ADDITION - Progression of skills – Know what comes before and next!

Year group	National Curriculum Objective	Skill	Videos modelling calculation strategies
Reception	● Have a deep understanding of numbers to 10, including the composition of each number. ● Subitise (recognise quantities without counting) up to 5 ● Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.	● Conceptually subitise to 5 ● 1 more ● Notice the composition of numbers within 10 ● Combine 2 groups ● Add more	
Year 1	● Read, write and interpret mathematical statements involving addition (+) and equals (=) signs. ● Represent and use number bonds within 20 ● Add 1-digit and 2-digit numbers to 20, including zero. ● Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as 7 = + 2	● Add together ● Add more ● Bonds within 10 ● Related facts within 20 ● Missing numbers	
Year 2	● Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 ● Add numbers using concrete objects, pictorial representations, and mentally, including: -a two-digit number and 1s -a two-digit number and 10s -2 two-digit numbers -adding 3 one-digit numbers ● Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	● Add 1s to any number (related facts) ● Add three 1-digit numbers ● Add across a 10 ● Add multiples of 10 ● Add 10s to any number ● Add two 2-digit numbers (not across a ten) ● Add two 2-digit numbers (across a ten) ● Missing numbers	
Year 3	● Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. ● Add numbers with up to three digits, using formal written methods of columnar addition. ● Add fractions with the same denominator within 1 whole.	● Add 1s, 10s and 100s to a 3-digit number ● Add two numbers (no exchange) ● Add two numbers across a 10 or 100 ● Complements to 100 ● Add fractions with the same denominator within 1 whole	AUTUMN TERM ● Add two numbers (no exchange) https://vimeo.com/731049452 ● Add two numbers across a 10 or 100 https://vimeo.com/731050814

	● Calculate the time taken by particular events or tasks.	● Calculate the duration of events	● Add 2-digit and 3-digit numbers https://vimeo.com/731055022 SUMMER TERM ● Add fractions https://vimeo.com/801900963
Year 4	● Add numbers with up to 4 digits using a formal written method. ● Solve simple measure and money problems involving fractions and decimals to 2 decimal places. ● Add fractions with the same denominator.	● Add 1s, 10s and 100s to a 4-digit number ● Add up to two 4-digit numbers ● Add decimal numbers in the context of money ● Add fractions and mixed numbers with the same denominator beyond 1 whole	AUTUMN TERM ● Add and subtract 1s, 10s, 100s and 1,000s https://vimeo.com/729667222 ● Add up to two 4-digit numbers - no exchange https://vimeo.com/729668590 ● Add two 4-digit numbers - one exchange https://vimeo.com/729669446 ● Add two 4-digit numbers - more than one exchange https://vimeo.com/729670044
Year 5	● Add whole numbers with more than 4 digits, including using formal written methods. ● Add numbers mentally with increasingly large numbers. ● Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 ● Add fractions with the same denominator, and denominators that are multiples of the same number.	● 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	AUTUMN TERM ● Add whole numbers with more than four digits https://vimeo.com/729929058 ● Add and subtract fractions with the same denominator https://vimeo.com/732511686 ● Add fractions within 1 https://vimeo.com/732511992 ● Add fractions with total greater than 1 https://vimeo.com/732512267 ● Add to a mixed number https://vimeo.com/732506842 ● Add two mixed numbers https://vimeo.com/732507155

			SUMMER TERM ● Add and subtract decimals across 1 https://vimeo.com/804247308 ● Add decimals with the same number of decimal places https://vimeo.com/804247493 ● Add decimals with different numbers of decimal places https://vimeo.com/804248019
Year 6	● Add whole numbers with more than 4 digits, including using formal written methods. ● Add numbers mentally with increasingly large numbers. ● Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 ● Add fractions with the same denominator, and denominators that are multiples of the same number.	● Add integers up to 10 million ● Add decimals with up to 3 decimal places ● Order of operations ● Negative numbers ● Add fractions	AUTUMN TERM ● Add and subtract integers https://vimeo.com/731423527 ● Add and subtract simple fractions https://vimeo.com/731803159 ● Add and subtract any two fractions https://vimeo.com/731803709 ● Add mixed numbers https://vimeo.com/731804033 SPRING TERM ● Add and subtract decimals https://vimeo.com/774364649

SUBTRACTION - Progression of skills – Know what comes before and next!

