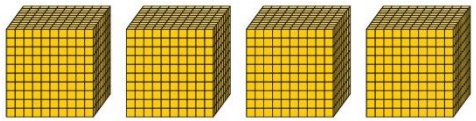
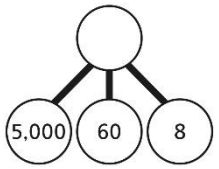
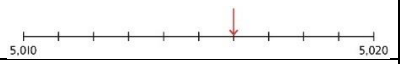
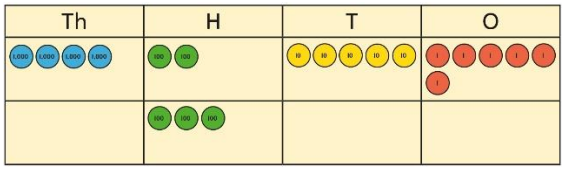
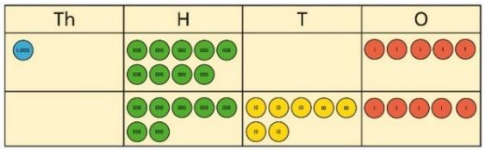
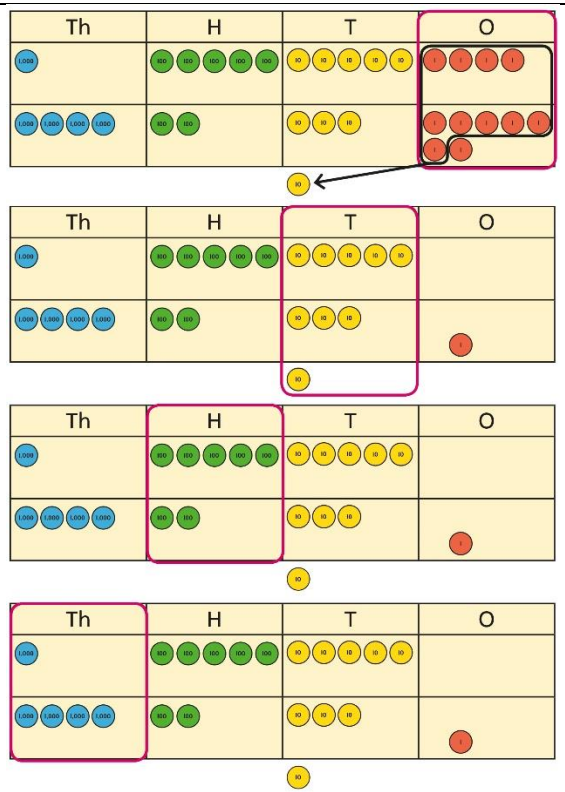
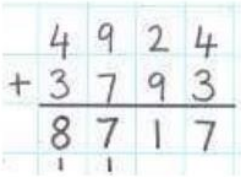
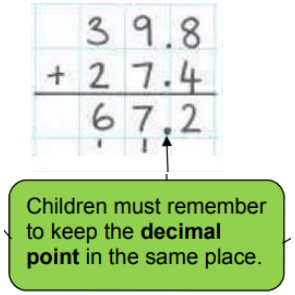
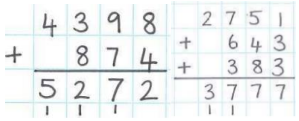
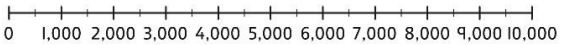
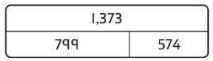
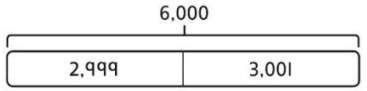
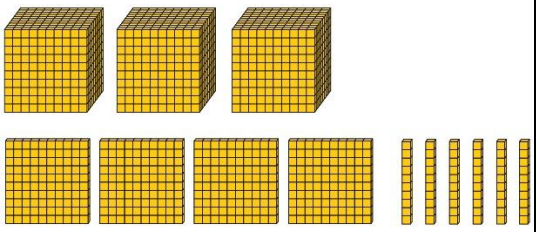
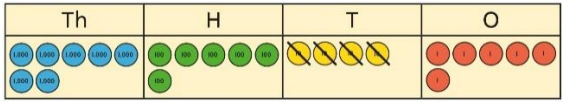
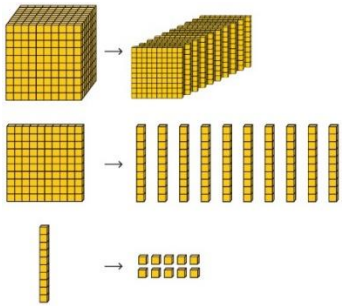
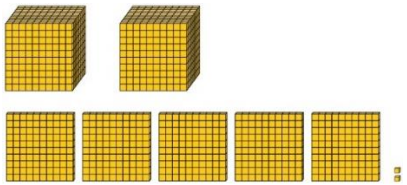
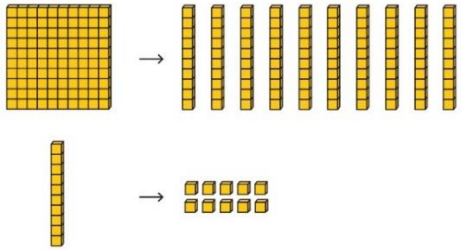
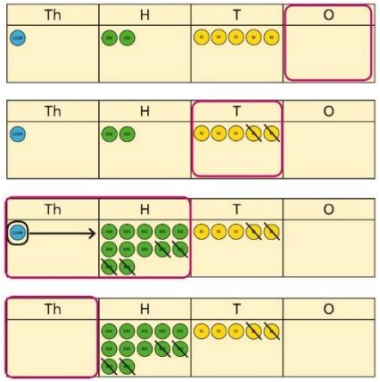
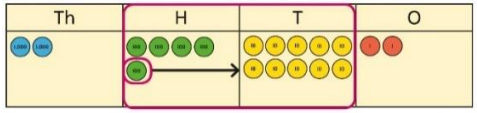
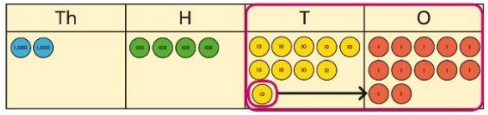
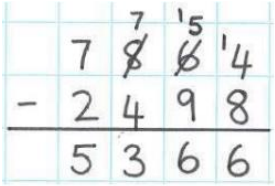
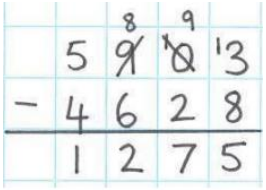
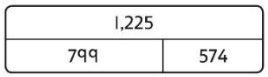
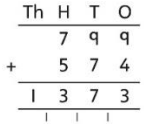
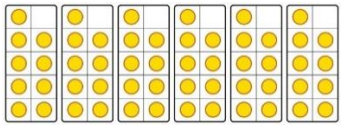
Year 4			
	Concrete	Pictorial	Abstract
Year 4 addition			
Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).	Use place value equipment to understand the place value of 4-digit numbers.  *4 thousands equal 4,000.* *1 thousand is 10 hundreds.*	Represent numbers using place value counters once children understand the relationship between 1,000s and 100s.  2,000 + 500 + 40 + 2 = 2,542	Understand partitioning of 4-digit numbers, including numbers with digits of 0.  *5,000 + 60 + 8 = 5,068* Understand and read 4-digit numbers on a number line. 
Solve addition two-step problems in contexts, deciding which operations and methods to use and why.	Use place value and known facts to support mental calculations. *Make 1,405 from place value equipment.* *Add 2,000.* *Now add the 1,000s.* *1 thousand + 2 thousands = 3 thousands* *1,405 + 2,000 = 3,405*	Use place value and known facts to support mental calculations.  *I can add the 100s mentally.* *200 + 300 = 500* *So, 4,256 + 300 = 4,556*	Use place value and known facts to support mental calculations. *4,256 + 300 = ?* *2 + 3 = 5* *200 + 300 = 500* *4,256 + 300 = 4,556*
Add numbers with up to 4 digits using the	Use place value equipment on a place value grid to organise thinking.	Use place value equipment to model required exchanges.	Use a column method to add, including exchanges.

