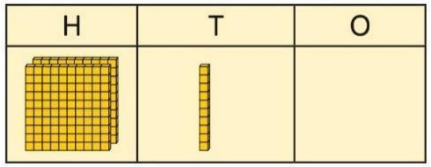
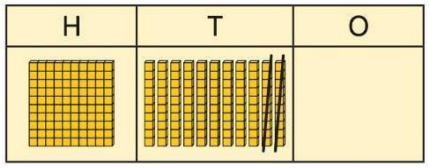
			O · Tth Hth 3 · 4 0 + 0 · 6 5 ·
Year 6 Addition Choose efficient methods for addition.			
Subtraction			
Year 1 Subtraction			
Counting back and taking away.	Children arrange objects and remove to find how many are left.  *1 less than 6 is 5.* *6 subtract 1 is 5.*	Children draw and cross out or use counters to represent objects from a problem.  9 – ☐ = ☐ There are ☐ children left.	Children count back to take away and use a number line or number track to support the method.  *9 – 3 = 6*
Finding a missing part, given a whole and a part	Children separate a whole into parts and understand how one part can be found by subtraction.	Children represent a whole and a part and understand how to find the missing part by subtraction.	Children use a part-whole model to support the subtraction to find a missing part.

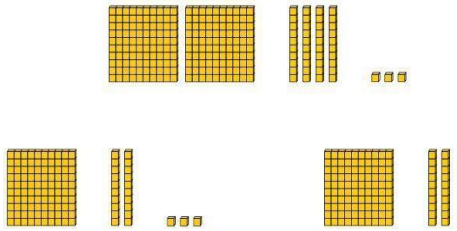
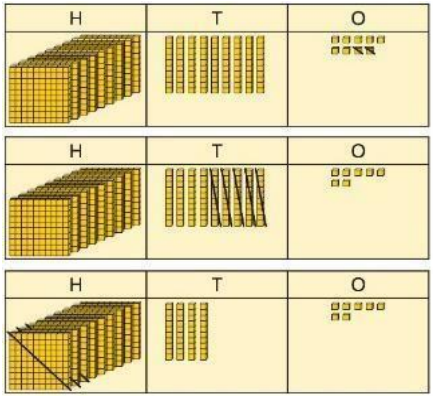
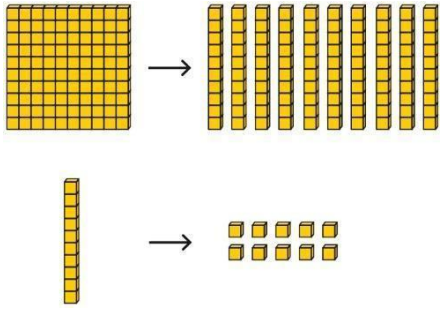
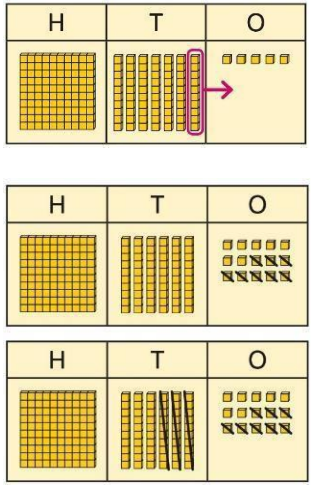
	 *8 – 5 = ?*	 5 – 4 = ☐	 *7 – 3 = ?* Children develop an understanding of the relationship between addition and subtraction facts in a part-whole model.  
Finding the difference	Arrange two groups so that the difference between the groups can be worked out.  *8 is 2 more than 6.* *6 is 2 less than 8.* *The difference between 8 and 6 is 2.*	Represent objects using sketches or counters to support finding the difference.  *5 – 4 = 1* *The difference between 5 and 4 is 1.*	Children understand 'find the difference' as subtraction.  *10 – 4 = 6* *The difference between 10 and 6 is 4.*
Subtraction bridging 10	For example: 12 – 7	Represent the use of bonds using ten frames.	Use a number line and a part-whole model to support the method.

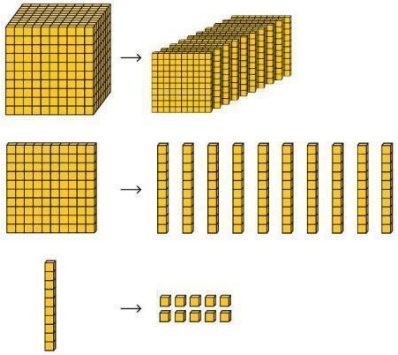
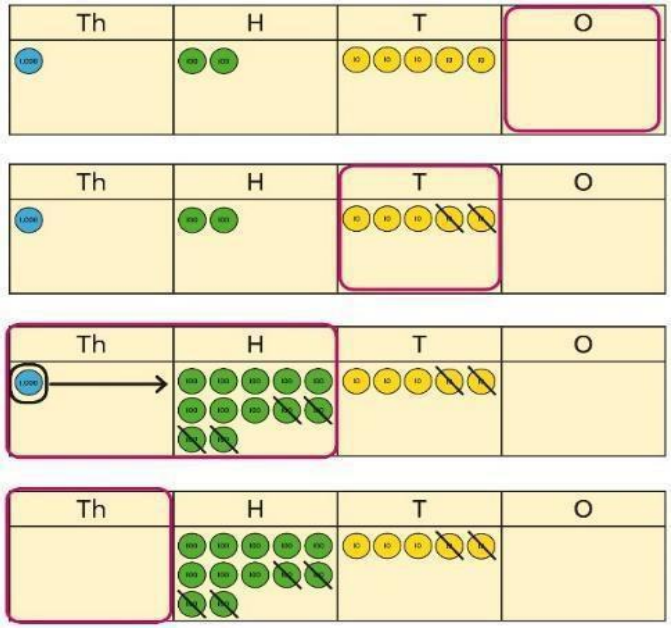
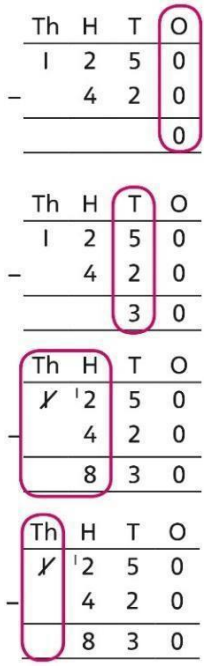
using number bonds	Arrange objects into a 10 and some 1s, then decide on how to split the 7 into parts.  *7 is 2 and 5, so I take away the 2 and then the 5.*	 *For 13 – 5, I take away 3 to make 10, then take away 2 to make 8.*	*13 – 5* 
Year 2 Subtraction			
Subtracting a single-digit number	Subtract the 1s. This may be done in or out of a place value grid.  	Subtract the 1s. This may be done in or out of a place value grid.  	Subtract the 1s. Understand the link between counting back and subtracting the 1s using known bonds.  T O 3 9 – 3 3 6 *9 – 3 = 6* *39 – 3 = 36*
Subtracting a single-digit number using exchange	Exchange 1 ten for 10 ones. This may be done in or out of a place value grid.	Exchange 1 ten for 10 ones.	Exchange 1 ten for 10 ones.

