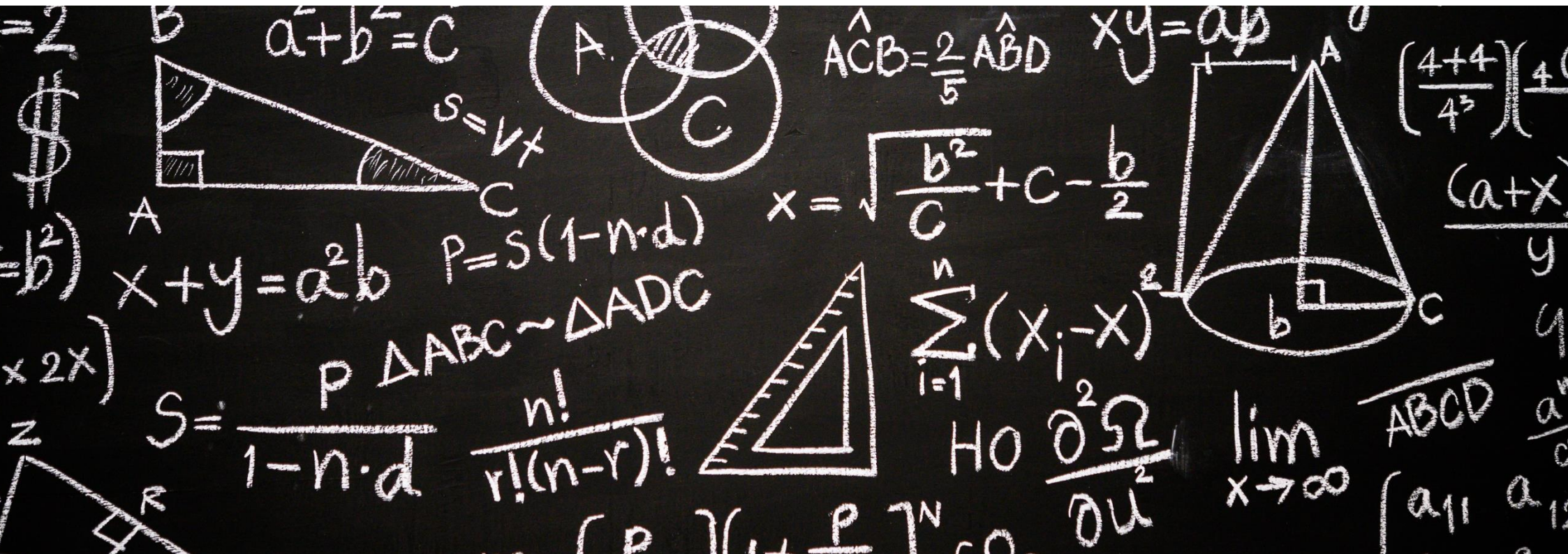# Gateshead Core Curriculum

Year 5

Review of Learning

In order to ensure that the curriculum meets the learning needs of the class, it is vital that there is an accurate picture of previous teaching and coverage. Last year's class teacher and the new teacher (including the maths subject leader or SLT where appropriate/possible) should work together to look at which objectives from the maths curriculum were taught during the previous year and were understood fully. It may be decided that some objectives from the previous year's curriculum may need to be consolidated and so an additional column has been added to the Gateshead Core Curriculum containing the previous year's objectives. These can be highlighted accordingly to indicate if further consolidation is required throughout the next academic year. Following discussion as to how these objectives will need to be consolidated, they can then be inserted into an appropriate place in the new year's curriculum.

Additional objectives have been included in this document. These are the Ready to Progress Criteria from the DfE June 2020 Non-Statutory Guidance for the National Curriculum in England (https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools). For ease of identification, these are in a red font colour.

In some instances, objectives may appear in all three terms. It is not the intention that these objectives are to be taught in each term but for the class teacher to consider the appropriateness of them. It may be that the teacher has taught the objective in the autumn and spring terms and assessment demonstrates that the children have a deep understanding of the objective. In this case, the class teacher may choose not to dedicate a full lesson of teaching but may chose a "lighter touch" to ensure retrieval of this objective is strong. Conversely, the class teacher may choose not to teach an objective in the autumn term due to focusing on other areas. In this case it would be imperative that the objectives were taught fully in the next two terms. Again, class teachers may identify that children require the objectives to be taught in all three terms and further consolidation of learning.

These documents are intended to be flexible and support class teachers in designing a flexible and personalised curriculum for their class.

