Maths Calculation Policy

Regis Manor Primary School

KEY STAGE 1

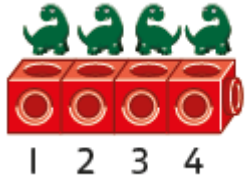
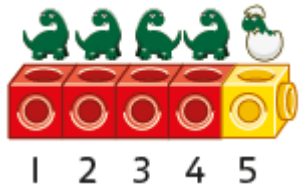
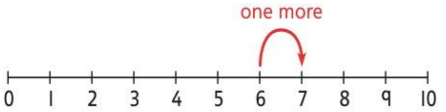
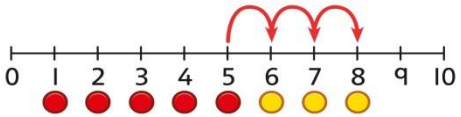
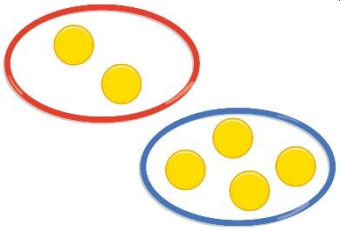
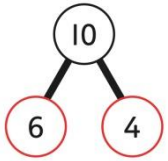
Children develop the core ideas that underpin all calculation. They begin by connecting calculation with counting on and counting back, but they should learn that understanding wholes and parts will enable them to calculate efficiently and accurately, and with greater flexibility. They learn how to use an understanding of 10s and 1s to develop their calculation strategies, especially in addition and subtraction.

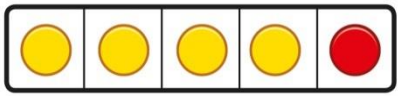
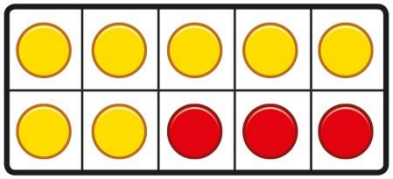
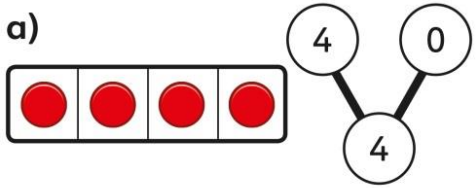
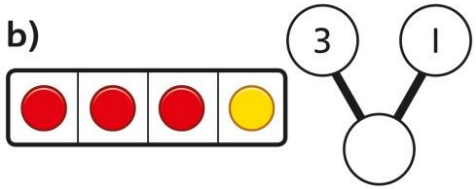
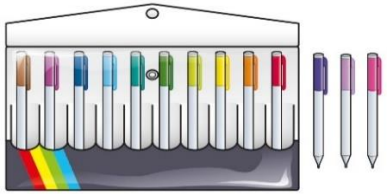
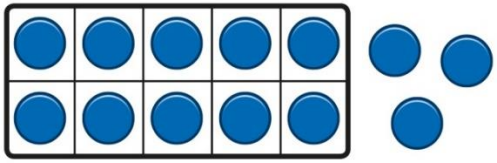
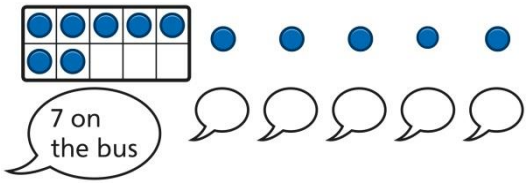
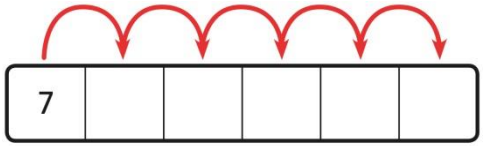
LOWER KEY STAGE 2

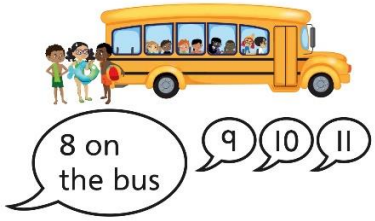
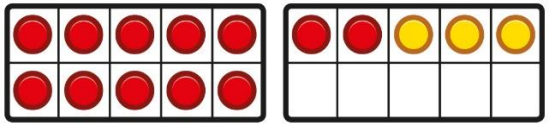
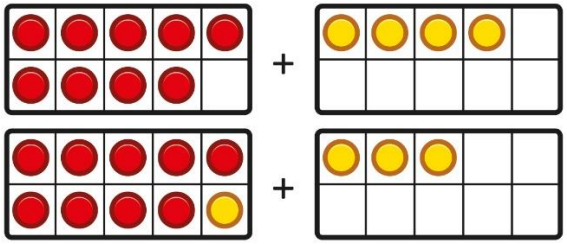
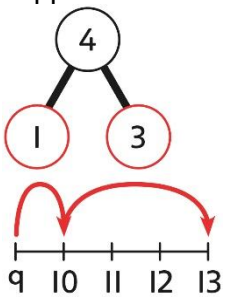
In Years 3 and 4, children develop the basis of written methods by building their skills alongside a deep understanding of place value. They should use known addition/subtraction and multiplication/division facts to calculate efficiently and accurately, rather than relying on counting. Children use place value equipment to support their understanding, but not as a substitute for thinking.

UPPER KEY STAGE 2

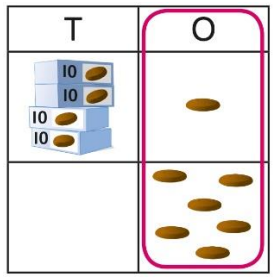
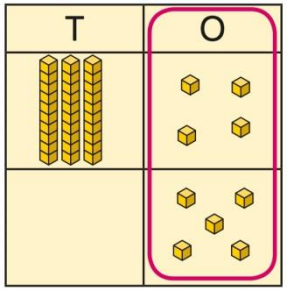
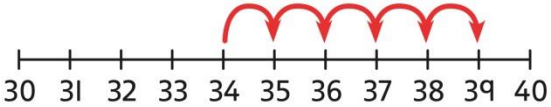
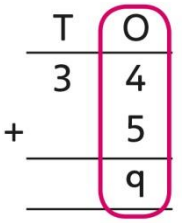
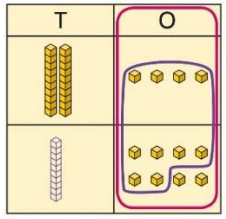
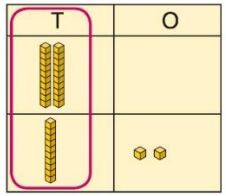
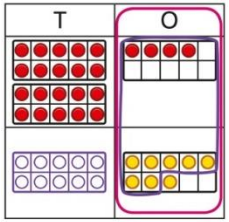
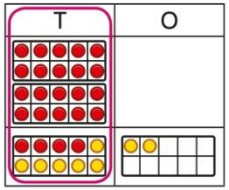
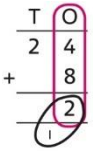
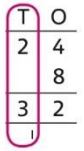
In upper Key Stage 2, children build on secure foundations in calculation, and develop fluency, accuracy and flexibility in their approach to the four operations. They work with whole numbers and adapt their skills to work with decimals, and they continue to develop their ability to select appropriate, accurate and efficient operations.

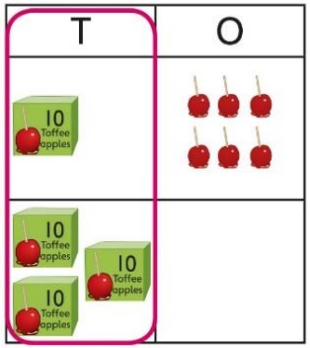
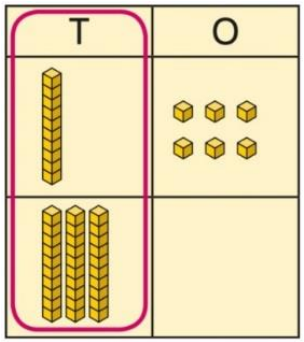
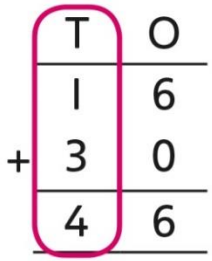
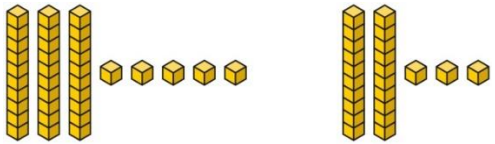
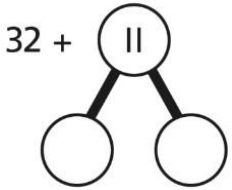
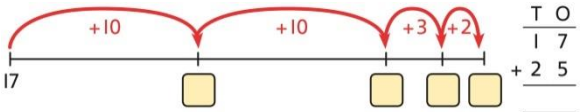
Year 1 Addition			
	Concrete	**Pictorial**	**Abstract**
Counting and adding more	Children add one more person, object or other suitable resources to a group to find one more.   	Children add one more cube or counter to a group to represent one more.  *One more than 4 is 5.*	**Counting and adding more** 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*
Understanding part-part-whole relationship	Sort people, objects or manipulatives 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 1 and 5. The whole is 6.*	Use a part-whole model to represent the numbers.   *6 + 4 = 10*
Knowing and finding number bonds within 10	Break apart a group and put back together to find and form number bonds using manipulatives.	Use five and ten frames to represent key number bonds.	Use a part-whole model alongside other representations to find number bonds. Make

