Medium Term Plans for Mathematics (revised 2020) - Year Five (Autumn Term)

Suggested oral mental starters (ongoing, throughout the term):

- Count from (and back to) 0 in multiples of 2, 3, 4, 5, 6, 7, 8, 9, 10,11,12, 25, 50, 100 and 1000 (consolidation from previous years)
- Recall and use multiplication and division facts for the 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 times tables (up to the 12th multiple)
  (See Multiplication Tables Guidance, 2020)
- Find all factor pairs of a given number
- Multiply and divide numbers mentally drawing upon known facts e.g. 7 x 6 = 42; 7 x 60 = 420; 420 ÷ 70 = 6
- Multiply numbers with up to two decimal places by 10 and 100 and divide corresponding numbers by 10 and 100
- Read, write, compare and order whole numbers up to 10,000 (and then 100,000)
- Read, write, compare and order numbers with up to two decimal places
- Recall and use addition and subtraction facts for multiples of 5 to 1000 (e.g. 485 + 515 = 1000, 1000 – 775 = 225)
- Given a number, identify the number that is 10/100/1,000 more or less within 100,000
- Add three two- digit numbers together mentally (using jottings) e.g. 78 + 19 + 12 = 90 + 19 = 109
- Find doubles of three-digit and four-digit numbers (using knowledge of partitioning and place value) and find corresponding halves
- Count forwards and backwards with positive and negative whole numbers (in steps other than one, including through zero -refer to number line)
- Reason about numbers and place value
- Convert between different units of measurement e.g. km to m, cm to mm, l to ml, kg to g, hours to minutes, weeks to days
- Compare and order fractions whose denominators are all multiples of the same number (using diagrams, resources and fraction walls to support)
- Consolidate telling the time to the nearest minute on an analogue clock and relate this to 12/24 hour digital clocks
  (use daily routines to support telling the time)

Areas of Study	No of days	Statutory requirements and non-statutory guidance	Suggested Key Vocabulary
Number Number and place value **Week 1**	3-5	Consolidate reading and writing numbers to 10,000 Read and write numbers to 100,000 Given a number, identify the number that is ten, one hundred or one thousand more or less within 100,000 Order and compare (using < and> signs) numbers within 100,000 Round numbers within 100,000 to the nearest 10, 100 or 1,000 Recognise the place value of each digit in a five-digit number Partition five-digit numbers into ten thousands, thousands, hundreds, tens and ones/units; continue to use place value cards and place value charts to support **Reason** about place value e.g. a number rounded to the nearest 100 is 4,300. What is the largest number it could be? What is the smallest number it could be?	Partition, Place Value Digit, number Units/ones, Tens, Hundreds, Thousands, Ten thousands Order Compare More than, Less than, <, > Round

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Number Decimals (and place value) **Week 2**	5	Consolidate tenths, hundredths and decimal equivalents e.g. 4 tenths = 4/10 = 0·4; 5 hundredths = 5/100 = 0·05; 27 hundredths = 27/100 = 0·27 (use visual resources to support understanding) Extend by introducing **thousandths** and relate them to tenths, hundredths and decimal equivalents 1/1000 = 0·001 (relate to measures e.g. ml and l, and use a place value chart to support) Recognise the place value of each digit in a decimal number with two decimal places and extend to numbers with up to three decimal places (tens, units/ones, tenths, hundredths, thousandths) Partition decimal numbers into tens, units/ones, tenths, hundredths and extend to thousandths; use place value cards and charts to support Round decimal numbers with one or two decimal places to the nearest whole number Compare and order (using < and >) decimal numbers with up to two decimal places and extend to three decimal places; relate to money or measures e.g. Put these lengths in order from shortest to longest: 1·45m, 1·05m, 1·54m, 1·5m Put these weights in order from lightest to the heaviest: 1·355 kg, 2·54 kg, 0·825 kg, 1·5 kg Solve addition and subtraction word problems, using numbers with up to two decimal places and extend to numbers with up to three decimal places, in the context of money or measures	Partition, Place value Digit, number, decimal, decimal place, decimal point. tenth, hundredth, thousandth Order Compare More than, greater than, less than, <, > Round
Number Addition and Subtraction **Week 3**	5	Solve word problems using knowledge of place value to add/subtract tens, hundreds and thousands to a four-digit or five-digit number mentally with jottings, such as empty number lines, to support) e.g. There are 1,540 people at a football match. 400 more people are waiting to come in. How many people is that in total? Consolidate using the **formal written method of addition** to add two three-digit numbers Extend using the formal written method of addition to add two four digit numbers; decimal numbers, initially in the context of money and measures **(See Written Calculation Policy, 2017)** Consolidate the **formal written method of subtraction** to subtract two three-digit numbers Extend using the formal written method to subtract a three-digit number from a four-digit number; a four-digit number from a four-digit number; decimal numbers, initially in the context of money and measures **(See Written Calculation Policy, 2017)** Solve addition and subtraction one-step, two-step and multi-step word problems (including money and measures problems), deciding which operations to use e.g. A jug of juice contains 1,450 ml. I drink 335 ml and then accidentally spill 280ml. How much juice is left in the jug? There are 2,540 people in the crowd at the football match and 870 are waiting to come in. What will the total number of people at the match be?	Digit Thousands, hundreds, tens, ones/units Addition, plus, altogether add, sum of, total, more than, increase Subtraction, subtract, minus, less than, decrease Calculate, calculation Problem, solution