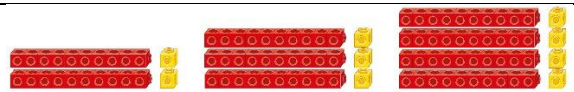
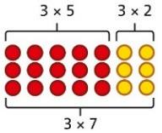
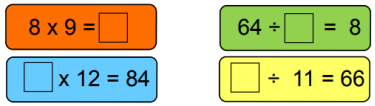
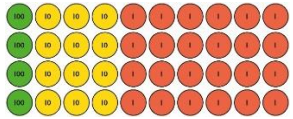
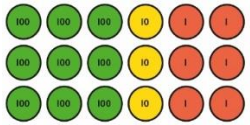
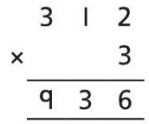
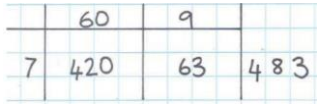
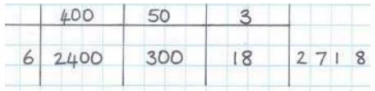
formal written methods of columnar addition where appropriate	Ensure that children understand how the columns relate to place value and what to do if the numbers are not all 4-digit numbers. *Use equipment.to show 1,905 + 775.*  *Why have only three columns been used for the second row? Why is the Thousands box empty?* *Which columns will total 10 or more?*	 Include examples that exchange in more than one column.	 They can choose to revert to the expanded columnar method at any point if they are experiencing difficulty. Children should also be able to add numbers with up to 2 decimal places (at this stage, both numbers should have the same number of decimal places):  They should also be able to use the same method to add up more than two numbers with different numbers of digits: 