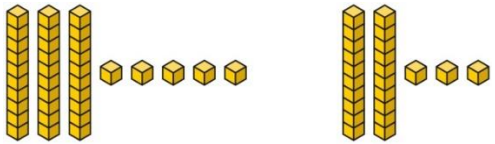
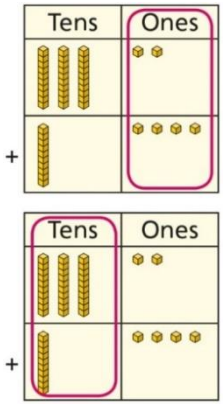
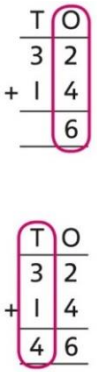
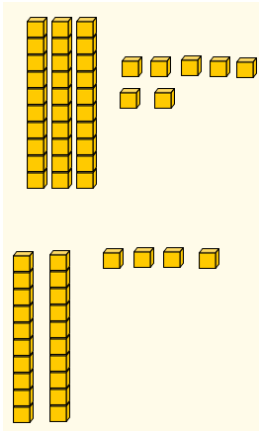
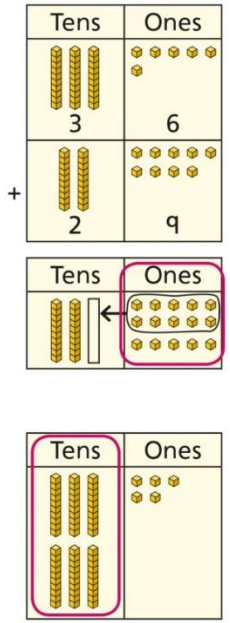
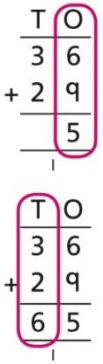
	 *3 + 4 = 7*  *6 = 2 + 4*	 *5 = 4 + 1*  *10 = 7 + 3*	sure to include examples where one of the parts is zero. a)  b)  *4 + 0 = 4* *3 + 1 = 4*
Understanding teen numbers as a complete 10 and some more	Complete a group of 10 objects or manipulaties and count more.  *13 is 10 and 3 more.*	Use a ten frame to support understanding of a complete 10 for teen numbers.  *13 is 10 and 3 more.*	*1 ten and 3 ones equal 13.* *10 + 3 = 13*
Adding by counting on	Children use knowledge of counting to 20 to find a total by counting on using people, objects or manipulatives.	Children use counters or appropriate manipulative to support and represent their counting on strategy.  	Children use number lines or number tracks to support their counting on strategy.  7 + 5 = ☐

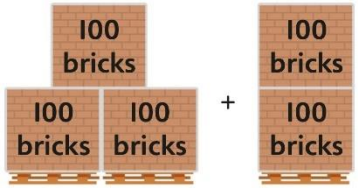
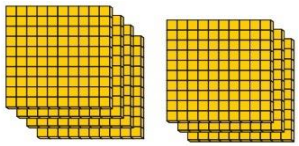
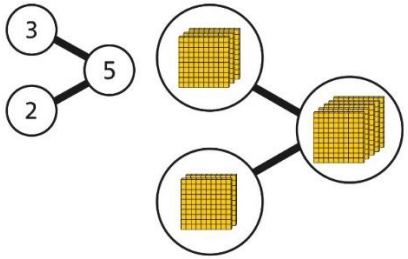
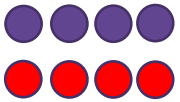
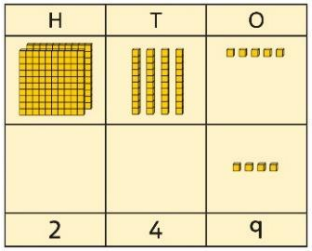
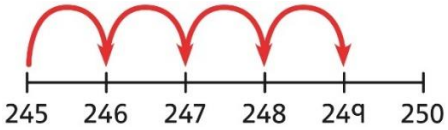
			
Adding the 1s	Children use bead strings to recognise how to add the 1s to find the total efficiently.  *2 + 3 = 5* *12 + 3 = 15*	Children represent calculations using ten frames to add a teen and 1s.  *2 + 3 = 5* *12 + 3 = 15*	Children recognise that a teen is made from a 10 and some 1s and use their knowledge of addition within 10 to work efficiently. *3 + 5 = 8* *So, 13 + 5 = 18*
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. 	Use a part-whole model and a number line to support the calculation.  *9 + 4 = 13*

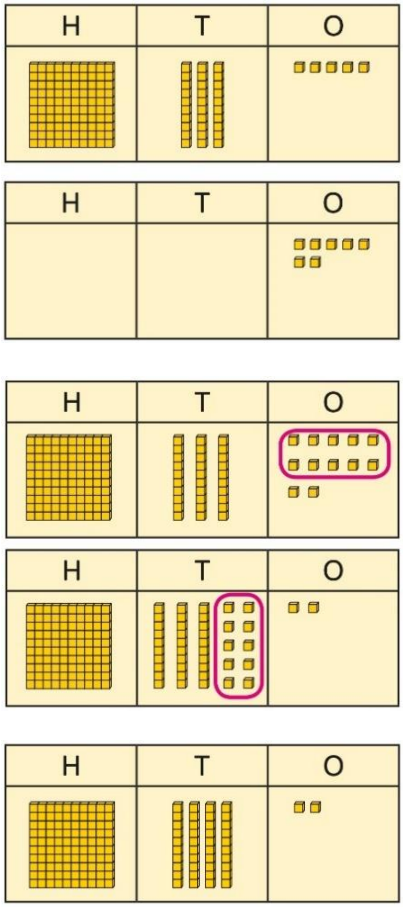
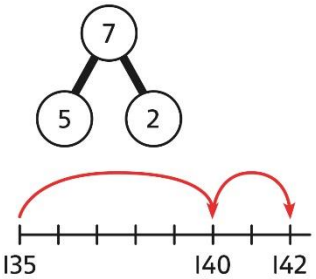
Year 2 Addition

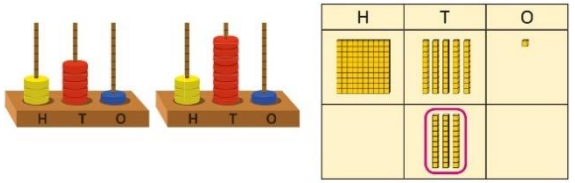
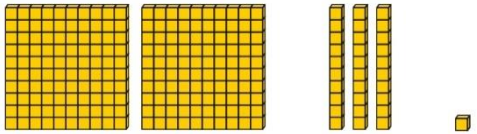
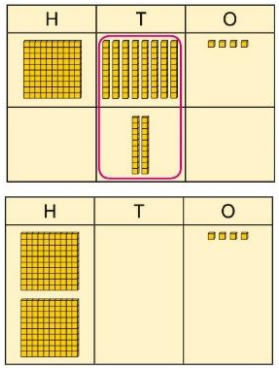
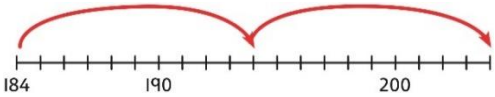
Year 2 Addition		Concrete	Pictorial	Abstract
	Adding a 1-digit number to a 2-digit number not bridging a 10	Add the 1s to find the total. Use known bonds within 10.  *41 is 4 tens and 1 one.* *41 add 6 ones is 4 tens and 7 ones.* This can also be done in a place value grid.  	Add the 1s.  *34 is 3 tens 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.  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.   	Exchange 10 ones for 1 ten.   	Exchange 10 ones for 1 ten.  

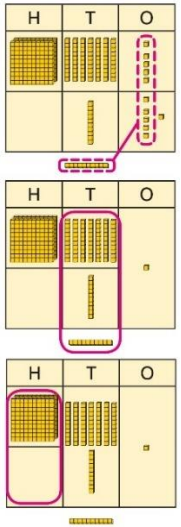
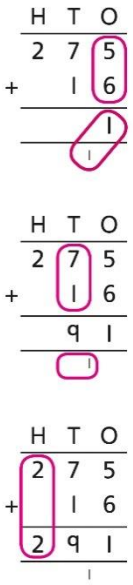
	Adding a multiple of 10 to a 2-digit number using columns	Add the 10s using a place value grid to support.  *16 is 1 ten and 6 ones.* *30 is 3 tens.* *There are 4 tens and 6 ones in total.*	Add the 10s using a place value grid to support.  *16 is 1 ten and 6 ones.* *30 is 3 tens.* *There are 4 tens and 6 ones in total.*	Add the 10s represented vertically. Children must understand how the method relates to unitising of 10s and place value.  *1 + 3 = 4* *1 ten + 3 tens = 4 tens* *16 + 30 = 46*
	Adding two 2-digit numbers	Add the 10s and 1s separately.  *5 + 3 = 8* *There are 8 ones in total.* *3 + 2 = 5* *There are 5 tens in total.* *35 + 23 = 58*	Add the 10s and 1s separately. Use a part-whole model to support.  *11 = 10 + 1* *32 + 10 = 42* *42 + 1 = 43* *32 + 11 = 43*	Add the 10s and the 1s separately, bridging 10s where required. A number line can support the calculations.  *17 + 25*

