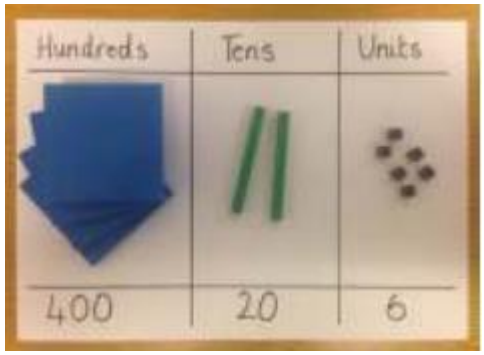
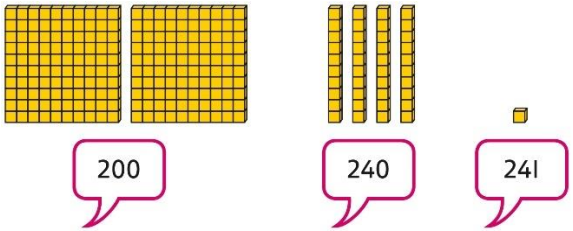
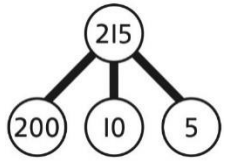
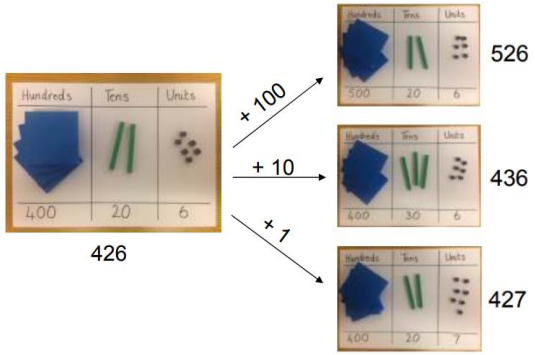
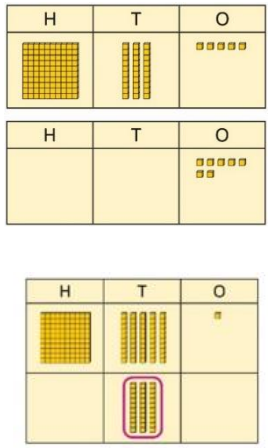
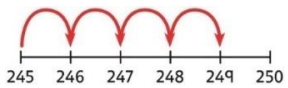
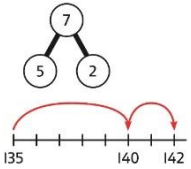
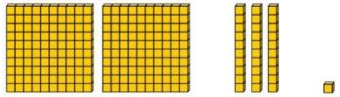
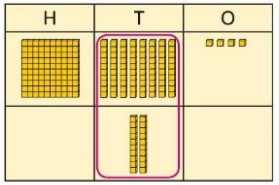
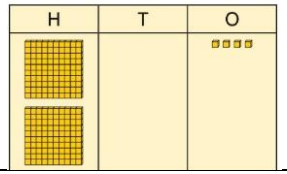
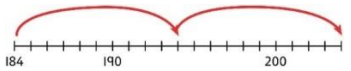
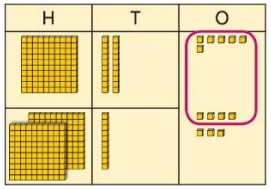
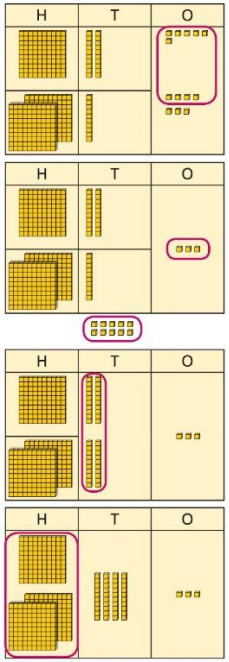
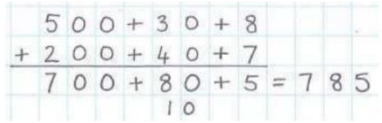
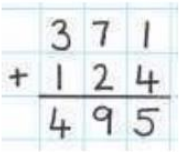
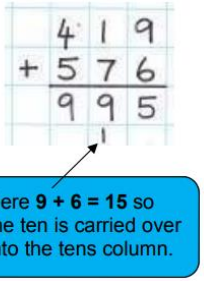
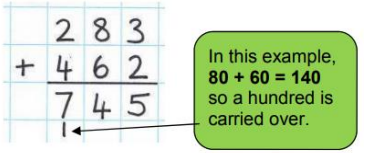
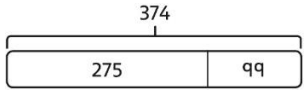
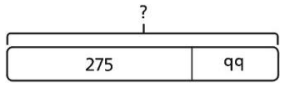
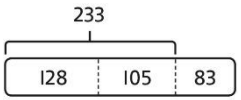
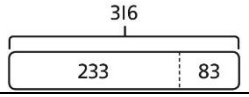
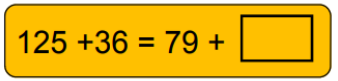
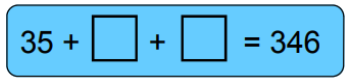
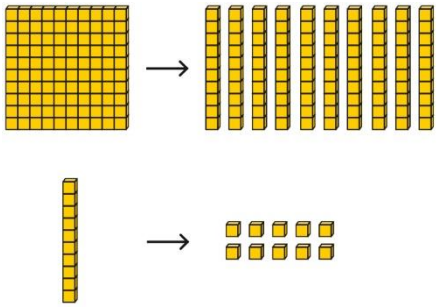
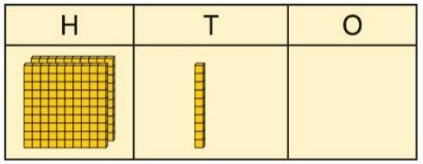
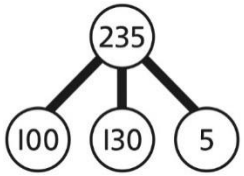
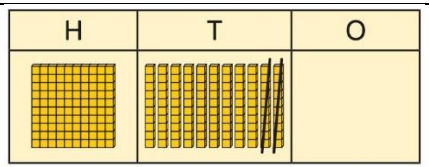
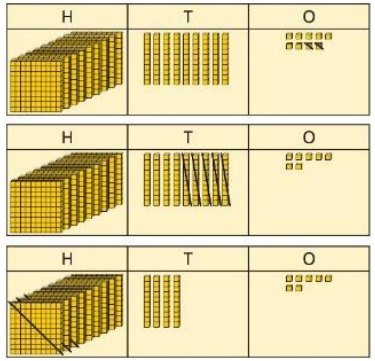
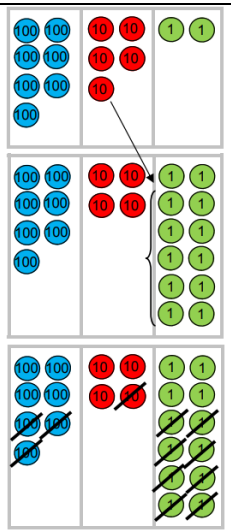
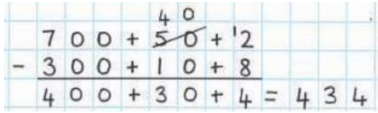
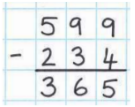
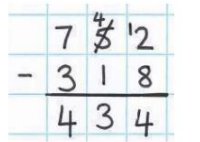
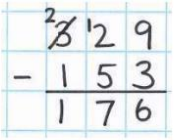
