

Tracking Individual Pupil Progress (TIPPS): Primary Mathematics Assessment Profile

Year 3 Understanding and investigating within number

Stage C: typical range of Year 3 attainment			
	3.1 Beginning to develop Y3 expectations	3.2 Embedding understanding of Y3 expectations	3.3 Demonstrates mastery and application of Y3 expectations
Place value, ordering and rounding			
<ul style="list-style-type: none"> Counting, reading and writing numbers 	Counts, reads and writes numbers up to 1000 in numerals and words May lack confidence and have problems crossing boundaries.	Counts, reads and writes numbers up to 1000 in numerals and in words	Accurately reads and writes numbers up to and beyond 1000 in numerals and in words Connects and explains changes in numbers counted to place value.
<ul style="list-style-type: none"> Comparing, ordering and rounding numbers using place value 	Consolidates comparing and ordering numbers from 0 up to 100 and beyond. Continues to identify the number that is 10 more or less than any number to 1000 Consolidates understanding of place value of each digit in a two-digit number, (tens, ones) and starts to extend to three digit numbers . Identifies and represents two digit and then three digit numbers using different representations. <i>Starts to round numbers up to 100 to the nearest 10 in a range of contexts e.g. money or measures</i>	Compares and orders numbers up to 1000 Identifies the number that is ten or one hundred more or less than any number up to 1000. Recognises the place value of each digit in a three-digit number (hundreds, tens, ones) Develops partitioning e.g. $146 = 100 + 40 + 6 = 130 + 16$ Identifies, represents and estimates numbers up to 1000 using different representations. <i>Rounds numbers up to 1000 to the nearest 10 in a range of contexts and explains decisions.</i>	Fluently compares and orders numbers up to 1000 Confidently identifies the number ten or one hundred more or less than any number up to 1000 and beyond. Recognises the place value of each digit in a three-digit number (hundreds, tens, ones) and demonstrates understanding in a range of number problems. Identifies, represents and estimates numbers up to and beyond 1000 using different representations. <i>Rounds numbers up to 1000 to the nearest 10 or 100 in a range of contexts Understands reasons for rounding.</i>
<ul style="list-style-type: none"> Problem solving 	Solves number and practical problems	Solves number and practical problems	Solves number and practical problems
Properties of numbers and number sequences			
<ul style="list-style-type: none"> Counting in multiples 	Confidently counts forwards and back in multiples of 2, 3, 5, 10 and 100	Counts from 0 in multiples of 4, 8, 50 and 100;	Fluently counts from 0 in multiples of 4, 8, 50 and 100 from any given multiple of that number.
<ul style="list-style-type: none"> Recognising and describing patterns 	<i>Recognizes patterns in sequences of multiples and connections between.</i>	<i>Recognizes and extends patterns in sequences of multiples and connections between them</i>	<i>Explores and discusses patterns, properties and relationships between multiples.</i>
Fractions	Recognises and finds unit fractions with small denominators of a discrete set of objects E.g. find $\frac{1}{3}$, $\frac{1}{5}$'s of a set of objects. Continue to recognise fractions as parts of a whole, measurement, shapes and as a division of a quantity	Recognises, finds and writes fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Starts to show understanding of the relation between unit fractions as operators and (fractions of) and division by integers.	Recognises, finds and writes fractions of a discrete set of objects: unit fractions and non-unit fractions with a wider range of denominators. Understands and explains the relation between unit fractions as operators (fractions of) and division by integers.
	Starts to compare unit fractions E.g. Compares $\frac{1}{3}$ and $\frac{1}{5}$ and explains which is larger / smaller.	Compares and orders unit fractions, and fractions with the same denominators	Compares and orders unit fractions, and fractions with the same denominators. Explains how fractions are ordered using precise vocabulary.
	Consolidates understanding of equivalence of fractions with $\frac{2}{4}$ and $\frac{1}{2}$, and starts to extend to other fractions.	Recognises and shows, using diagrams, equivalent fractions with small denominators.	Recognises and shows, using diagrams, a wider range of equivalent fractions with small denominators. Starts

