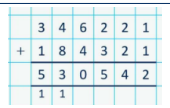
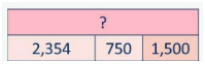
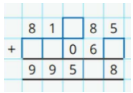
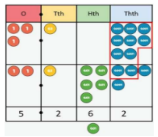
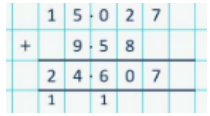
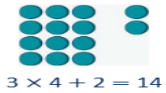
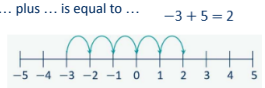
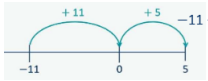
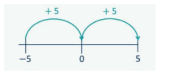
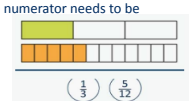
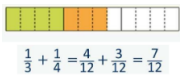
Progression of Addition

Year 5	Year 6
Add using mental strategies Add whole numbers with more than 4 digits Add decimals with up to 2 decimal places Complements to 1 Add fractions with denominators that are a multiple of one another	Add integers up to 10 million Add decimals with up to 3 decimal places Order of operations Negative numbers Add fractions

Addition

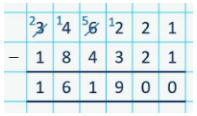
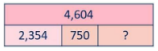
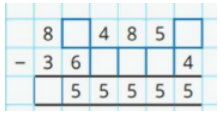
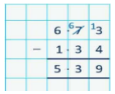
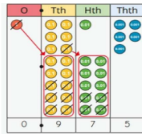
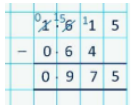
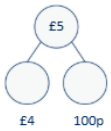
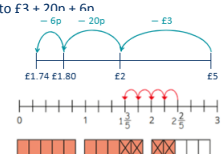
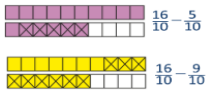
Year 6	Add larger numbers, using the formal written method of columnar addition. Use their knowledge of the order of operations to carry out calculations involving the 4 operations. Calculate intervals across zero. Add fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
Progression of skills	**Key representations**
Add integers up to 10 million Encourage children to estimate and use inverse operations to check answers to calculations.	  
Add decimals with up to 3 decimal places Progress to numbers with digits in different place value columns. Encourage children to check that they have lined up the columns correctly.	I do/do not need to make an exchange because …   
Add decimal numbers in the context of money Emphasis on partitioning and use of number lines rather than formal written calculations.	… has greater priority than …, so the first part of the calculation I need to do is …    
Negative numbers Children add to negative numbers and carry out calculations which cross 0	… plus … is equal to …    
Negative numbers Children add to negative numbers and carry out calculations which cross 0	The denominator has been multiplied by … , so the numerator needs to be  The lowest common multiple of … and … is …   …is made up of … wholes and …  

Progression of Subtraction

Year 5	Year 6

Subtract whole numbers with more than 4 digits Subtract using mental strategies Subtract decimals with up to 2 decimal places Complements to 1 Subtract fractions with denominators that are a multiple of one another	Subtract integers up to 10 million Subtract decimals with up to 3 decimal places Order of operations Negative numbers Subtract fractions

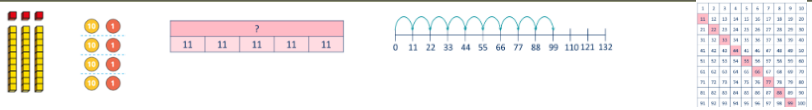
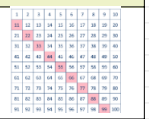
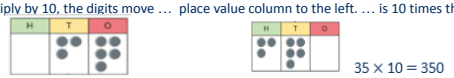
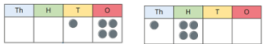
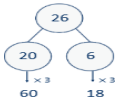
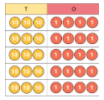
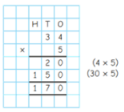
Subtraction

Year 6	Subtract larger numbers, using the formal written methods of columnar subtraction. Use their knowledge of the order of operations to carry out calculations involving the 4 operations. Calculate intervals across zero. Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
Progression of skills	**Key representations**
Subtract integers up to 10 million Encourage children to estimate and use inverse operations to check answers to calculations.	  
Subtract decimals with up to 3 decimal places Progress from the same number of decimal and whole number places to a different number of decimal and whole number places.	I do/do not need to make an exchange because ...   
Subtract decimal numbers in the context of money Emphasis here is on partitioning and use of number lines rather than formal written calculations.	I can partition £… into £… and 100p £… − £… = £… 100p − …p = …p **£5 − £3.26** £4 − £3 = £1 100p − 26p = 74p £5 - £3.26 = £1.74  £3.26 can be partitioned into £3 + 20p + 6p  
Subtract fractions and mixed numbers with the same denominator Include subtracting fractions from wholes.	When subtracting fractions with the same denominator, I only subtract the numerator. … tenths − … tenths = … tenths 

Progression of Multiplication

Year 3	Year 4	Year 5
The 3 times-table The 4 times-table The 8 times-table Related facts Multiply a 2-digit number by a 1-digit number - no exchange Multiply a 2-digit number by a 1-digit number - with exchange Scaling Correspondence problems	Times-table facts to 12 × 12 Multiply by 1 and 0 Multiply 3 numbers Factor pairs Multiply by 10 and 100 Related facts Mental strategies Multiply a 2 or 3-digit number by a 1-digit number Scaling Correspondence problems	Multiples and factors Square and cube numbers Multiply numbers up to 4 digits by a 1-digit number Multiply numbers up to 4 digits by a 2-digit number Multiply by 10, 100 and 1,000 Mental strategies Multiply fractions by a whole number Multiply mixed numbers by a whole number Find the whole