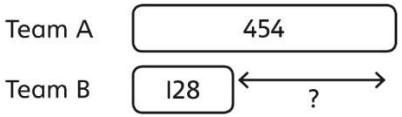
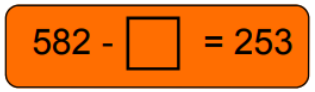
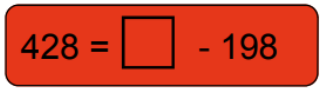
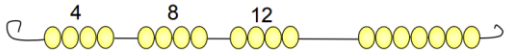
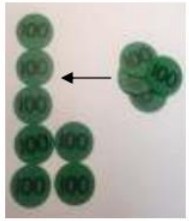
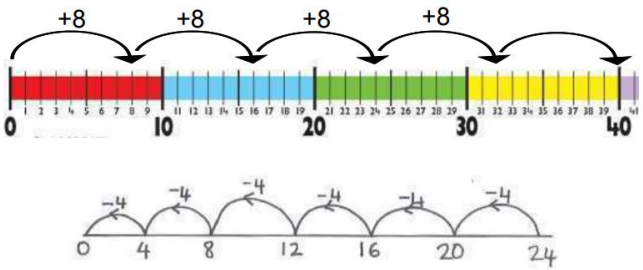
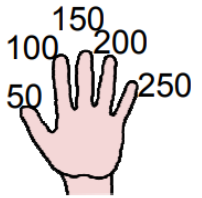
Year 3			
	Concrete	Pictorial	Abstract
Year 3 addition			
Understand place value of each digit in a threedigit number (hundreds, tens, ones).	Understand 100s, 10s and 1s to build 3-digit numbers. 	Use equipment to represent numbers to 1,000.  Use a place value grid to support the structure of numbers to 1,000. Place value counters are used alongside other equipment. Children should understand how each counter represents a different unitised amount.	Represent the parts of numbers to 1,000 using a part-whole model.  *215 = 200 + 10 + 5* Recognise numbers to 1,000 represented on a number line, including those between intervals.
Add - a 3-digit number and ones - a 3-digit number and tens - a 3-digit number and hundreds	To grasp these, children must be able to partition a 3-digit number into hundreds, tens and units. 	Exchange 10 ones for 1 ten where needed. Use a place value grid to support the understanding. 135+7= 142 *351 + 30 = 381* *5 tens + 3 tens = 8 tens* 	Understand the link with counting on. *245 + 4*  Understand how to bridge by partitioning to the 1s to make the next 10. 