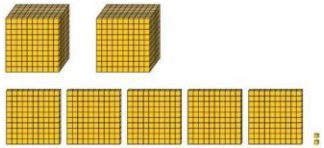
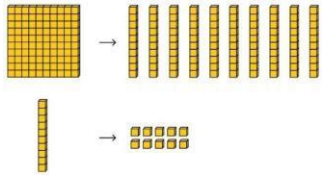
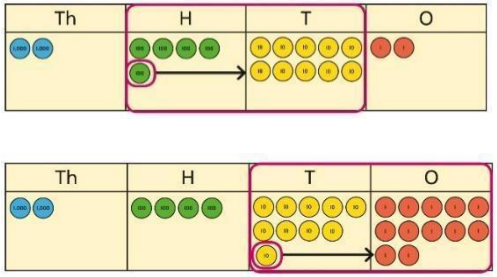
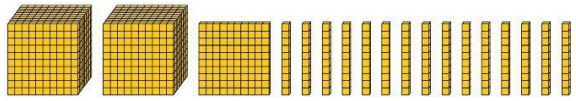
	 Children to move objects when they exchange.		 *25 – 7 = 18*
Subtracting a 2-digit number	Subtract by taking away.  *61 – 18* *I took away 1 ten and 8 ones.*	Subtract the 10s and the 1s. This can be represented on a 100 square.  Discuss efficient ways to subtract on a 100 square. 68-26 = 42	Subtract the 10s and the 1s. This can be represented on a number line.  *64 – 41 = ?* *64 – 1 = 63* *63 – 40 = 23* *64 – 41 = 23*  *46 – 20 = 26* *26 – 5 = 21*

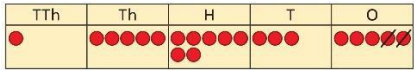
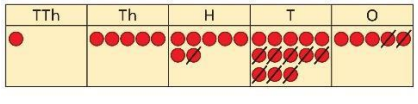
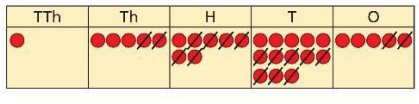
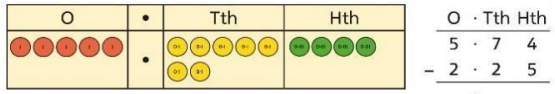
		Move up one row on the hundred square to subtract 10.	*46 − 25 = 21*
Subtracting a 2-digit number using place value and columns and exchanging	Subtract the 1s. Then subtract the 10s. This may be done in or out of a place value grid.  *38 − 16 = 22*	Subtract the 1s. Then subtract the 10s.  45- 27 Exchange one ten for ten ones. Subtract seven ones.	Using column subtraction, subtract the 1s. Then subtract the 10s. 
Year 3 Subtraction			
3-digit number – 1s without exchange moving to 3 digit number -	Understand why an exchange is necessary by exploring why 1 ten must be exchanged. Use place value equipment.	Represent the required exchange on a place value grid. *151 − 6 = ?*	Calculate mentally by using known bonds. *151 − 6 = ?* *151 − 1 − 5 = 145*

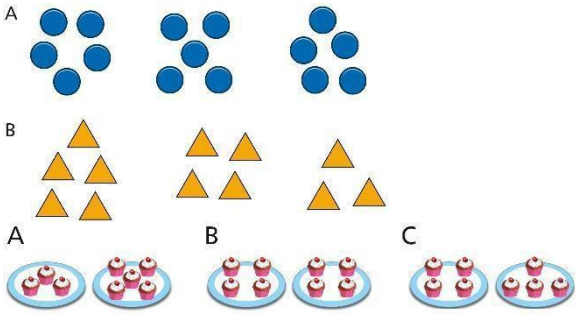
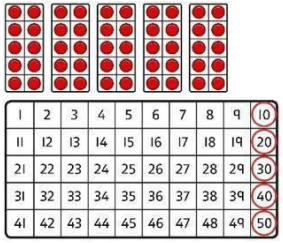
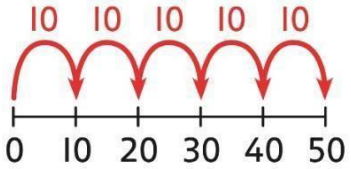
1s with exchange.			
3-digit number- 10s no exchanging first. **Then 3 digit numbers - 10s with exchanging.**	Use equipment to understand the exchange of 1 hundred for 10 tens. 	Represent the exchange on a place value grid using equipment. *210 − 20 = ?*  *I need to exchange 1 hundred for 10 tens, to help subtract 2 tens.*  *210 − 20 = 190*	Understand the link with counting back on a number line. 210-20=190