Reasoning and Problem Solving

There is the expectation that **all** units of mathematics will include elements of reasoning and problem solving. Therefore, the following objectives have been removed from the progression grid as they could be equally applied to all areas of mathematics

- *Explain methods and reasoning orally and in writing, including using diagrams and symbols.*
- *Apply understanding to solve routine and non-routine problems and puzzles and explain reasoning.*
- *Explore and discuss patterns, properties and relationships that arise in the number system using appropriate mathematical vocabulary.*
- *Develop lines of enquiry through conjecturing relationships and generalizations and testing ideas. Identify examples for which a statement is true or false.*
- *Solve calculation problems including using information from a range of tables and charts.*
- *Apply measuring skills to an appropriate degree of accuracy, alongside the skills of thinking mathematically to solve problems. These should include practical problems and might involve construction of shapes or artefacts, often in a cross curricular context.*
- *Make and explain connections between number, measures and shape.*
- *Solve problems, involving reasoning about shapes and their properties. Explain solutions orally or using writing, diagrams, practical materials or dynamic geometry ICT tools.*

educationGateshead Core Curriculum for Primary Mathematics Progression Grid Year 5 (2020-2021)

Consolidation from Year 4	Year 5 Autumn	Year 5 Spring	Year 5 Summer
These are the objectives from Year 4. Some of these objectives may need consolidation in Year 5 depending on discussion with sending teacher.	**Understanding and investigating with numbers** **3 weeks**	**Understanding and investigating with numbers** **3 weeks**	**Understanding and investigating with numbers** **3 weeks**
Place value, ordering and rounding	**Place value, ordering and rounding**	**Place value, ordering and rounding**	**Place value, ordering and rounding**
• **Count** *forwards and back in steps of* 10, 100 *from any given number.* • *Interpret negative numbers in context and* **count backwards through zero to include negative numbers.** • *Read, write,* **order and compare numbers beyond 1000.** • 4NPV–1 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. • **Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones).** • 4NPV–2 Recognise the place value of each digit in four-digit numbers, and compose and	• **Count forwards or backwards in steps of powers of 10 from any given number up to 1 000 000 .** • **Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.** *Order a given set of negative and positive integers.* • **Read, write, order and compare numbers to at least 1 000 000 and determine the** place **value of each digit.** Continue to use numbers in contexts including measurement. • Extend and apply understanding of the number system to decimal numbers and fractions • *Use the vocabulary of comparing and ordering*	• **Count forwards or backwards in steps of powers of 10 from any given number up to 1 000 000.** • **Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.** *Order a given set of negative and positive integers.* • **Read, write, order and compare numbers to at least 1 000 000 and determine the** place **value of each digit.** Continue to use numbers in contexts including measurement. • 5NPV–1 Know that 10 tenths are equivalent to 1 one, and	• **Count forwards or backwards in steps of powers of 10 from any given number up to 1 000 000 .** • **Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.** *Order a given set of negative and positive integers.* • **Read, write, order and compare numbers to at least 1 000 000 and determine the** place **value of each digit.** Continue to use numbers in contexts including measurement. • Extend and apply understanding of the number system to decimal numbers and fractions

decompose four-digit numbers using standard and non-standard partitioning. • **Find 1000 more or less than a given number.** • *Use the vocabulary of comparing and ordering numbers including use of >, < symbols and = sign.* • **Identify, represent and estimate numbers using different representations** including measures. • **Read Roman numerals to 100 (I and C) and know that, over time, the numeral system changed to include the concept of zero and place value.** *Appreciate the difference between the Roman numeral system and our own number system from a place value viewpoint.* • **Round any number to the nearest 10, 100 or 1000.** • Connect estimation and rounding of numbers to the use of measuring instruments. • 4NPV–3 Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.	*numbers including use of >, < symbols and = sign.* • **Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000.**	that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01. • Extend and apply understanding of the number system to decimal numbers and fractions • 5NPV–2 Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and nonstandard partitioning. • *Use the vocabulary of comparing and ordering numbers including use of >, < symbols and = sign.* • **Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000.** • *Apply understanding of the number system to solve* **number problems and practical problems** *and*	• 5NPV–3 Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each. • *Use the vocabulary of comparing and ordering numbers including use of >, < symbols and = sign.* • **Read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.** *Appreciate the difference between the Roman numeral system and our own number system from a place value viewpoint.* • **Round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000.**