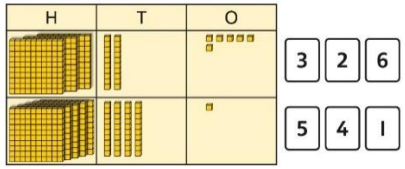
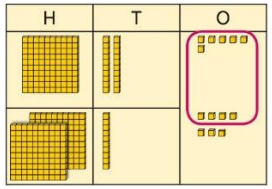
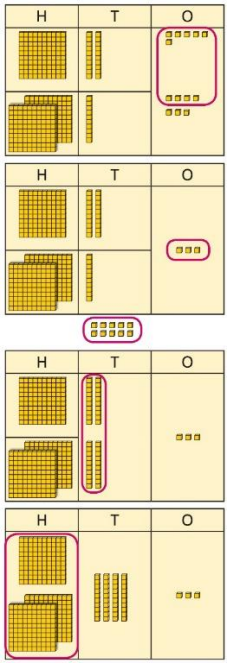
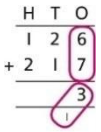
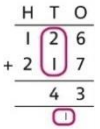
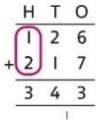
	Adding two 2-digit numbers using a place value grid	Add the 10s and 1s separately.  *5 + 3 = 8* *There are 8 ones in total.* *3 + 2 = 5* *There are 5 tens in total.* *35 + 23 = 58*	Add the 1s. Then add the 10s.  	Add the 1s. Then add the 10s. 
	Adding two 2-digit numbers with exchange	 Add the ones, exchange 10 ones for a ten. Then add the tens.	Add the 1s. Exchange 10 ones for a ten. Then add the 10s.  	Add the 1s. Exchange 10 ones for a ten. Then add the 10s. 

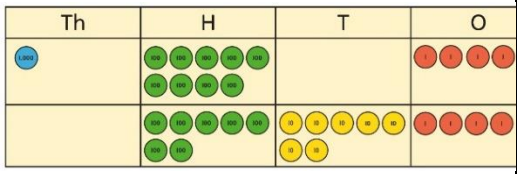
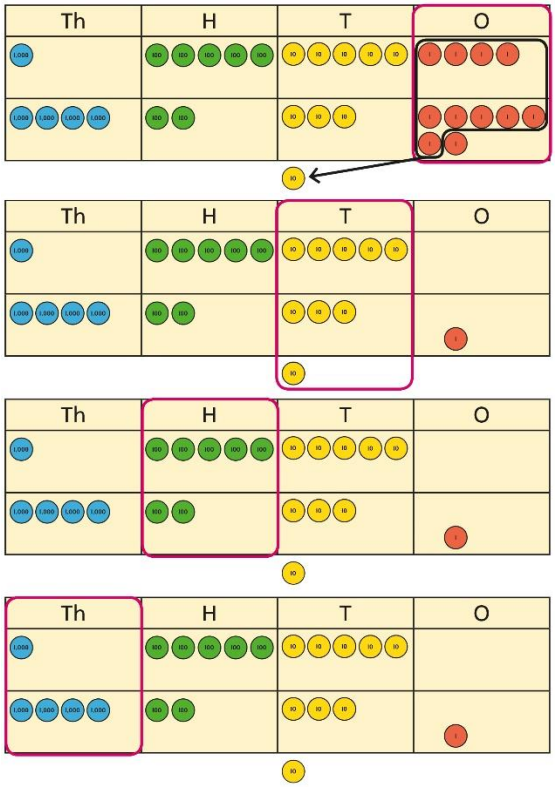
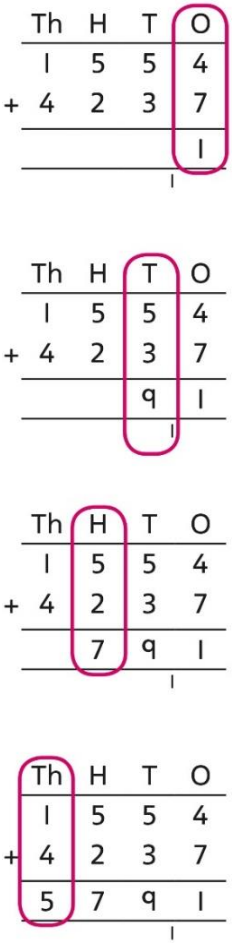
Year 3 Addition			
	Concrete	**Pictorial**	**Abstract**
Adding 100s	Use known facts and unitising to add multiples of 100 using a range of suitable resources.  *3 + 2 = 5* *3 hundreds + 2 hundreds = 5 hundreds* *300 + 200 = 500*	Use known facts and unitising to add multiples of 100.  *3 + 4 = 7* *3 hundreds + 4 hundreds = 7 hundreds* *300 + 400 = 700*	Use known facts and unitising to add multiples of 100. Represent the addition on a number line. Use a part-whole model to support unitising.  *3 + 2 = 5* *300 + 200 = 500*
3-digit number + 1s, no exchange or bridging	Use number bonds to add the 1s using a range of suitable resources to support.  *214 + 4 = ?* *Now there are 4 + 4 ones in total.* *4 + 4 = 8* *214 + 4 = 218*	Use number bonds to add the 1s.  *245 + 4* *5 + 4 = 9* *245 + 4 = 249*	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*

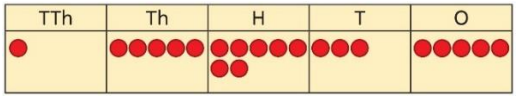
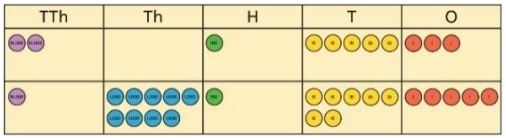
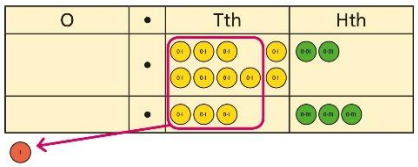
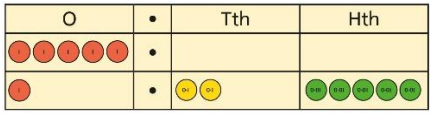
	3-digit number + 1s with exchange	Understand that when the 1s sum to 10 or more, this requires an exchange of 10 ones for 1 ten. Children should explore this using unitised objects or physical apparatus.	Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding.  *135 + 7 = 142*	Understand how to bridge by partitioning to the 1s to make the next 10.  *135 + 7 = ?* *135 + 5 + 2 = 142* Ensure that children understand how to add 1s bridging a 100. *198 + 5 = ?* *198 + 2 + 3 = 203*

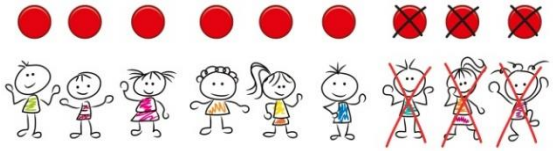
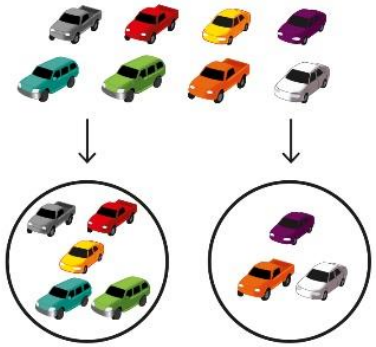
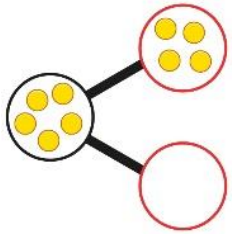
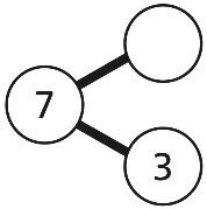
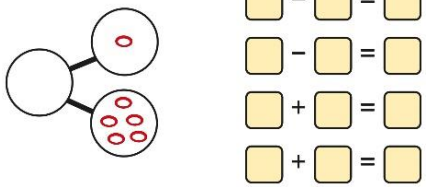
	3-digit number + 10s, no exchange	Calculate mentally by forming the number bond for the 10s.  *234 + 50* *There are 3 tens and 5 tens altogether.* *3 + 5 = 8* *In total there are 8 tens.* *234 + 50 = 284*	Calculate mentally by forming the number bond for the 10s. *351 + 30 = ?*  *5 tens + 3 tens = 8 tens* *351 + 30 = 381*	Calculate mentally by forming the number bond for the 10s. *753 + 40* *I know that 5 + 4 = 9* *So, 50 + 40 = 90* *753 + 40 = 793*
	3-digit number + 10s, with exchange	Understand the exchange of 10 tens for 1 hundred. 	Add by exchanging 10 tens for 1 hundred. *184 + 20 = ?*  *184 + 20 = 204*	Understand how the addition relates to counting on in 10s across 100.  *184 + 20 = ?* *I can count in 10s … 194 … 204* *184 + 20 = 204* Use number bonds within 20 to support efficient mental calculations. *385 + 50* *There are 8 tens and 5 tens.* *That is 13 tens.* *385 + 50 = 300 + 130 + 5* *385 + 50 = 435*