Year group	National Curriculum Objective	Skill	Videos modelling calculation strategies
Reception	● Have a deep understanding of number to 10, including the composition of each number. ● Subitise (recognise quantities without counting) up to 5 ● Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (and some subtraction facts) and some number bonds to 10, including double facts.	● Conceptually subitise to 5 ● 1 less ● Notice the composition of numbers within 10 ● Partition ● Take away	●
Year 1	● Read, write and interpret mathematical statements involving subtraction (–) and equals (=) signs. ● Represent and use number bonds and related subtraction facts within 20 ● Subtract one-digit and two-digit numbers to 20, including zero. ● Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9	● Find a part ● Take away ● Bonds within 10 ● Related facts within 20 ● Missing numbers	●

Year 2	• Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100 • Subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s - 2 two-digit numbers • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	• Subtract 1s from any number (related facts) • Subtract across a 10 • Subtract multiples of 10 • Subtract 10s from any number • Subtract two 2-digit numbers (not across a ten) • Subtract two 2-digit numbers (across a ten) • Missing numbers	•
Year 3	• Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. • Subtract numbers with up to three digits, using formal written methods. • Subtract fractions with the same denominator within 1 whole.	• Subtract 1s, 10s and 100s from a 3-digit number • Subtract two numbers (no exchange) • Subtract two numbers across a 10 or 100 • Complements to 100 • Subtract fractions with the same denominator within 1 whole	**AUTUMN TERM** • Subtract two numbers (no exchange) https://vimeo.com/731049925 • Subtract two numbers across a 10 https://vimeo.com/731052793 • Subtract a 2-digit number from a 3-digit number https://vimeo.com/731055541 **SUMMER TERM** • Subtract fractions https://vimeo.com/801901064
Year 4	• Subtract numbers with up to 4 digits using a formal written method. • Solve simple measure and money problems involving fractions and decimals to 2 decimal places. • Subtract fractions with the same denominator.	• Subtract 1s, 10s, 100s and 1,000s from a 4-digit number • Subtract up to two 4-digit numbers • Subtract decimal numbers in the context of money • Subtract fractions and mixed numbers with the same denominator	AUTUMN TERM • Subtract two 4-digit numbers - no exchange https://vimeo.com/729671030 • Subtract two 4-digit numbers - one exchange https://vimeo.com/729671673 • Subtract two 4-digit numbers - more than one exchange https://vimeo.com/729672196

Year 5	• Subtract whole numbers with more than 4 digits. • Subtract numbers mentally with increasingly large numbers. • Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 • Subtract fractions with the same denominator, and denominators that are multiples of the same number.	• 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	AUTUMN TERM • Subtract whole numbers with more than four digits https://vimeo.com/729929837 • Subtract fractions https://vimeo.com/732507694 • Subtract from a mixed number https://vimeo.com/732507972 • Subtract from a mixed number - breaking the whole https://vimeo.com/732508176 • Subtract two mixed numbers https://vimeo.com/732508492 SUMMER TERM • Subtract decimals with the same number of decimal places https://vimeo.com/804247703 • Subtract decimals with different numbers of decimal places https://vimeo.com/804248171
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.	• Subtract integers up to 10 million • Subtract decimals with up to 3 decimal places • Order of operations • Negative numbers • Subtract fractions	AUTUMN TERM • Add and subtract integers https://vimeo.com/731423527 • Add and subtract simple fractions https://vimeo.com/731803159 • Add and subtract any two fractions https://vimeo.com/731803709 • Subtract mixed numbers https://vimeo.com/731804373 • SPRING TERM Add and subtract decimals https://vimeo.com/774364649

MULPILICATION - Progression of skills – <u>Know what comes before and next!</u>

Year group	National Curriculum Objective	Skill	Videos modelling calculation strategies
Reception	●Have a deep understanding of number to 10, including the composition of each number. ●Subitise (recognise quantities without counting) up to 5 ●Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. ●Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	● Double to 10 ● Make equal groups	●
Year 1	●Count in multiples of twos, fives and tens. ●Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher	● Count in 2s, 5s and 10s ● Add equal groups ● Make arrays ● Make doubles	●

Year 2	●Recall and use multiplication facts for the 2, 5 and 10 multiplication tables. ●Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs. ●Show that multiplication of two numbers can be done in any order (commutative).	• Link repeated addition and multiplication • Use arrays • Double • The 2 times-table • The 10 times-table • The 5 times-table • Missing numbers	• Use arrays https://vimeo.com/732395183
Year 3	●Recall and use multiplication facts for the 3, 4 and 8 multiplication tables. ●Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ●Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	• 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	SPRING TERM • Multiply a 2-digit number by a 1-digit number - no exchange https://vimeo.com/772116415 • Multiply a 2-digit number by a 1-digit number – with exchange https://vimeo.com/772116811
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	• 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	AUTUMN TERM • Multiply three numbers https://vimeo.com/732474401