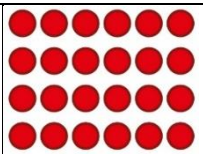
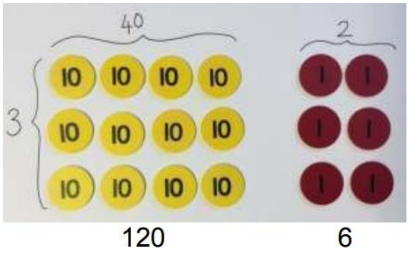
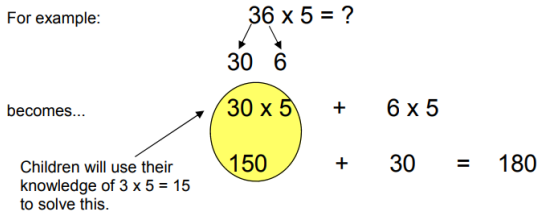
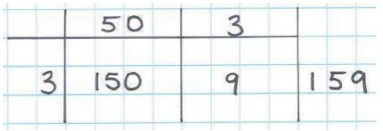
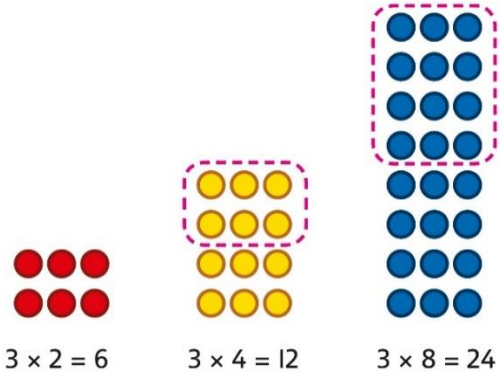
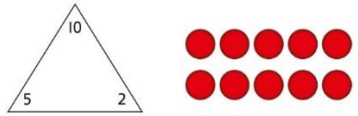
	 Understand the exchange of 10 tens for 1 hundred.	Add by exchanging 10 tens for 1 hundred. *184 + 20 = 204*   	Ensure that children understand how to add 1s bridging a 100. *198 + 5 = 198 + 2 + 3 = 203*  Understand how the addition relates to counting on in 10s across 100. *I can count in 10s … 194 … 204* *184 + 20 = 204*