• *Apply understanding of the number system to* **solve number and practical problems** *and puzzles involving* **increasingly large positive numbers**, *money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.*		*puzzles involving numbers, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.*	
Properties of numbers and number sequences	**Properties of numbers and number sequences**	**Properties of numbers and number sequences**	**Properties of numbers and number sequences**
• *Continue to* **count in** *and recognise known multiples,* extend to **multiples of 6, 7, 9, 25 and 1000.** • *Recognise patterns in sequences of multiples and connections between them e.g. explore patterns on a 12 x 12 multiplication grid.* • *Use the vocabulary of factors and multiples and look for common factors and multiples to support work with fractions.* • *Apply understanding of number properties to solve routine and non-routine problems and puzzles involving numbers, money or measure.* • *Explore and discuss patterns, properties and relationships that arise in the number system using appropriate mathematical vocabulary.*	• *Continue to practise to recognise multiples of numbers up to 12 x 12, to recognise patterns in sequences of multiples and connections between them. Know and apply tests of divisibility.* • 5NF–1 Secure fluency in multiplication table facts, and corresponding division facts, through continued practice. • **Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** *Identify common multiples.* • **Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.**	• *Continue to practise to recognise multiples of numbers up to 12 x 12, to recognise patterns in sequences of multiples and connections between them. Know and apply tests of divisibility.* • **Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** *Identify common multiples.* • 5MD–2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors. • **Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.**	• *Continue to practise to recognise multiples of numbers up to 12 x 12, to recognise patterns in sequences of multiples and connections between them. Know and apply tests of divisibility.* • **Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** *Identify common multiples.* • **Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.**

• *Develop lines of enquiry through conjecturing relationships and generalizations and testing ideas. Identify examples for which a statement is true or false.*	• **Establish whether a number up to 100 is prime and recall prime numbers up to 19.** • **Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).** • Use understanding of the terms factor, multiple and prime, square and cube numbers to construct equivalence statements (e.g. 4 x 35 = 2 x 2 x 35; 3 x 270 = 3 x 3 x 9 x 10 = 9^2 x 10).	• Recognise and describe linear number sequences, including those involving fractions and decimals and find the term to term rule	
Fractions decimals and percentages	**Fractions decimals and percentages**	**Fractions decimals and percentages**	**Fractions decimals and percentages**
• *Compare and order fractions* • **Recognise and show, using diagrams, families of common equivalent fractions.** • Use factors and multiples to recognise equivalent fractions and simplify where appropriate e.g. 6/9 = 2/3 or ¼ = 2/8. • Make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. • 4NPV–4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000	• Continue to develop understanding of fractions as numbers, measures and operators by finding, *naming and writing,* fractions of numbers and quantities. • 5F–1 Find non-unit fractions of quantities. • Extend and apply understanding of the number system to decimal numbers and fractions • **Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.** • 5F–2 Find equivalent fractions and understand that they have the same	• Continue to develop understanding of fractions as numbers, measures and operators by finding, *naming and writing,* fractions of numbers and quantities. • Extend and apply understanding of the number system to decimal numbers and fractions • **Compare and order fractions whose denominators are all multiples of the same number.** • **Add and subtract fractions with the same denominator and with denominators that are multiples of the same number** extending to	• Continue to develop understanding of fractions as numbers, measures and operators by finding, *naming and writing,* fractions of numbers and quantities. • Extend and apply understanding of the number system to decimal numbers and fractions • **Add and subtract fractions with the same denominator and with denominators that are multiples of the same number** extending to calculations that exceed 1 as a mixed number. • **Multiply proper fractions and mixed numbers by whole**

with 2, 4, 5 and 10 equal parts.
- Extend use of the number line to connect fractions, numbers and measures.
- 4F–1 Reason about the location of mixed numbers in the linear number system.
- **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.**
  4MD–1 Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size.
- Count forwards and back using simple fractions and decimals.
- **Count up and down in** tenths and **hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.**
- 4NPV–1

value and the same position in the linear number system.
- **Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$).**
- Connect equivalent fractions > 1 that simplify to integers with division and other fractions > 1 to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions
- Continue to practise counting forwards and backwards using fractions and decimals, including bridging through zero, for example on a number line.
- **Read, write, order and compare numbers with up to three decimal places.**
- **Read and write decimal numbers as fractions (e.g 0.71 = 71/100).**
- **Recognised and use thousandths and relate them to tenths, hundredths, decimal equivalents** and measures