	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.		SPRING TERM ● Informal written methods for multiplication https://vimeo.com/771674183 ● Multiply a 2digit number by a 1digit number https://vimeo.com/771674540 ● Multiply a 3digit number by a 1digit number https://vimeo.com/771675046
Year 5	●Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers ●Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) ●Multiply numbers up to 4 digits by a one- or two-digit number using a formal	● 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	AUTUMN TERM ● Multiply by 10, 100 and 1,000 https://vimeo.com/731342209 SPRING TERM ● Multiply up to a 4digit number by a 1digit number https://vimeo.com/771238517

	written method, including long multiplication for two-digit numbers. ●Multiply numbers mentally drawing upon known facts. ●Multiply whole numbers and those involving decimals by 10, 100 and 1000 ●Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	• Multiply fractions by a whole number • Multiply mixed numbers by a whole number • Find the whole	• Multiply a 2digit number by a 2digit number area model https://vimeo.com/771239086 • Multiply a 2digit number by a 2digit number https://vimeo.com/771239764 • Multiply a 3digit number by a 2digit number https://vimeo.com/771240161 • Multiply a 4digit number by a 2digit number https://vimeo.com/771240666 • Multiply a unit fraction by an integer https://vimeo.com/772396428 • Multiply a non-unit fraction by an integer https://vimeo.com/772396544 • Multiply a mixed number by an integer https://vimeo.com/772396685 • Find the whole • https://vimeo.com/772397201

DIVISION - Progression of skills – <u>Know what comes before and next!</u>

Year group	National Curriculum Objective	Skill	Videos modelling calculation strategies
Reception	● Have a deep understanding of number to 10, including the composition of each number. ● Subitise (recognise quantities without counting) up to 5 ● Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. ● Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	● Sharing ● Grouping	●
Year 1	● Solve simple one-step problems involving division, using concrete objects, pictorial representations and arrays with the support of the teacher. ● Recognise, find and name a half as one of two equal parts of a quantity. ● Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	● Make equal groups – grouping ● Make equal groups – sharing ● Find a half ● Find a quarter	●
Year 2	● Recall and use division facts for the 2, 5 and 10 multiplication tables. ● Calculate mathematical statements for division within the multiplication tables and write them using the division (÷) and equals (=) signs. ● Recognise, find, name and write fractions 1 , 1 , 2 and of a quantity.	● Divide by 2 ● Divide by 10 ● Divide by 5 ● Missing numbers ● Unit fractions ● Non-unit fractions	●
Year 3	● Recall and use division facts for the 3, 4 and 8 multiplication tables.	● Divide by 3 ● Divide by 4 ● Divide by 8	SPRING TERM

	• Write and calculate mathematical statements for 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. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	• 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	• Divide a 2-digit number by a 1-digit number – no exchange https://vimeo.com/772117900 • Divide a 2-digit number by a 1-digit number - with reminders https://vimeo.com/772128909
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.	• 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	SPRING TERM • Divide a 2digit number by a 1digit number 1 https://vimeo.com/771675344 • Divide a 2digit number by a 1digit number 2 https://vimeo.com/771675815 • Divide a 3digit number by a 1digit number https://vimeo.com/771676494
Year 5	• Divide numbers mentally drawing upon known facts. • Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context. • Divide whole numbers and those involving decimals by 10, 100 and 1,000	• Mental strategies • Divide numbers up to 4 digits by a 1-digit number • Divide by 10, 100 and 1,000 • Fraction of an amount	AUTUMN TERM • Divide by 10, 100 and 1,000 https://vimeo.com/731342529 SPRING TERM • Short division https://vimeo.com/771241770 • Divide a 4digit number by a 1digit number https://vimeo.com/771242200 Divide with remainders https://vimeo.com/771242746

Year 6	• Perform mental calculations, including with mixed operations and large numbers. • Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. • Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. • Divide numbers by 10, 100 and 1,000 giving answers up to three decimal places. • Use written division methods in cases where the answer has up to two decimal places. • Associate a fraction with division and calculate decimal fraction equivalents. • Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6] • Solve problems involving the calculation of percentages.	• Short division • Mental strategies • Long division • Order of operations • Divide by 10, 100 and 1,000 • Divide decimals by integers • Decimal and fraction equivalents • Divide a fraction by an integer • Fraction of an amount • Calculate percentages • Calculations involving ratio	AUTUMN TERM • Short division https://vimeo.com/731432126 • Introduction to long division https://vimeo.com/731433176 • Long division with remainders https://vimeo.com/731433626 • Divide a fraction by an integer https://vimeo.com/731807180 • Divide any fraction by an integer https://vimeo.com/731807503 SPRING TERM Divide decimals by integers https://vimeo.com/774367440

Below are the links to further videos, which may be useful to support home learning.

YEAR 3
https://whiteroseeducation.com/parent-pupil-resources/maths/home-learning?year=year-3-new&term=autumn&term=spring&term=summer

YEAR 4
https://whiteroseeducation.com/parent-pupil-resources/maths/home-learning?year=year-4-new&term=autumn&term=spring&term=summer

YEAR 5
https://whiteroseeducation.com/parent-pupil-resources/maths/home-learning?year=year-5-new&term=autumn&term=spring&term=summer

YEAR6
https://whiteroseeducation.com/parent-pupil-resources/maths/home-learning?year=year-6-new&term=autumn&term=spring&term=summer