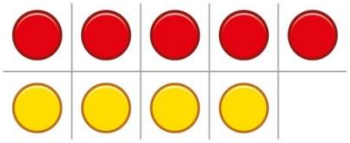
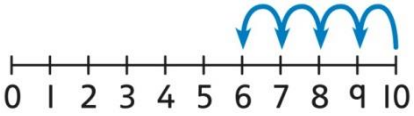
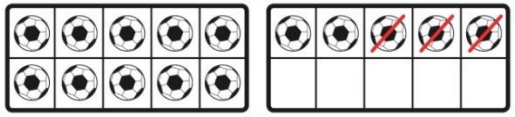
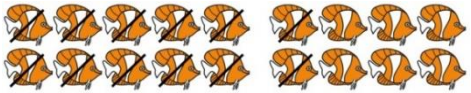
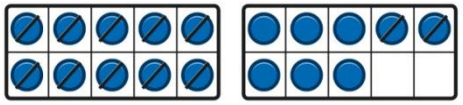
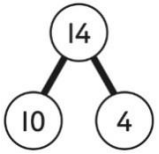
	3-digit number + 2-digit number	Use place value equipment to make and combine groups to model addition. 	Use a place value grid to organise thinking and adding of 1s, then 10s.	Use the vertical column method to represent the addition. Children must understand how this relates to place value at each stage of the calculation.
	3-digit number + 2-digit number, exchange required	Use place value equipment to model addition and understand where exchange is 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.*	Represent the required exchange on a place value grid using equipment. *275 + 16 = ?*  *275 + 16 = 291* Note: In this example, a mental method may be more efficient. The numbers for the example calculation have been chosen to allow children to visualise the concept and see how the method relates to place value. Children should be encouraged at every stage to select methods that are accurate and efficient.	Use a column method with exchange. Children must understand how the method relates to place value at each stage of the calculation.  *275 + 16 = 291*

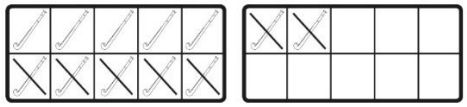
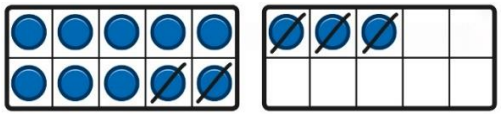
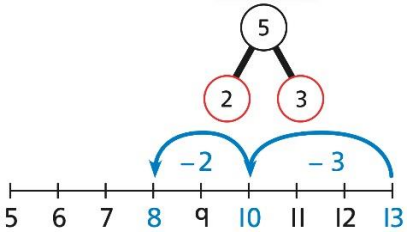
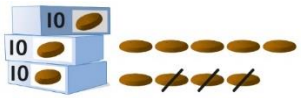
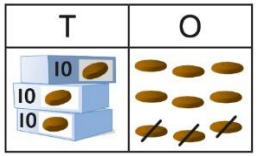
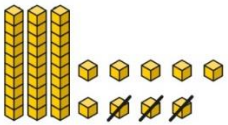
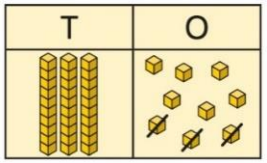
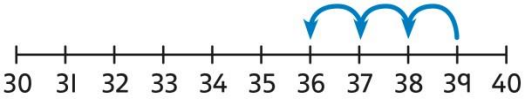
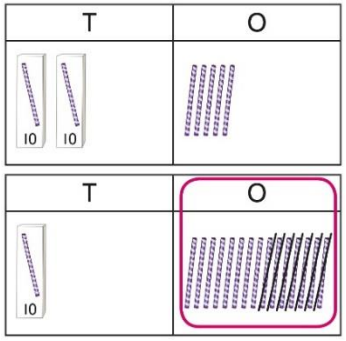
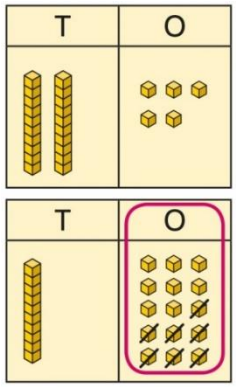
	3-digit number + 3-digit number, no exchange	Use place value equipment to make a representation of a calculation. This may or may not be structured in a place value grid. *326 + 541 is represented as:* 	Represent the place value grid with equipment to model the stages of column addition.	Use a column method to solve efficiently, using known bonds. Children must understand how this relates to place value at every stage of the calculation.
	3-digit number + 3-digit number, exchange required	Use place value equipment to enact the exchange required.  *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* Note: Children should also study examples where exchange is required in more than one column, for example *185 + 318 = ?*

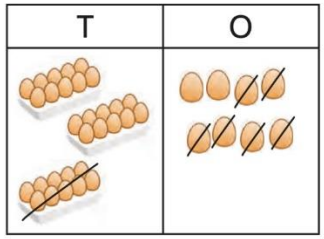
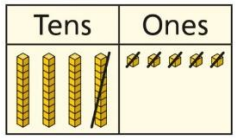
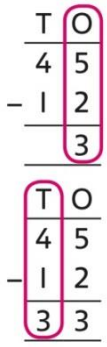
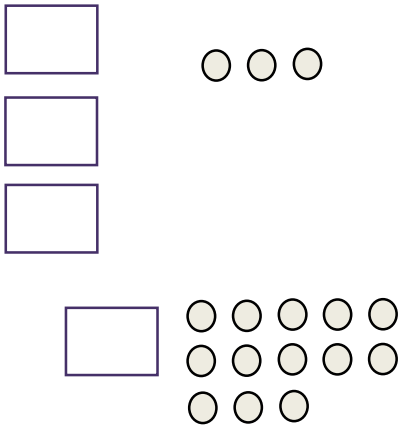
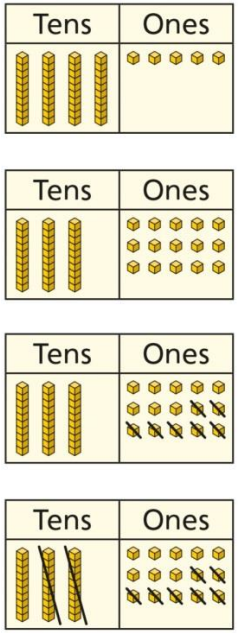
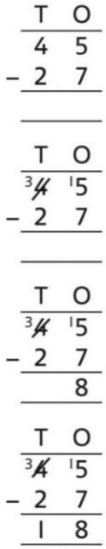
Year 4 Addition			
	Concrete	**Pictorial**	**Abstract**
Column addition with exchange	Use place value equipment on a place value grid to organise thinking. Ensure that children understand how the columns relate to place value and what to do if the numbers are not all 4-digit numbers. *Use equipment.to show 1,905 + 775.*  *Why have only three columns been used for the second row? Why is the Thousands box empty?* *Which columns will total 10 or more?*	Use place value equipment to model required exchanges.  Include examples that exchange in more than one column.	Use a column method to add, including exchanges.  Include examples that exchange in more than one column.

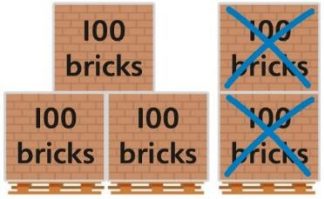
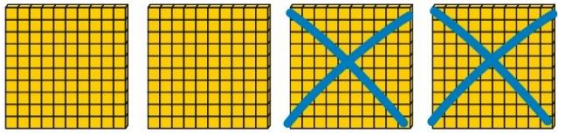
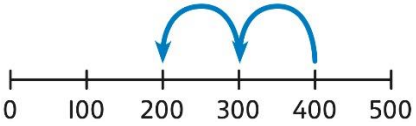
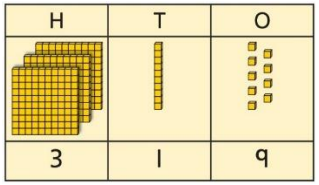
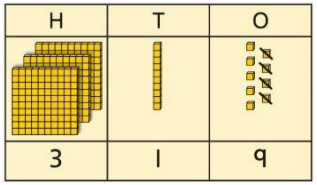
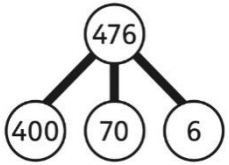
Year 5 Addition			
	Concrete	**Pictorial**	**Abstract**
Column addition with whole numbers	Use place value equipment to represent additions. *Add a row of counters onto the place value grid to show 15,735 + 4,012.* 	Represent additions, using place value equipment on a place value grid alongside written methods.  *I need to exchange 10 tens for a 100.*	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 = ?*
Year 6 Addition			
Please see previous years for consolidation.			