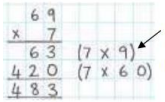
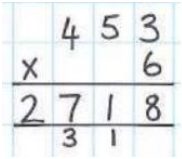
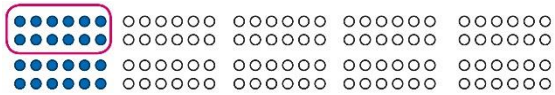
Estimate and use inverse operations to check answers to a calculation.		Use rounding and estimating on a number line to check the reasonableness of an addition.  *912 + 6,149 = ?* *I used rounding to work out that the answer should be approximately 1,000 + 6,000 = 7,000.*	Bar models may be used to represent additions in problem contexts, and to justify mental methods where appropriate.   *I chose to work out 574 + 800, then subtract 1.*  *This is equivalent to 3,000 + 3,000.*

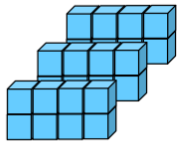
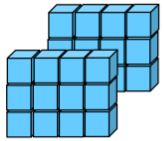
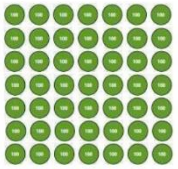
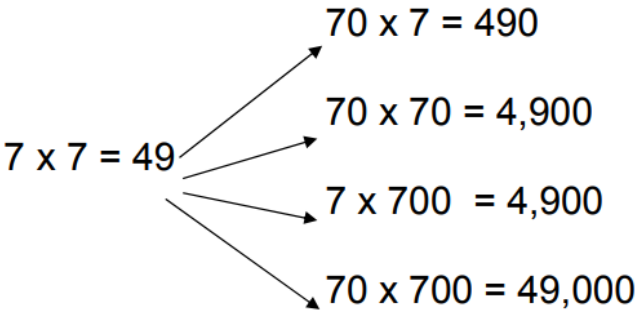
Year 4 subtraction			
Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Use place value equipment to justify mental methods.  *What number will be left if we take away 300?*	Use place value grids to support mental methods where appropriate.  *7,646 − 40 = 7,606*	Use knowledge of place value and unitising to subtract mentally where appropriate. *3,501 − 2,000* *3 thousands − 2 thousands = 1 thousand* 3,501 − 2,000 = 1,501