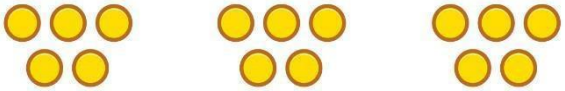
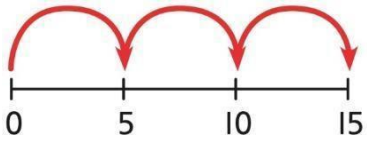
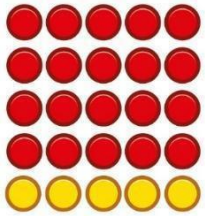
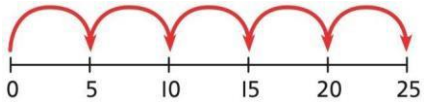
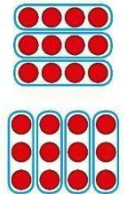
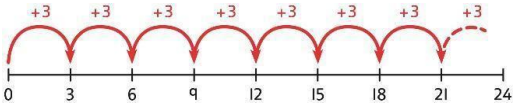
3-digit number – up to 3-digit number	Use place value equipment to explore the effect of splitting a whole into two parts, and understand the link with taking away. 	Represent the calculation on a place value grid. 999-352= 647 	Use column subtraction to calculate accurately and efficiently. H T O 9 9 9 – 3 5 2 7 H T O 9 9 9 – 3 5 2 4 7 H T O 9 9 9 – 3 5 2 6 4 7
3-digit number – up to 3-digit number, exchange required	Use equipment to enact the exchange of 1 hundred for 10 tens, and 1 ten for 10 ones. 	*Model the required exchange on a place value grid.* *175 – 38 = ?* *I need to subtract 8 ones, so I will exchange a ten for 10 ones.* 	Use column subtraction to work accurately and efficiently. H T O 1 6 15 – 3 8 1 3 7 175 – 38 = 137 If the subtraction is a 3-digit number subtract a 2-digit number, children should understand how the recording relates to the place value, and so how to line up the digits correctly. Children should also understand how to exchange in calculations where there is a zero in the 10s column.

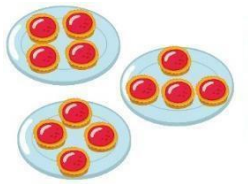
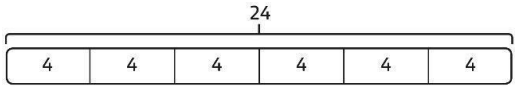
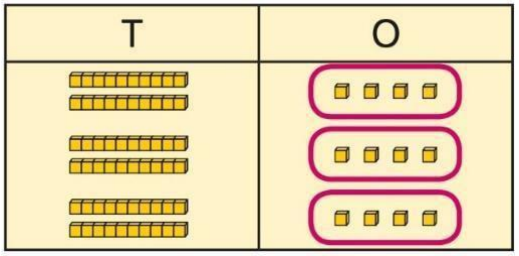
			
Year 4 Subtraction			
Column subtraction with exchange	Understand why exchange of a 1,000 for 100s, a 100 for 10s, or a 10 for 1s may be necessary. 	Represent place value equipment on a place value grid to subtract, including exchanges where needed.  1250- 420 = 830	Use column subtraction, with understanding of the place value of any exchange required. 

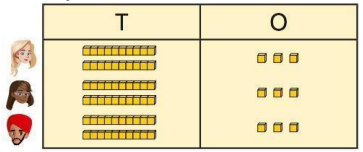
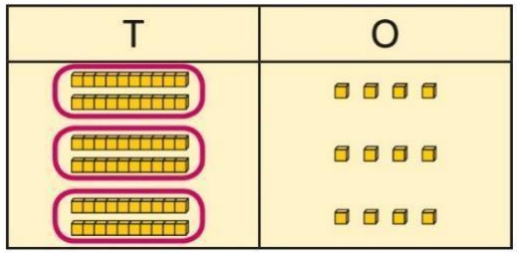
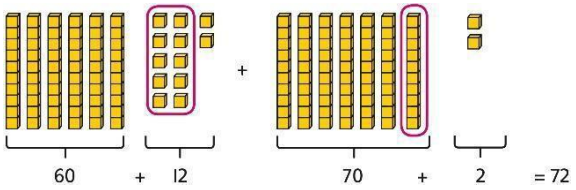
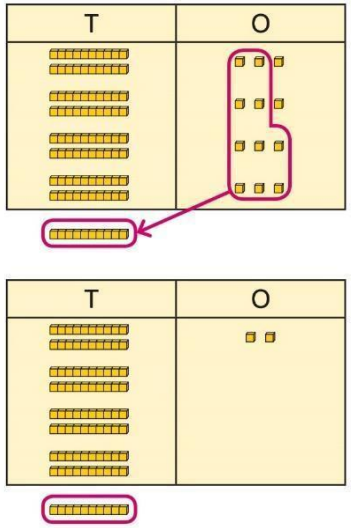
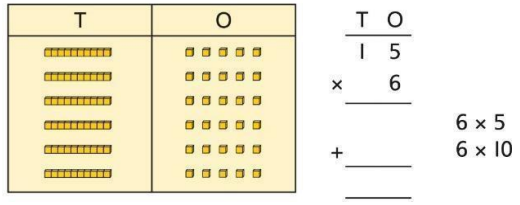
Column subtraction with exchange across more than one column	Understand why two exchanges may be necessary. *2,502 – 243 = ?*  *I need to exchange a 10 for some 1s, but there are not any 10s here.* 	Make exchanges across more than one column where there is a zero as a place holder. *2,502 – 243 = ?* 	Make exchanges across more than one column where there is a zero as a place holder. *2,502 – 243 = ?* Th H T O 2 4 ⁸ø ¹0 2 – 2 4 3 Th H T O 2 4 ⁸ø ⁹¹ø ¹2 – 2 4 3 Th H T O 2 4 ⁸ø ⁹¹ø ¹2 – 2 4 3 2 2 5 9
Year 5 Subtraction			
Column subtraction with whole numbers	Use place value equipment to understand where exchanges are required. *2,250 – 1,070* 	Represent the stages of the calculation using place value equipment on a grid alongside the calculation, including exchanges where required. *15,735 – 2,582 = 13,153*	Use column subtraction methods with exchange where required. TTh Th H T O ⁵ø ¹¹Z ¹0 9 7 – 1 8 5 3 4 4 3 5 6 3