calculations that exceed 1 as a mixed number.
- Continue to practise counting forwards and backwards using fractions and decimals, including bridging through zero, for example on a number line.
- **Read, write, order and compare numbers with up to three decimal places.**
- **Read and write decimal numbers as fractions (e.g 0.71 = 71/100)**
- 5F–3 Recall decimal fraction equivalents for ½ ,1/4 , 1/5 and 1/10 , and for multiples of these proper fractions.
- **Recognise and use thousandths and relate them to tenths, hundredths, decimal equivalents and measures**
- **Round decimals with two decimal places to the nearest whole number and to one decimal place.**
- Mentally add and subtract tenths, and one-digit whole numbers and tenths.
- Add and subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (e.g.0.83+ 0.17 =1) *using*

numbers, supported by materials and diagrams.
- Connect multiplication by a fraction to using fractions as operators (fractions of) and to division. This relates to scaling by simple fractions, including fractions > 1.
- Continue to practise counting forwards and backwards using fractions and decimals, including bridging through zero, for example on a number line.
- **Read, write, order and compare numbers with up to three decimal places.**
- **Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 and as a decimal fraction.**
- **Solve problems which require knowing percentage and decimal equivalents of $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ and those with a denominator of a multiple of 10 or 25.**
- Make connections between percentages, fractions and decimals e.g. 100% represents a whole quantity, 1% is 1/100…

• **Compare** and order **numbers and** quantities **with the same number of decimal places up to two decimal places** and represent them in several ways, such as on number lines. • **Recognise and write decimal equivalents to ¼, ½, ¾ .** • **Recognise and write decimal equivalents of any number of tenths or hundredths. Round decimals with one decimal place to the nearest whole number.** • *Apply understanding of fractions and decimals to solve routine and non-routine problems and puzzles involving numbers, shapes, money or measures. Explain methods and reasoning orally and in writing, including using diagrams and symbols.* • **Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non unit fractions where**	• 5MD–1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size. • **Round decimals with two decimal places to the nearest whole number and to one decimal place** • 5NPV–4 Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.	*formal written methods when appropriate.* • Recognise and describe linear number sequences, including those involving fractions and decimals and find the term to term rule.	and relate this to finding 'fractions of'. • Understand that percentages, decimals and fractions are different ways of expressing proportions •

the answer is a whole number. • 4F–2 Convert mixed numbers to improper fractions and vice versa. • **Add and subtract fractions with the same denominator** practising through increasingly complex problems beyond one whole. • 4F–3 Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers			
Developing and applying calculation	**Developing and applying calculation**	**Developing and applying calculation**	**Developing and applying calculation**
Addition and Subtraction	**Addition and Subtraction 2 weeks**	**Addition and Subtraction 2 weeks**	**Addition and Subtraction 2 weeks**
Continue to practise using known facts and understanding of place value to quickly derive sums and differences using whole numbers and decimals • Continue to practise mental methods with increasingly large numbers e.g. *Use place value and known facts to add or subtract one near multiple of 100 from another e.g. 602 – 498 or 535 + 399.*	• *Continue to practise using known facts and understanding of place value to quickly derive sums/differences using whole numbers and decimals.* • 5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth), for example: 8 + 6 = 14 0.8 + 0.6 = 1.4 0.08 + 0.06 = 0.14	• *Continue to practise using known facts and understanding of place value to quickly derive sums/differences using whole numbers and decimals.* • **Add and subtract numbers mentally with increasingly large numbers** e.g. *Use place value and known facts to subtract one near multiple of 1000 from*	• *Continue to practise using known facts and understanding of place value to quickly derive sums/differences using whole numbers and decimals.* • **Add and subtract numbers mentally with increasingly large numbers** e.g. *Use place value and known facts to subtract one near multiple of 1000 from*

- 4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example:
  8 + 6 = 14 and 14 – 6 = 8
  So
  800 + 600 = 1,400
  1,400 – 600 = 800
- *Use and explain a range of mental strategies appropriate to the numbers involved, sometimes supporting explanations with jottings or informal recording.*
- **Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.**
- **Estimate and use inverse operations to check answers to a calculation.**
- *Understand and use the relationships between the four operations and the principles of the arithmetic laws; commutative, associative and distributive.*
- **Solve addition and subtraction two-step**

