Y5 medium-term immersion plan – learning sequence 1

Week	1	2	3	4	5	6	7	8	9	10	11	12

Number and place value
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 **5N1**
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit, **relating to prior learning** **5N2/3a**
- read Roman numerals to 1000 (M) and recognise years written in Roman numerals **5N3b**
- round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 *and connect to estimation when calculating or when using measuring instruments* **5N4**
- *apply understanding of the number system to decimal numbers and fractions they have met so far*
- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero **5N5**
- *recognise and describe linear number sequences including those involving fractions and describe the term to term rule*
- solve number problems and practical problems that involve all of the above **5N6**

Fractions (including decimals)
- read and write decimal numbers as fractions [e.g. $0.71 = {}^{71}/_{100}$] **5F6a**
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents **5F6b**
- round decimals with two decimal places to the nearest whole number and to one decimal place **5F7**
- read, write, order and compare numbers with up to three decimal places **5F8**

Multiplication and division
- multiply and divide numbers mentally drawing upon known facts **5C6a**
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 e.g. *multiply and divide by powers of 10 in scale drawings and multiply and divide by powers of a 1000 in converting between units such as kilometres and metres* **5C6b**

Addition and subtraction
- add and subtract numbers mentally with increasingly large numbers **5C1**
  – **know when and how to use jottings to support conservation of number**
  – **calculate what must be added to any 4 digit number to make the next multiple of 1000 e.g. 4087 + □□□ = 5000**
  – **practise mental calculations with increasingly large numbers to aid fluency (e.g. 12 462 – 2 300 = 10 162)**
- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) *including extending through* **5C2**
  - **varying the place value e.g. 23456 + 637 + 7503 or 642.7 + 75.69 +6200.09**
  - **varying number of times 0 is used as a placeholder e.g. 70056 – 2399**
  - **solving missing number calculations (knowing when they can and cannot use the inverse operation e.g. 3490 + □□□ = 4286 or 52901 - □□□□ = 49244)**
  - **applying to a variety of contexts including measurement**
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy **5C3**
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why **5C4**

Measurement
- convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) **5M5**
- calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes **5M7b**
- estimate volume [e.g. using 1 cm3 blocks to build cuboids(including cubes)] and capacity[e.g. using water] **5M8**

Multiplication and division
- multiply and divide numbers mentally drawing upon known facts **5C6a**
- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers **5C5a**
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers **5C5b**
- establish whether a number up to 100 is prime and recall prime numbers up to 19 **5C5c**
- recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) **5C5d**
- *use understanding of factors, multiples, primes and 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 = 9² x 10)*
- *use and explain the equals sign to indicate equivalence, including in missing number problems (e.g. 13 + 24 = 12 + 25; 33 = 5 x □)*
- multiply numbers up to 4 digits by a one digit number using a formal written method, **using concrete resources 5C7a**
  1. **HTO x O with no exchange**
  2. **HTO x O with exchange of ones to tens**
  3. **HTO x O with exchange of tens into hundreds**
  4. **HTO x O with exchange of ones into tens and tens into hundreds**
  5. **As above with a greater number of digits multiplied by a single digit**
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division **(whole number remainders only) using concrete resources 5C7b**
  1. **HTO ÷ O no exchange and no remainder**
  2. **HTO ÷ O no exchange with whole number remainder**
  3. **HTO ÷ O with exchange of hundreds into tens**
  4. **HTO ÷ O with exchange of tens into ones**
  5. **HTO ÷ O with exchange with whole number remainder**
  6. **Where there are zeros in the quotient e.g. 816 ÷ 4=204**
  7. **With a greater number of digits to be divided by a single digit**
- solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes **5C8a**
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **5C8b**

Herts for Learning

Y5 medium-term immersion plan – learning sequence 2

Week	1	2	3	4	5	6	7	8	9	10	11	12

Addition and subtraction

- add and subtract numbers mentally with increasingly large numbers   **5C1**
    - know when and how to use jottings to support conservation of number
    - practise mental calculations with increasingly large numbers to aid fluency (e.g. 12 462 – 2 300 = 10 162)
- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) **including extending through**   **5C2**
    - varying the place value e.g. 23456 + 637 + 7503 or 642.7 + 75.69 +6200.09
    - varying number of times 0 is used as a placeholder e.g. 70056 – 2399
    - solving missing number calculations (knowing when they can and cannot use the inverse operation e.g. 3490 + □□□ = 4286 or 52901 - □□□□ = 49244)
    - applying to a variety of contexts including measurement
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy   **5C3**
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why   **5C4**