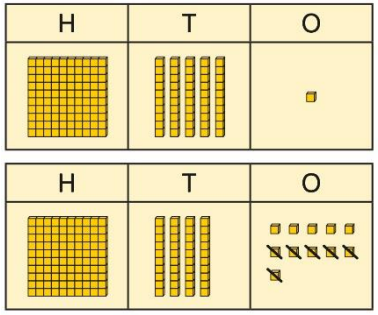
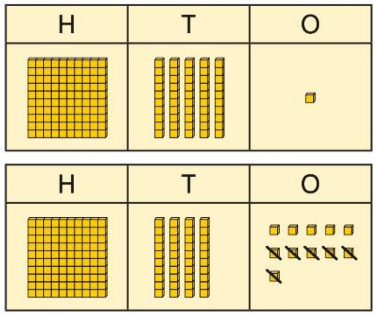
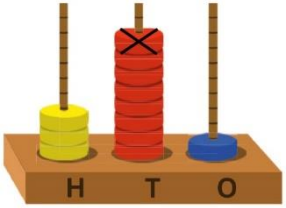
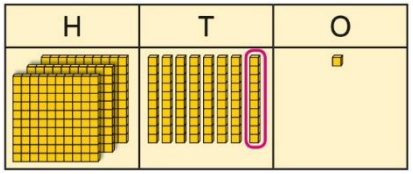
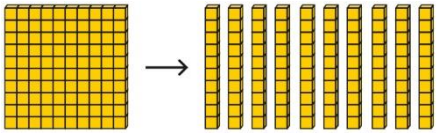
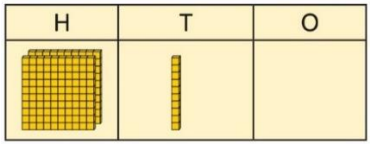
Year 1 Subtraction			
	Concrete	**Pictorial**	**Abstract**
Counting back and taking away	Children arrange objects or manipulatives and remove to find how many are left.  *1 less than 6 is 5.* *6 subtract 1 is 5.*	Children draw and cross out or use counters to represent objects from a problem.  9 – ☐ = ☐ 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.  *8 − 5 = ?*	Children represent a whole and a part and understand how to find the missing part by subtraction.  5 – 4 = ☐	Children use a part-whole model to support the subtraction to find a missing part.  *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.	Represent objects using sketches or counters to support finding the difference.	Children understand 'find the difference' as subtraction.

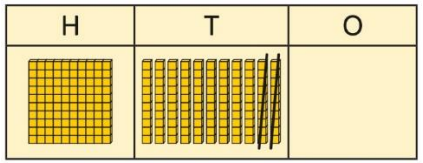
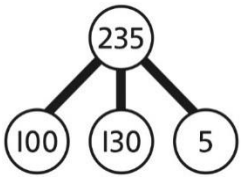
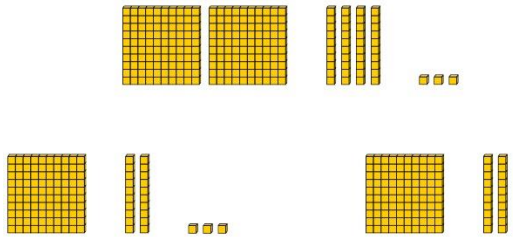
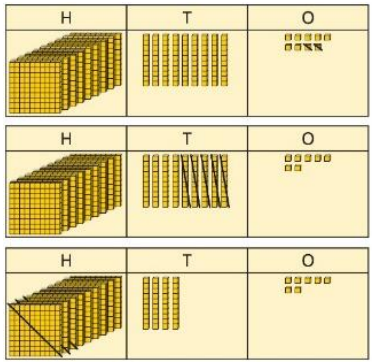
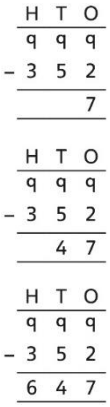
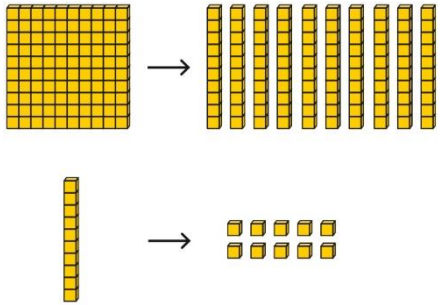
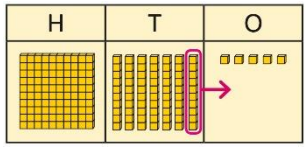
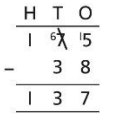
		 *8 is 2 more than 6.* *6 is 2 less than 8.* *The difference between 8 and 6 is 2.*	 *5 − 4 = 1* *The difference between 5 and 4 is 1.*	 *10 − 4 = 6* *The difference between 10 and 6 is 4.*
Subtraction within 20	Understand when and how to subtract 1s efficiently. Use a bead string to subtract 1s efficiently.  *5 − 3 = 2* *15 − 3 = 12*	Understand when and how to subtract 1s efficiently.  *5 − 3 = 2* *15 − 3 = 12*	Understand how to use knowledge of bonds within 10 to subtract efficiently. *5 − 3 = 2* *15 − 3 = 12*
Subtracting 10s and 1s	For example: 18 − 12 Subtract 12 by first subtracting the 10, then the remaining 2.  *First subtract the 10, then take away 2.*	For example: 18 − 12 Use ten frames to represent the efficient method of subtracting 12.  *First subtract the 10, then subtract 2.*	Use a part-whole model to support the calculation.  *19 − 14* *19 − 10 = 9* *9 − 4 = 5* *So, 19 − 14 = 5*
Subtraction bridging 10 using number bonds	For example: 12 − 7 Arrange objects into a 10 and some 1s, then decide on how to split the 7 into parts.	Represent the use of bonds using ten frames.	Use a number line and a part-whole model to support the method. *13 − 5*

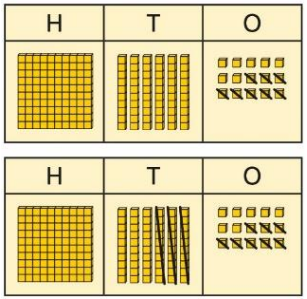
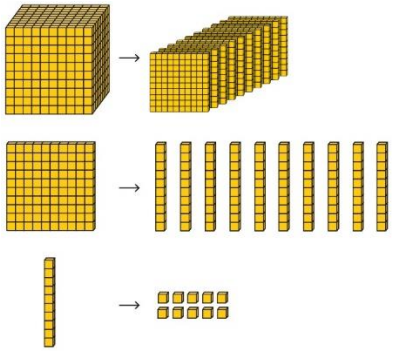
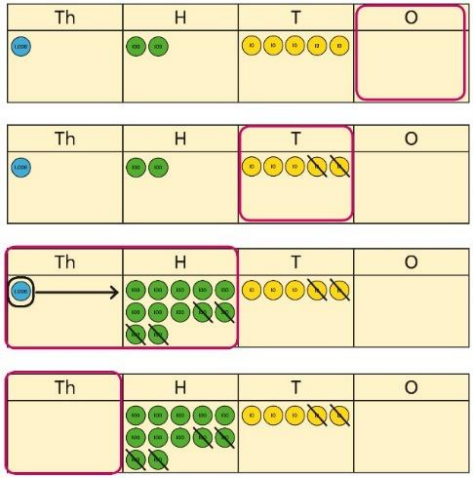
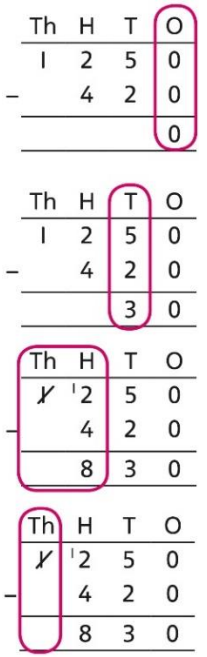
		 *7 is 2 and 5, so I take away the 2 and then the 5.*	 *For 13 – 5, I take away 3 to make 10, then take away 2 to make 8.*	
Year 2 Subtraction				
Year 2 Subtraction		**Concrete**	**Pictorial**	**Abstract**
	Subtracting a single-digit number	Subtract the 1s. This may be done in or out of a place value grid and with resources.  	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 and with a range of resources. 	Exchange 1 ten for 10 ones. This may be done in or out of a place value grid. 	Exchange 1 ten for 10 ones and show it with an effective method. T O 1 2 1 5 – 7 8 T O 1 2 1 5 – 7 1 8

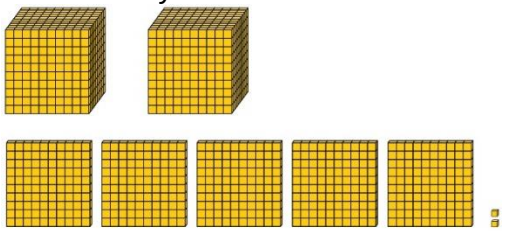
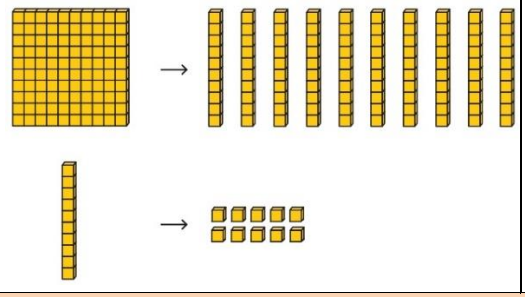
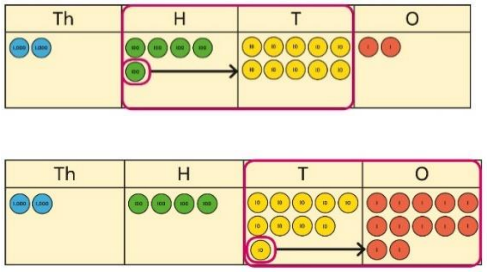
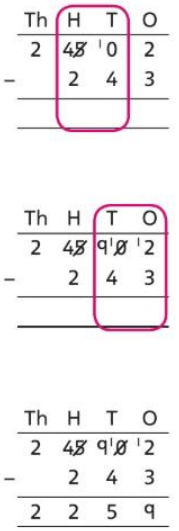
				25 − 7 = 18
	Subtracting a 2-digit number using place value and columns	Subtract the 1s. Then subtract the 10s. This may be done in or out of a place value grid and with resources.  *38 − 16 = 22*	Subtract the 1s. Then subtract the 10s.  	Using column subtraction or a number line, subtract the 1s. Then subtract the 10s. 
	Subtracting a 2-digit number with exchange	Use a range of resources to show chn how to exchange a ten for some ones. 33 – 15 = 18 	Exchange 1 ten for 10 ones. Then subtract the 1s. Then subtract the 10s.  	Using column subtraction, exchange 1 ten for 10 ones. Then subtract the 1s. Then subtract the 10s. 