- **Add and subtract numbers mentally with increasingly large numbers** e.g. *Use place value and known facts to subtract one near multiple of 1000 from another e.g. 6070 – 4097 or 12 462 – 2300 = 10 162*.
- Mentally add and subtract tenths, and one digit whole numbers and tenths.
- *Use and explain a range of mental strategies appropriate to the numbers involved, sometimes supporting explanations with jottings or informal recording.*
- **Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).**
- Add and subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (e.g.0.83+ 0.17 =1) *using formal written methods when appropriate.*
- **Use rounding,** *estimation and inverse operations* **to check answers to calculations and determine, in the context of a problem, levels of accuracy.**

- *another e.g. 6070 – 4097 or 12 462 – 2300 = 10 162*.
- Mentally add and subtract tenths, and one digit whole numbers and tenths.
- *Use and explain a range of mental strategies appropriate to the numbers involved, sometimes supporting explanations with jottings or informal recording.*
- **Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).**
- Add and subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (e.g.0.83+ 0.17 =1) *using formal written methods when appropriate.*
- **Add and subtract fractions with the same denominator and with denominators that are multiples of the same number.**
- **Use rounding,** *estimation and inverse operations* **to check answers to**

- *another e.g. 6070 – 4097 or 12 462 – 2300 = 10 162*.
- Mentally add and subtract tenths, and one digit whole numbers and tenths.
- *Use and explain a range of mental strategies appropriate to the numbers involved, sometimes supporting explanations with jottings or informal recording.*
- **Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).**
- Add and subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (e.g.0.83+ 0.17 =1) *using formal written methods when appropriate.*
- **Use rounding,** *estimation and inverse operations* **to check answers to calculations and determine, in the context of a problem, levels of accuracy.**
- *Understand and use the relationships between the*

problems in contexts, deciding which operations and methods to use and why. • *Solve calculation problems including using information from a range of tables and charts* • *Apply understanding of number operations to solve number puzzles and non-routine problems and explain reasoning.* • Use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 13 + 24 = 12+ 25; 33 = 55 - Δ). • **Add and subtract fractions with the same denominator** practising through increasingly complex problems beyond one whole	• *Understand and use the relationships between the four operations and the principles of the arithmetic laws; commutative, associative and distributive. (Distributivity can be expressed as a(b+c) = ab + ac).* • **Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.** • **Add and subtract fractions with the same denominator and with denominators that are multiples of the same number.** • *Use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 13 + 24 = 12+ 25; 33 = 55 - Δ).*	**calculations and determine, in the context of a problem, levels of accuracy.** • *Understand and use the relationships between the four operations and the principles of the arithmetic laws; commutative, associative and distributive. (Distributivity can be expressed as a(b+c) = ab + ac).* • **Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.** • *Use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 13 + 24 = 12+ 25; 33 = 55 - Δ).*	*four operations and the principles of the arithmetic laws; commutative, associative and distributive. (Distributivity can be expressed as a(b+c) = ab + ac).* • **Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.** • *Use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 13 + 24 = 12+ 25; 33 = 55 - Δ).* • *Use a calculator to solve problems when the numbers involved are appropriate, including decimals and fractions, and interpret the display correctly for the context.*
Multiplication and Division	**Multiplication and Division 2 weeks**	**Multiplication and Division 2 weeks**	**Multiplication and Division 2 weeks**
• **Recall multiplication and division facts for multiplication tables up to 12 x 12.**	• **Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.**	• **Multiply and divide numbers mentally drawing upon known number facts,** *place value and properties of numbers to support mental*	• **Multiply and divide numbers mentally drawing upon known facts** *place value and properties of numbers to*

Column 1 (grey):

- 4NF–1 Recall multiplication and division facts up to 12 x 12, and recognise products in multiplication tables as multiples of the corresponding number.
- *Relate multiplication and division to arrays and explore partitioning arrays in different ways to show relationships between number facts.*
- **Use place value, known and derived facts to multiply and divide mentally (** e.g. 600 ÷ 3 = 200 can be derived from 2 x 3 = 6) **, including multiplying by 0 and 1; dividing by 1; multiplying together three numbers.**
- 4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example:
  3 x 4 = 12 and 12 ÷ 4 = 3
  S0 300 x 4 = 1, 200
  1,200 ÷ 4 = 300
- **Recognise and use factor pairs and commutativity in mental calculations.**

Column 2 (orange):