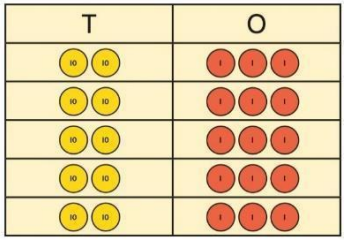
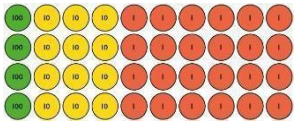
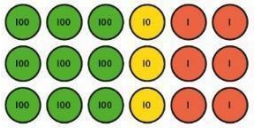
		 Now subtract the 10s. Exchange 1 hundred for 10 tens.  Subtract the 100s, 1,000s and 10,000s.  	*62,097 – 18,534 = 43,563*
Subtracting decimals	Explore complements to a whole number by working in the context of measures.  1 m – ☐ m = ☐ m *1 – 0·49 = ?*	Use a place value grid to represent the stages of column subtraction, including exchanges where required. *5·74 – 2·25 = ?*  Exchange 1 tenth for 10 hundredths.  Now subtract the 5 hundredths.  Now subtract the 2 tenths, then the 2 ones.  	Use column subtraction, with an understanding of place value, including subtracting numbers with different numbers of decimal places. *3·921 – 3·75 = ?* O · Tth Hth Thth 3 · 9 2 1 – 3 · 7 5 0 ·

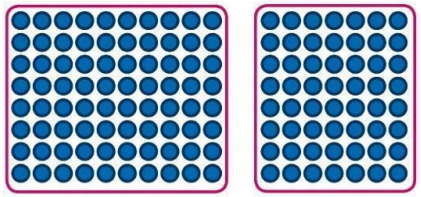
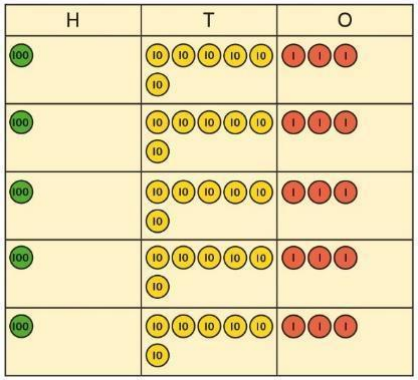
Multiplication			
Year 1 Multiplication			
Recognising and making equal groups	Children arrange objects in equal and unequal groups and understand how to recognise whether they are equal. 	Children draw and represent equal and unequal groups.	Describe equal groups using words. *Three equal groups of 4.* *Four equal groups of 3.*
Finding the total of equal groups by counting in 2s, 5s and 10s	 There are 5 pens in each pack … 5…10…15…20…25…30	100 squares and ten frames support counting in 2s, 5s and 10s. 	Use a number line to support repeated addition through counting in 2s, 5s and 10s. 
Year 2 Multiplication			

Use equal groups and repeated addition	Recognise equal groups and write as repeated addition and as multiplication.  *3 groups of 5 chairs* *15 chairs altogether*	Recognise equal groups using standard objects such as counters and write as repeated addition and multiplication.  *3 groups of 5.* *5 + 5 + 5 = 15* *15 in total*	Use a number line and write as repeated addition and as multiplication.  *5 + 5 + 5 = 15* *3 × 5 = 15*
Use arrays to represent multiplication and support understanding	Understand the relationship between arrays, multiplication and repeated addition.  *4 groups of 5*	Understand the relationship between arrays, multiplication and repeated addition.  *4 groups of 5 … 5 groups of 5*	Understand the relationship between arrays, multiplication and repeated addition.  *5 × 5 = 25*
Year 3 multiplication			
Understand equal grouping and repeated addition.	Children continue to build understanding of equal groups and the relationship with repeated addition. They recognise examples using concrete objects.	Children recognise that arrays demonstrate commutativity. 	Children understand the link between repeated addition and multiplication.  *8 groups of 3 is 24.*

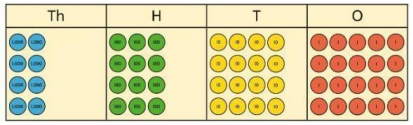
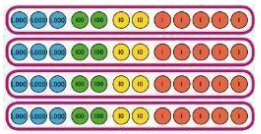
	 Children recognise that arrays can be used to model commutative multiplications.  *I can see 3 groups of 8.* *I can see 8 groups of 3.*	*This is 3 groups of 4.* *This is 4 groups of 3.*	*3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24* *8 × 3 = 24* A bar model may represent multiplications as equal groups.  *6 × 4 = 24*
Multiplying a 2-digit number by a 1-digit number	Understand how to link partitioning a 2-digit number with multiplying. *Each person has 23 flowers.* *Each person has 2 tens and 3 ones.*  *There are 3 groups of 2 tens.*	Use place value to support how partitioning is linked with multiplying by a 2-digit number. *3 × 24 = ?*  *3 × 4 = 12*	Use addition to complete multiplications of 2-digit numbers by a 1-digit number. *4 × 13 = ?* *4 × 3 = 12* *4 × 10 = 40* *12 + 40 = 52* *4 × 13 = 52*

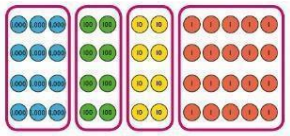
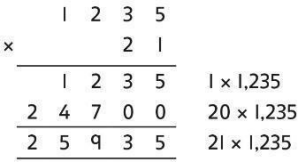
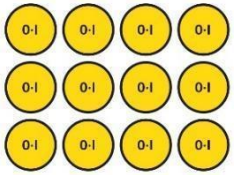
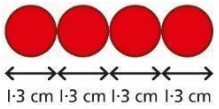
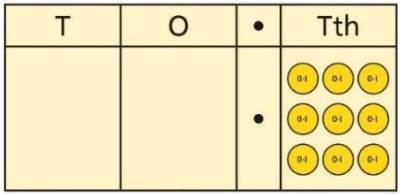
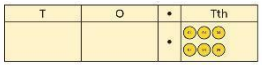
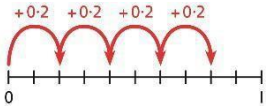
	There are 3 groups of 3 ones. Use place value equipment to model the multiplication context.  *There are 3 groups of 3 ones.* *There are 3 groups of 2 tens.*	 *3 × 20 = 60* *60 + 12 = 72* *3 × 24 = 72*	
Multiplying a 2-digit number by a 1-digit number, expanded column method	Use place value equipment to model how 10 ones are exchanged for a 10 in some multiplications. *3 × 24 = ?* *3 × 20 = 60* *3 × 4 = 12*  *3 × 24 = 60 + 12* *3 × 24 = 70 + 2* *3 × 24 = 72*	Understand that multiplications may require an exchange of 1s for 10s, and also 10s for 100s. *4 × 23 = ?*  	Children may write calculations in expanded column form, but must understand the link with place value and exchange. Children are encouraged to write the expanded parts of the calculation separately.  *5 × 28 = ?*