Multiplication and division

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers **5C5a**
- multiply and divide numbers mentally drawing upon known facts **5C6a**
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 e.g. *multiply and divide by powers of 10 in scale drawings and multiply and divide by powers of a 1000 in converting between units such as kilometres and metres*   **5C6b**
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers   **5C7a**
- 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   **5C7b**
    - *where remainder is a whole number*
    - *where remainder is expressed as a fraction of the divisor*
    - *where remainder is expressed as a simplified fraction*
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates **5C8c**

Fractions (including decimals and percentages)

- **count forwards and backwards with whole numbers, decimals and fractions including bridging zero, for example on a number line**
- 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 = 11/5] **5F2a**
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths, hundredths *and thousandths* **5F2b**
- compare and order fractions whose denominators are all multiples of the same number **using the number line and other models** **5F3**
- *connect multiplication by a fraction to using fractions as operators (fractions of), and to division*
- *develop understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities*
- add and subtract fractions with the same denominator and multiples of the same number **5F4**
- *add and subtract tenths, and one-digit whole numbers and tenths, decimals with different numbers of decimal places, and derive complements of 1(e.g. 0.83 + 0.17 = 1)*
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams **5F5**
- read and write decimal numbers as fractions [e.g. 0.71 = 71/100] **5F6a**
- round decimals with two decimal places to the nearest whole number and to one decimal place **5F7**

Measurement

- solve problems involving converting between units of time **5M4**
- convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) **5M5**
- use all four operations to solve problems involving measure [e.g. a. money, b. length, c. mass, d. volume,] using decimal notation including scaling **5M9a,b,c,d**

Statistics

- complete, read and interpret information in tables, including timetables **5S1**
- solve comparison, sum and difference problems using information presented in a line graph **5S2**
- *begin to decide which representations of data are most appropriate and reason why*

Properties of shape

- use the properties of rectangles to deduce related facts and find missing lengths and angles   **5G2a**
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles **5G2b**
- identify 3-D shapes, including cubes and other cuboids, from 2-D representations **5G3b**
- *use conventional markings for parallel lines and right angles*
- *use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides , and other properties of quadrilaterals*

Geometry

- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles **5G4a**
- identify:
    - angles at a point and one whole turn (total 360°)
    - angles at a point on a straight line and ½ a turn (total180°)
    - other multiples of 90° **5G4b**
- draw given angles, and measure them in degrees (°) **5G4c**
- *increase accuracy when drawing lines with a ruler **and set square** to the nearest millimetre, and measuring angles with a protractor*
- *use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems*

Position and direction

- 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 *(using **conventions of coordinates** in the first quadrant and for reflections in lines that are parallel to the axes)* **5P2**

Herts for Learning

Y5 medium-term immersion plan – learning sequence 3

	Week 1	2	3	4	5	6	7	8	9	10	11	12

Number and place value
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 **5N1**
- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit **5N2/3a**
- read Roman numerals to 1000 (M) and recognise years written in Roman numerals **5N3b**
- round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 **5N4**
- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero **5N5**
- *recognise and describe linear number sequences including those involving fractions and describe the term to term rule*
- solve number problems and practical problems that involve all of the above **5N6**

Fractions (including decimals and percentages)
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams **5F5**
- solve problems involving number up to three decimal places **5F10**
- 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 **5F11**
- 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 **5F12**

Addition, subtraction, multiplication and division
- add and subtract numbers mentally with increasingly large numbers **5C1**
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy **5C3**
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why **5C4**
- multiply and divide numbers mentally drawing upon known facts **5C6a**
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 **5C6b**
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers **5C7a**
- 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 **5C7b**
  1. where remainder is a whole number
  2. where remainder is expressed as a fraction of the divisor
  3. where remainder is expressed as a simplified fraction
  4. where the remainder is expressed as a decimal number
- solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes **5C8a**
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **5C8b**
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates **5C8c**
- **begin to investigate the impact of brackets on calculation e.g. 4 + 3 x 2 could equal 4 + (3x2) or (4+3) x 2**

Measurement
- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints **5M6**
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres **5M7a**
- calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes **5M7b**
- use all four operations to solve problems involving measure [e.g. length, mass, volume, money] using decimal notation including scaling **5M9abcd**

Geometry
- use the properties of rectangles to deduce related facts and find missing lengths and angles **5G2a**
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles **5G2b**
- *use conventional markings for parallel lines and right angles*
- *use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals*
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles **5G4a**
- identify:
  - angles at a point and one whole turn (total 360°)
  - angles at a point on a straight line and ½ a turn (total 180°)
  - other multiples of 90° **5G4b**
- draw given angles, and measure them in degrees (°) **5G4c**
- *increase accuracy when drawing lines with a ruler to the nearest millimetre, and measuring with a protractor*

Herts for Learning