- *Use knowledge of place value and multiplication facts to derive related multiplication and division facts involving decimals e.g. 0.8 x 7, 4.8 ÷ 6.*
- 5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth), for example:
  3 x 4 = 12
  0.3 x 4 = 1.2
  0.03 x 4 = 0.12
- **Multiply and divide numbers mentally drawing upon known number facts,** *place value and properties of numbers to support mental calculation with larger numbers.*
- **Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including** short multiplication and **long multiplication for two-digit numbers.**
- **Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret**

Column 3 (teal):

- *calculation with larger numbers.*
- **Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.**
- *Use knowledge of place value and multiplication facts to derive related multiplication and division facts involving decimals e.g. 0.8 x 7, 4.8 ÷ 6.*
- **Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including** short multiplication and **long multiplication for two-digit numbers.**
- 5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.
- **Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context** as fractions, as decimals or by rounding.
- *Understand and use the relationships between the*

Column 4 (pink):

- *support mental calculation with larger numbers.*
- **Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.**
- *Use knowledge of place value and multiplication facts to derive related multiplication and division facts involving decimals e.g. 0.8 x 7, 4.8 ÷ 6.*
- **Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including** short multiplication and **long multiplication for two-digit numbers.**
- **Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context** as fractions, as decimals or by rounding.
- 5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.
- **Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.**

- **Multiply two-digit and three-digit numbers by a one-digit number using formal written layout** of short multiplication.
- Use the formal written method of short division *for calculations involving two and three digit numbers divided by a single digit* with exact answers.
- 4NF–2 Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example:

  74÷ 9 = 8 r 2

  and interpret remainders appropriately according to the context.
- **Solve** one and two step **problems** in contexts **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** e.g. the number of choices on a

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- **remainders appropriately for the context** as fractions, as decimals or by rounding.
- *Understand and use the relationships between the four operations and the principles of the arithmetic laws; commutative, associative and distributive.* (Distributivity can be expressed as a(b+c) = ab + ac).
- *Use rounding, estimation and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy.*
- **Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.**
- **Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.**
- Use and explain the equals sign to indicate equivalence, including in missing number

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- *four operations and the principles of the arithmetic laws; commutative, associative and distributive.* (Distributivity can be expressed as a(b+c) = ab + ac).
- *Use rounding, estimation and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy.*
- **Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.**
- Use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 2 x 24 = 12 x 4; 33 = 5 x ◊).

- Connect multiplication by a fraction to using fractions as operators (fractions of) and to division. This relates to scaling by simple fractions, including fractions > 1.
- *Understand and use the relationships between the four operations and the principles of the arithmetic laws; commutative, associative and distributive.* (Distributivity can be expressed as a(b+c) = ab + ac).
- *Use rounding, estimation and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy.*
- **Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.**
- **Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.**
- Use multiplication and division as inverses e.g. by multiplying and dividing by powers of ten in scale drawings

menu or three cakes shared equally between 10 children. • *Understand and use the relationships between the four operations and the principles of the arithmetic laws; commutative, associative and distributive.* • 4MD–2 Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication • 4MD–3 Understand and apply the distributive property of multiplication. • *Use rounding, estimation and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy.* • *Solve calculation problems using information from a range of tables and charts.* • *Apply understanding of number operations to solve number puzzles, routine and non –routine problems and explain reasoning.* • *Use and explain the equals sign to indicate equivalence,*	problems (e.g. 2 x 24 = 12 x 4; 33 = 5 x ◊).		or by powers of 1000 in converting between units such as kilometres and meters. • Use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 2 x 24 = 12 x 4; 33 = 5 x ◊). • *Use a calculator to solve problems when the numbers involved are appropriate, including decimals and fractions, and interpret the display correctly for the conte*xt.