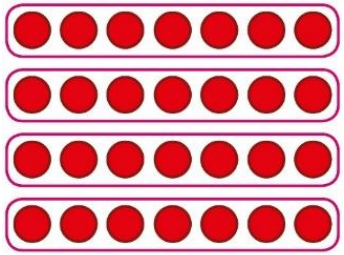
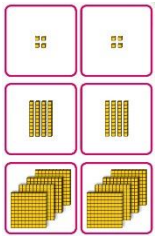
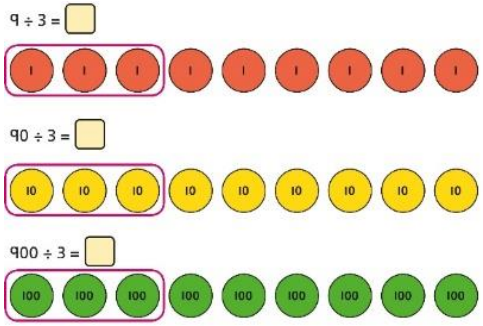
Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate	Understand why exchange of a 1,000 for 100s, a 100 for 10s, or a 10 for 1s may be necessary.  Understand why two exchanges may be necessary. *2,502 − 243 = ?*  *I need to exchange a 10 for some 1s, but there are not any 10s here.* 	Represent place value equipment on a place value grid to subtract, including exchanges where needed.  Make exchanges across more than one column where there is a zero as a place holder. *2,502 − 243 = ?*  	Use column subtraction, with understanding of the place value of any exchange required.  Make exchanges across more than one column where there is a zero as a place holder.  They should revert to the expanded columnar method and/or use place value counters if they experience difficulties.

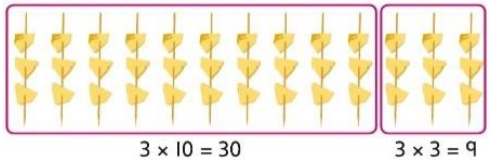
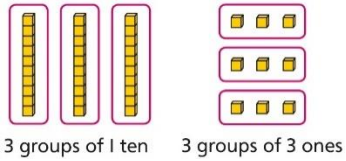
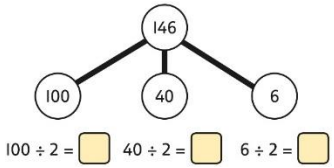
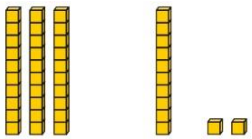
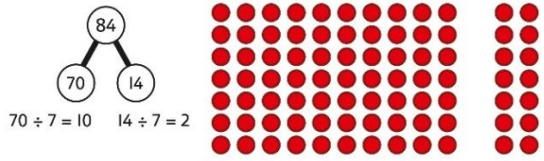
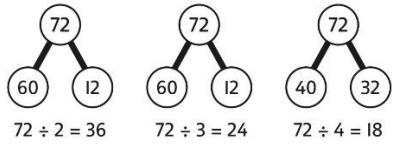
Estimate and use inverse operations to check answers to a calculation.		Use inverse operations to check subtractions. *I calculated 1,225 − 799 = 574.* *I will check by adding the parts.*   *The parts do not add to make 1,225.* *I must have made a mistake.*	To estimate the answer, round both numbers to the nearest thousand: 4000 + 2000 = 6000 or to the nearest hundred for a more accurate guess 3800 + 2100 = 5900 Solve the calculation using the compact columnar addition method: 3 7 8 2 + 2 1 3 6 5 9 1 8 1 If 3782 + 2136 = 5918 then 5918 - 3782 should equal 2136
Year 4 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 inverse		
Year 4 multiplication			
Count in steps of 6, 7, 9, 25 and 1000, and in hundredths (1/100 or 0.01).		Children should be able to count in multiples of 6, 7, 9, 25 and 1000, and in hundredths mentally. Counting resources (see Year 3) may be used to support children if necessary. It is equally important that children can count backwards in these intervals as well.	
Recall multiplication and division facts for multiplication tables up to 12 × 12.	Understand the special cases of multiplying by 1 and 0.  5 × 1 = 5 5 × 0 = 0	Represent the relationship between the ×9 table and the ×10 table.  Represent the ×11 table and ×12 tables in relation to the ×10 table.	Understand how times-tables relate to counting patterns. Understand links between the ×3 table, ×6 table and ×9 table *5 × 6 is double 5 × 3* ×5 table and ×6 table *I know that 7 × 5 = 35* *so I know that 7 × 6 = 35 + 7.*

