Standards in Mathematics: YEAR THREE

Taken from Chris Quigley's Depth of Learning and adapted for use by Ashdene Primary School.

Standard	Cognitive Challenge	Nature of Progress	Typically Pupils Will…	Predominant Teaching Style
Working Towards Expected Standard (WT)	Low level cognitive demand. Involves following instructions.	Acquiring	name, describe, follow instructions or methods, complete tasks, recall information, ask basic questions, use, match, report, measure, list, illustrate, label, recognise, tell, repeat, arrange, define, memorise.	Modelling Explaining
Working at Expected Standard (WA)	Higher level of cognitive demand. Involves mental processing beyond recall. Requires some degree of decision making.	Practising	apply skills to solve problems, explain methods, classify, infer, categorise, identify patterns, organise, modify, predict, interpret, summarise, make observations, estimate, compare.	Reminding Guiding
Exceeding/Working in Greater Depth	Cognitive demands are complex and abstract. Involves problems with multi-steps or more than one possible answer. Requires justification of answers.	Deepening Understanding	solve non-routine problems, appraise, explain concepts, hypothesise, investigate, cite evidence, design, create, prove.	Coaching Mentoring

Assessment criteria for mathematics: YEAR THREE

Note: Independently or 'without support' means – Choosing to by oneself not when asked.

Learning Objective		Key Indicator(s)	Working Towards The Expected Standard (WT) Some evidence of the WA indicators seen	Working At The Expected Standard (WA) Most of the following features will be seen	Exceeding The Expected Standard/Greater Depth (Exc) All of the following features will be seen
To know and use numbers	Counting	Count in multiples of 2 to 9, 25, 50, 100 and 1000.	The expected standard has not been met	With concrete objects, there is counting in multiples of 2 to 9, 25, 50, 100 and 1000.	There is counting in multiples of 2, to 9, 25, 50, 100 and 1000.
		Find 1000 more or less than a given number.		There is some evidence of finding 1000 more or less than some numbers.	Generally, 1000 more or less than a given number is found.
		Count backwards through zero to include negative numbers.		There is a process of counting backwards to zero but prompts may be needed.	There is counting backwards to zero and through zero and negative numbers are recognised.
	Representing	Identify, represent and estimate numbers using different representations.		Numbers are represented as a collection of ones, groups of ten and groups of 100. With support estimation is attempted.	Generally, numbers are represented both pictorially and in writing in groups of ones, tens and hundreds. Estimation is generally accurate.
		Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.		Roman numerals on a clock can be read.	Roman numerals to 100 (I to C) are read.
	Comparing	Order and compare numbers beyond 1000.		With the support of a teacher, place value in numbers up to 1000 is understood and these numbers can be ordered.	The place value in numbers beyond 1000 is understood and these numbers can be ordered and compared.

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	Place value	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones).	The expected standard has not been met	The place value of each digit in a two-digit whole number is recognised. The place value of each digit in a three-digit number is recognised.	Generally the place value of each digit in a four-digit whole number is recognised.
		Round any number to the nearest 10, 100 or 1000.		When models or frameworks are provided, any number is rounded to the nearest 10 or 100.	Generally, any number is rounded accurately to the nearest 10, 100 or 1000.
	Solving problems	Solve number and practical problems with increasingly large positive numbers.		With concrete objects and apparatus number problems can be solved. Equipment is beginning to be chosen to help solve problems.	Number and practical problems with large positive numbers are solved. Patterns in results are looked for when problem solving. Generally, there is a secure awareness of which operation to use when solving problems.
To add and subtract	Checking	Estimate and use inverse operations to check answers to a calculation.	The expected standard has not been met	When structure is provided, the inverse operations are used to check answers to a calculation.	Generally, during problem solving, work is checked and corrections are made. Generally, inverse relationships are used to find missing numbers in a number sentence and to check answers to a calculation.
	Using number facts	Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.		There is an awareness of how to solve two-step problems using number facts and place value. Simple missing number problems can be solved using number facts and place value.	Generally, two-step number problems, including missing number problems, are tackled and solved using number facts, place value and addition and subtraction.

