Netherthorpe Primary School (updated December 2021)

**Maths Long Term Plan with Progression of Skills**

**Year 5**

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| **Autumn** | | | | |
| **Knowledge** | 5NPV–1 Tenths and hundredths  5NPV–2 Place value in decimal fractions  5NPV–3 Decimal fractions in the linear number system  5NPV–4 Reading scales with 2, 4, 5 or 10 intervals  5NF–2 Scaling number facts by 0.1 or 0.01 | NC Money Objectives | NC Negative Number Objectives | 5MD–3 Multiply using a formal written method  5MD–4 Divide using a formal written method |
| **Unit 1**  **Decimal Fractions** | **Unit 2**  **Money** | **Unit 3**  **Negative Numbers** | **Unit 4**  **Short Multiplication and short division** |
| **Progression of Skills** | * Identify tenths as part of a whole * Describe and represent tenths as a decimal fraction * Count in tenths in different ways * Describe and write decimal numbers with tenths in different ways * Compare and order decimal numbers with tenths * Explain that decimal numbers with tenths can be composed additively * Explain that decimal numbers with tenths can be composed multiplicatively * Use their knowledge to calculate with decimal numbers within and across one whole * Use their knowledge to calculate with decimal numbers using mental methods * Use their knowledge to calculate with decimal numbers using column addition and subtraction * Use representations to round a decimal number with tenths to the nearest whole number * Identify hundredths as part of a whole * Describe and represent hundredths as a decimal fraction * Describe and write decimals numbers with hundredths in different ways * Compare and order decimal numbers with hundredths * Explain that decimal numbers with hundredths can be partitioned in different ways * Use their knowledge of decimal place value to convert between and compare metres and centimetres * Explain that different lengths can be composed additively and multiplicatively * Use their knowledge of decimal place value to solve problems in different contexts * Use their knowledge to calculate with decimal numbers up to and bridging one tenth * Use their knowledge to calculate with decimal numbers using column addition and subtraction * Round a decimal number with hundredths to the nearest tenth * Round a decimal number with hundredths to the nearest whole number * Read and write numbers with up to 3 decimal places * Compare and order numbers with up to 3 decimal places | * Explain and represent whole pounds as a quantity of money * Explain and represent whole pounds and pence as a quantity of money * Explain how to compare amounts of money * Convert quantities of money between pounds and pence * Use their knowledge of addition to efficiently add commonly used prices * Use their knowledge of subtraction to calculate the change due when paying whole pounds or notes * Use and explain the most efficient strategies when adding quantities of money * Use and explain the most efficient strategies when subtracting quantities of money * Find the change when purchasing several items * Use the most efficient and reliable strategy to find the change when purchasing several items | * Represent a change story using addition and subtraction symbols * Interpret numbers greater than and less than zero in different contexts * Read and write negative numbers * Explain how the value of a number relates to its position from zero * Identify and place negative numbers on a number line * Interpret sets of negative and positive numbers in a range of contexts * Use their knowledge of positive and negative numbers to calculate intervals * Explain how negative numbers are used on a coordinate grid * Use their knowledge of positive and negative numbers to interpret graphs | * Multiply a two-digit number by a single-digit number using partitioning and representations (no regroups) * Multiply a two-digit number by a single-digit number using partitioning and representations (one regroup) * Multiply a two-digit number by a single-digit number using partitioning and representations (two regroups) * Multiply a two-digit number by a single-digit number using partitioning * Multiply a two-digit number by a single-digit number using expanded multiplication (no regroups) * Multiply a two-digit number by a single-digit number using short multiplication (no regroups) * Multiply a two-digit number by a single-digit number using expanded multiplication (regrouping ones to tens) * Multiply a two-digit number by a single-digit number using short multiplication (regrouping ones to tens) * Multiply a two-digit number by a single-digit number using expanded multiplication (regrouping tens to hundreds) * Multiply a two-digit number by a single-digit number using short multiplication (regrouping tens to hundreds) * Multiply a two-digit number by a single-digit number using both expanded and short multiplication (two regroups) * Use estimation to support accurate calculation * Multiply a three-digit number by a single-digit number using partitioning and representations * Multiply a three-digit number by a single-digit number using partitioning * Multiply a three-digit number by a single-digit number using expanded and short multiplication (no regroups) * Multiply a three-digit number by a single-digit number using expanded and short multiplication (one regroup) * Multiply a three-digit number by a single-digit number using expanded and short multiplication (multiple regroups) * Use estimation to support accurate calculation * Divide a two-digit number by a single-digit number using partitioning and representations (no remainders, no exchanging) * Divide a two-digit number by a single-digit number using partitioning and representations (with exchanging) * Divide a two-digit number by a single-digit number using partitioning and representations (with exchanging and remainders) * Divide a two-digit number by a single-digit number using short division (no exchanging, no remainders) * Divide a two-digit number by a single-digit number using short division (with exchanging) * Divide a two-digit number by a single-digit number using short division (with exchanging and remainders) * Divide a three-digit number by a single-digit number using partitioning and representations (no exchanging, no remainders) * Divide a three-digit number by a single-digit number using partitioning and representations (one exchange, no remainders) * Divide a three-digit number by a single-digit number using partitioning and representations (with exchanging and remainders) * Divide a three-digit number by a single-digit number using short division * Divide a three-digit number by a single-digit number using short division (with exchanging and remainders) * Solve short division problems accurately when the hundreds digit is smaller than the divisor * Use efficient strategies of division to solve problems |