			to recognise families of equivalent fractions.
	Shows understanding of fractions as numbers and counts in halves and quarters up to 10, forwards and back, starting at different numbers and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line.	Recognises and uses fractions as numbers unit and non-unit fractions with small denominators. Places them on a number line and starts to deduce relations between them such as size and equivalence. Counts forwards and back.	Understands fractions as numbers using a wider range of fractions: unit and non-unit fractions with small denominators. Deduces and explain relations between them such as size and equivalence. Goes beyond the 0 -1 range and in contexts such as measures.
	Starts to count up and down in tenths and to recognises that tenths arise from dividing an object into ten equal parts	Count up and down in tenths and recognises that tenths arise from dividing an object into ten equal parts and in dividing one-digit numbers or quantities by 10.	Fluently counts up and down in tenths and recognises that tenths arise from dividing an object into ten equal parts and in dividing one-digit numbers or quantities by 10 makes connections with place value, decimal measures and division by 10.
	Begins to add and subtract fractions with the same denominator within one whole starting with halves and quarters e.g. $\frac{1}{2} + \frac{1}{2} = 1$; $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$; $1 - \frac{1}{4} = \frac{3}{4}$.	Adds and subtracts fractions with the same denominator within one whole	Confidently add and subtract fractions with the same denominator within one whole e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$.
<ul style="list-style-type: none"> Problem solving 	Solves problems and number puzzles using the appropriate range of fractions in a range of contexts and solves them, giving clear explanations of reasoning and methods using precise mathematical vocabulary, diagrams and symbols	Solves problems and number puzzles using the appropriate range of fractions in a range of contexts and solves them, giving clear explanations of reasoning and methods using precise mathematical vocabulary, diagrams and symbols	Solves problems and number puzzles using the appropriate range of fractions in a range of contexts and solves them, giving clear explanations of reasoning and methods using precise mathematical vocabulary, diagrams and symbols

Year 3 Developing and applying calculation

Stage C: typical range of Year 3 attainment			
	3.1 Beginning to develop Y3 expectations	3.2 Embedding understanding of Y3 expectations	3.3 Demonstrates mastery and application of Y3 expectations
Addition and subtraction • Understanding number operations and the links between them	Continues to recognise and use the inverse relationship between addition and subtraction to check calculations and to solve missing number problems with appropriate numbers e.g. given $65 + 3 = 68$, complete $68 - \Delta = 65$ and $\Delta - 65 = \diamond$.	Continues to recognise and use the inverse relationship between addition and subtraction to check calculations and to solve missing number problems with appropriate e.g. given $165 + 30 = 195$, complete $195 - \Delta = 165$ and $\Delta - 165 = \diamond$.	Continues to recognise and use the inverse relationship between addition and subtraction to check calculations and to solve missing number problems with appropriate numbers e.g. given $65 + 44 = 109$, complete $109 - \Delta = 65$ and $\Delta - 65 = \diamond$.
Addition and subtraction • Mental calculation	Consolidates use of addition and subtraction facts to derive or calculate sums and differences of two-digit numbers. Starts to work with three-digit numbers. <i>Explains strategies used supporting explanations with jottings or informal recording.</i>	Adds and subtracts numbers mentally including • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds • two digit numbers with answers within 100 <i>Explains strategies used.</i>	Fluently adds and subtracts mentally including • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds • Two digit additions with answers that exceed 100 <i>Explains strategies use.</i>
Addition and subtraction • Written methods	Explore column methods for addition and subtraction that does not cross a ten e.g. $43 + 20$ or $65 - 14$	Begin to add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. Including crossing tens.	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.
	Estimate answers to calculations and use inverse operations to check.	Estimate answers to calculations and use inverse operations to check.	Estimate answers to calculations and use inverse operations to check.
• Problem solving	Solve problems including missing number problems using number facts and place value in a range of contexts	Solve more complex problems including missing number problems using number facts and place value in a range of contexts.	Solve increasingly complex problems including missing number problems using number facts and place value in a wider range of contexts.
Multiplication and division			
• Understanding number operations and the links between them	Continues to show and understand that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Relates multiplication to repeated addition and division to repeated subtraction. Starts to recognise and use the inverse relationship to derive related facts, check calculations and to solve missing number problems in the appropriate range of numbers e.g. given $5 \times 3 = 15$, complete $3 \times \Delta = 15$ and $\Delta \div 5 = 3$	Continues to show and understand that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Starts to use the commutative and associative laws for efficient mental calculation e.g. $2 \times 7 \times 5 = 2 \times 5 \times 7$ Relates multiplication to repeated addition and division to repeated subtraction. Develops use the inverse relationship to derive related facts, check calculations and to solve missing number problems in the appropriate range of numbers e.g. given $4 \times 6 = 24$, complete $6 \times \Delta = 24$ and $\Delta \div 6 = 4$	Continues to show and understand that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Uses the commutative and associative laws for efficient mental calculation with a wider range of calculations. Relates multiplication to repeated addition and division to repeated subtraction. Regularly uses the inverse relationship to derive related facts, check calculations and to solve missing number problems with more complex number sentences.
Multiplication and division • Recall of number facts	Continues to practice and shows rapid recall of 2, 5 and 10 multiplication tables.	Develops recall and use of multiplication and division facts for the 3, 4 and 8 multiplication tables.	Fluently recalls and uses multiplication and division facts for the 2, 5, 10, 3, 4 and 8 multiplication tables.