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	Complexity	Solve two-step addition and subtraction problems in contexts, deciding which operations and methods to use and why.	The expected standard has not been met	With the support of practical apparatus, two-step addition and subtraction problems are solved.	Two-step problems, involving addition and subtraction, are solved in different contexts. The most appropriate operations and methods are chosen and used to solve problems.
	Methods	Add and subtract numbers with up to four digits using the formal written methods of columnar addition and subtraction where appropriate.		The correct formal written methods are used to add and subtract numbers up to four-digits.	Generally, the formal written methods of columnar addition and subtraction are used to add and subtract numbers up to four-digits.
		Add and subtract numbers mentally, including: • A three-digit number and ones • A three-digit number and tens • A three-digit number and hundreds		With prompts, three-digit numbers and ones are added and subtracted mentally.	Three-digit numbers and ones and three-digit numbers and tens are added and subtracted mentally. Reminders may be needed to address mistakes. Three-digit numbers and hundreds are added and subtracted mentally.
To multiply and divide	Methods	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	The expected standard has not been met	Using practical apparatus, two-digit numbers are multiplied by a one-digit number. Calculations are represented using a formal written layout.	Two-digit numbers can be multiplied and divided by a one-digit number, using formal written layout accurately. With reminders, three-digit numbers can be multiplied and divided by a one-digit number, using formal written layout.

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		Use place value, and known and derived facts to multiply and divide mentally, including multiplying by 0 and 1, dividing by 1, multiplying together three numbers.	The expected standard has not been met	With the support of concrete objects, two-digit numbers can be multiplied and divided by 2, 3, 4 and 5. When reminders of strategies to support are given, simple multiplication and division facts can be solved mentally, including multiplying and dividing by 1.	Generally, place value and known multiplication and division facts are used to divide and multiply mentally, including multiplying by 0 and 1. Two-digit numbers can be multiplied by 2, 3, 4 and 5 mentally. Generally, three numbers can be multiplied together. Two-digit and three-digit numbers are multiplied by 0 and 1 and two-digit and three digit numbers are divided by 1 mentally with reminders occasionally needed.
		Recognise and use factor pairs in mental calculations.		With the support of pictorial representations, factor pairs are recognised.	Generally, factor pairs in mental calculations are used and recognised, e.g. 1 x 48 = 48, 2 x 24 = 48, 3 x 16 = 48.
	Checking	Recognise and use the inverse relationship between multiplication and division and use this to check calculations and solve missing number problems.		There is an awareness of the inverse relationship between multiplication and division. This is used to solve problems and at times to check calculations. Division facts can be found from a known multiplication fact.	The inverse relationship between multiplication and division is recognised. The inverse relationship between multiplication and division is used to solve problems and check calculations. Division facts can be found from a known multiplication fact.
	Complexity	Solve problems involving multiplying and dividing, 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).		Using pictorial representations, concrete objects and at times the support of a teacher, simple multiplication and division problems are solved.	Generally there is an understanding of the distributive law: multiplying a number by a group of numbers added together is the same as doing each multiplication separately, e.g. 3 x (2 + 4) = (3 x 2) + (3 x 4). The distributive law and other multiplication and addition methods are used to solve: • Problems involving multiplying two-digit numbers by a one-digit number • Integer scaling problems • Correspondence problems.

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	Using multiplication and division facts	Recall multiplication and division facts for multiplication tables up to 12 x 12.	The expected standard has not been met	Generally, multiplication and division facts for multiplication tables 2, 5 and 10 are recalled. Multiplication and division facts are recalled for 3 and 4 multiplication tables.	Multiplication and division facts are recalled for 2, 3, 4, 5 and 10 multiplication tables at speed. Generally and with a few reminders or corrections, multiplication and division facts for multiplication tables up to 12 x 12 can be recalled.
To use fractions	Solving problems	Add and subtract fractions with the same denominator within one whole.	The expected standard has not been met	With concrete objects and pictorial representations, fractions with the same denominator within one whole are added and subtracted, e.g. $^{2}/_{7} + {}^{3}/_{7} = {}^{5}/_{7}$	Fractions with the same denominator within one whole are added and subtracted.
		Solve problems involving increasingly harder fractions.		There is problem solving involving $^{1}/_{2}$ and 1/4 as fractions, decimals and percentages.	Generally, fractions with the same denominator are added and subtracted correctly, e.g. $1\ {}^{1}/_{4} - {}^{3}/_{4} = 1/2$.
		Add and subtract fractions with the same denominator.		With the support of a teacher, problems such as . + . are solved.	Problems involving fractions with the same denominator are solved.
		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.		With the support of practical apparatus, the effect of dividing a one or two-digit number by 10 is found and the value of the digits in the answer are identified as ones, tenths and hundredths.	The effect of dividing a one- or two-digit number by 10 and 100 is found and the value of the digits in the answer are identified as ones, tenths and hundredths, e.g. 136 ÷ 100 = 1.36 and the value of the number 3 in the answer is 3 tenths.
		Solve simple measure and money problems involving fractions and decimals to two decimal places.		When models are provided, such as concrete objects and pictorial images, measure and money problems involving fractions and decimals to two decimal places are solved.	Generally, simple measure and money problems involving fractions and decimals to two decimal places are solved.
	Recognising fractions	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.		With concrete objects and pictorial images, $^{1}/_{2}$, $^{1}/_{3}$ and $^{1}/_{4}$ of a discrete set of objects are found.	$^{1}/_{2}$, $^{1}/_{4}$, $^{1}/_{3}$ and $^{1}/_{5}$ of a discrete set of objects are generally recognised and used. Non-unit fractions are recognised and used (e.g. $^{2}/_{3}$).
		Round decimals with one decimal place to the nearest whole number.		With support decimals with one place are rounded to the nearest whole number.	Decimals with one place are rounded to the nearest whole number.