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| **Spring** | | | |
| **Knowledge** | 5G–2 Compare and calculate areas | 5MD–1 Multiplying and dividing by 10 and 100 | 5MD–2 Find factors and multiples |
| **Unit 5**  **Area and Scaling** | **Unit 6**  **Calculating with Decimal Fractions** | **Unit 7**  **Factors, Multiples and Primes** |
| **Progression of Skills** | * Explain what area is and can measure using counting as a strategy (1) * Explain what area is and can measure using counting as a strategy (2) * Explain how to make different shapes with the same area * Explain how to compare the area of different shapes * Measure the area of flat shapes area using square centimetres * Measure the area of flat shapes area using square metres * Calculate the area of a rectangle using multiplication * Calculate the area of rectilinear shapes * Use their knowledge of area to solve problems * Compare and describe lengths by using their knowledge of multiplication * Use their knowledge of multiplication to solve comparison and change problems * Compare and describe lengths by using their knowledge of division * Use their knowledge of division to solve comparison and change problems * Compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) (1) * Compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) (2) * Describe the changes in measurements using their knowledge of multiplication and division * Use their knowledge of multiplication and division to solve comparison and change problems | * Explain the effect of multiplying and dividing a number by 10, 100 and 1,000 (1) * Explain the effect of multiplying and dividing a number by 10, 100 and 1,000 (2) * Explain how to multiply and divide a number by 10, 100 and 1,000 (first ‘number’ two or more non-zero digits) * Use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (length) * Use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (mass and capacity) * Explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (tenths) * Explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (hundredths) * Use their knowledge of multiplying decimal fractions by whole numbers to solve measures problems * Explain the relationship between multiplying by 0.1 dividing by 10 * Explain the relationship between multiplying by 0.01 dividing by 100 * Explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions (1) * Explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions (2) * Explain how to use the size of the multiplier to predict the size of the product compared to the multiplicand * Explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers (1) * Explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers (2 | * Explain what ‘volume’ is using a range of contexts * Describe the units used to measure volume * Explain how to calculate the volume of a cuboid * Explain what a cube number is * Use their knowledge of calculating volume to solve problems in a range of contexts * Explain how to calculate the volume of compound shapes * Explain the use of the commutative and distributive laws when multiplying three or more numbers * Explain the reasons for changing two-factor multiplication calculations to three-factor multiplications * Explain what a factor is and how to use arrays and multiplication/division facts to find them * Explain how to systematically find all factors of a number and how they know when they have found them all * Use a complete list of factors to explain when a number is a square number * Explain how to identify a prime number or a composite number * Explain how to identify a common factor or a prime factor of a number * Explain how to identify a multiple or common multiple of a number * Use knowledge of properties of number to solve problems in a range of contexts * Explain how to use the factor pairs of ‘100’ to solve calculations efficiently |

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| **Knowledge** | **Summer** | | |
| 5NPV–5 Convert between units of measure  5F–1 Find non-unit fractions of quantities  5F–2 Find equivalent fractions  5F–3 Recall decimal equivalents for common fractions  3F–2 Find unit fractions of quantities | 5NPV–5 Convert between units of measure | 5G–1 Compare, estimate, measure and draw angles |
| **Progression Of Skills** | **Unit 8**  **Fractions** | **Unit 9**  **Converting Units** | **Unit 10**  **Angles** |
|  | * Explain the relationship between repeated addition of a proper fraction and multiplication of fractions (unit fractions) * Explain the relationship between repeated addition of a proper fraction and multiplication of fractions (non-unit fractions) * Multiply a proper fraction by a whole number (within a whole) * Multiply a proper fraction by a whole number (greater than a whole) * Multiply an improper fraction by a whole number * Multiply a mixed number by a whole number (product is within a whole) * Multiply a mixed number by a whole number (product is greater than a whole) * Find a unit fraction of a quantity * Explain the relationship between finding a fraction of a quantity and multiplying a whole number by a unit fraction * Explain the relationship between dividing by a whole number and multiplying a whole number by a unit fraction * Use their knowledge of multiplying a whole number by a unit fraction to solve problems * Find a non-unit fraction of a quantity (mental calculation) * Find a non-unit fraction of a quantity (written calculation) * Multiply a whole number by a proper fraction * Explain when a calculation represents scaling down and when it represents repeated addition * Find the whole when the size of a unit fraction is known * Find a unit fraction when the size of a non-unit fraction is known * Find the whole when the size of a non-unit fraction is known * Find the unit fraction when the size of a non-unit fraction is known * Use representations to describe and compare two fractions (1/4 and 3/12) * Use representations to describe and compare two fractions (1/5 and 5/10) * Use representations to describe and compare two fractions (pouring context) * Correctly use the language of equivalent fractions * Explain the vertical relationship between numerators and denominators within equivalent fractions (1/5, 1/3 and equivalent) * Use their knowledge of the vertical relationship to solve equivalent fractions problems * Explain the horizontal relationship between numerators and denominators across equivalent fractions (1/5, 1/3 and equivalent) * Explain the relationship within families of equivalent fractions * Use their knowledge of equivalent fractions to solve problems * Explain and represent how to divide 1 into different amounts of equal parts * Identify and describe patterns within the number system * Use their knowledge of common equivalents to compare fractions with decimals * Practise recalling common fraction-decimal equivalents | * Apply memorised unit conversions to convert between units of measure (larger to smaller units - whole number conversions) * Apply memorised unit conversions to convert between units of measure (smaller to larger units - whole number conversions) * Convert from and to fraction and decimal fraction quantities of larger units * Derive common conversions over 1 * Carry out conversions that correspond to 100 parts * Solve measures problems involving different units * Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints * Convert between miles and kilometres * Solve problems involving converting between units of time. | * Compare the size of angles where there is a clear visual difference * Use the terms acute, obtuse and reflex when describing the size of angles or amount of rotation with relation to right angles * Use a unit called degrees (°) as a standard unit to measure angles * Estimate the size of angles in degrees using angle sets * Measure the size of angles accurately using a protractor |