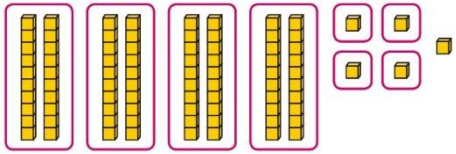
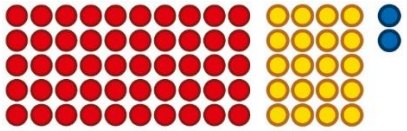
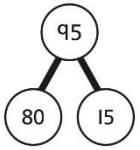
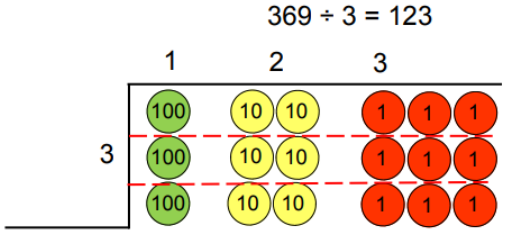
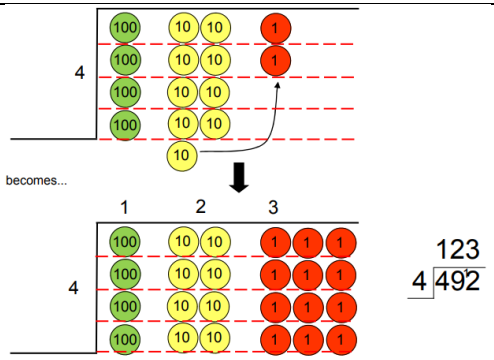
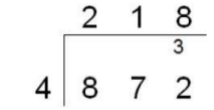
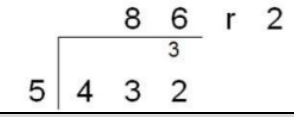
		 *2 × 11 = 20 + 2* *3 × 11 = 30 + 3* *4 × 11 = 40 + 4*  4 × 12 = 40 + 8	×5 table and ×7 table *3 × 7 = 3 × 5 + 3 × 2*  ×9 table and ×10 table *6 × 10 = 60* *6 × 9 = 60 – 6* Missing number problems can help assess children's knowledge of multiplication and division facts up to 12 x 12. 
Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Children should focus on deepening their understanding of the grid method to multiply a two-digit number by a one-digit number. Place value apparatus can be used to embed this. *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.   	Use the formal column method for up to 3-digit numbers multiplied by a single digit. 69 x 7 = 483   The grid method can be used to multiply a three-digit number as well. 453 x 6 = 2718

			The children should then progress to using the expanded column method, whereby the same process is used, only now the information is recorded in columns.  When they are ready, children reduce their recordings even further and start using short multiplication. 
Recognise and use factor pairs and commutativity in mental calculations. multiplying together three numbers	Represent situations by multiplying three numbers together.  *Each sheet has 2 × 5 stickers.* *There are 3 sheets*. *There are 5 × 2 × 3 stickers in total.*	Understand that commutativity can be used to multiply in different orders.  *2 × 6 × 10 = 120* *12 × 10 = 120* *10 × 6 × 2 = 120* 60 × 2 = 120 Through practise, they will notice that, no matter how they group the numbers, they will always get the same answer.	Knowing their factor pairs (which two numbers multiply together to make a particular value) is another skill the children need to acquire. Use knowledge of factors to simplify some multiplications. *24 × 5 = 12 × 2 × 5* 12 × 2 × 5 = 12 × 10 = 120 So, 24 × 5 = 120