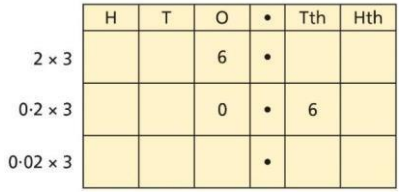
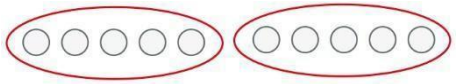
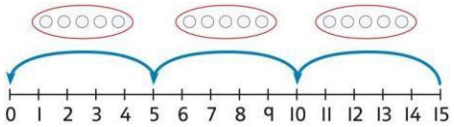
		4 × 23 = 92  *5 × 23 = ?* *5 × 3 = 15* *5 × 20 = 100* *5 × 23 = 115*	T O 2 8 × 5 4 0 5 × 8 1 0 0 5 × 20 1 4 0
Year 4 multiplication			
Column multiplication for 2- and 3-digit numbers multiplied by a single digit	Use place value equipment to make multiplications. *Make 4 × 136 using equipment.*  *I can work out how many 1s, 10s and 100s.* *There are 4 × 6 ones… 24 ones* *There are 4 × 3 tens … 12 tens* *There are 4 × 1 hundreds … 4 hundreds* *24 + 120 + 400 = 544*	Use place value equipment alongside a column method for multiplication of up to 3-digit numbers by a single digit.  3 1 2 × 3 9 3 6	Use the formal column method for up to 3-digit numbers multiplied by a single digit. 3 1 2 × 3 9 3 6 Understand how the expanded column method is related to the formal column method and understand how any exchanges are related to place value at each stage of the calculation.

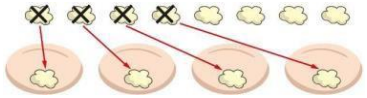
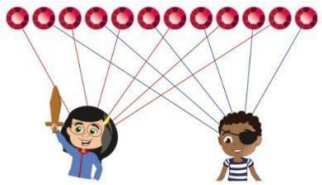
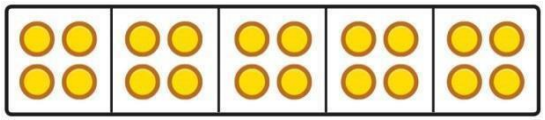
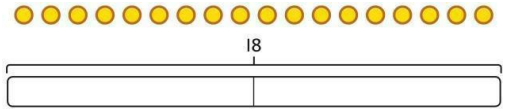
			2 3 × 5 1 5 1 0 0 1 1 5 2 3 × 5 1 1 5 1
Year 5 Multiplication			
Multiplying up to 4-digit numbers by a single digit	Explore how to use partitioning to multiply efficiently. *8 × 17 = ?*  8 × 10 = 80 8 × 7 = 56 80 + 56 = 136 *So, 8 × 17 = 136*	Represent multiplications using place value equipment and add the 1s, then 10s, then 100s, then 1,000s.  	Use a column multiplication, including any required exchanges. 1 3 6 × 6 8 1 6 2 3
Multiplying 2-digit numbers by 2-digit numbers	Partition one number into 10s and 1s, then add the parts. *23 × 15 = ?*	Use pictorial representations to multiply 1s,10s, 100s. *28 × 15 = ?* *28 × 15 = 420*	Use column multiplication, ensuring understanding of place value at each stage.

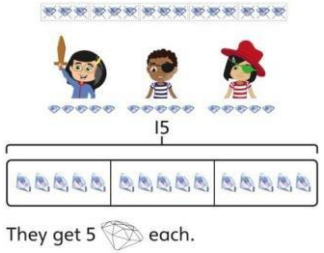
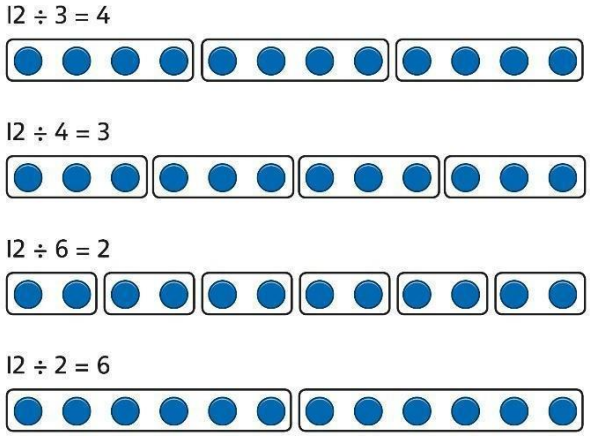
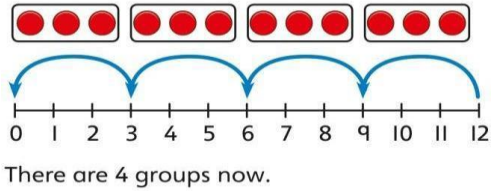
	 10 × 15 = 150  10 × 15 = 150  3 × 15 = 45 There are 345 bottles of milk in total. H T O 1 5 0 1 5 0 + 4 5 3 4 5 1 *23 × 15 = 345*		3 4 × 2 7 2 3 8 (2) 34 × 7 ——— 3 4 × 2 7 2 3 8 (2) 34 × 7 6 8 0 34 × 20 ——— 3 4 × 2 7 2 3 8 (2) 34 × 7 6 8 0 34 × 20 9 1 8 34 × 27 1
Multiplying up to 4-digits by 2-digits	Use place value counters.	*143 × 12 = 1,716*	Use column multiplication, ensuring understanding of place value at each stage. 1 4 3 × 1 2 2 8 6 143 × 2 1 4 3 0 143 × 10 1 7 1 6 143 × 12 1 Progress to include examples that require multiple exchanges as understanding, confidence and fluency build.