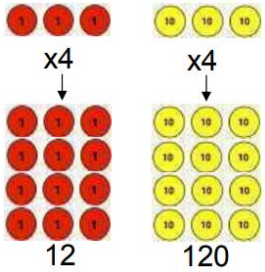
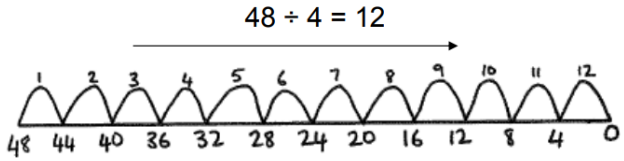
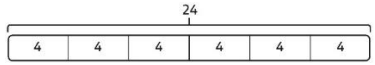
Add numbers with up to three digits, using formal written methods of columnar addition	Use place value equipment to make and combine groups to model addition.  Use place value equipment to enact the exchange required.  *There are 13 ones.* *I will exchange 10 ones for 1 ten.*	Use a place value grid to organise thinking and adding of 1s, then 10s. Model the stages of column addition using place value equipment on a place value grid. 	Some children may continue to develop the partitioned columnar method for addition.  Children progress on to the compact columnar addition method:   

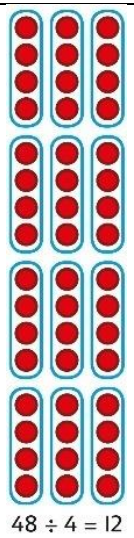
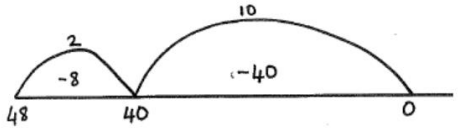
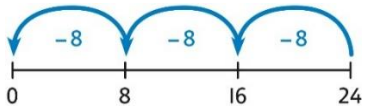
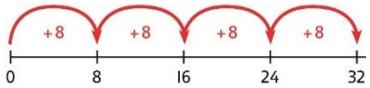
Solve problems, including missing number problems, using number facts, place value, and more complex addition	Encourage children to use their own drawings and choices of place value equipment to represent problems with one or more steps. These representations will help them to select appropriate methods.	Children understand and create bar models to represent addition problems. *275 + 99 = 374*  Use representations to support choices of appropriate methods.  *I will add 100, then subtract 1 to find the solution.* *128 + 105 + 83 = ?* *I need to add three numbers.* 128 + 105 = 233  	 
Year 3 subtraction			
Subtract: - a 3-digit number and ones - a 3-digit number and tens - a 3-digit number and hundreds	Use equipment to enact the exchange of 1 hundred for 10 tens, and 1 ten for 10 ones. 	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.*	Understand the link with counting back on a number line. Use flexible partitioning to support the calculation. *235 − 60 = ?*  *235 = 100 + 130 + 5*

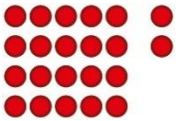
		 *210 − 20 = 190*	*235 − 60 = 100 + 70 + 5* = 175
Subtract numbers with up to three digits, using formal written methods of columnar addition.	Represent the calculation on a place value grid. 	 With the example 752 - 318, there are currently not enough units to take away 8. It is therefore necessary to exchange one of the tens into ones. This gives 12 units and 4 tens. Now the calculation can be completed as normal.	Some children may continue to develop the partitioned columnar method for subtraction.    You can't do **2 - 8** so a ten needs to be borrowed from the 50.  Because **20 - 50** can't be done, a hundred is borrowed to make **120 - 50 = 70**

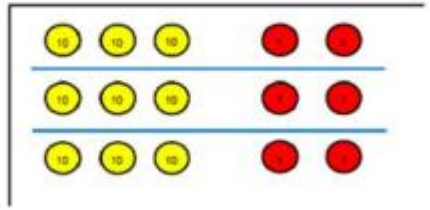
Solve problems, including missing number problems, using number facts, place value, and more complex subtraction	Encourage children to use their own drawings and choices of place value equipment to represent problems with one or more steps. These representations will help them to select appropriate methods.	Use bar models to represent subtractions. 'Find the difference' is represented as two bars for comparison.  Bar models can also be used to show that a part must be taken away from the whole.	 
Year 3 addition and subtraction vocabulary	addition add, more, and make, sum, total altogether double near double half, halve one more, two more … ten more … one hundred more how many more to make …? how many more is … than …? how much more is …? subtract take away how many are left/left over? how many have gone? one less, two less, ten less … one hundred less how many fewer is … than …? how much less is …? difference between equals is the same as number bonds/pairs/facts missing number tens boundary, hundreds boundary		
Year 3 multiplication			
Count from 0 in multiples of 4, 8, 50 and 100, and in tenths (1/10 or 0.1)	There are a variety of resources that children can use to practise counting in these steps, both forwards and backwards.  		 This process of counting in multiples will help reinforce the children's knowledge of times tables facts. For instance, "I have counted up 5 lots of 4 to make 20. Therefore, 5 x 4 = 20."