	$5 \times 2 \times 3 = 30$ $10 \times 3 = 30$	2 x 4 x 3 = ?   (2 x 4) x 3 8 x 3 = 24 2 x (4 x 3) 2 x 12 = 24 For this reason, when they are presented with a problem which requires multiplying three numbers together, they will be able to choose which order they do it in. 6 x 5 x 9 = (6 x 9) x 5 = 54 x 5 = 270	
Use place value, known and derived facts to multiply.	Using known multiplication and division facts, children should be able to derive other associated facts for multiples of 10 and 100. 7 x 7 = 49 7 x 700 = 4,900  Place value counters can be used to support the children with this.		Use known facts and understanding of place value and commutativity to multiply mentally. *4 × 7 = 28* *4 × 70 = 280* *40 × 7 = 280* *4 × 700 = 2,800* *400 × 7 = 2,800* For some calculations, children may be able to mentally partition the numbers and work the answer out by jotting bits down. 6 x 17 = 6 x 10 + 6 x 7 = 60 + 42 = 102

Year 4 division			
Recall multiplication and division facts for multiplication tables up to 12 × 12.	Use objects 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
Use place value, known and derived facts to divide.	Use place value equipment to understand how to use unitising to divide.  *8 ones divided into 2 equal groups* *4 ones in each group* *8 tens divided into 2 equal groups* *4 tens in each group* *8 hundreds divided into 2 equal groups* *4 hundreds in each group*	Represent divisions using place value equipment.  *9 ÷ 3 = 3* *9 tens divided by 3 is 3 tens.* *9 hundreds divided by 3 is 3 hundreds.*	Use known facts to divide 10s and 100s by a single digit. *15 ÷ 3 = 5* *150 ÷ 3 = 50* *1500 ÷ 3 = 500*

Use place value and known facts to divide.	Partition into 10s and 1s to divide where appropriate. *39 ÷ 3 = ?*  *39 = 30 + 9* *30 ÷ 3 = 10* *9 ÷ 3 = 3* *39 ÷ 3 = 13*	Partition into 100s, 10s and 1s using Base 10 equipment to divide where appropriate. *39 ÷ 3 = ?*  *39 = 30 + 9* *30 ÷ 3 = 10* *9 ÷ 3 = 3* *39 ÷ 3 = 13*	Partition into 100s, 10s and 1s using a part-whole model to divide where appropriate. *142 ÷ 2 = ?*  *100 ÷ 2 = 50* *40 ÷ 2 = 20* *6 ÷ 2 = 3* *50 + 20 + 3 = 73* 142 ÷ 2 = 73
Use place value and known facts to divide.	Use place value equipment to explore why different partitions are needed. *42 ÷ 3 = ?* *I will split it into 30 and 12, so that I can divide by 3 more easily.* 	Represent how to partition flexibly where needed. *84 ÷ 7 = ?* *I will partition into 70 and 14 because I am dividing by 7.*  84 ÷ 7 = 12	Make decisions about appropriate partitioning based on the division required. 

Understand remainders	Use place value equipment to find remainders. *85 shared into 4 equal groups* *There are 24, and 1 that cannot be shared.* 	Represent the remainder as the part that cannot be shared equally.  72 ÷ 5 = 14 remainder 2	Understand how partitioning can reveal remainders of divisions.  *80 ÷ 4 = 20* *12 ÷ 4 = 3* 95 ÷ 4 = 23 remainder 3
Formal written method for division.		 Examples where exchange is required should also be provided: 492 ÷ 4 = ?	Children to use the formal short division method. Manipulatives, such as place value counters, could be used for a more visual experience. Begin with divisions that divide equally with no remainder.  Move onto divisions with a remainder. 
Year 4 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 inverse square, squared		