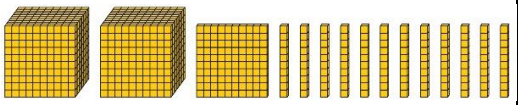
Year 3 Subtraction			
	Concrete	**Pictorial**	**Abstract**
Subtracting 100s	Use known facts and unitising to subtract multiples of 100 using a range of resources.  *5 − 2 = 3* *500 − 200 = 300*	Use known facts and unitising to subtract multiples of 100.  *4 − 2 = 2* *400 − 200 = 200*	Understand the link with counting back in 100s.  *400 − 200 = 200* Use known facts and unitising as efficient and accurate methods. *I know that 7 − 4 = 3. Therefore, I know that 700 − 400 = 300.*
3-digit number − 1s, no exchange	Use number bonds to subtract the 1s. Encourage chn to use straws or any other resources.  *214 − 3 = ?*  *4 − 3 = 1* *214 − 3 = 211*	Use number bonds to subtract the 1s.  *319 − 4 = ?*  *9 − 4 = 5* *319 − 4 = 315*	Understand the link with counting back using a number line. Use known number bonds to calculate mentally. *476 − 4 = ?*  *6 − 4 = 2* *476 − 4 = 472*

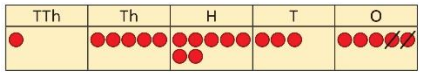
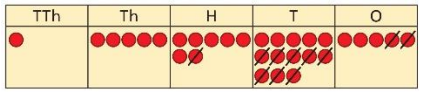
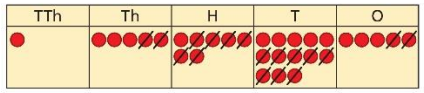
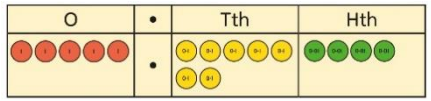
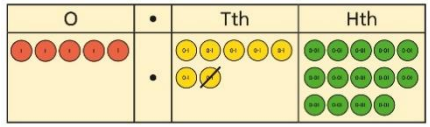
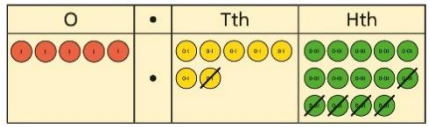
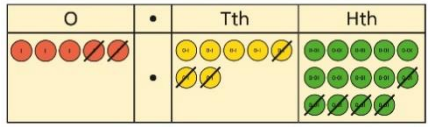
	3-digit number − 1s, exchange or bridging required	Understand why an exchange is necessary by exploring why 1 ten must be exchanged. Use place value equipment such as dienes or place value counte  rs.	Represent the required exchange on a place value grid. *151 − 6 = ?*  	Calculate mentally by using known bonds and write this as a number sentence. *151 − 6 = ?* *151 − 1 − 5 = 145*
	3-digit number − 10s, no exchange	Subtract the 10s using known bonds. Use a range of resources and manipulatives.  *381 − 10 = ?* *8 tens with 1 removed is 7 tens.* *381 − 10 = 371*	Subtract the 10s using known bonds.  *8 tens − 1 ten = 7 tens* *381 − 10 = 371*	Use known bonds to subtract the 10s mentally. *372 − 50 = ?* *70 − 50 = 20* *So, 372 − 50 = 322*
	3-digit number − 10s, exchange or bridging required	Use equipment to understand the exchange of 1 hundred for 10 tens. 	Represent the exchange on a place value grid using equipment. *210 − 20 = ?*  	Understand the link with counting back on a number line. Use flexible partitioning to support the calculation. *235 − 60 = ?*

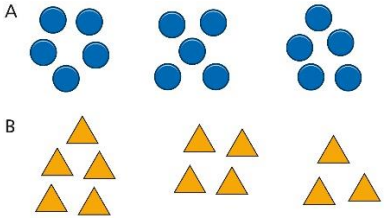
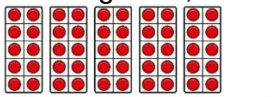
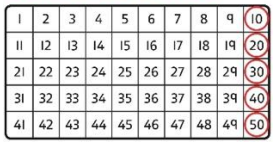
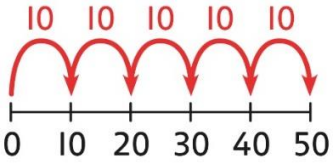
			I need to exchange 1 hundred for 10 tens, to help subtract 2 tens.  *210 − 20 = 190*	 *235 = 100 + 130 + 5* *235 − 60 = 100 + 70 + 5* *= 175*
3-digit number − up to 3-digit number	Use place value equipment to explore the effect of splitting a whole into two parts, and understand the link with taking away. 	Represent the calculation on a place value grid.  	Use column subtraction to calculate accurately and efficiently. 
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.  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			
	Concrete	**Pictorial**	**Abstract**	**Concrete**
	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. Use resources to model. 	Represent place value equipment on a place value grid to subtract, including exchanges where needed. 	Use column subtraction, with understanding of the place value of any exchange required. 

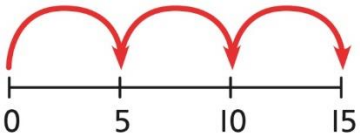
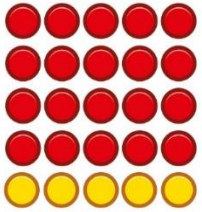
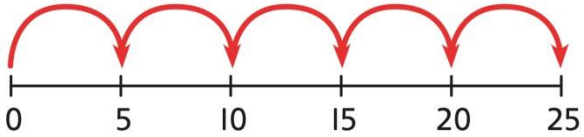
	Column subtraction with exchange across more than one column	Understand why two exchanges may be necessary. *2,502 − 243 = ?* Use a variety of resources to model.  *I need to exchange a 10 for some 1s, but there are not any 10s here.* 	Make exchanges across more than one column where there is a zero 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 = ?* 

Year 5 Subtraction			
	Concrete	**Pictorial**	**Abstract**
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. 62,097 − 18,534 = 43,563

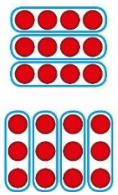
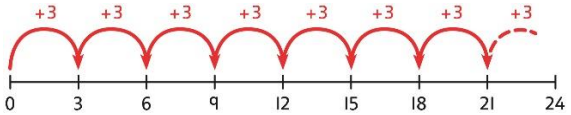
			 TTh Th H T O 1 5 7 3 5 − 2 5 8 2 3 Now subtract the 10s. Exchange 1 hundred for 10 tens.  TTh Th H T O 1 5 6 13 5 − 2 5 8 2 5 3 Subtract the 100s, 1,000s and 10,000s.  TTh Th H T O 1 5 6 13 5 − 2 5 8 2 1 3 1 5 3	
Subtracting decimals	Explore complements to a whole number by working in the context of length.  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 = ?*  O · Tth Hth 5 · 7 4 − 2 · 2 5 · Exchange 1 tenth for 10 hundredths.  O · Tth Hth 5 · 6 14 − 2 · 2 5 · Now subtract the 5 hundredths.  O · Tth Hth 5 · 6 14 − 2 · 2 5 · 9 Now subtract the 2 tenths, then the 2 ones.  O · Tth Hth 5 · 6 14 − 2 · 2 5 3 · 4 9	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 ·
Year 6 Subtraction				
	Please see year 5 for any consolidation needed			

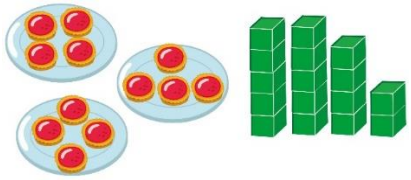
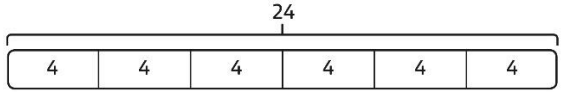
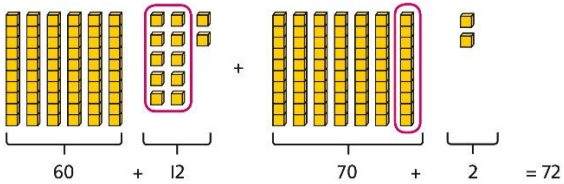
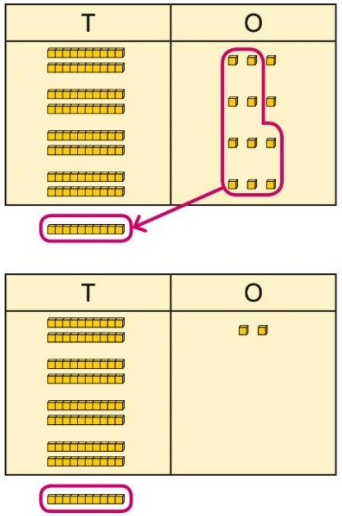
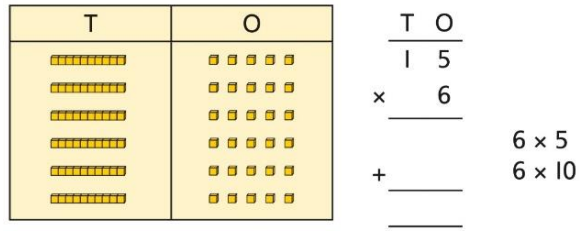
Year 1 Multiplication				
Year 1 Multiplication		**Concrete**	**Pictorial**	**Abstract**
	Recognising and making equal groups	Children arrange objects in equal and unequal groups and understand how to recognise whether they are equal. A B C 	Children draw and represent equal and unequal groups. 	Describe 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…35…40…	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. 