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		Compare numbers with the same number of decimal places up to two decimal places.	The expected standard has not been met	With support, two numbers with two decimal places are ordered correctly.	Generally, any sets of numbers with two decimal places are ordered correctly.
		Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and from dividing one-digit numbers or quantities by 10.		Within the context of counting money and metric measures, there is an emerging understanding that tenths arise from dividing a measure into 10 equal parts and from dividing one-digit numbers or quantities by 10.	Generally, the metric measure system is used to count in tenths and to explain that tenths arise from dividing a measure into 10 equal parts. With support, one-digit numbers or quantities are divided by 10.
		Count up and down in hundredths; recognise that hundredths arise from dividing an object by 100 and dividing tenths by 10.		Counting up and down in tenths and hundredths is correct.	Generally, counting up and down in tenths and hundredths is correct. It is generally recognised that tenths or hundredths arise from dividing an object into 10 or 100 equal parts and from dividing one-digit numbers or quantities by 10 or 100.
		Compare and order unit fractions and fractions with the same denominators.		With pictorial representations, unit fractions and fractions with the same denomination are ordered.	Generally, unit fractions and fractions with the same denominators are ordered.
		Recognise and show, using diagrams, families of common equivalent fractions.		By using diagrams, families of common equivalent fractions are recognised.	Families of common equivalent fractions are recognised and shown, e.g. $^1/_2$ is equivalent to $^2/_4$, $^3/_6$, $^4/_8$, etc.
		Recognise the equivalence of 2/4 and 1/2.		When concrete objects or pictorial representations are provided, the equivalence of $^2/_4$ and $^1/_2$ is recognised.	Generally, the equivalence of $^2/_4$ and $^1/_2$ is recognised.
	Equivalence	Recognise and write decimal equivalents of any number of tenths or hundredths.		With the support of a teacher, a decimal equivalent to $^1/_10$ is recognised.	Generally, decimal equivalents of any number of tenths are recognised and written. Decimal equivalents of any number of tenths or hundredths are recognised and written.

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		Recognise and write decimal equivalents to $^1/_4$, $^1/_2$, $^3/_4$.	The expected standard has not been met	There is an emerging understanding of the decimal equivalent to ¼.	Generally, decimal equivalents to ¼, ½ and ¾ are 9ecognize9 and written correctly
To **understand the properties of shapes**		Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.	The expected standard has not been met	With guidance, 2-D shapes can be drawn and 3-D shapes made using modelling materials. Basic properties, e.g. number of sides, lines of symmetry, etc., are described.	Generally, 2-D shapes can be drawn and 3-D shapes made using modelling materials. 3-D shapes in different orientations are recognised.
		Recognise angles as a property of shape or a description of a turn.		Turns of 90 degrees are recognised.	Generally, angles, as a property of shape, are recognised and described, including 90 and 180 degrees.
		Identify right angles; recognise that two right angles make a half turn, three make three quarters of a turn and four make a complete turn; identify whether angles are greater than or less than a right angle.		With support, right angles can be identified and angles which are greater than or less than a right angle are identified.	Generally, right angles, obtuse angles and acute angles are identified, compared and ordered correctly and the correct terminology is used. Right-angled or equilateral triangles are recognised. When reminders are given, isosceles and scalene triangles are identified.
		Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.		Horizontal and vertical lines are identified correctly.	Horizontal and vertical lines are identified independently and pairs of perpendicular and parallel lines are generally identified correctly.
		Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.		When prompts are given, geometric shapes, including triangles and quadrilaterals, are classified. With some guidance, different types of triangles, such as equilateral, scalene, isosceles and right-angled, are classified. The net for a cube is created.	Geometric shapes, including triangles and quadrilaterals, are generally classified. Generally there is classification of triangles into equilateral, scalene, isosceles and right-angled triangles, using the properties of shape.