including in missing number problems (e.g. 2 x 24 = 12 x 4; 33 = 5 x ◊).			
Measurement	**Measurement 2 weeks**	**Measurement 2 weeks**	**Measurement 2 weeks**
• *Continue to use read and write standard metric units and their abbreviations, developing fluency in their relationships.* • *Suggest suitable units and equipment for measuring and read scales to an appropriate degree of accuracy.* • **Measure and calculate the perimeter of a rectilinear figure, including squares, in centimetres and metres.** • **Find the area of rectilinear shapes by counting squares.** • Relate area to arrays and multiplication. • *Use all four operations to solve problems including scaling problems involving measure (e.g. length, mass, volume, money) and using decimal notation where appropriate. Information required to solve a problem is often drawn from tables, including timetables, graphs and charts.*	• *Continue to use read and write standard metric units and their abbreviations, developing fluency in their relationships.* • *Suggest suitable units and equipment for measuring and read scales to an appropriate degree of accuracy.* • **convert between different units of metric measure (e.g. kilometre and metre; centi metre and metre; centimetre a nd millimetre; gram and kilogram; litre and millilitre)** u sing knowledge of place value and multiplication / division. • **Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.** • **Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes.** *For rectangles use the formula, length* x *breadth = area, expressed in words or symbols.*	• *Continue to use read and write standard metric units and their abbreviations, developing fluency in their relationships.* • *Suggest suitable units and equipment for measuring and read scales to an appropriate degree of accuracy.* • **convert between different units of metric measure (e.g. kilometre and metre; centi metre and metre; centimetre a nd millimetre; gram and kilogram; litre and millilitre)** u sing knowledge of place value and multiplication / division. • *Continue to read the time, interpret timetables and use units of time, including to* **solve problems involving converting between units of time.** • **Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.** • **Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and**	• *Continue to use read and write standard metric units and their abbreviations, developing fluency in their relationships.* • *Suggest suitable units and equipment for measuring and read scales to an appropriate degree of accuracy.* • **convert between different units of metric measure (e.g. kilometre and metre; c entimetre and metre; centi metre and millimetre; gram and kilogram; litre and millilitr e)** using knowledge of place value and multiplication / division. • 5NPV–5 Convert between units of measure, including using common decimals and fractions. • *Continue to read the time, interpret timetables and use units of time, including to* **solve problems involving converting between units of time.** • **Understand and use approximate equivalences**

- *Apply measuring skills to an appropriate degree of accuracy, alongside the skills of thinking mathematically to solve problems. These should include practical problems and might involve construction of shapes or artefacts, often in a cross curricular context.*
- *Make and explain connections between number, measures and shape.*
- **Estimate, compare,** *order* **and calculate different measures, including money in pounds and pence** building on understanding of place value, decimal notation *and knowledge of fractions.*
- 4NPV–4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.
- **Convert between units of measure e.g. kilometre to metre; hour to minute** using multiplication.
- *Continue to develop accuracy with telling the time and using the*

- **Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.** *Information required to solve a problem is often drawn from tables, including timetables, graphs and charts.*

estimate the area of irregular shapes. *For rectangles use the formula, length* x *breadth = area, expressed in words or symbols.*
- **Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.**

between metric units and common imperial units such as inches, pounds and pints.
- **Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.**
- **Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes.** *For rectangles use the formula, length* x *breadth = area, expressed in words or symbols.*
- 5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.
- Use the relations of perimeter or area to find unknown lengths, missing measures questions such as these can be expressed algebraically e.g. $4 + 2b = 20$ for a rectangle of sides 2cm and bcm and perimeter 20cm.

vocabulary of time. Compare durations of events including when expressed in different units e.g. 3.5 hours and 140 minutes. • **Read, write and convert time between analogue and digital 12- and 24-hour clocks.** • **Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.**			• Calculate area from scale drawings using given measurements**.** • **Estimate volume (e.g. using 1 cm³ blocks to build cubes and cuboids) and capacity (e.g. using water).** • *Continue to read the time, interpret timetables and use units of time, including to* **solve problems involving converting between units of time.** • **Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.** *Information required to solve a problem is often drawn from tables, including timetables, graphs and charts.*
Geometry	**Geometry 2 weeks**	**Geometry 2 weeks**	**Geometry 2 weeks**

Properties of Shapes	Properties of Shapes	Properties of Shapes	Properties of Shapes

• *Continue to develop use of correct mathematical vocabulary(including parallel and perpendicular) to identify and describe 2-D and 3-D shapes.*
• *Continue to draw and make 2-D and 3-D shapes using a range of materials.*
• **Compare and classify geometric shapes, including quadrilaterals** e.g. parallelogram, rhombus, trapezium **and triangles** e.g. isosceles**,** equilateral, scalene**, based on their properties and sizes** (this will partially cover 4G–1)
• **Identify acute and obtuse angles and compare and order angles up to two right angles by size** in preparation for using a protractor.
• Compare lengths and angles to decide if a polygon is regular or irregular.
• 4G–2 Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons.
	• *Continue to compare and classify geometric shapes based on developing knowledge and understanding of their properties.*
	• **Use the properties of rectangles to deduce related facts and find missing lengths and angles.**
	• **Identify 3D shapes, including cubes and other cuboids, from 2D representations.**
	• Become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. Use conventional markings for parallel lines and right angles.
		• *Continue to compare and classify geometric shapes based on developing knowledge and understanding of their properties.*
		• **Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.**
		• **Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles.**
		• **Draw given angles and measure them in degrees (°).**
		• **Identify:**
		   o **angles at a point and one whole turn (total 360°)**
		   o **angles at a point on a straight line and ½ a turn (total 180°)**
		   o **other multiples of 90°.**
		
