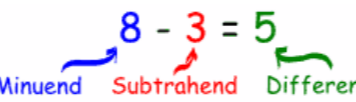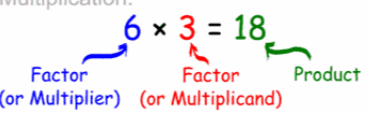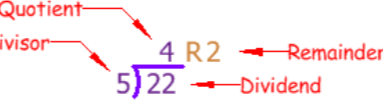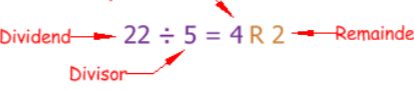# Maths MTP Year 5

Year 5	Recall: Children should be able to derive and recall	Mental calculation skills: Working mentally, with jottings if needed, children should be able to	Mental methods or strategies: Children should understand when to and be able to apply these strategies	GUIDANCE DOCUMENTS
Mental Arithmetic KPIs Tables and known facts	**Addition and Subtraction** • sums and differences of decimals, e.g. 6.5 + 2.7, 7.8 – 1.3 • doubles and halves of decimals, e.g. half of 5.6, double 3.4 • what must be added to any four-digit number to make the next multiple of 1000, e.g. 4087 + ☐ = 5000 • what must be added to a decimal with units and tenths to make the next whole number, e.g. 7.2 + ☐ = 8	**Addition and Subtraction** • add or subtract a pair of two- digit numbers or three-digit multiples of 10, e.g. 38 + 86, 620 – 380, 350 + 360 • add or subtract a near multiple of 10 or 100 to any two-digit or three-digit number, e.g. 235 + 198 • find the difference between near multiples of 100, e.g. 607 – 588, or of 1000, e.g. 6070 – 4087 (number lines) • add or subtract any pairs of decimal fractions each with units and tenths, e.g. 5.7 + 2.5, 6.3 – 4.8	**Addition and Subtraction** • count on or back in hundreds, tens, ones and tenths • partition: add hundreds, tens or ones separately, then recombine • subtract by counting up from the smaller to the larger number • add or subtract a multiple of 10 or 100 and adjust • partition: double and adjust • use knowledge of place value and related calculations, e.g. 6.3 – 4.8 using 63 – 48 • partition: count on or back in minutes and hours, bridging through 60 (analogue and digital times)	1. [Teaching Children to Calculate Mentally](#) 2. [Written Calculation Policy](#) 3. [Mental Calculation Policy](#) 4. [NCETM Spines](#) 5. [Ready to Progress Criteria](#)
	Multiplication and Division • squares to 10 × 10 • division facts corresponding to tables up to 10 × 10, and the related unit fractions, e.g. 7 × 9 = 63 so one-ninth of 63 is 7 and one-seventh of 63 is 9 • percentage equivalents of one-half, one-quarter, three-quarters, tenths and hundredths • factor pairs to 100	**Multiplication and Division** • multiply and divide two-digit numbers by 4 or 8, e.g. 26 × 4, 96 ÷ 8 • multiply two-digit numbers by 5 or 20, e.g. 320 × 5, 14 × 20 • multiply by 25 or 50, e.g. 48 × 25, 32 × 50 • double three-digit multiples of 10 to 500, e.g. 380 × 2, and find the corresponding halves, e.g. 760 ÷ 2 • find the remainder after dividing a two-digit number by a single-digit number, e.g. 27 ÷ 4 = 6 R 3 • multiply and divide whole numbers and decimals by 10, 100 or 1000, e.g. 4.3 × 10, 0.75 × 100, 25 ÷ 10, 673 ÷ 100, 74 ÷ 100 • multiply pairs of multiples of 10, e.g. 60 × 30, and a multiple of 100 by a single digit number, e.g. 900 × 8 • divide a multiple of 10 by a single-digit number (whole number answers) e.g. 80 ÷ 4, 270 ÷ 3 • find fractions of whole numbers or quantities, e.g. 2/3 of 27, 4/5 of 70 kg • find 50%, 25% or 10% of whole numbers or quantities, e.g. 25% of 20 kg, 10% of £80 • find factor pairs for numbers to 100, e.g. 30 has the factor pairs 1 × 30, 2 × 15, 3 × 10 and 5 × 6	**Multiplication and Division** • multiply or divide by 4 or 8 by repeated doubling or halving • form an equivalent calculation, e.g. to multiply by 5, multiply by 10, then halve; to multiply by 20, double, then multiply by 10 • use knowledge of doubles/ halves and understanding of place value, e.g. when multiplying by 50 multiply by 100 and divide by 2 • use knowledge of division facts, e.g. when carrying out a division to find a remainder • use understanding that when a number is multiplied or divided by 10 or 100, its digits move one or two places to the left or the right relative to the decimal point, and zero is used as a place holder • use knowledge of multiplication and division facts and understanding of place value, e.g. when calculating with multiples of 10 • use knowledge of equivalence between fractions and percentages, e.g. to find 50%, 25% and 10% • use knowledge of multiplication and division facts to find factor pairs	