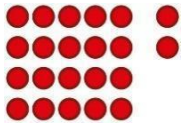
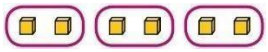
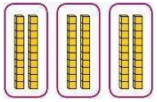
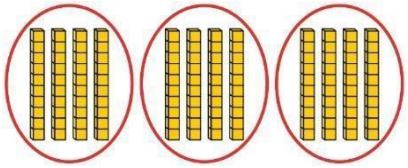
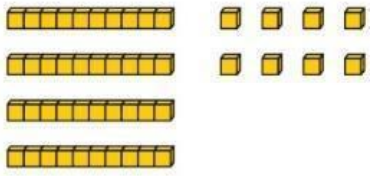
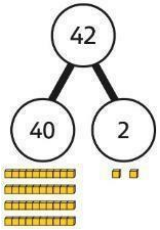
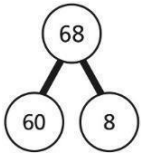
			1,274 × 32 = ? *First multiply 1,274 by 2.* 1 2 7 4 × 3 2 2 5 1 4 8 1,274 × 2 *Then multiply 1,274 by 30.* 1 2 7 4 × 3 2 2 5 1 4 8 1,274 × 2 3 8 2 1 2 0 1,274 × 30 *Finally, find the total.* 1 2 7 4 × 3 2 2 5 1 4 8 1,274 × 2 3 8 2 1 2 0 1,274 × 30 4 0 7 6 8 1,274 × 32 *1,274 × 32 = 40,768*
Multiplying up to a 4-digit number by a single digit number	Use equipment to explore multiplications.  *4 groups of 2,345* *This is a multiplication:*	Use place value equipment to compare methods. Method 1  3 2 2 5 3 2 2 5 3 2 2 5 + 3 2 2 5 1 2 9 0 0 1 1 2	Use column method for multiplication. Method 4 3 2 2 5 × 4 1 2 9 0 0 1 2

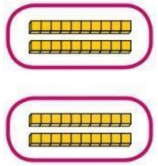
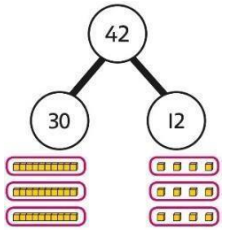
	4 × 2,345 *2,345 × 4*	Method 2  4 × 3,000 4 × 200 4 × 20 4 × 5 12,000 + 800 + 80 + 20 = 12,900	
Multiplying up to a 4-digit number by a 2-digit number	Use place value counters to multiply each part of the calculation.		Use compact column multiplication with understanding of place value at all stages.  1 2 3 5 × 2 1 1 2 3 5 1 × 1,235 2 4 7 0 0 20 × 1,235 2 5 9 3 5 21 × 1,235
Multiplying decimals	Explore decimal multiplications using place value equipment and in the context of measures.  *3 groups of 4 tenths is 12 tenths.* *4 groups of 3 tenths is 12 tenths.*  1·3 cm 1·3 cm 1·3 cm 1·3 cm *4 × 1 cm = 4 cm*	Represent calculations on a place value grid. 3 × 3 = 9 3 × 0·3 = 0·9  T O • Tth Understand the link between multiplying decimals and repeated addition.   +0·2 +0·2 +0·2 +0·2 0 1	Use known facts to multiply decimals. *4 × 3 = 12* *4 × 0·3 = 1·2* *4 × 0·03 = 0·12* *20 × 5 = 100* *20 × 0·5 = 10* *20 × 0·05 = 1* Find families of facts from a known multiplication. *I know that 18 × 4 = 72.* *This can help me work out:* *1·8 × 4 = ?*

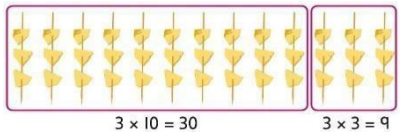
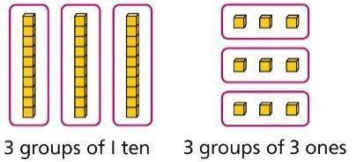
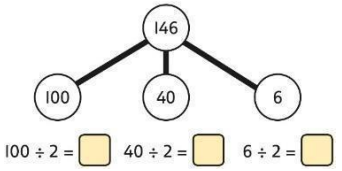
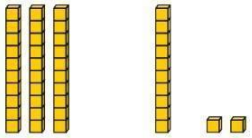
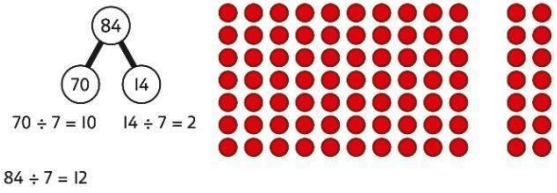
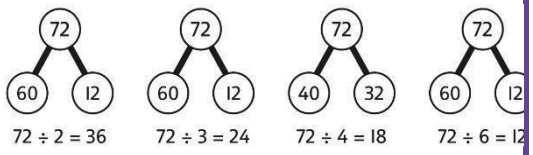
	4 × 0·3 cm = 1.2 cm *4 × 1·3 = 4 + 1·2 = 5·2 cm*		*18 × 0·4 = ?* *180 × 0·4 = ?* *18 × 0·04 = ?* Use a place value grid to understand the effects of multiplying decimals. 
Division			
Year 1 **Division**			
Grouping	Learn to make equal groups from a whole and find how many equal groups of a certain size can be made. Sort a whole set people and objects into equal groups.  *There are 10 children altogether.* *There are 2 in each group.* *There are 5 groups.*	Represent a whole and work out how many equal groups.  *There are 10 in total.* *There are 5 in each group.* *There are 2 groups.*	Children may relate this to counting back in steps of 2, 5 or 10. 

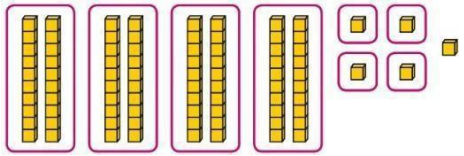
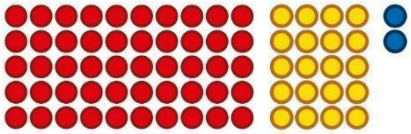
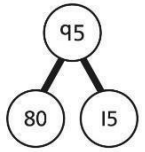
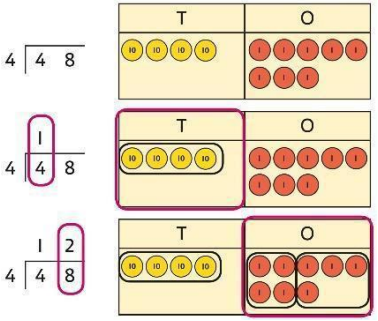
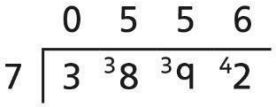
Sharing	Share a set of objects into equal parts and work out how many are in each part**.** 	Sketch or draw to represent sharing into equal parts. This may be related to fractions. 	*10 shared into 2 equal groups gives 5 in each group.*
Year 2 Division			
Sharing equally	Start with a whole and share into equal parts, one at a time.  *12 shared equally between 2.* *They get 6 each.* Start to understand how this also relates to grouping. To share equally between 3 people, take a group of 3 and give 1 to each person. Keep going until all the objects have been shared	Represent the objects shared into equal parts using a bar model.  *20 shared into 5 equal parts.* *There are 4 in each part.*	Use a bar model to support understanding of the division.  *18 ÷ 2 = 9*