Write and calculate mathematical statements for multiplication and division using the multiplication. tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	 Understand how to use times-tables facts flexibly. *6 × 4 = 24* 4 × 6 = 24 Understand how times-table facts relate to commutativity. 42 x 3 = 126  Base 10 resources or place value counters should be used to teach this procedure to ensure children gain a deep understanding of its principles.	Once the children are ready to multiply bigger numbers, they are taught to partition them first. By breaking the number up into smaller parts, the calculation becomes much easier to deal with. 	As children become more confident, they can move on to recording the same idea using pencil and paper on the grid method.  53 x 3 = 159
Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Children learn the times-tables as 'groups of', but apply their knowledge of commutativity.  *I can use the ×3 table to work out how many keys.* *I can also use the ×3 table to work out how many batteries.*	Children understand how the ×2, ×4 and ×8 tables are related through repeated doubling. 	Children understand the relationship between related multiplication and division facts in known times-tables.  *2 × 5 = 10* *5 × 2 = 10* *10 ÷ 5 = 2* *10 ÷ 2 = 5*

Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	Children should also start to use facts that they know to make links with other facts, for instance with numbers that are 10 times bigger (multiples of 10).  Place value counters can be used to demonstrate this idea. If 3 x 4 = 12, then 30 x 4 = 120.	Children to draw related multiplication facts. *The same principle can be applied to division facts.* *If 6 ÷ 3 = 2, then 60 ÷ 3 = 20*	6 x 4 = □ □ x ○ = 48 32 ÷ □ = 4 □ ÷ 3 = 50 Children should be given practical problems where they will need to scale up. "Harry's sunflower is 9cm tall. Alex's is 4 times taller. How tall is Alex's sunflower?"
Year 3 division			
Write and calculate mathematical statements for division using the multiplication tables that they know.	Use knowledge of known times-tables to calculate divisions.	For division, children should develop a more efficient number line strategy, through the use of repeated subtraction. To begin with, the children may 'jump back' along the number line in smaller steps.  But, as their times table knowledge improves, they will be able partition the dividend (the number being divided) into more workable chunks.	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*

	 48 ÷ 4 = 12 *48 divided into groups of 4.* *There are 12 groups.* *4 × 12 = 48* 48 ÷ 4 = 12	48 ÷ 4 = 12 40 8  	Children understand how division is related to both repeated subtraction and repeated addition.  *24 ÷ 8 = 3*  *32 ÷ 8 = 4*

Solve problems, involving division.	Use equipment to understand that a remainder occurs when a set of objects cannot be divided equally any further.  *There are 13 sticks in total.* *There are 3 groups of 4, with 1 remainder.* *Make 29 from place value equipment.* *Share it into 2 equal groups*.  *There are two groups of 14 and 1 remainder.*	Use images to explain remainders.  *22 ÷ 5 = 4 remainder 2* *29 ÷ 2 = ?*  *29 ÷ 2 = 14 remainder 1*	Understand that the remainder is what cannot be shared equally from a set. *22 ÷ 5 = ?* *3 × 5 = 15* *4 × 5 = 20* *5 × 5 = 25 … this is larger than 22* *So, 22 ÷ 5 = 4 remainder 2* 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.* Problems where there is a remainder, but the answer needs to be given as a whole, should also be provided. “Pencils are sold in packs of 10. How many packs will I need to buy for 24 children?”

Bus stop method.	Children will use practical resources to support the short division method and will be encouraged to use multiples of the divisor to assist (TU ÷ U) 1. Create the dividend using Place Value counters. 2. Group the tens counters according to the divisor and write the number of groups above the line in the tens column. 3. Group the ones counters according to the divisor and write the number of groups above the line in the ones column. 4. Any counters that cannot be grouped are the remainder. Write this at the end as 'r1' 96 ÷ 3 Tens Ones 3 2 3 	Complete written divisions and show the remainder using r.
Year 3 multiplication and division vocabulary	multiplication multiply multiplied by, multiple, factor groups of times product once, twice, three times … ten times repeated addition division dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three each … ten each group in pairs, threes … tens equal groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact	