

Loders Primary Academy Mathematics Skills Progression

Strand	Stage Three		Stage Four		Stage Five		Stage Six		Stage Seven		
Problem Solving	Begin to adopt a systematic approach or suggested model to solve a problem.	Deconstruct a maths problem and find the important information needed to solve it.	Solve addition and subtraction two step problems in context deciding which operations and methods to use and why. Involving whole numbers, simple decimals and fractions PS5/PS20/PS25	Solve a multiplication and division one/two-step problem involving numbers, problems, using number facts, place value, money, measures, time to 2dp. PS20/PS25	Solve addition and subtraction multistep problems in context deciding which operations and methods to use and why. Involving fractions, percentages, and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and those fractions with a denominator of a multiple of 10 or 25 using a calculator where appropriate. PS6/PS21/PS27	Solve problems involving addition, subtraction, multiplication and division and a combination of these including understanding the meaning of the equals sign. PS14/PS21	Solve addition and subtraction multistep problems in context deciding which operations and methods to use and why. Involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. PS7/PS22	Solve problems involving similar shapes where the scale factor is known or can be found. PS17/PS22	Solve multi-step problems by breaking down complex calculations into simpler steps. I can test a prediction.	Solve complex problems by independently breaking them down into smaller, more manageable tasks. E.g. draw appropriately on a range of efficient techniques, methods and resources including ICT or give solutions to an appropriate degree of accuracy.	
	Use prior mathematical knowledge to solve problems. e.g. buy a number of items for 10p with £2	Identify a range of different approaches that can be used to solve a problem. e.g. find ways of making 25p with silver coins working systematically	Apply a range of appropriate approaches to systematically solve problems. e.g. plan a menu for the café keeping to a given budget PS5/PS20	Solve simple multiplication and division problems including simple scaling by simple fractions. PS24/PS25 Solve simple problems which require knowing simple percentage and decimals and simple conversion of units of measure.	Solve problems involving multiplication and division using knowledge of factors and multiples, squares and cubes PS13/PS21	Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates, percentages and decimal notation. PS15/PS21/PS26	Use rounding to check answers to calculations and determine, in the context of problems, levels of accuracy. IOC4	Solve problems involving the calculation of percentages, e.g. of measures and such as 15% of 360 Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. IOC5/IOC8			Solve problems involving the calculation and conversion of units of measure using decimal notation up to 3dp where appropriate. MAC9/CON10/PS22
	Solve problems including missing number problems, using number facts, place value and more complex addition and subtraction. PS4/EQ5/PS19	Solve problems including missing numbers involving multiplication and division, including positive integer scaling problems and harder correspondence problems in which 'n' objects are connected to 'm' objects. PS11/EQ6/PS23	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. PS12/PS20	Choose and use appropriate calculation/units of measure when solving number, measure and time problems, including timetables in 24 hour clock and calendars with ease.	Choose and use appropriate calculation strategies when solving mixed number, measure and time problems, including durations of time in hours and minutes.	Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including problems involving similar shapes where the scale factor is known or can be found. MAC/PS267	Use a range of calculation strategies to solve Year 5, measure and time problems with ease. Check answers to make sure they are reasonable.	Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. Use simple formulae F2	Use trial and improvement methods when solving numerical problems that involve ordering and approximating decimals.	Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.	
Communicating	Use and interpret diagrams with increasing independence. Explain a problem in my own words.	Organise work systematically, begin to pose questions in order to clarify the problem.	Organise my work effectively so that it can be followed by others. I can clarify a problem independently.	Explore patterns, properties and relationships.	Explore reasoning and conclusions using words, symbols and diagrams as appropriate.	Understand the relationship between operations to identify an effective strategy to solve a problem.	Explain using maths language how I solved a problem.	Plan a line of enquiry. Make a reasoned prediction.	Support lines of enquiry and predictions with sound mathematical reasoning.	Interpret, discuss and synthesise information presented in a variety of mathematical forms	
	Explain what has been done verbally and where appropriate in writing. Explain why an answer is or is not correct.	Explain what has done and record in writing where appropriate using key statements. (e.g. It must be...because...)	Respond to probing questions giving valid reasons for choices made. e.g. Why do you think that...	Propose a general statement involving numbers or shapes, and identify an example that either supports (True) or disproves (False) the statement.	Give examples to either support (True) or disprove (False) the statement.	Give reasons why the examples either support (True) or disprove (False) the statement.	Use specific mathematical vocabulary in my explanations. e.g. factor, prime, product.	Use an increasing range of mathematical vocabulary and terminology to support work.	Use a increasing range of mathematical vocabulary and terminology to support all stages of work	Find a counter-example to disprove a conjecture.	
	Use known number facts and inverse to check own work.	Use a variety of methods to check my own work.	Use a variety of effective methods to check my own and others' work.	Begin to present my work in a clear and organised way.	Present work in a clear and organised way.	Present work in a clear and organised way and explain my work using accurate mathematical language.	Present information and results in a clear and organised way that supports reasoning.	Draw conclusion and give explanations for reasoning using words and symbols.	Support explanations, conclusions and reasoning with accurate evidence, using words, symbols and diagrams.	Explain and justify reasoning and conclusions, using notation, symbols and diagrams. e.g. present a concise, reasoned argument using symbols, diagrams, graphs and related explanatory text	
Reasoning	Explain why an answer is correct. e.g. I think the answer is 12 because it is the next multiple of 3	Find examples that meet simple general statements. e.g. Every multiple of 4 is a multiple of 2	Identify and use patterns, relationships and properties of numbers and shapes; investigate a statement involving numbers, and know when I have tested an appropriate number of examples.	Explore and identify patterns, properties and relationships.	Represent and interpret sequences, patterns and relationships involving numbers and shapes.	Represent and interpret sequences, patterns and relationships involving complex numbers and shapes.	Explain reasoning and give simple conclusions to problem solving.	Provide evidence to prove /disprove a prediction.	Explain whether a line of enquiry has proved conclusive.	Begin to give mathematical justifications. e.g. use logical argument to justify solutions or express generalisations algebraically	
	Respond to questions about patterns and their relationships. e.g. What if...?, How could you test...?, Can you predict...?	Identify and use patterns, relationships to make a simple general statement. e.g. I think that...All will...because	Show an understanding of general statements that are 'true', by find examples that are both true and false.(counter examples) e.g. Every multiple of 4 is a multiple of 2 because...	Propose a general statement involving numbers or shapes.	Propose and test a general statement involving numbers and shapes.	Suggest a Hypothesis.	Suggest and test a Hypothesis. Provide a range of evidence to support the outcome of tests.	Provide evidence to support the outcome of the test. Generate sequences and describe the general term.	Make and test conjectures about patterns and relationships: look for proofs or counter examples.	Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.	

Loders Primary Academy

Mathematics Skills Progression

				Identify an example that either supports (True) or disproves (False) the statement.	Identify examples that either support (True) or disprove (False) the statement.	Construct and use simple expressions and formulae in words.	Construct and use simple expressions and formulae in words then symbols.	Construct and use increasingly complex expressions and formulae.	Use letters and symbols to represent unknown numbers or variables	Identify variables and express relations between variables algebraically and graphically
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Strand	Stage Three		Stage Four		Stage Five		Stage Six		Stage Seven	
Number and Place Value	Read, write, order, count, and compare numbers to 1000 in numerals and words. CN3/RW3	Count from 0 in multiples of 4, 8, 50 and 100. CN5	Read, write, count and order numbers to beyond 1000 and know the value of the digits. CN4	Read, write, count and order numbers to 100 000 and know the value of the digits.	Read, write, count, order and compare numbers to 100,000+ and know the value of the digits. CN6/RW6/UPV5	Read, write, count, order and compare numbers to 1 million and know the value of the digits. CN7/RW8/UPV7	Multiply/divide whole numbers and decimals by 10/100/1000.	Read, write, count and order numbers to at least 1,000,000 and know place value up to 3 d.p.	Understand and use place value, including decimals, measures and for any size integers.	
		Compare numbers with the same number of decimal place. CN5	Find 1000 more or less than a given number. C9	Count in a range of multiples.						
		Find 10 or 100 more or less than a given number. CN6	Count in multiples of 6 and 7.	Count in multiples of 6, 7, 9, 25 and 1000. C8/MD6						
	Recognise the place value in each digit of a three digit number and partition in to multiples of 100, 10, 1 in a range of different ways. UPV2	Round three-digit and four-digit numbers to the nearest 10, 100, 1000 and give estimates for their sums.	Recognise the place value of each digit in a four-digit numbers, partition in to multiples of 1000, 100, 10, 1 in a range of different ways. UPV3	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 units, tenths and hundreds. UPV4	Round six digit+ numbers to the nearest R3	Recognise and partition six digit numbers in to multiples of 10,000, 1000, 100, 10, 1 in a range of different ways.	Round any whole number to a required degree of accuracy. R5	Round decimals to 3.d.p and position them on a number line.	Round numbers and measures to an appropriate degree of accuracy.	Round large numbers to a given power of 10 and to one significant figure.
	Find 10 or 100 more or less than a given number to 1000+. CN6	Identify, estimate and represent numbers in different ways. IRE3	Identify factors and prime numbers for numbers to 50+. CN4	Identify pairs of factors for two-digit numbers. Showing an awareness of prime factors and composite (nonprime numbers).	Identify multiples, factors, square numbers, and prime numbers to 100.	Recognise and describe number relationships including multiple, factor, square and cube numbers.(including notation) P5/MAC17	Recognise the sequences of triangular numbers, square numbers and cube numbers, using appropriate notation. e.g. (2) (3).	Recognise, understand and generate number sequences. e.g. Fibonacci Sequence.	Use algebra to write the formula for the nth term in a number sequence. e.g. 1, 3, 5, 7, 9 ... nth term = 2n - 1	Write an expression to describe the nth term of an arithmetic sequence.
	Estimate and use inverse operations to check answers to a calculation. IOC3/IOC7	Identify, estimate and represent numbers in different ways. IRE4	Recognise and describe linear number sequences, including those involving fractions and decimals, e.g. 3, 3 1/2, 4, 4 1/2...)	Count backwards through zero to include negative numbers C7	Count forwards and backwards with positive and negative whole numbers through zero. C10	Interpret negative numbers in context C10	Use negative numbers and calculate intervals across zero. CN12	Interpret negative numbers in a range of contexts.	Interpret and compare numbers in negative numbers in a range of contexts.	Interpret and compare numbers in standard form, where n is a positive or negative integer.
Count from 0 in multiples of 4, 8, 50 and 100. MD4	Use positive and negative numbers in context and position them on a number line.	Recognise negative numbers and continue positive /negative number sequences and find missing numbers.	Count backwards through zero to include negative numbers C7	Count forwards and backwards with positive and negative whole numbers through zero. C10	Interpret negative numbers in context C10	Use negative numbers and calculate intervals across zero. CN12	Interpret negative numbers in a range of contexts.	Interpret and compare numbers in negative numbers in a range of contexts.	Interpret and compare numbers in standard form, where n is a positive or negative integer.	
Read Roman Numerals from I to XII.	Estimate the answer to a calculation and use the inverse operation to check answers. IOC2/IOC6	Read, write and order Roman numerals to 100 (I to C) and know that over time the number system changed to include the concept of zero and place value. RW5	Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1, dividing by 1 and multiplying together three numbers. MC11	Add and subtract numbers mentally with increasingly large numbers and tenths and one-digit whole numbers and tenths. MC6	Multiply and divide numbers mentally drawing upon know number facts. MC13	Perform mental calculations involving mixed operations and large numbers.. MC7/MC15				
Mental Maths	Add and subtract numbers mentally e.g. a three-digit number and one A three-digit number and ten A three-digit number and hundreds MC5	Add and subtract mentally. A two-digit number and a singledigit number Two, two digit numbers	Add and subtract mentally pairs of two-digit numbers. e.g. 47 +58, 91 – 35 Recognise and use factor pairs commutatively in mental calculations. MC12/P1	Add and subtract numbers mentally with increasingly large numbers and tenths and one-digit whole numbers and tenths. MC6	Multiply and divide numbers mentally drawing upon know number facts. MC13	Perform mental calculations involving mixed operations and large numbers.. MC7/MC15				
	Recall multiplication tables 2x, 4x, 5x and 10x.	Recall multiplication tables 2x, 4x, 5x and 10x, and corresponding division facts.			Multiply integers and those involving decimals by 10/100/1000 MC14					
Addition & Subtraction	Add and subtract two-digit numbers that bridge 10s and 100s.	Add and subtract numbers up to three digits using formal written methods of column addition and subtraction. WM2 Use inverse to estimate and check answers to calculations.	Add and subtract whole numbers with up to 4 digits using formal written methods of column addition and subtraction. WM3	Add and subtract three digits to1dp using formal written methods of column addition and subtraction.	Add and subtract whole numbers with more than 4+digits, including using formal written methods (columnar addition and subtraction) WM4	Solve addition and subtraction to2dp using formal written methods of column addition and subtraction. PS7/PS22	Use knowledge of the order of operations to carry out calculations involving all four operations. MC8/001	Solve complex multi-step calculations involving mixed calculations.	Apply appropriate calculation strategies and degrees of accuracy to increasingly complex problems.	
	Add near multiples of 10 when adding two or three-digit number.	Identify and use addition and subtraction complements of 200. e.g.150 + 50 = 200 200 – 150 = 50	Identify and use addition and subtraction complements of 500. e.g.350 + 150 = 500 500 – 150 = 350	Identify and use addition and subtraction complements of 500+. e.g.550 + 150 = 700 600 – 150 = 450	Identify and use addition and subtraction complements of 1000. e.g. 650 + 350 = 1000 1000 – 650 = 350	Calculate decimal complements e.g. 6.8 + 3.2 =10 10 – 6.8 = 3.2	Calculate decimal complements (e.g. 63.8 + 36.2 = 100 100 – 63.8 = 36.2)	Identify a range of comparative complements. (e.g. whole numbers and fractions)	Identify a range of comparative complements. (e.g. whole numbers, fractions, decimals and percentages)	

Loders Primary Academy

Mathematics Skills Progression

	Count from any given number in whole number and decimal steps.	Add using decimal notation up to 2 decimal places.	Extend counting beyond zero when counting backwards and relate numbers to their position on a number line.	Find the difference between a positive and a negative number or two negative numbers in context.	Add using negative numbers.	Add and subtract negative numbers.	Use inequalities. (e.g. $-3 > -5$, $-5 < -3$)	Calculate simple algebraic equations. (e.g. $2n + n = 9$)	Calculate increasingly complex algebraic equations. (e.g. $3n + (4 \times n) = 28$)	Substitute values in expressions, rearrange and simplify expressions and solve equations.
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Multiplication & Division	Write and calculate statements for multiplication and division using multiplication tables, including twodigit numbers times one-digit numbers. Using mental and formal written methods.	Recall and use the multiplication and division facts for 4x, 8x, 3x, 6x multiplication tables. e.g. $36 \div 6 = 6$, $6 \times 6 = 36$ $72 \div 8 = 9$, $9 \times 8 = 72$ MD5	Recall and use the multiplication and division facts for 7x, 8x and 9x. (e.g. $63 \div 9 = 7$, $9 \times 7 = 63$)	Use knowledge of multiplication facts and corresponding division for 2x to 12x tables to multiply and divide. MD7	Count forwards and backwards in steps of powers of ten from any given number up to 1 million. CN11/MD8	Recognise and describe number relationships including multiple, factor, square and cube numbers.(including notation) P5/MAC17	Multiply HTU x TU including problem solving and calculator methods.	Multiply HTU x HTU including problem solving and calculator methods.	Multiply THHTU x HTU including problem solving and calculator methods.	Multiply a range of multi-digit numbers mentally.
	Count from 0 in multiples of 4.8.50 and 100. MD4	Recall the doubles of two-digit numbers and use these to calculate doubles of multiples of 10 and 100.	Multiply a decimal by 10. e.g. 42.9×10	Multiply and divide a decimal by 10. e.g. 42.9×10	Multiply a decimal to 2.d.p by 10 and 100 e.g. 36.23×10	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	Work out decimal calculations using related multiplication facts (e.g. $0.8 \times 7 = 5.6$)	Multiply decimals up to 2. D. p. by a one-digit number.	Multiply decimals up to 2. D. p. by a two digit number.	Multiply a range of whole numbers by s 3-digit numbers to 2. D. p.
	Recall the doubles of all numbers to 100+. Use knowledge of halving to 'undo' doubling.									
	Use Expanded Grid method to represent and solve multiplication problems.	Use the Grid method to multiply a two digit number by a one digit number.	Multiply/divide a two-digit and three digit number by a one digit number using formal layout. WM7	Multiply/ divide a four digit numbers by a two-digit number.	Extend methods to the multiplication of a two-digit number by a two-digit number. (e.g. 16×25)	Multiply/divide a four digit number by a one or two digit number using formal written method. (long multiplication and short division and interpret remainders appropriately)	Divide a four-digit number by a twodigit number using formal written method of short and long division and interpret remainders as whole number remainders. WM 11	Divide a four- digit number by a twodigit number where there the remainder is a fraction or by rounding. WM11	Divide a whole number by a two-digit number using short division where there is a remainder.	Divide a multi-digit number by a two digit number with remainders/fractions.
	Write and calculate statements for multiplication and division using multiplication tables, including twodigit numbers times one-digit numbers. Using mental progressing to formal written methods. MC10/WM6		Identify factors and prime numbers for numbers to 50+.	Recognise and use factor pairs and commutativity in mental calculations. MC12/P1	Identify multiples and factors including finding all factor pairs of a number and common factors of two number. P2	Know and use vocab of prime numbers, prime factors and composite (non-prime numbers). P3 Establish whether a number up to 100 is a prime number and recall prime numbers up to 19. P4	Identify common factors, common multiples and prime numbers.	Express a two digit number as a product of prime factors.	Use prime factor decomposition of three digits positive integers. E.g. understand that 120 can be expressed as $2 \times 2 \times 2 \times 3 \times 5$ or $2 \text{ cubed} \times 3 \times 5$.	Use the concepts and vocab of prime numbers, factors (or divisors), multiples, common factors, common multiples, lowest common multiple, prime factorisation, including use of product notation.
	Recall the halves of odd and even numbers to 50+ e.g. half of 27 is 13.5	Recall the halves of numbers to 100+ e.g. half of 36.5 is 18.25	Count in multiples of 6, 7, 9, 25 and 1000. C8/MD6	Multiply and divide integers by 10/100/1000.	Multiply and divide integers by 10/100/1000/10,000.	Multiply integers and those involving decimals by 10/100/1000 MC14	Multiply one-digit numbers up to 2 d.p. by whole numbers. MDF3/MD2	Recognise and use square and cube numbers and the notation for square and cubed numbers.	Identify and use integer powers and associated roots. (e.g. square cube and higher)	Recognise powers of 2,3,4,5 and distinguish between exact representations of roots and their decimal approximations.
Use Partitioning e.g. $28 \div 2 = 14$ $20 \div 2 = 10$ $8 \div 2 = 4$	Use knowledge of the doubles of twodigit numbers to derive the halves of multiples of 10 and 100. Use apparatus to model division calculations with remainders.	Derive and recall division facts for 2, 5, and 10 up to 1000+.	Identify the doubles and corresponding halves of two-digit numbers	Double and halve whole numbers e.g. double 126 is 63, half of 320 is 160	Multiply /halve decimals. e.g. $26.5 \times 3 = 79.5$	Work out decimal calculations using related division facts (e.g. $4.8 \div 6 = 0.8$.)	Work out decimal calculations to 2. D. p. using related division facts (e.g. $29.2 \div 8 = 3.65$)	Work out decimal calculations to 3. D. p. using related division facts	Express a quotient as a fraction/decimal. (e.g. $67 \div 5 = 13.4$ or $13 \frac{2}{5}$)	
Written and Calculator Methods	Use Expanded Grid method to represent and solve multiplication problems.	Use the Grid method to multiply a two digit number by a one digit number.	I can use inverses in number problems (e.g. I think of a number, double it and add 5.The answer is 35. What is the number?).	Solve problems involving multiplying and adding including distributive law to multiply two digit numbers by one digit and integer scaling problems, and harder correspondence problems, such as 'n' objects are connected to 'm' objects. PS12	Use the order of operations, including brackets.	Complete balancing equations with all four operations. (e.g. $700 \div 10 = 52 + P$)	Use the commutative e.g. $95 + 86 = 86 + 95$ associative e.g. $25 + 17 + 18 = (25 +17) +18$ and distributive e.g. $2 (P + 2) = 2P + 4$ laws.	Use brackets and inverses effectively (e.g. $(24 + P) \div 6 = 5$)	Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.	Use convention notation for the priority of operations, including brackets, powers, roots and reciprocals.
	Add and subtract numbers up to three digits using formal written methods of column addition and subtraction	Add and subtract numbers up to three digits using the most appropriate method	Multiply and divide four and five digit numbers. Read a calculator display in the context of money. (e.g. 12.5 as £12.50)	Use formal written methods of short multiplication and short division with exact answers.	Multiply numbers up to 4 digits by a one or two digit number using formal written method including long multiplication for two-digit numbers. WM8	Divide numbers up to 4 digits by a one digit number using formal written method of short division and interpret remainders appropriately for two-digit numbers. WM9	Multiply multi-digit numbers up to 4 digits by a two digit whole number using the formal written method of long multiplication. WM10	Divide a four-digit number by a twodigit number using formal written method of short and long division and interpret remainders as whole number remainders. WM 11	Use a calculator to convert fractions, decimals and percentages.	Use a calculator to calculate squares and the square root.

Loders Primary Academy

Mathematics Skills Progression

					Use a calculator to calculate percentages	Use a calculator to find missing numbers including decimals.	Use a calculator to add/subtract/multiply/divide whole numbers and decimals up to 2 places.	Use written division methods in cases where the answer has up to 2dp. DM12/MDD6	
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Strand	Stage Three	Stage Four	Stage Five	Stage Six	Stage Seven					
Fractions, Decimals, percentages	Read and write proper fractions, recognise that the denominator is the parts of the whole and the numerator as the number of parts.	Add and subtract fractions with the same denominator within one whole e.g. $4/6 + 1/6 = 5/6$ ASF1 Compare and order unit fractions and fractions of the same denominators. COMF1	Add and subtract a range of unit fractions with the same denominator. ASF2	Multiply fractions with the same denominator.	Add and subtract fractions with the same denominator and multiples of the same number. e.g. $5/7 + 4/7 = 9/7$ or 1 and $2/7$ ASF3	Multiply and divide fractions with the same denominator.	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ASF5	Recall and use equivalences between fractions, decimals and percentages, including in different contexts. e.g. $1/4 = 25\% = 0.25$ E12	Order fractions and mixed numbers.	Evaluate one number as a fraction or percentage of another.
	Recognise, find and use fractions of a discrete set of objects, unit fractions and non-unit fractions with small denominators, (e.g. $1/2, 1/3, 1/4$ 1/16 of 12 litres) RF4	Recognise and use fractions as numbers, unit fractions and non-unit fractions with small denominators RF6	Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. RF7	Convert simple improper fractions to mixed fractions, (e.g. $7/2 = 3\frac{1}{2}$), E6	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. E6	Recognise and convert mixed numbers and improper fractions and convert from one form to another and write the mathematical statements greater than 1 as a mixed number. e.g. $2/5 + 4/5 = 6/5 = 1\frac{1}{5}$ ASF4	Use common factors to simplify fractions: use common multiples to express fractions in the same denomination. P7/E10	Convert mixed and improper fractions with different denominators to decimals and percentages.	Convert mixed and improper fractions, decimals and percentages.	Calculate fractions of a range of quantities with fractional answers
	Use diagrams to compare fractions and establish equivalents. Recognise simple equivalents. (Half of a £ is 50p)	Recognise and show using diagrams equivalent fractions with small denominators. e.g. $1/2 = 2/4$ E2 Match simple equivalent decimals and fractions, half-0.5, quarter-0.25	Recognise and show families of common equivalent fractions using diagrams. (e.g. $6/8$ and $3/4$, $70/100$ and $7/10$) E3	Recognise and write decimal equivalents for $1/4, 1/2, 3/4$, E5	Compare and order fractions whose denominators are all multiples of the same number. COMF2	Multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams e.g. $3/4 \times 3 = 9/4$ or 2 and $1/4$ or 3 and $1/4 \times 3 = 9$ and $3/4$ MDF1	Compare and order fractions, including fractions > 1 . COMF3	Multiply simple pairs of proper fractions, writing the answer in its simplest form. MDF2 Divide proper fractions by whole numbers. e.g. $1/3$ divided by 2 = $1/6$ MDF4	Divide mixed and improper fractions by whole numbers, using common factors to simplify the fractions.	Understand and use the equivalences between fractions, decimals and percentages e.g. $7/8, 1/6$
	Count up and down in 10ths and find $1/10^{\text{th}}$ of a quantity. CF2	Count up and down in tenths and recognise that tenths arise from dividing an object into 10 equal parts and dividing one-digit numbers or quantities by 10. CF2/RF5	Recognise and write decimal equivalents of any number of tenths or hundredths. E4 Round decimals with one decimal place to the nearest whole number and count up and down in 100ths. R2/CF3/RID1	Divide a one or two-digit number by 10 or 100, identifying the value of the digits in the answer as ones, tens and hundredths. UPV4/MDD1	Round decimals to two decimal places to the nearest whole number and to one decimal place. R4/RID2	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. UPV6/RF8/E8	Solve problems that require answers to be rounded to specified degrees of accuracy. R6/RID3	Identify the value of each digit in numbers given 3dp and multiply and divide numbers by 10, 100, 1000 giving answers up to three decimal places. UPV/CD37/MDD3/MDD4	Order a wide range of decimals with up to 4 decimal places.	Calculate decimal fraction equivalents. e.g. $0.375 = 3/8$
	Use £ and p notation. e.g. $£2.10 + 31p =$	Add and subtract amounts of money giving change using both £ and p. MAC15	Estimate, compare and calculate amounts of money giving change using both £ and p. CE7/MAC5 Find 50%, 20% 10% and know the equivalent fractions.	Find simple percentages e.g. 10%, 25%, 50%, 75% of quantities and percentages e.g. 30%, 60% of quantities (multiples of ten).	Recognise that the % symbol relates to 'number of parts per hundred'. E9	Write percentages as a fraction with denominator 100, and as a decimal. E9	Solve problems involving the calculation of percentages (e.g. of measures, such as 15% of 360) and the use of percentages for comparison. RP2	Associate a fraction with division and calculate decimal fraction equivalents, (e.g. 0.375) for a simple fraction (for example 3/8) MC16/E11/MDD5	Calculate percentages of quantities e.g. 15% of £3.60 and use in problem solving e.g. find sale prices – Reduce £260 by 25%	Work interchangeably with terminating decimals and their corresponding fractions e.g. $3.5 = 7/2$ or $0.375 = 3/8$
	Algebra	Find missing numbers with HTU using addition and subtraction.	Find missing numbers with HTU using multiplication.	Find missing numbers with ThTU including multiplication.	Complete balancing calculations including division. e.g. $18 + \quad = 120 \div 6$	Use symbols to represent an unknown number or variable e.g. $3n = 30$ $n = 10$	Express missing number problems algebraically.	Express missing number problems algebraically. EQ8 Find pairs of numbers that satisfy number sentences involving two unknowns. e.g. $a + b = b + a$ EQ9	Find all possible combinations of two variables. EQ10 Recognise when it is possible to use formulae for area and volume of shapes. F8	Use and interpret algebraic notation, ab in place of $a \times b$ 3y in place of $y + y + y$ and 3 x y a2 in place of $a \times a$, a2b in place of $a \times a \times b$ a/b in place of $a \div b$
Continue a number-based sequence. e.g. factors or prime numbers		Recreate and generate a range of number sequences.	Recognise and continue a complex sequence. e.g. square or triangular-based numbers.	Continue simple fraction (e.g. halves and quarters) and decimal sequences (e.g. to one decimal place) and find missing numbers.	Identify complex patterns and make generalisations.	Identify patterns in numbers and make own rules. e.g. multiples of 4 are divisible by 2	Generate and describe linear number sequences. S4	Express generalisations using symbols and notation, using simple formulae. F2	Make generalisations about number sequences.	Find and describe in words the rule for the next term or nth term of a sequence where the rule is linear.
Ratio and Proportion	Confidently identify the proportion of a quantity, shape or fractions.	Solve problems involving proportions of quantities. e.g. increase the quantities in a recipe for 2 people to feed 4 people.	Solve problems involving proportions of quantities. e.g. increase the quantities in a recipe for 2 people to feed 6 people.	Reduce a ratio to simplest form and use it in problem solving by multiplying. E.g. given the ingredients in a recipe for 5 people, calculate the quantities needed for 8 people.	Solve problems involving similar shapes where the scale factor is known or can be found. RP3	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and divisions. RP1	Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. RP4	Use scale factors, scale diagrams and maps.	Use ratio and scale factor notation and methods involving conversion, mixing, measuring, scaling, and comparing quantities and concentrations.	



St. Andrew's C of E Primary Academy

Mathematics Skills Progression



Strand	Stage Three		Stage Four		Stage Five		Stage Six		Stage Seven	
Geometry Properties of shape 2D Shapes	Describe the properties of 2D shapes using accurate language, including lengths of lines and acute and obtuse angles greater or less than a right angle.	Identify, draw, make, visualise and describe properties of rectangles, triangles and regular polygons. DC1	Name and draw polygons from 3 to 12 sides and can describe their properties. e.g. vertical, horizontal, congruent	Recognise, compare and classify geometric shapes including quadrilaterals and triangles based on their properties and sizes. e.g. square, rectangle, trapezium, parallelogram, rhombus CC2	Use properties of rectangles to deduce related facts and find missing lengths and angles. EQ7/CC3	Draw, classify and describe regular and irregular polygons using their properties, including equal sides, types of triangles and angles.(obtuse, acute, reflex right-angle) CC4	Compare and classify geometric shapes using their properties and sizes to find unknown angles in any triangles, quadrilaterals and regular polygons. CC5	Reason about triangles/quadrilaterals. e.g. given the perimeter and length of one side of an isosceles triangle, I can find the length of all sides	Construct triangles and quadrilaterals using given formulae.	Derive and apply formulae to calculate and solve problems involving the area of triangles, parallelograms and trapezia . Draw and measure line segments and angles in geometric figures, including interpreting scale drawings. Use appropriate formulae for finding circumferences and areas of circles, areas of plane rectilinear figures when solving problems.
	Measure the perimeter of simple 2D shapes. MAC4	Recognise right angled, isosceles, equilateral and scalene triangles and describe their properties.	Recognise acute and obtuse angles.	Recognise acute and obtuse angles and compare and order angles up to two right angles by size.(using a protractor) A4	Know angles are measured in degrees, estimate, recognise and compare obtuse, acute and reflex angles. A5	Identify Angles at a point and one whole turn Angles at a point on a straight line Other multiples of 90 degrees. A6	Use the properties of rectangles to deduce related facts and find missing lengths and angles.	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. A7	Solve problems using angles and symmetry properties of polygons, and explain these properties. Relate the area of rectangles to parallelograms and triangles. e.g. by dissection, and calculate their areas, and understanding the formulae to do this.	Derive and apply formulae to calculate and solve problems involving the perimeter of triangles, parallelograms and trapeziums .
	Recognise and describe angles as a property of shape or a description of a turn. A1	Identify right angles, recognise how many are needed to make a half turn, three-quarter, full turn etc. A2								
		Recognise angles that are greater than or less than 90 degrees. A2								
	Measure the area of squares and rectangles using apparatus.	Estimate the area of squares and rectangles and then measure accurately	Find the area of a rectilinear shape by counting the squares. MAC16	Find the area of various sized squares and rectangles by counting / multiplying squares.(Arrays)	Calculate and compare the area of rectangles (including squares) and including standard units square centimetres (cm ²) and square metres (m ²) and estimate the area of irregular shapes. CE8/MAC17	Use the formula L x B to find the area of a square/rectangle. I can solve problems using this formula. E.g. given the area of a square I can find the length of a side	Calculate the area of a triangles and parallelograms. e.g. 1/2base x height MAC18	Draw measure and name the parts of a circle including radius, diameter and circumference. (know that the diameter is twice the radius) ISP7		
						Recognise when it is possible to use formulae for the area of shapes. MAC20				
	Measure the perimeter of simple 2D shapes. MAC4	Estimate and measure the perimeter of squares and rectangles accurately.	Measure and calculate the perimeter of a rectilinear shape (including squares) in cm and m. MAC6	Perimeter is expressed algebraically as 2(a + b) where a and b are the dimensions of the same unit) F1	Measure and calculate the perimeter of composite rectilinear shapes in cm and m. MAC8	Calculate the perimeter of rectangles and related composite shapes using the relations of perimeter or area to find unknown lengths. (Begin to express algebraically)	Recognise that shapes with the same area can have different perimeters and visa versa. MAC10	Measure and calculate the perimeter of rectilinear shapes. e.g. 2(a + b)	Construct and measure the perimeter of rectilinear shapes.	
Geometry Properties of Shapes 3D Shapes	Draw and make 3D shapes using modelling materials. DC1	Identify, draw, make, visualise and describe properties of 3D shapes, e.g. a cone, cube, cuboid, triangular prism, triangular /square based pyramid. DC1	Recognise increasingly complex 3D shapes. (e.g. tetrahedron, dodecahedron)	Visualise a cube or cuboid from its net and construct.	Identify 3D shapes, including cubes and other cuboids from 2D representations. ISP5	Use construction kits to make basic 3D nets and shapes. e.g. cube, cuboid	Use construction kits to make 3D nets and shapes. e.g. cube, triangular prism, triangular/square based pyramid	Recognise, describe, measure and construct 3D shapes including their nets. e.g. cube, triangular prism, triangular/square based pyramid ISP/DC5	Measure and accurately construct the nets of the 3D shapes. e.g. cylinder, cone, hexagonal prism	Recognise and use common 2-D representations of 3-D objects. e.g. interpret diagrams on isometric paper
	Recognise 3D shapes in different orientations and describe their properties using accurate language including lengths of lines and angles DC1									
					Estimate volume and capacity. e.g. using 1 cm cubed blocks to build cubes and cuboid, and using water. CE9	Use the mathematical formulae for the volume of a cube or cuboid. e.g. Volume = Base Area x Height	Recognise when it is possible to use formulae for the volume of shapes. MAC20	Calculate, estimate and compare the volume of cubes and cuboids using standard units. e.g. cm³ and m³ P8/CE10/MAC19	Calculate the volume of triangular and square-based pyramids e.g. Volume = 1/3 Base Area x Height	Derive and apply formulae to calculate and solve problems involving volume for cuboids (including cubes) and other prisms (including cylinders) .
							Calculate, estimate and compare the volume of cubes and cuboids using standard units e.g. cm³ and m³ CE10			
Position, Direction and Movement	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines A3	Draw lines of symmetry in simple shapes and recognise shapes with no symmetry.	Complete a simple symmetric figure with respect to a specific line of symmetry, e.g., parallel or perpendicular to one side etc. DC2	Identify lines of symmetry in 2-D shapes presented in different orientations, ISP4	Use a grid to plot the reflection of a simple shape in a mirror line at 45 degrees.	Use a grid to plot the reflection of complex shapes in a mirror line at 45 degrees.	Reflect a 2D shape in an oblique mirror line movement where the shape does not cross the mirror line.	Reflect a 2D shape in an oblique mirror line movement where the shape does/does not cross the mirror line.	Reflect a shape in two mirror lines where the shape is not parallel or perpendicular to either mirror.	Enlarge 2-D shapes by a positive whole-number scale factor, when given a centre of enlargement.
	Draw the reflection of a shape in a vertical/horizontal mirror line where the line touches the sides of the shape.	Draw the reflection of a shape in a vertical/horizontal mirror line which does not touch the sides of the shape.	Reflect a shape in a diagonal mirror line which runs along the side of the shape.	Reflect a shape in a diagonal mirror line where the line does not touch the shape.	Complete a shape, e.g. rectangle which has two sides drawn at an oblique angle on a grid.	Identify, describe and represent the position of a shape following a reflection or translation using the appropriate language knowing that the shape has not changed. PDM6	Draw and translate simple shapes on the coordinate's plane, and reflect them in the axes. PDM8	Describe positions on the full coordinate grid (all four quadrants) Translate and draw simple shapes on the co-ordinate plane and reflect them in the axes.	Understand properties of translations, reflections and rotations. e.g. they preserve length and angle	Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures.
	Recognise that 2 right angles make a half turn, three right angles make three quarters of a turn and four make a complete turn. Recognise angles as a description of a turn.	Identify whether angles are greater than or less than a right angle. Recognise that a straight line, (180 degrees) is equivalent to two right angles (90 degrees)	Give directions using 90 degrees /quarter turns, 180 degree half turns and 360 degree full turns.	Describe movements between two positions as translations of a given unit to the left/right, up/down. PDM4	Recognise the order of rotation symmetry	Rotate a shape about its centre or vertex.	Rotate shapes through 90° and 180° where the movement centre of rotation is the centre of the shape.	Rotate shapes through 90 and 180 degrees, where the centre of rotation is the vertex of the shape.	Generate a spiral by repeatedly rotating a shape through 90 and 180 degrees, where the centre of rotation is the vertex of the shape.	Devise instructions for a computer to generate and transform shapes and paths.



St. Andrew's C of E Primary Academy

Mathematics Skills Progression



	Plot points on a grid where the rows and columns are labelled.	Describe and find the position of a square on a square grid.	Describe positions on a 2D grid and plot co-ordinates in the first quadrant. PDM3.	Plot specified points and draw sides to complete a given polygon. PDM5	Read and plot coordinates in the two upper quadrants.	Read, describe and plot positions in all four quadrants. PDM7	Find unknown coordinates, given the coordinates of three vertices a parallelogram, find the fourth.	Use and interpret coordinates in all four quadrants.	Enlarge a simple 2D shape using coordinates.	Enlarge a 2D shape; given a positive whole number scale factor a centre of enlargement.
Measure Length	Measure, compare, add and subtract length (m/cm/mm) MAC3	Read and record scales accurately, where appropriately to the nearest tenth of the unit. (e.g. On a 0-1m scale with 200cm intervals recognise that half way between 400cm and 600cm is 500cm)	Measure, compare, add and subtract standard metric units and their abbreviations when estimating, measuring and recording length. e.g. mm, cm, m, km	Convert between units of measure in length and height. e.g. mm, cm, m, km CON3 Estimate, compare and calculate different measures including length. CE7	Convert between units of measure in length with ease. e.g. mm to cm, cm to m, m to km and vice versa CON6 Measure, compare, multiply and divide standard metric units and their abbreviations when estimating, measuring and recording length. e.g. mm, cm, m, km	Understand and use equivalent imperial/metric units. e.g. 8km = 5 miles, 1 inch = 2.5 cm, 1 foot = 30cm, 1 yard = 90cm CON8/CON11	Understand and use equivalent imperial/metric units. e.g. 8km = 5 miles, 1 inch = 2.5 cm, 1 foot = 30cm, 1 yard = 90cm	Use, read, write and convert between standard units of measure in length using decimal notation up to 3 decimal places. e.g. mm to cm, cm to m, m to km, miles and km and vice versa CON9	Calculate the area and perimeter of a range of regular and irregular 2D shapes.	Derive and apply formulae to calculate and solve problems involving the area of triangles, parallelograms and trapezia. Derive and apply formulae to calculate and solve problems involving the perimeter of triangles, parallelograms and trapeziums.
Measures Mass	Measure, compare, add and subtract mass (kg/g) MAC3	Read and record scales accurately, where appropriately to the nearest tenth of the unit. (e.g. On a 0-1Kg scale with 200g intervals recognise that half way between 400g and 600g is 500g)	Measure, compare, add and subtract standard metric units and their abbreviations when estimating, measuring and recording mass. e.g. mg, g, kg, kilo	Convert between units of measure in mass. e.g. g, kg CON3 Estimate, compare and calculate different measures including mass. CE7	Convert between units of measure in capacity with ease. e.g. g to kg and vice versa CON6 Measure, compare, multiply and divide standard metric units and their abbreviations when estimating, measuring and recording mass. e.g. mg, g, kg, kilo	Understand and use equivalent imperial/metric units. e.g. 1kg = 2.2lb, 8oz = 225g CON8/CON11	Understand and use equivalent imperial/metric units. e.g. 1kg = 2.2lb, 8oz = 225g	Use, read, write and convert between standard units of measure in mass, using decimal notation up to 3 decimal places. e.g. g to kg and vice versa CON9	Convert between units of measure in mass, using decimal notation up to three decimal places. e.g. g to kg and vice versa	Calculate the mass of a range of regular and irregular 3D shapes.

Strand	Stage Three		Stage Four		Stage Five		Stage Six		Stage Seven	
Measures Capacity & Volume	Measure, compare, add and subtract volume/capacity (l/ml) MAC3 Read scales to the nearest divisions. e.g. 2, 5, 10 Interpret the divisions between the numbers on the scale. e.g. scale from 0 to 25 in intervals of 1 with a scale numbered in 5s	Read and record scales accurately, where appropriately to the nearest tenth of the unit. e.g. On a 0-1L scale with 200ml intervals recognise that half way between 400ml and 600ml is 500ml Interpret intervals and divisions on partially numbered scales and record readings accurately.	Measure, compare, add and subtract standard metric units and their abbreviations when estimating, measuring and recording capacity. e.g. ml, cl, dl, L	Convert between units of measure in capacity and volume. e.g. ml, dl, l. CON3 Estimate, compare and calculate different measures including volume and capacity. CE7	Convert between units of measure in capacity with ease. e.g. dl to L and vice versa CON6 Measure, compare, multiply and divide standard metric units and their abbreviations when estimating, measuring and recording capacity. e.g. ml, cl, dl, L	Understand and use equivalent imperial/metric units. e.g. 1.76pt = 1ltr CON8/CON11	Understand and use equivalent imperial/metric units. e.g. 1.76pt = 1ltr	Use, read, write and convert between standard units of measure in capacity, using decimal notation up to 3 decimal places. e.g. dl to L and vice versa CON9	Convert between units of measure in capacity, using decimal notation up to three decimal places. e.g. dl to L and vice versa	Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction.
Measures Time	Know the number of seconds in a minute and the number of days in each month, year and leap year. Use vocab such as o'clock, am/pm, morning afternoon, noon, midnight. TT6/CON2 Read and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. RW4/TT5	Compare durations of events, e.g. calculate the time taken by a particular event or task CE5 Estimate and read time to the nearest minute, record and compare time in terms of seconds minutes, hours and o'clock, use am and pm, morning afternoon, noon and midnight. And 12 hour clock rotation. CE6/TT6	Read, write, compare and convert time between analogue and digital 12 hour clocks.	Read, write, compare and convert time between analogue and digital 12 and 24 hour clocks. TT7/CON4 Solve problems involving the conversion of hours to minutes, minutes to seconds, weeks to days etc. TT8/CON3/CON5	Solve problems involving the conversion of hours to minutes, minutes to seconds, weeks to days. TT8/CON3/CON5	Solve a range of problems involving converting between units of time. TT9/CON7				
Statistics Processing and Representing Data	Solve one step and two step questions, e.g. How many more? How many fewer, using information contained within simple scaled pictograms, bar charts and tables. e.g. 2, 5, 10 units per cm SP1 Collect data and record it in a simple block graph/ computer database, lists tables and charts.	Construct graphs with simple scales of one, two, five or 10 with increasing accuracy Answer a question by identifying the data to be collected.	Construct graphs and charts selecting own scales. e.g. scale of 2, 4 10 Use Venn/Carroll diagrams using two criteria such as 'multiples of 8' and 'multiples of 6'. Gather information from a range of frequency tables, pictograms and bar and line graphs to represent the frequency of events and changes over time.	Collect discrete data e.g. record how many scores of 6 in fifty throws of the dice and record in a frequency table I can group data into equal class intervals	Construct a line graph. Collect data to support the testing of a hypothesis linked to the frequency of an event. (using a frequency table)	Construct a frequency graph. Choose a suitable class interval when collecting or representing data. e.g. The number of hours spent using computers	Formulate questions and collect the data needed to answer them. Construct tables for large sets of raw data, choosing suitable class intervals.	Design a survey to capture data from more than one source. Design and use two-way tables.	Construct frequency diagrams e.g. construct simple time graphs for time series and pie charts. Process data using a range of representations, using ICT where appropriate.	Reduce a linear equation in two variables to the standard form, $y=mx + c$, calculate and interpret gradients and intercepts of graphs of such linear equations. Collect and record continuous data, choosing appropriate equal class intervals over a sensible range to create frequency tables e.g. choose suitable class intervals when constructing tables for large sets of raw (discrete or continuous) data
		Talk about the data collected.	Use comparative language with confidence to talk about a range of charts, graphs and diagrams.	Understand 'certain', 'impossible', 'more likely', 'equally likely', 'fair', 'unfair' in probability.	Decide whether a probability can be estimated or calculated.	Describe and predict outcomes from data using the language of chance and likelihood.	Compare two probabilities to show likelihood. e.g. two spinners, which is more likely to give an even number	Determine whether a probability can be calculated or estimated.	Use the probability scale 0 to 1.	Work systematically to find all possible mutually exclusive outcomes for up to two events.



St. Andrew's C of E Primary Academy

Mathematics Skills Progression



Statistics Interpreting Data	Draw simple conclusions about data in a simple block graph/computer database and pose questions about the data.	Interpret and present data in tables, diagrams; tally charts pictograms and bar charts Venn/Carroll diagrams. ICP4	Interpret and present discrete and continuous data using appropriate graphical methods including, bar charts and time graphs. IPC5	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. SP2	Complete, read and interpret information in tables, including timetables. e.g. a conversion table IPC6	Solve comparison, sum and difference problems using information presented in a line graph. SP3	Interpret and construct pie charts and line graphs and use to draw conclusions and solve problems e.g. different sample size IPC7	Create and interpret a range of data from a variety of representations and identify ways to extend the survey/investigation.	Interpret the results of statistical surveys.	Collect and record continuous data, choosing appropriate equal class intervals over a sensible range to create frequency tables e.g. choose suitable class intervals when constructing tables for large sets of raw (discrete or continuous) data.
	Extract information from graphs and charts where the scale is in ones and twos and use this to solve simple problems.	Interpret scales on bar and line graphs by reading the scale between the divisions. e.g. reading 22 on a scale labelled in 5s	Compare information from more than graph or chart.	Calculate the median of a set of data	Use mode to compare two sets of data.	Use mode and range to compare two sets of data.	Understand, calculate and interpret the mean of a set of data as an average. SP4	Compare two distributions using the range and one from the mode, mean, median. e.g. Find five numbers where the mode is 6 and the range is 8	Compare two distributions using the range and one from the mode, mean, median. e.g. Find five numbers where the mode is 6 and the range is 8	Understand and use the concept of correlation
		Draw simple conclusions for the data collected. e.g. How many more...?	Give reasons for conclusions.	Give reasons for variations.	Compare discrete and continuous data.	Identify the difference between a range of discrete and continuous data.	Compare data sets and respond to questions.	Draw conclusions from comparable data that may be misleading. e.g. data from two pie charts with different sample sizes.	I can factor in the impact of the size of the sample on the accuracy of results and conclusions.	I can communicate results and draw conclusions using a range of tables, graphs and diagrams.