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		Identify acute and obtuse angles and compare and order angles up to two right angles by size.	The expected standard has not been met	With prompts from a teacher, the terminology acute and obtuse is beginning to be used.	Generally, angles are compared and ordered up to 180 degrees. Generally, the language of obtuse and acute angles is used in describing angles.
		Identify lines of symmetry in 2-D shapes presented in different orientations.		Lines of symmetry in simple 2-D shapes, such as squares, rectangles and equilateral triangles, are identified with support.	Generally, lines of symmetry in 2-D shapes presented in different orientations are identified.
		Complete a simple symmetric figure with respect to a specific line of symmetry.		With the support of a teacher and when using a vertical line of symmetry, simple symmetric figures are completed.	When using a vertical or horizontal line of symmetry, simple symmetric figures are completed. Nets of 3-D shapes have started to be recognised and some nets for more common 3-D shapes can be created.
To describe position, direction and movement		Recognise angles as a property of shape and as an amount of rotation.	The expected standard has not been met	With the support of a teacher, angles are recognised as a property of shape. Rotations of 90 or 180, can be related to $^1/_4$ and $^1/_2$ turns.	Angles are recognised as a property of shape and as an amount of rotation.
		Identify angles that are greater than a right angle.		With support, angles greater than 90 degrees are recognised and described as obtuse.	Angles that are greater than a right angle are identified and called obtuse angles. Angles greater than 180 degrees are described as reflex angles.
		Describe positions on a 2-D grid as coordinates in the first quadrant.		The x and y axis are identified on a coordinate grid. When help or structure is provided, positions on a 2-D grid, as coordinates in the first quadrant, e.g. (2,2), are described.	Positions on a 2-D grid, as coordinates in the first quadrant, e.g. (2,2), are described and plotted.

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		Describe movements between positions as translations of a given unit to the left/right and up/down.	The expected standard has not been met	There is an awareness of the following terminology for position, direction and movement: left/right, clockwise/ anticlockwise, 90^0 to give directions.	The following directional terminology: left/right, clockwise/anticlockwise, 90^0, is understood and used correctly to describe position, direction and movement.
		Plot specified points and draw sides to complete a given polygon.		With support from a structured activity provided, specific points are plotted on a coordinate grid to complete a triangle or square.	Specified points are plotted on a coordinate grid and sides are drawn to complete a given polygon, e.g. a hexagon.
To use measures		Measure, compare, add and subtract: lengths/heights (m/cm/ mm); mass/weight (kg/g); volume/ capacity (l/ml).	The expected standard has not been met	Measurements are taken and recorded. With practical apparatus, measurements are added and subtracted.	Generally, measurement scales are understood and measurements are taken and recorded. Generally, a series of measurements are added and subtracted.
		Measure the perimeter of simple 2-D shapes.		The terms area and perimeter are beginning to be understood. With support, the perimeter of simple 2-D shapes is measured in cm and m.	Generally, the terminology of area and perimeter is secure and used correctly. The perimeter of a rectilinear figure (including squares) in centimetres and metres is measured and calculated.
		Add and subtract amounts of money to give change (£ and p).		With the support of practical apparatus, amounts of money can be added and subtracted to give change within one pound.	Generally, amounts of money can be added and subtracted to give change.
		Read, write and convert time between analogue and digital 12- and 24-hour clocks, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.		The time can be understood from an analogue clock, including when using Roman numerals.	Times are read, written and converted between analogue and digital 12- and 24-hour clocks, (e.g. 3 o'clock – 15:00hrs).
		Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use appropriate vocabulary.		A 12-hour clock can be read and time duration within the hour estimated.	Generally, time is estimated to the nearest minute, five minutes, quarter, half and three quarters of an hour. Time is compared and recorded, and the correct vocabulary is used: hours, minutes, seconds, etc.
		Know the number of seconds in a minute and the number of days in each month, year and leap year. Compare durations of events.		With support, the number of seconds in a minute and the number of days in a year is remembered.	The number of seconds in a minute and the number of days in each month, year and leap year are remembered, with prompts when necessary.

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		Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days and 12- and 24-hour clocks.	The expected standard has not been met	With concrete objects, simple conversions are beginning to be made.	Problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days are solved.
		Convert between different units of measure. (e.g. kilometre to metre, hour to minute).		Some conversions between different units are completed.	Generally, conversions of £ to pence, km to m and other simple conversions are completed.
		Measure and calculate the area and perimeter of a rectilinear figure (including squares) in centimetres and metres.		By counting squares inside a shape, the area of rectilinear shapes can be found.	Generally the area and perimeter of rectilinear shapes is found by counting squares.
		Estimate, compare and calculate different measures, including money in pounds and pence.		With support, estimation, comparisons and calculations of a range of measures is undertaken.	Generally, accurate estimation, comparisons and calculations of different measures are completed.