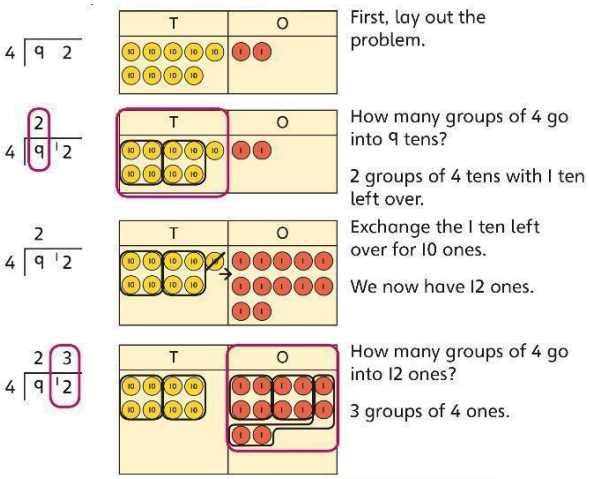
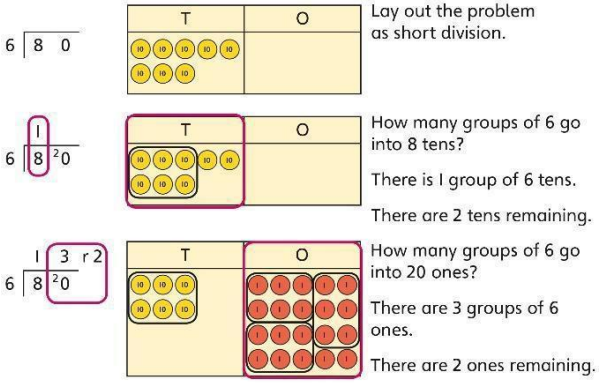
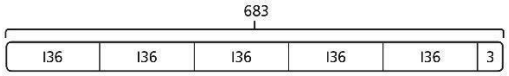
	 *15 shared equally between 3.* *They get 5 each.*		
Grouping equally	Understand how to make equal groups from a whole.  *8 divided into 4 equal groups.* *There are 2 in each group.*	Understand the relationship between grouping and the division statements. 	Understand how to relate division by grouping to repeated subtraction.  *12 divided into groups of 3.* *12 ÷ 3 = 4* *There are 4 groups.*
Year 3 Division-			
Understanding remainders	Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further.	Use images to explain remainders.	Understand that the remainder is what cannot be shared equally from a set.

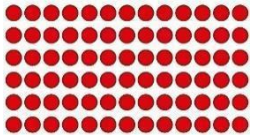
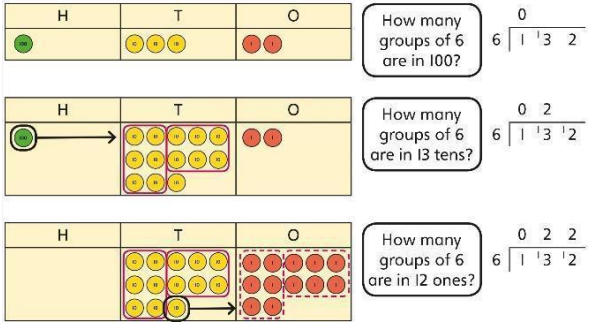
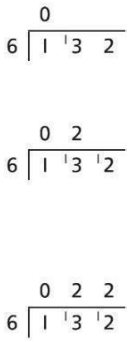
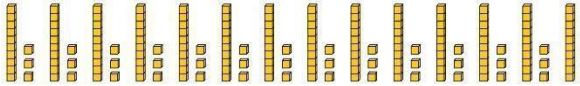
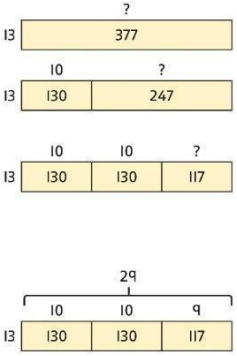
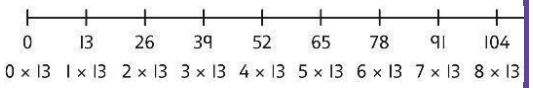
	 *There are 13 sticks in total.* *There are 3 groups of 4, with 1 remainder.*	 *22 ÷ 5 = 4 remainder 2*	*22 ÷ 5 = ?* *3 × 5 = 15* *4 × 5 = 20* *5 × 5 = 25 … this is larger than 22* *So, 22 ÷ 5 = 4 remainder 2*
Using known facts to divide multiples of 10	Use place value equipment to understand how to divide by unitising. *Make 6 ones divided by 3.*  *Now make 6 tens divided by 3.*  *What is the same? What is different?*	Divide multiples of 10 by unitising.  *12 tens shared into 3 equal groups.* *4 tens in each group.*	Divide multiples of 10 by a single digit using known times-tables. *180 ÷ 3 = ?* *180 is 18 tens.* *18 divided by 3 is 6.* *18 tens divided by 3 is 6 tens.* *18 ÷ 3 = 6* *180 ÷ 3 = 60*
2-digit number divided by 1-digit number, no remainders	Children explore dividing 2-digit numbers by using place value equipment.  *48 ÷ 2 = ?*	Children explore which partitions support particular divisions. 	Children partition a number into 10s and 1s to divide where appropriate.  *60 ÷ 2 = 30* *8 ÷ 2 = 4* *30 + 4 = 34* *68 ÷ 2 = 34*