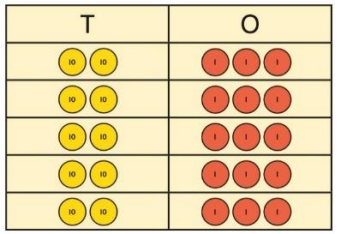
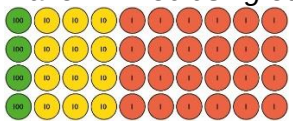
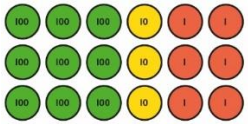
Year 2 Multiplication

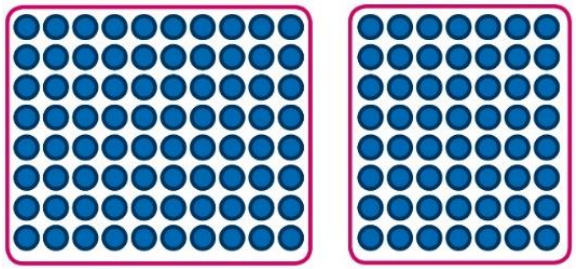
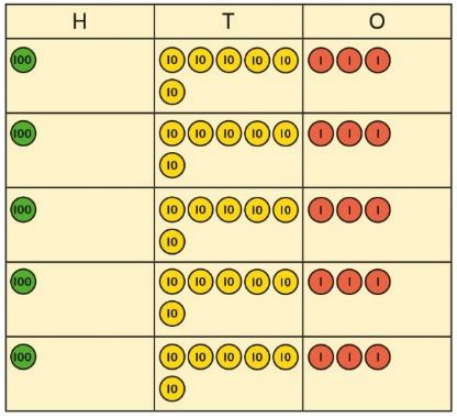
	Concrete	Pictorial	Abstract
Equal groups and repeated addition	Recognise equal groups and write as repeated addition and as multiplication.  *3 groups of 5 chairs* *15 chairs altogether*	Recognise equal groups using standard objects such as counters and write as repeated addition and multiplication.  *3 groups of 5* *15 in total*	Use a number line and write as repeated addition and as multiplication.  *5 + 5 + 5 = 15* *3 × 5 = 15*
Using 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

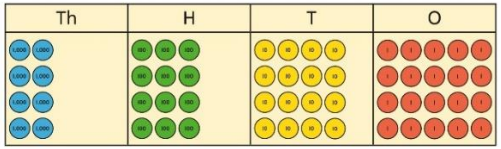
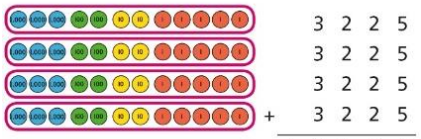
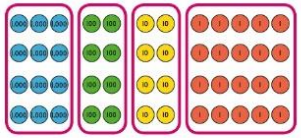
	Concrete	Pictorial	Abstract
Understanding equal grouping and repeated addition	Children continue to build understanding of equal groups and the relationship with repeated addition. They recognise both examples and non-examples using objects.	Children recognise that arrays demonstrate commutativity. 	Children understand the link between repeated addition and multiplication.  *8 groups of 3 is 24.*

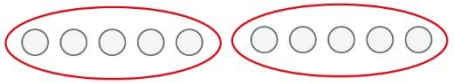
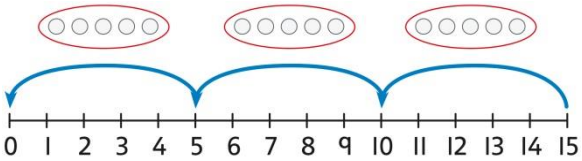
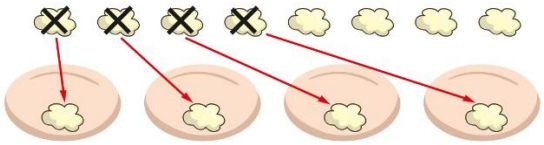
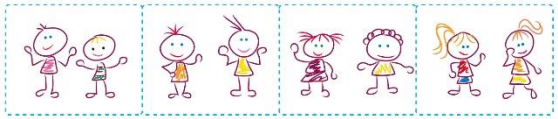
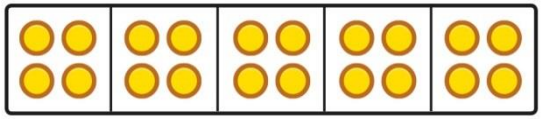
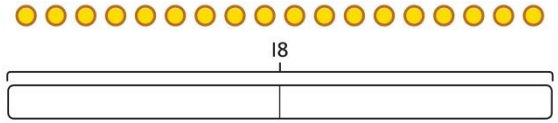
		 Children recognise that arrays can be used to model commutative multiplications.  *I can see 3 groups of 8.* *I can see 8 groups of 3.*	*This is 3 groups of 4.* *This is 4 groups of 3.*	*3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24* *8 × 3 = 24* A bar model may represent multiplications as equal groups.  *6 × 4 = 24*
Multiplying a 2-digit number by a 1-digit number, 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 = ?*  *4 × 23 = 92*	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 = ?*

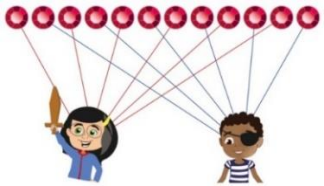
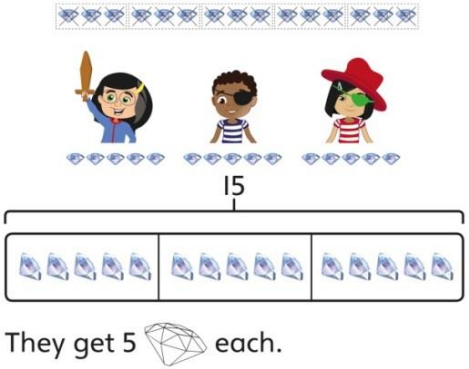
			 *5 × 23 = ?* *5 × 3 = 15* *5 × 20 = 100* *5 × 23 = 115*	T O 2 8 × 5 4 0 5 × 8 1 0 0 5 × 20 1 4 0
Year 4 Multiplication				
		Concrete	**Pictorial**	**Abstract**
	Column multiplication for 2- and 3-digit numbers multiplied by a single digit	Use place value equipment to make multiplications. *Make 4 × 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

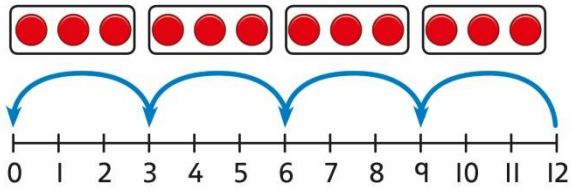
Year 5 Multiplication			
	Concrete	**Pictorial**	**Abstract**
Multiplying up to 4-digit numbers by a single digit	Using a range manipulatives explore how to use partitioning to multiply efficiently. *8 × 17 = ?*  8 × 10 = 80 8 × 7 = 56 80 + 56 = 136 *So, 8 × 17 = 136*	Represent multiplications using place value equipment and add the 1s, then 10s, then 100s, then 1,000s. 163 x 5 = ?  	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 = ?*  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*	See above to consolidate concept of multiplication with place value counters if needed.	Use column multiplication, ensuring understanding of place value at each stage. 3 4 × 2 7 2 3 8 34 × 7 2 3 4 × 2 7 2 3 8 34 × 7 2 6 8 0 34 × 20

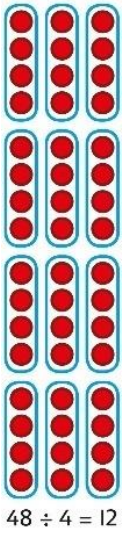
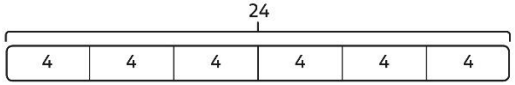
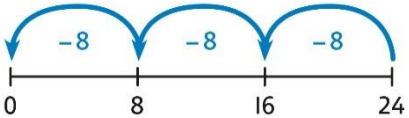
				34 × 27 2 3 8 (2) 34 × 7 6 8 0 34 × 20 9 1 8 (1) 34 × 27
	Multiplying up to 4-digits by 2-digits		See above to consolidate concept of multiplication with place value counters if needed.	Use column multiplication, ensuring understanding of place value at each stage. 1 4 3 × 1 2 2 8 6 143 × 2 1 4 3 0 143 × 10 1 7 1 6 (1) 143 × 12 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) 2 (1) 2 0 1,274 × 30 *Finally, find the total.*

