



Skills Progression 2015/16

KEY LEARNING MILSTONES (adapted from NAHT and Michael Tidd),

CALCULATION STRATEGIES and PROBLEM SOLVING STRATEGIES

Subject area: Mathematics: number and place value, addition and subtraction, multiplication and division, fractions, ratio and proportion, algebra, geometry, measurement

Curriculum leader: Nicky Gifford

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and place value	1. Counts to and across 100 from any number 2. Counts, reads and writes numbers to 100 in numerals 3. Identifies 'one more' and 'one less'	1. Counts in steps of 2s, 3s and 5s, from 0 and steps of 10 from any number, forward and backward 2. Recognises place value in two-digit numbers 3. Compares and order numbers up to 100 using <, > and =	1. Counts in multiples of 4, 8, 50 and 100 2. Compares and orders numbers up to 1000	1. Counts backwards through zero, including negative numbers 2. Recognises place value in four-digit numbers 3. Rounds any number to the nearest 10, 100 or 1000	1. Interprets negative numbers in context 2. Reads Roman numerals to 1000, including years	1. Uses negative numbers to calculate intervals across zero
Addition and subtraction	4. Reads and writes mathematical symbols: +, - and = 5. Uses number bonds and subtraction facts within 20 6. Adds and subtracts 1-digit and 2-digit numbers to 20, including zero	4. Recalls and uses number +/- facts to 20 fluently, and derives and uses related facts 5. Adds and subtracts mentally and with objects one- and two-digit numbers 6. Understands and uses the inverse relationship between addition and subtraction	3. Adds and subtracts numbers mentally, including rounds numbers to HTU 4. Adds and subtracts using standard column method 5. Estimates answers to calculations and uses the inverse to check answers		3. Uses rounding to check answers and determine accuracy	2. Divides numbers using long division, interpreting the remainders as appropriate 3. uses order of operations to carry out calculations + M - N x P-Q ÷ P-Q
Strategies	+ A-D - A-D	+ E-F2 - E-G	+ G-H2 - H-I	+ I-L - J-L	+ L-M - M	
Multiplication and division		7. Knows the 2x, 5x and 10x tables, including recognising odd and even numbers 8. Calculates mathematical statements using x and ÷ symbols	6. Knows 3x, 4x and 8x tables	4. Knows tables up to 12x12 5. Uses place value and number facts to carry out mental calculations 6. Uses factor pairs and commutatively in mental calculations 7. Uses short multiplication method	4. Identifies multiples and factors, including finding factor pairs and common factors 5. Recognises and uses square and cube numbers, and knows the notation 6. Uses vocabulary: prime numbers, prime factors and composite numbers 7. Knows prime numbers up to 19 8. Multiplies and divides numbers by 10, 100 or 1000, including decimals 9. Uses long multiplication for multiplying numbers of up to 4 digits by one or two digits 10. Divides numbers using standard written short division	
Strategies	x A-B2 ÷ A-D	x C-E ÷ E-G	x F-G ÷ H-I	x H-K ÷ J-L	x L-O ÷ M-O	

<p>Fractions (including decimals and percentages)</p>	<p>7. Recognises, finds and names a half including from quantities 8. Recognises, finds and names a quarter, including from quantities.</p>	<p>9. Recognises, finds, names and writes $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of size, shape or quantity 10. Writes simple fraction facts, e.g. $\frac{1}{2}$ of 6 = 3</p>	<p>7. Counts up and down in tenths 8. Understands that tenths are objectives or quantities divided into ten equal parts 9. Compares and orders simple fractions 10. Recognises and shows equivalent fractions 11. Finds and writes fractions of a set of objects 12. Adds and subtracts fractions with common denominators (less than one)</p>	<p>8. Recognises and uses hundredths 9. Recognises and writes decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ 10. Divides one- or two-digit numbers by 10 and 100, using tenths and hundredths 11. Rounds decimals with one decimal place to the nearest whole number 12. Compares numbers up to two decimal places</p>	<p>11. Converts between mixed numbers and improper fractions 12. Compares and orders fractions whose denominators are multiples of the same number 13. Identifies, names and writes equivalent fractions including tenths and hundredths 14. Adds and subtracts fractions with denominators that are multiples of the same number 15. Multiplies proper fractions and mixed numbers by whole numbers with support 16. Reads and writes decimal numbers as fractions 17. Rounds decimals with 2 decimals places to whole number or to one decimal place 18. Reads, writes, orders and compares numbers with up to 3 decimal places 19. Recognises % symbol and explains as a fraction with denominator 100 (parts of 100)</p>	<p>4. Uses common factors to simplify fractions 5. Compares and orders fractions of any size 6. Adds and subtracts fractions with different denominators and mixed numbers 7. Multiplies simple pairs of proper fractions 8. Divides proper fractions by whole numbers 9. Calculates decimal fraction equivalents for simple fractions 10. Multiplies a number with up to two decimal places by whole numbers 11. Uses written division with answers of up to two decimal places</p>
<p>Ratio and proportion</p>						<p>12. Solves problems involving the calculation of percentages 13. Recalls and use equivalences between fractions, decimals and percentages 14. Solves problems using ratio using multiplication and division facts 15. Solves problems involving similar shapes where the scale factor is known 16. Solves problems involving proportion, using knowledge of fractions and multiples</p>
<p>Algebra</p>						<p>17. Uses simple formulae 18. Generates and describes linear number sequences 19. Expresses missing number problems algebraically</p>

