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 hundredths5NPV–2 Place value in decimal fractions5NPV–3 Decimal fractions in the linear number system5NPV–4 Reading scales with 2, 4, 5 or 10 intervals5NF–2 Scaling number facts by 0.1 or 0.01 | NC Money Objectives | NC Negative Number Objectives | 5MD–3 Multiply using a formal written method5MD–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 measure5F–1 Find non-unit fractions of quantities5F–2 Find equivalent fractions5F–3 Recall decimal equivalents for common fractions3F–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
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