Maths   MTP Year 5

	Phase 1	Phase 2	Phase 3	Phase 4
Areas to revise	Year 4 KPIs as required (number facts & times tables facts focus)	Phase 1 according to AFL	Phase 2 according to AFL	Phase 3 according to AFL
KPIs covered Formal? Informal? Strategies?	**Phase 1:** **Place Value** • Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10,000 and 100,000 • Solve number problems and practical problems involving place value knowledge • Counts forwards and backwards in steps of powers of 10 for any given number up to 1 000 000 **Addition and Subtraction** • Add and subtract whole numbers with more than 4 digits,including using formal written methods (columnar addition and subtraction) • Add and subtract numbers mentally with increasingly large numbers (eg 12,462 - 2,300 = 10,612) • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy **Multiplication and Division** • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	**Phase 2:** **Place Value** • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero **Multiplication and Division** • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Know and use the vocabulary of prime numbers • Multiply and divide numbers mentally drawing upon known facts • Recognises and uses square numbers and cube numbers, and the notation for squared and cubed (^{2}) (^{3}) • 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 • 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 **Fractions and Decimals** • Identify, name and write equivalent fractions of a given fraction represented visually • Recognise mixed number 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) • Add and subtract fractions with the same denominator and multiples of the same number • Compare and order fractions whose denominators are all multiples of the same number • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • Read and write decimal numbers as fractions (e.g. 0.71 = 71/100) **Measure** • Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres **Geometry** • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	**Phase 3:** **Multiplication and Division** • Establish whether a number up to 100 is a prime and recall prime numbers up to 19. Know and use the vocabulary of prime numbers • Solve problems involving addition, subtraction, multiplication and division including using their knowledge of factors and multiples, squares and cubes • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. **Fractions and Decimals** • Read, write, order and compare numbers with up to three decimal places • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • Round decimals with two decimal places to the nearest whole number and to one decimal place • Solve problems which require knowing decimal and percentage equivalent of ½ ¼ 1/5 2/5 4/5 of denominator of a multiple of 10 or 25 • Recognises the per cent (%) symbol and understand that percentage relates to 'number of parts per hundred,' and write percentage as a fraction with denominator 100, and as a decimal • Solve problems involving number up to three decimal places **Measure** • Use all four operations to solve problems involving measure using decimal notation including scaling **Geometry** • Identify 3-D shapes, including cubes and other cuboids, from 2-D representations • 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.	**Phase 4:** **Place Value** • Read Roman numerals to 1000 and recognise years written in Roman numerals **Geometry** • Use the properties of rectangles to deduce related facts and find missing lengths and angles • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • Draw given angles, and measure them in degrees (°) **Measure** • Estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water) • Calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes • Solve problems involving converting between units of time **Statistics** • Complete, read and interpret information in tables, including timetables. • Solve comparison, sum and difference problems using information presented in a time graph
	See Calculation Policy for Formal Strategies			

Key vocab	Place Value	Addition & Subtraction	Multiplication and Division	Measure
	Place Value units, ones, tens, hundreds, digit, one-, two- or three-digit number, 'teens' number place, place value, stands for, represents, exchange, the same number as, as many as, equal to Of two objects/amounts: greater, more, larger, bigger, less, fewer, smaller Of three or more objects/amounts: greatest, most, biggest, largest, least, fewest, smallest one more, ten more, one hundred more, one less, ten less, one hundred less compare, order, size first, second, third… tenth… twentieth, twenty-first, twenty-second… last, last but one, before, after, next, between, half-way between above, below	**Addition & Subtraction** , add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more… ten more… one hundred more, how many more to make…? how many more is… than…? how much more is…? subtract, subtraction, take (away), minus, leave, how many are left/left over? one less, two less… ten less… one hundred less how many fewer is… than…? how much less is…? difference between, half, halve equals, sign, is the same as tens boundary, hundreds boundary unitise Addition: $8 + 3 = 11$ Addend Addend Sum $8 - 3 = 5$ Minuend Subtrahend Difference	**Multiplication and Division** lots of, groups of, , times, multiply, multiplication, multiplied by, multiple of, product once, twice, three times… ten times…times as (big, long, wide… and so on),repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each…group in pairs, threes… tens, equal groups of, , divide, division, divided by, divided into, left, left over, remainder Multiplication: $6 × 3 = 18$ Factor Factor Product (or Multiplier) (or Multiplicand) Quotient Divisor 4 R 2 ← Remainder 5)22 ← Dividend Quotient Dividend → 22 ÷ 5 = 4 R 2 ← Remainder Divisor **Fractions** Equivalent Numerator, Denominator part, equal parts, fraction, one whole, one half, two halves one quarter, two… three… four quarters, one third, two thirds, three thirds, one tenth	**Measure** **Measure** Compare Add and Subtract Perimeter Lengths Metres, Centimetres, Millimetres Mass Kilograms, Grams Volume Litres, Millilitres Analogue Clock Morning, Afternoon, Noon, Midnight Seconds, Minutes, Hours O'clock, am, pm Roman Numerals **Statistics** 2D shapes, 3D shapes Recognise Orientations Describe Angles Right angles Degrees ½ turn, ¾ turn, Complete turn Greater than, Less than Horizontal lines Vertical lines Perpendicular lines Parallel lines **Geometry** shape, pattern, flat, curved, straight, round, hollow, solid, corner, point, pointed, face, side, edge, end, sort, make, build, draw, surface right-angled, vertex, vertices, layer, diagram, cube, cuboid,pyramid sphere, hemi-sphere, cone, cylinder, prism, circle, circular, semi-circle, triangle, triangular, square, rectangle, rectangular

				star, pentagon, pentagonal, hexagon, hexagonal, octagon, octagonal quadrilateral