Multiplication

Year 4	Recall multiplication facts for multiplication tables up to 12 × 12 Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations. Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
Progression of skills	**Key representations**
Times-table facts to 12 × 12 Encourage daily counting in multiples both forwards and back. Encourage children to notice links between related times-tables.	… groups of … = … times … is equal to … … × … =  
Multiply by 1 and 0	Any number multiplied by 1 is equal to … Any number multiplied by 0 is equal to …  … × … = … 1 × 1 = 1 1 × 0 = 0 2 × 1 = 2 2 × 0 = 0 3 × 1 = 3 3 × 0 = 0 4 × 1 = 4 4 × 0 = 0
Multiply 3 numbers Children use their understanding of commutativity to multiply more efficiently.	To work out … × … × …, I can first calculate … × … and then multiply the answer by …  4 × 2 × 3 − 8 × 3 − 24 2 × 3 × 4 = 6 × 4 = 24 3 × 4 × 2 = 12 × 2 = 24
Factor pairs Children explore equivalent calculations using different factors pairs.	12 =… × … , so … × 12 = … × … × … 
Multiply by 10 and 100 Some children may over-generalise that multiplying by 10 or 100 always results in adding zeros. This will cause issues later when multiplying decimals.	When I multiply by 10, the digits move … place value column to the left. … is 10 times the size of …  35 × 10 = 350 When I multiply by 100, the digits move … place value columns to the left. … is 100 times the size of … 
Mental strategies Partition 2 or 3-digit numbers to multiply using informal methods.	… tens multiplied by … is equal to … tens. …ones multiplied by … is equal to … ones.   26 × 8 = 80 + 80 + 48 = 208  3 × 26 = 60 + 18 = 78
Multiply a 2 or 3-digit number by a 1-digit number The short multiplication method is introduced for the first time, initially in an expanded form.	To multiply a 2-digit number by … , I multiply the ones by … and the tens by … To multiply a 3-digit number by … I multiply the ones by … , the tens by … and the hu   
Scaling Children focus on multiplication as scaling (… times the size)	For every … , there are … possibilities. There are … × … possibilities altogether. A pizza company offers a choice of 5 toppings and 3 bases. 5 × 3 = 15

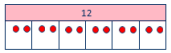
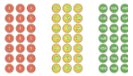
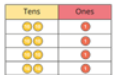
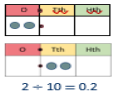
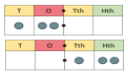
	Deep pan	Italian	Thin
Cheese	C DP	C I	C Th
Mushroom	M DP	M I	M Th
Vegetable	V DP	V I	V Th
Chicken	C DP	C I	C Th
Tuna	T DP	T I	T Th

Progression of Division

Year 3	Year 4	Year 5

Divide by 3 Divide by 4 Divide by 8 Related facts Divide a 2-digit number by a 1-digit number - no exchange Divide a 2-digit number by a 1-digit number - with remainders Unit fractions of a set of objects Non-unit fractions of a set of objects	Division facts to 12 × 12 Divide a number by 1 and itself Related facts Divide a 2 or 3-digit number by a 1-digit number Divide by 10 and 100	Mental strategies Divide numbers up to 4 digits by a 1-digit number Divide by 10, 100 and 1,000 Fraction of an amount

Division

Year 4	Recall division facts for multiplication tables up to 12 × 12 Use place value, known and derived facts to divide mentally, including: dividing by 1 Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	
Progression of skills	**Key representations**	
Division facts to 12 × 12 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are … groups of … in … … ÷ … =   2 × 6 = 12 12 ÷ 6 = 2  	… has been shared equally into … equal groups. … ÷ … =   2 × 6 = 12 12 ÷ 6 = 2
Divide a number by 1 and itself Children may try to divide a number by zero and it should be highlighted that this is not possible.	When I divide a number by 1, the number remains the same. 5 shared between 1 is 5 There are **5** groups of 1 in 5  	When I divide a number by itself, the answer is 1 5 shared between 5 is 1  There is **1** group of 5 in 5 
Related facts Link to known times-table facts.	… ÷ … is equal to … so … tens ÷ … is equal to … tens and … hundreds ÷ … is equal to … hundreds.  21 ÷ 7 = 3 210 ÷ 7 = 30 2,100 ÷ 7 = 300	21 ÷ 3 = 7 210 ÷ 3 = 70 2,100 ÷ 3 = 700 
Divide a 2 or 3-digit number by a 1-digit number Progress from divisions with no exchange, to divisions with exchange and then divisions with remainders.	I can partition … into … tens and … ones.  80 ÷ 4 = 20 4 ÷ 4 = 1 84 ÷ 4 = 21  	I cannot share the hundreds/tens equally, so I need to exchange 1 …  300 ÷ 3 = 100 120 ÷ 3 = 40 15 ÷ 3 = 5 435 ÷ 3 = 145 
Divide by 10 and 100 Encourage children to notice that dividing by 100 is the same as dividing by 10 twice.	When I divide by 10, the digits move 1 place value column to the right. … is one-tenth the size of …  2 ÷ 10 = 0.2  12 ÷ 10 = 1.2	When I divide by 100, the digits move 2 place value columns to the r … is one-hundredth the size of …  2 ÷ 100 = 0.02  12 ÷ 100 = 0.12