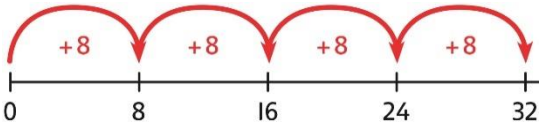
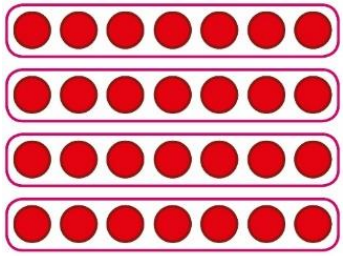
				1 2 7 4 × 3 2 2 5 4 8 (1,274 × 2) 3 8 2 0 (1,274 × 30) 4 0 7 6 8 (1,274 × 32) *1,274 × 32 = 40,768*
Year 6 Multiplication				
		Concrete	**Pictorial**	**Abstract**
	Multiplying up to a 4-digit number by a single digit number	Use a range of equipment to explore multiplications.  *4 groups of 2,345* *This is a multiplication:* *4 × 2,345* *2,345 × 4*	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 Method 2  4 × 3,000 4 × 200 4 × 20 4 × 5 12,000 + 800 + 80 + 20 = 12,900	Understand short multiplication. Compare and select appropriate methods for specific multiplications. Method 4 3 2 2 5 × 4 1 2 9 0 0
	Multiplying up to a 4-digit number by a 2-digit number		See above to consolidate concept of multiplication with place value counters if needed.	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)

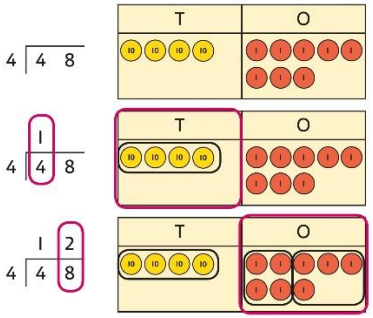
Year 1 Division				
Year 1 Division		**Concrete**	**Pictorial**	**Abstract**
	Grouping	Learn to make equal groups from a whole and find how many equal groups of a certain size can be made. Sort a whole set people and objects into equal groups.  *There are 10 children altogether.* *There are 2 in each 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				
Year 2 Division		**Concrete**	**Pictorial**	**Abstract**
	Sharing equally	Start with a whole and share into equal parts, one at a time.	Represent the objects shared into equal parts using a bar model. 	Use a bar model to support understanding of the division. 

		 *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.  *15 shared equally between 3.* *They get 5 each.*	*20 shared into 5 equal parts.* *There are 4 in each part.*	*18 ÷ 2 = 9*
	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 ÷ 3 = 4  12 ÷ 4 = 3  12 ÷ 6 = 2  12 ÷ 2 = 6 	 There are 4 groups now. *12 divided into groups of 3.* *12 ÷ 3 = 4* *There are 4 groups.*

Year 3 Division			
	Concrete	**Pictorial**	**Abstract**
Using times-tables knowledge to divide	Use knowledge of known times-tables to calculate divisions. Use a range of resources to support.  *24 divided into groups of 8.* *There are 3 groups of 8.*	Use knowledge of known times-tables to calculate divisions.  48 ÷ 4 = 12 *48 divided into groups of 4.* *There are 12 groups.*	Use knowledge of known times-tables to calculate divisions. *I need to work out 30 shared between 5.* *I know that 6 × 5 = 30* *so I know that 30 ÷ 5 = 6.* A bar model may represent the relationship between sharing and grouping.  *24 ÷ 4 = 6* *24 ÷ 6 = 4* Children understand how division is related to both repeated subtraction and repeated addition.  *24 ÷ 8 = 3*

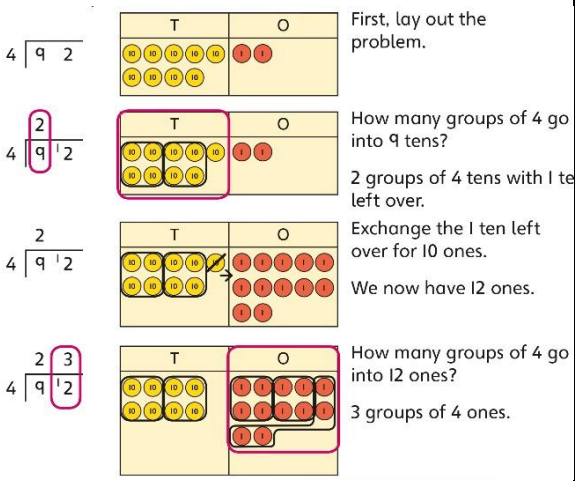
			4 × 12 = 48 *48 ÷ 4 = 12*	 *32 ÷ 8 = 4*
Year 4 Division				
		Concrete	**Pictorial**	**Abstract**
	Understanding the relationship between multiplication and division, including times-tables	Use objects or manipulatives to explore families of multiplication and division facts.  *4 × 6 = 24* *24 is 6 groups of 4.* *24 is 4 groups of 6.* *24 divided by 6 is 4.* *24 divided by 4 is 6.*	Represent divisions using an array.  28 ÷ 7 = 4	Understand families of related multiplication and division facts. *I know that 5 × 7 = 35* *so I know all these facts:* *5 × 7 = 35* *7 × 5 = 35* *35 = 5 × 7* *35 = 7 × 5* *35 ÷ 5 = 7* *35 ÷ 7 = 5* *7 = 35 ÷ 5* *5 = 35 ÷ 7*
Year 5 Division				
		Concrete	**Pictorial**	**Abstract**
	Dividing up to four digits by a single digit using short division	Explore grouping using a range of equipment and 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.	Use short division for up to 4-digit numbers divided by a single digit. $\begin{array}{r} 0\ 5\ 5\ 6 \\ 7\overline{)\ 3\ {}^{3}8\ {}^{3}9\ {}^{4}2} \end{array}$ *3,892 ÷ 7 = 556* Use multiplication to check.



Lay out the problem as a short division.

There is 1 group of 4 in 4 tens.
There are 2 groups of 4 in 8 ones.

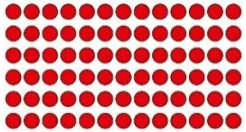
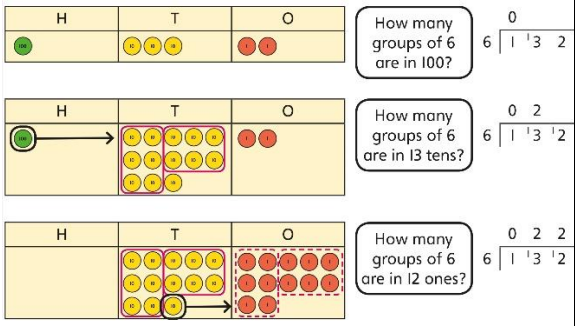
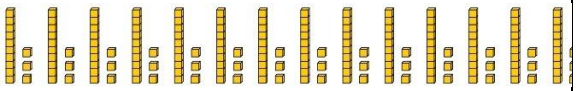
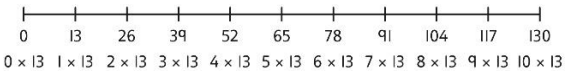
Work with divisions that require exchange.

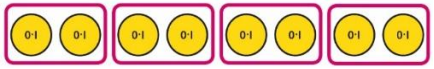
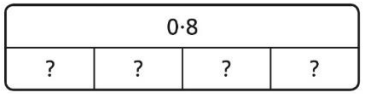


556 × 7 = ?

6 × 7 = 42
50 × 7 = 350
500 × 7 = 3500

3,500 + 350 + 42 = 3,892

	Dividing by a single digit	Use a range of 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. $6\overline{)13\,2}$ → 0 $6\overline{)13\,2}$ → 0 2 $6\overline{)13\,2}$ → 0 2 2
	Dividing by a 2-digit number using long division	Use a range of equipment to build numbers from groups.  *182 divided into groups of 13.* *There are 14 groups.*	See above to consolidate concept of division with place value counters if needed.	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 = ?*  $13\overline{)377}$ $-\ 130$ (10) 247 $-\ 130$ (10) 117 $-\ 117$ (9) 0 29 *377 ÷ 13 = 29* Divisions with a remainder explored in problem-solving contexts.

	Dividing decimals	Use a range of resources including place value equipment to explore division of decimals.  *8 tenths divided into 4 groups. 2 tenths in each group.*	Use a bar model to represent divisions.  $4 \times 2 = 8$ $\quad 8 \div 4 = 2$ So, $4 \times 0{\cdot}2 = 0{\cdot}8$ $\quad 0{\cdot}8 \div 4 = 0{\cdot}2$	Use short division to divide decimals with up to 2 decimal places.