Measurement	<p>9. Measures and begins to record length, mass, volume and time</p> <p>10. Recognises and knows the value of all coins and notes</p> <p>11. Uses language to sequence events in chronological order</p> <p>12. Recognises and uses language relating to dates</p> <p>13. Tells the time to the half-hour, including drawing clocks</p>	<p>11. Combines amounts of money to make a value, including using £ and p symbols</p> <p>12. Tells the time to the nearest 5 minutes, including drawing clocks</p>	<p>13. Measures, compares and calculates measures using standard units</p> <p>14. Measures the perimeter of simple 2D shapes</p> <p>15. Adds and subtracts money, including giving change</p> <p>16. Tells and writes the time from an analogue clock, including using Roman numerals</p> <p>17. Estimates and reads time to the nearest minute</p>	<p>13. Converts between different units of metric measurement, including money</p> <p>14. Finds the area of rectilinear shapes by counting squares</p> <p>15. Solves problems converting units of time</p>	<p>20. Understands and uses common approximate conversions between metric and imperial</p>	<p>20. Converts units of measure between smaller and larger units</p> <p>21. Converts between miles and kilometres</p> <p>22. Calculates the area of parallelograms and triangles</p> <p>23. Calculates and compares volume of cubes and cuboids</p>
Geometry – properties of shapes	<p>14. Recognises and names common 2-D shapes</p> <p>15. Recognises and names common 3-D shapes</p>	<p>13. Describes properties of 2D shapes, including number of sides and symmetry</p> <p>14. Describes properties of 3D shapes, including number of edges, vertices and faces</p>	<p>18. Identifies horizontal, vertical, parallel and perpendicular lines</p> <p>19. Identifies whether angles are greater or less than a right angle</p>	<p>16. Compares and classifies shapes, including quadrilaterals and triangles</p> <p>17. Completes a simple symmetric figure with respect to a specific line of symmetry</p>	<p>21. Measure and calculates the perimeter of composite rectilinear shapes</p> <p>22. Calculates the area of rectangles, and estimates the area of irregular shapes</p> <p>23. Uses the properties of rectangles to find missing lengths and angles</p> <p>24. Distinguishes between regular and irregular polygons</p> <p>25. Identifies 3D shapes from 2D representations</p> <p>26. Knows angles are measured in degrees and compare acute, obtuse and reflex angles</p> <p>27. Draws and measure angles to the nearest degree</p> <p>28. Identifies angles at a point, in a turn and on a straight line</p>	<p>24. Illustrates and names parts of a circle</p> <p>25. Finds missing angles in triangles, quadrilaterals and regular polygons</p> <p>26. Recognises vertically opposite angles and find missing angles</p>
Geometry – position and direction				<p>18. Describes positions on a 2D grid using co-ordinates</p> <p>19. Describes translations using a given unit to the left/right and up/down</p>	<p>29. Describes and represents the result of a reflection or translation</p>	<p>27. Describes positions on the full co-ordinate grid</p> <p>28. Translates shapes on a co-ordinate grid and reflect in the axes</p>
Statistics		<p>Interprets and constructs simple tables, tally charts and pictograms</p>	<p>20. Interprets and presents data using bar, charts, pictograms and tables</p>	<p>20. Interprets and presents discrete and continuous data on appropriate graphs</p>	<p>30. Completes, reads and interprets information in tables, including timetables</p>	<p>29. Constructs and interprets pie charts</p> <p>30. Calculates the mean as an average</p> <p>31. Uses estimates to check answers</p>
Problem Solving Strategies	<p>Draw a Picture, Look for a Pattern, Guess and Check</p>	<p>Draw a Picture, Look for a Pattern, Guess and Check, Be Systematic</p>	<p>Draw a Picture, Look for a Pattern, Guess and Check, Be Systematic, Work Backwards</p>	<p>Draw a Picture, Look for a Pattern, Guess and Check, Be Systematic, Work Backwards</p>	<p>Draw a Picture, Look for a Pattern, Guess and Check, Be Systematic, Work Backwards, Logical Reasoning</p>	<p>Draw a Picture, Look for a Pattern, Guess and Check, Be Systematic, Work Backwards, Logical Reasoning</p>