	Starts to use doubling to connect the 2 and 4 multiplication tables.	Connects 2, 4 and 8 tables through doubling.	Recognises a wider range of connections in tables.
Multiplication and division <ul style="list-style-type: none"> Mental calculation 	Start to develop efficient mental methods for multiplication and division using known tables facts, commutative and associative laws and place value e.g. $40 \times 2 = 80$, $50 \times 3 = 150$, $5 \times 15 \times 2 = 5 \times 2 \times 15$.	Continues to develop efficient mental methods for multiplication and division using known tables facts, commutative and associative laws and place value e.g. $40 \times 4 = 160$, $80 \div 4 = 20$	Continues to develop efficient mental methods for multiplication and division using known facts, commutative, associative and distributive laws e.g. $4 \times 12 \times 5 = 20 \times 12 = 240$, $15 \times 3 = (10 + 5) \times 3$ perhaps represented with an array or the grid method.
Multiplication and division <ul style="list-style-type: none"> Written methods 	Writes and calculates mathematical statements for multiplication and division using the multiplication tables that are known.	Writes and calculate mathematical statements for multiplication and division using the multiplication tables that are known, and starts to include appropriate two-digit numbers times one-digit numbers, using informal recording methods such as the grid method, linked to understanding of partitioning arrays to support the development of formal methods as appropriate.	Writes and calculates mathematical statements for multiplication and division using the multiplication tables that are known, including for two-digit numbers times one-digit numbers, using mental methods and informal recording and progressing to formal written methods with appropriate numbers.
<ul style="list-style-type: none"> Problem solving 	Solve problems involving appropriate multiplications and division facts including <ul style="list-style-type: none"> missing number problems, positive integer scaling problems (using doubling and halving....draw a line two times as long) and correspondence problems in which n objects are connected to m objects and problems in a range of contexts 	Solve problems involving appropriate multiplications and division facts and calculation methods including <ul style="list-style-type: none"> missing number problems, reasoning puzzles positive integer scaling problems e.g. 4 times as high correspondence problems in which n objects are connected to m objects and problems in a wider range of contexts 	Solve problems involving appropriate multiplications and division facts and mental or written calculation methods including <ul style="list-style-type: none"> missing number problems, reasoning puzzles positive integer scaling problems (using doubling and halving....draw a line two times as long) and correspondence problems in which n objects are connected to m objects and more complex problems in a range of contexts
	Solve simple problems in contexts deciding which of the four operations to use and why.	Solve simple problems in a wider range of contexts deciding which of the four operations to use and why.	Solve more complex problems in contexts deciding which of the four operations to use and why.

Tracking Individual Pupil Progress (TIPPS): Primary Mathematics Assessment Profile