		• 5G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.
		• Become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor.
			• *Continue to compare and classify geometric shapes based on developing knowledge and understanding of their properties.*
			• Use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, e.g. through using dynamic geometry ICT tools.
			• Become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. Use conventional markings for parallel lines and right angles.
			• Use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.
			• *Solve problems, involving reasoning about shapes and their properties. Explain solutions orally or using writing, diagrams, practical materials or dynamic geometry ICT tools.*

• **Identify lines of symmetry in 2-D shapes presented in different orientations.** • **Complete a simple symmetric figure with respect to a specific line of symmetry.** • Draw symmetric patterns using a variety of media to become familiar with different orientations of lines symmetry; and recognise line symmetry in a variety of diagrams including where the line of symmetry does not dissect the original shape. • 4G–3 Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry		Use conventional markings for parallel lines and right angles. • Use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems. • *Solve problems, involving reasoning about shapes and their properties. Explain solutions orally or using writing, diagrams, practical materials or dynamic geometry ICT tools.*	
Position and Direction	**Position and Direction**	**Position and Direction**	**Position and Direction**
• Draw a pair of axes in one quadrant, with equal scales and integer labels. • Read, write and use pairs of coordinates to **describe positions on a 2-D grid as coordinates in the first quadrant.** • Use co-ordinate plotting ICT tools. **Describe movements between positions as**	• **Identify, describe and represent the position of a shape following a reflection, using the appropriate language, and know that the shape has not changed.** • Recognize and use reflection in a variety of diagrams, including continuing to use a 2D grid and coordinates in the first	• **Identify, describe and represent the position of a shape following a translation, using the appropriate language, and know that the shape has not changed.** • Recognize and use translation in a variety of diagrams, including continuing to use a 2D grid and coordinates in the first quadrant.	• **Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.** • Recognize and use reflection and translation in a variety of diagrams, including continuing to use a 2D grid and coordinates

translations of a given unit to the left/right and up/down. • **Plot specified points and draw sides to complete given polygon** • 4G–1 Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant. • *Recognise and use the eight compass directions*	quadrant. Reflection should be in lines that are parallel to the axes. • *Recognize and use the eight compass directions*		in the first quadrant. Reflection should be in lines that are parallel to the axes.
Statistics	**Statistics 1 week**	**Statistics 1 week**	**Statistics 1 week**
Interpreting, Constructing and Presenting Data	**Interpreting, Constructing and Presenting Data**	**Interpreting, Constructing and Presenting Data**	**Interpreting, Constructing and Presenting Data**
• **Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.** • **Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.** • Begin to relate the graphical representation of data to recording change over time. • Understand and use a greater range of scales in representations. • *Pose questions that can be answered using information*	• **Complete, read and interpret information in** (a wide range of charts and) **tables including timetables.** • Begin to decide which representations of data are most appropriate and why.	• **Complete, read and interpret information in** (a wide range of charts and) **tables including timetables.** • **Solve comparison, sum and difference problems using information presented in a line graph.** • Connect work on coordinates and scales to their interpretation of time graphs. • Begin to decide which representations of data are most appropriate and why • *Pose questions that can be answered using information presented in different graphs charts and tables.*	• **Complete, read and interpret information in** (a wide range of charts and) **tables, including timetables.** • **Solve comparison, sum and difference problems using information presented in a line graph.** • Connect work on coordinates and scales to their interpretation of time graphs. • Begin to decide which representations of data are most appropriate and why. • *Pose questions that can be answered using information presented in different graphs charts and tables.*

presented in different graphs charts and tables. • *Understand and use Venn and Carroll diagrams to support reasoning about numbers or shape.* • *Apply the skills of collecting, representing and interpreting statistical data across the curriculum within and beyond mathematic, sometimes in response to an enquiry of interest to and suggested by pupils.*		• *Apply the skills of collecting, representing and interpreting statistical data across the curriculum within and beyond mathematics, sometimes in response to an enquiry of interest to and suggested by pupils.*	• *Apply the skills of collecting, representing and interpreting statistical data across the curriculum within and beyond mathematics, sometimes in response to an enquiry of interest to and suggested by pupils.*