	First divide the 10s.  *Then divide the 1s.* 	*I need to partition 42 differently to divide by 3.*  *42 = 30 + 12* *42 ÷ 3 = 14*	Children partition flexibly to divide where appropriate. *42 ÷ 3 = ?* *42 = 40 + 2* *I need to partition 42 differently to divide by 3.* *42 = 30 + 12* *30 ÷ 3 = 10* *12 ÷ 3 = 4* *10 + 4 = 14* *42 ÷ 3 = 14*
2-digit number divided by 1-digit number, with remainders	Use place value equipment to understand the concept of remainder. *Make 29 from place value equipment. Share it into 2 equal groups.*  *There are two groups of 14 and 1 remainder.*	Use place value equipment to understand the concept of remainder in division. *29 ÷ 2 = ?*  *29 ÷ 2 = 14 remainder 1*	Partition to divide, understanding the remainder in context. *67 children try to make 5 equal lines.* *67 = 50 + 17* *50 ÷ 5 = 10* *17 ÷ 5 = 3 remainder 2* *67 ÷ 5 = 13 remainder 2* *There are 13 children in each line and 2 children left out.*
Year 4 Division			

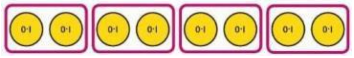
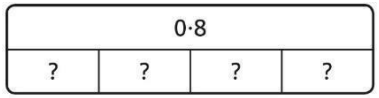
Dividing 2-digit and 3-digit numbers by a single digit by partitioning into 100s, 10s and 1s	Partition into 10s and 1s to divide where appropriate. *39 ÷ 3 = ?*  *39 = 30 + 9* *30 ÷ 3 = 10* *9 ÷ 3 = 3* *39 ÷ 3 = 13*	Partition into 100s, 10s and 1s using Base 10 equipment to divide where appropriate. *39 ÷ 3 = ?*  *39 = 30 + 9* *30 ÷ 3 = 10* *9 ÷ 3 = 3* *39 ÷ 3 = 13*	Partition into 100s, 10s and 1s using a part-whole model to divide where appropriate. *142 ÷ 2 = ?*  *100 ÷ 2 = 50* *40 ÷ 2 = 20* *6 ÷ 2 = 3* *50 + 20 + 3 = 73* *142 ÷ 2 = 73*
Dividing 2-digit and 3-digit numbers by a single digit, using flexible partitioning	Use place value equipment to explore why different partitions are needed. *42 ÷ 3 = ?* *I will split it into 30 and 12, so that I can divide by 3 more easily.* 	Represent how to partition flexibly where needed. *84 ÷ 7 = ?* *I will partition into 70 and 14 because I am dividing by 7.*  	Make decisions about appropriate partitioning based on the division required.  Understand that different partitions can be used to complete the same division.
Understanding remainders	Use place value equipment to find remainders.	Represent the remainder as the part that cannot be shared equally.	Understand how partitioning can reveal remainders of divisions.

	85 shared into 4 equal groups *There are 24, and 1 that cannot be shared.* 	 *72 ÷ 5 = 14 remainder 2*	 *80 ÷ 4 = 20* *12 ÷ 4 = 3* *95 ÷ 4 = 23 remainder 3*
Year 5 Division			
Dividing up to four digits by a single digit using short division	Explore grouping using place value equipment. *268 ÷ 2 = ?* *There is 1 group of 2 hundreds.* *There are 3 groups of 2 tens.* *There are 4 groups of 2 ones.* *264 ÷ 2 = 134*	Use place value equipment on a place value grid alongside short division. The model uses grouping. A sharing model can also be used, although the model would need adapting.  Lay out the problem as a short division. *There is 1 group of 4 in 4 tens.*	Use short division for up to 4-digit numbers divided by a single digit.  *3,892 ÷ 7 = 556* Use multiplication to check. *556 × 7 = ?* *6 × 7 = 42* *50 × 7 = 350* *500 × 7 = 3500* *3,500 + 350 + 42 = 3,892*

		There are 2 groups of 4 in 8 ones. Work with divisions that require exchange. 	
Understanding remainders	Understand remainders using concrete versions of a problem. *80 cakes divided into trays of 6.*  *80 cakes in total. They make 13 groups of 6, with 2 remaining.*	Use short division and understand remainders as the last remaining 1s. 	In problem solving contexts, represent divisions including remainders with a bar model.  *683 = 136 × 5 + 3* *683 ÷ 5 = 136 r 3*

Dividing by a single digit	Use equipment to make groups from a total.  *There are 78 in total.* *There are 6 groups of 13.* *There are 13 groups of 6.*		Use short division to divide by a single digit. 
Dividing by a 2-digit number using long division	Use equipment to build numbers from groups.  *182 divided into groups of 13.* *There are 14 groups.*	Use an area model alongside written division to model the process. *377 ÷ 13 = ?*  *377 ÷ 13 = 29*	Use long division where factors are not useful (for example, when dividing by a 2-digit prime number). Write the required multiples to support the division process. *377 ÷ 13 = ?* 

			13 | 3 7 7 − 1 3 0 10 2 4 7 − 1 3 0 10 1 1 7 − 1 1 7 9 0 29 *377 ÷ 13 = 29* A slightly different layout may be used, with the division completed above rather than at the side. 3 21 | 7 9 8 − 6 3 0 1 6 8 3 8 21 | 7 9 8 − 6 3 0 1 6 8 − 1 6 8 0 Divisions with a remainder explored in problem-solving contexts.
Dividing decimals	Use place value equipment to explore division of decimals.	Use a bar model to represent divisions.	Use short division to divide decimals with up to 2 decimal places.

	 *8 tenths divided into 4 groups. 2 tenths in each group.*	 $4 \times 2 = 8$ $\quad 8 \div 4 = 2$ So, $4 \times 0{\cdot}2 = 0{\cdot}8$ $\quad 0{\cdot}8 \div 4 = 0{\cdot}2$	$8 \overline{)4 \cdot 24}$ $8 \overline{)4 \cdot {}^{4}2\ 4}$ (0 ·) $8 \overline{)4 \cdot {}^{4}2\ {}^{2}4}$ (0 · 5) $8 \overline{)4 \cdot {}^{4}2\ {}^{2}4}$ (0 · 5 3)
Year 6 Division **Choose efficient methods.**			