Year 3 Measurement

Stage C: typical range of Year 3 attainment			
	3.1 Beginning to develop Y3 expectations	3.2 Embedding understanding of Y3 expectations	3.3 Demonstrates mastery and application of Y3 expectations
Measurement			
<ul style="list-style-type: none"> length mass capacity 	Uses appropriate tools and standard units to measure <ul style="list-style-type: none"> (m /cm) lengths / heights (kg / g) to measure mass (l/ml) to measure volume / capacity 	Chooses and uses appropriate tools and standard units to measure with increasing accuracy <ul style="list-style-type: none"> (m /cm/mm) lengths / heights accurately. (kg / g) to measure mass accurately. (l/ml) to measure volume / capacity accurately 	Chooses and uses appropriate tools and standard units to measure accurately <ul style="list-style-type: none"> (m /cm/mm) lengths / heights accurately. (kg / g) to measure mass accurately. (l/ml) to measure volume / capacity accurately <i>Explains why one unit is more appropriate than another and shows some understanding of the need for different levels of accuracy.</i>
		Starts to measure the perimeter of simple 2-D shapes	Measures perimeter of simple 2 – D shapes accurately.
	Starts to find equivalent <ul style="list-style-type: none"> lengths e.g. 5m = 500cm masses e.g. 1kg = 1000g capacities e.g. 1l = 1000ml 	Starts to find a greater range of equivalences <ul style="list-style-type: none"> lengths e.g. 5m and 50cm = 550cm masses e.g. 1kg and 200g = 1200g capacities e.g. 1l and 500ml = 1500ml 	Finds a wide range of equivalent lengths e.g. 5cm = 50mm, 230 cm = 2m and 30cm and explains why they are equivalent using mathematical vocabulary and showing fluency with measures facts.
	Compares and orders measures <ul style="list-style-type: none"> Length e.g. 2m / 1m and 30cm / 95cm. Mass e.g. 1kg / 200g. Capacity e.g. 1l / 200ml Records results of comparisons using >, < and = symbols and appropriate comparative language.	Compares and orders measures including those involving mixed units for <ul style="list-style-type: none"> Length e.g. 1m and 50cm / 125cm. Mass e.g. 1kg and 500g / 2000g. Capacity e.g. 1l and 100ml / 750ml Records results of comparisons using >, < and = symbols and appropriate comparative language	Compares and orders a wider range of measures including those involving mixed units for <ul style="list-style-type: none"> Length Mass Capacity Records results of comparisons using >, < and = symbols and appropriate comparative language <i>Explains how they have been ordered using mathematical vocabulary and showing fluency with measures facts</i>
	Starts to identify relationships and comparisons involving simple scaling by integers, connecting this to multiplication using known tables e.g. this ribbon is 5 times as long as one, this parcel is twice as heavy as this one. May need support.	More confident in Identifying relationships and comparisons involving simple scaling by integers, connecting this to multiplication using known tables e.g. this ribbon is 8 times as long as one, this jug holds four times as much as this one.	Fluently identifies relationships and comparisons involving simple scaling by integers, connecting this to multiplication using known tables e.g. this ribbon is 8 times as long as one, the weight of this cake is 3 times the weight of this one.
<ul style="list-style-type: none"> Temperature 		Continues to measure and record temperature (°C)	

<ul style="list-style-type: none"> Time 	<p>Starts to</p> <ul style="list-style-type: none"> Tell and write the time from an analogue clock to the nearest minute. Record and compare time in terms of minutes and hours; use vocabulary such as o'clock, morning, afternoon, noon and midnight. Estimate time e.g. when has one minute passed? <p>Starts to know the number of seconds in a minute and the number of days in each month.</p> <p>Compares duration of events e.g. the time taken by a particular event or task</p>	<p>Tells and write the time to the nearest minute from an analogue clock, including using Roman numerals from I to XII, and the 12-hour clocks. Use the digital 12 hour clock.</p> <p>Records and compares time in terms of seconds, minutes and hours; uses vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.</p> <p>Knows the number of seconds in a minute and the number of days in each month, a year and leap year.</p> <p>Compare duration of events e.g. the time taken by a particular event or task</p>	<p>Tells and write the time fluently from an analogue clock, including using Roman numerals from I to XII, and the 12-hour and 24-hour clocks. Use the digital 12 hour clock.</p> <p>Estimates and reads time with increasing accuracy to the nearest minute; records and compares time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight fluently.</p> <p>Knows and recalls fluently the number of seconds in a minute and the number of days in each month, a year and leap year.</p> <p>Compare duration of events e.g. calculate the time taken by a particular event or task</p>
		<i>Solves problems in the context of time including using timetables and calendars</i>	<i>Solves more complex problems in the context of time including using timetables and calendars</i>
<ul style="list-style-type: none"> Money 	<p>Continues to show recognition of all values of coins and notes when using both £ and p in practical situations, showing different ways to create sums of money, including using the fewest coins.</p> <p>Record £ and p separately.</p>	<p>Shows confidence with coin / note recognition and recording of amounts of money through adding and subtracting amounts of money, including calculating change, in the appropriate number range and using appropriate calculation methods.</p>	<p>Demonstrates fluency with coin / note recognition and recording of amounts of money through adding and subtracting amounts of money, including calculating change, in the appropriate number range and using appropriate calculation methods.</p>
<ul style="list-style-type: none"> Problem solving 	<p>Solves simple problems in a range of measures contexts.</p>	<p>Solves a range of problems in measures contexts involving all four operations.</p>	<p>Solves a range of more complex problems in measures contexts involving all four operations and where appropriate, fractions. Poses own problems.</p>

Year 3 Geometry

Stage C: typical range of Year 3 attainment			
	3.1 Beginning to develop Y3 expectations	3.2 Embedding understanding of Y3 expectations	3.3 Demonstrates mastery and application of Y3 expectations
Geometry			
<ul style="list-style-type: none"> properties of shapes 	Continues to identify and describe using precise mathematical vocabulary the properties of a wide variety of regular and irregular 2D and 3D shapes.	Extends knowledge of the properties of shapes to symmetrical and non-symmetrical polygons and polyhedra. <i>Recognise 3-D and 2-D shapes in different orientations and describe them.</i>	Confidently uses properties of 2D and 3D shapes, regular and irregular, in different orientations to describe and classify them and to solve problems involving reasoning about their properties. Accurately uses mathematical vocabulary
<ul style="list-style-type: none"> 	<i>Draws 2-D shapes</i> using a ruler and measure accurately in centimetres.	<i>Draws 2-D shapes</i> using a ruler and measure with increasing accuracy in centimetres and millimetres. <i>Makes 3-D shapes using modelling materials</i> and describes their properties.	<i>Draws 2-D shapes</i> using a ruler and measures accurately in centimetres and millimetres in a variety of contexts. <i>Makes a wider range of 3-D shapes using modelling materials</i> and describes their properties.
<ul style="list-style-type: none"> 	<i>Recognises angles as a property of shape or a description of turn</i> <i>Identifies whether angles are greater or less than a right angle.</i>	<i>Recognises angles as a property of a greater range of shapes and as a description of turn.</i> <i>Identifies right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn.</i> <i>Start to use the language of acute and obtuse.</i>	<i>Confidently uses angles, including acute, obtuse and right angles as a property of shapes and as a description of turn</i> in a wider range of situations to reason and solve problems.
Geometry:	<i>Starts to identify</i> horizontal and vertical lines	<i>Identifies horizontal and vertical lines and pairs of perpendicular and parallel lines.</i>	Confidently <i>identifies horizontal and vertical lines and pairs of perpendicular and parallel lines</i> in a wider range of situations.
<ul style="list-style-type: none"> Position and direction 		<i>Recognises angles as a description of a turn.</i> <i>Describes position, direction and movement including movement in a straight line and quarter, half, three quarter and full turns both clockwise and anti-clockwise.</i>	Confidently <i>recognise angles as a description of a turn.</i> <i>Describes position, direction and movement including movement in a straight line and quarter, half, three quarter and full turns both clockwise and anti-clockwise</i>
		<i>Identify the position of a square on a grid using references e.g. A3. B6 and describe ways to move between squares.</i>	<i>Confidently identify the position of a square on a grid using references e.g. A3. B6 and describe ways to move between squares.</i>

Year 3 Statistics

Stage C: typical range of Year 3 attainment			
Statistics	3.1 Beginning to develop Y3 expectations	3.2 Embedding understanding of Y3 expectations	3.3 Demonstrates mastery and application of Y3 expectations
	<p>Continues to interpret and present data using bar charts, pictograms and tables in different contexts</p> <p>Understands and use simple scales e.g. 2, 5, 10 units per cm in pictograms and bar charts with increasing accuracy.</p> <p>Solve simple problems using information for charts and tables.</p> <p><i>Understand and use Venn and Carroll diagrams to support reasoning about appropriate numbers or shapes.</i></p>	<p>Continues to interpret and present data using a wider range of bar charts, pictograms and tables in different contexts.</p> <p>Understands and uses simple scales e.g. 2, 5, 10 units per cm in pictograms and bar charts with increasing accuracy.</p> <p>Solve one and two-step questions e.g. 'How many more?' and 'How many fewer?' 'How many altogether?' using information presented in scaled bar charts and pictograms and tables.</p> <p><i>Understand and use Venn and Carroll diagrams to support reasoning about appropriate numbers or shapes</i></p>	<p>Interpret and present data using bar charts, pictograms and tables in a wider range of contexts.</p> <p>Start to suggest which form of presentation might be more appropriate.</p> <p>Understand and use simple scales e.g. 2, 5, 10 units per cm in pictograms and bar charts with increasing accuracy. Suggest scales and pictogram ratios to use when construction charts from their own data.</p> <p>Confidently solves one and two-step questions e.g. 'How many more?' and 'How many fewer?' 'How many altogether?' using information presented in scaled bar charts and pictograms and tables. Poses their own questions that can be answered using information presented in different bar charts pictograms and tables.</p> <p><i>Understand and use Venn and Carroll diagrams to support reasoning about appropriate numbers or shapes.</i></p>