Geometry Angles **&** Properties of 2D Shapes **Week 4**	3 2	Understand that an angle is a measurement of turn Consolidate understanding of acute, obtuse and right angles; introduce **reflex** angles Know that angles are measured in degrees º; know that a right angle is a quarter turn and measures 90º; know that two right angles are half a turn and measure 180º Estimate, compare and order angles Know that angles on a straight line total 180 º and calculate missing angles on a straight line using this knowledge Introduce the **protractor** (including use of interactive resources); measure given angles in degrees (to the nearest 5 degrees) Solve problems related to angles e.g. It is three o'clock on an analogue clock. What is the angle between the two hands? How many degrees has the minute hand turned after 30 minutes? Consolidate names and properties of 2D shapes (including special triangles and special quadrilaterals); sort, compare and classify 2D shapes (including regular/ irregular shapes; types of angles; symmetrical/non-symmetrical shapes) **Reason** about 2-D shapes e.g. Is it always, sometimes or never true that the diagonals of a rectangle meet at right angles? Extend with other quadrilaterals	Acute, obtuse, right angle Reflex angle Degrees º Quarter turn, Half turn Protractor Vocabulary related to 2D shapes from previous years including: regular, irregular, symmetrical, non-symmetrical, polygon, isosceles, equilateral, scalene, right-angled (triangles), parallelogram, rhombus, trapezium, kite Diagonal (line)
Number Multiplication **Week 5**	5	Consolidate all mathematical vocabulary related to multiplication; introduce the term **product** e.g. What is the product of 7 and 8? Calculate mathematical statements for all multiplication tables up to 12 x 12; include multiplying by 0; solve missing number problems using all multiplication tables to 12 x 12 **(See Multiplication Tables Guidance, 2020)** Find **all** factor pairs of a given number; extend by finding all common factors of two numbers e.g. the common factors of 24 and 42 are 2, 3 and 6 Recognise **square numbers** and the notation for squared (^{2}) e.g. $8^2 = 8 \times 8 = 64$ (use a multiplication grid to support) Consolidate the **formal written method of short multiplication** to multiply a two digit-number by a single digit number and a three-digit number by a single digit number; extend to multiplying a four-digit number by a single digit number **(See Written Calculation Policy, 2017)** Solve word problems, which involve short multiplication e.g. There are 132 cherries in a box. I have 6 boxes of cherries. How many cherries do I have altogether? Solve problems involving multiples and multiplication facts; consider the problem 'Zids and Zods' **(See Mathematical Challenges for all pupils, 2016)**	Multiply, multiplication, times, product Factor, Factor pairs Square number, squared (^{2}) Formal method of short multiplication Calculation Problem, solution

Number Division **Week 6**	5	Calculate mathematical division statements for all times tables; solve missing number problems; use the inverse operation to check answers Know and apply tests of divisibility for 2, 3, 5, 9, 10, 100 **(See Multiplication Tables Guidance, 2020)** Consolidate the **formal method of short division** to divide a two digit number by a single digit and a three-digit number divided by a single-digit number, with whole number answers e.g. 196 ÷ 7 = 28 and with remainders e.g.127÷ 6 = 21r1 **(See Written Calculation Policy, 2017)** Solve word problems, which involve division with whole number answers and with remainders, using the formal written method of short division; begin to interpret remainders in context e.g. I need 98 tangerines for a party. The tangerines come in bags of 5. How many bags do I need? (round up) I am collecting vouchers for sports equipment. I get one tennis ball for every 8 vouchers. I have 115 vouchers. How many tennis balls can I get with my vouchers? (round down)	Divide, division Short division Formal layout $\overline{)\quad}$ Remainder Inverse Calculation Problem, solution Round up Round down
Number Fractions **Week 7**	5	Write fractions (unit fractions and non-unit fractions) using notation and words; use the terms numerator and denominator Compare and order fractions whose denominators are all multiples of the same number using diagrams and resources, such as a fraction wall, to support e.g. 3/ 4 > 1/2 ; 1/ 2 < 5/8; order these fractions, starting with the smallest: 3/8, 1/2, 3/4, 1/8, 5/8 Find unit and non-unit fractions of whole number quantities e.g. 1/5 of 40; 3/5 of 20; 1/6 of £42; 5/6 of £42; relate to multiplication and division Recognise **mixed numbers** and **improper fractions** in context and/or using diagrams e.g. I have 2/3 of a mushroom pizza, and 2/3 of a tomato pizza. I have 4/3 (improper fraction) of a pizza altogether or 1 1/3 of a pizza (mixed number); convert from one form to the other using simple examples e.g. 1½ = 3/2; 1¾ = 7/4 Identify, name and write **equivalent fractions** of a given fraction, including tenths and hundredths (use visual resources, such as a fraction wall, to support) e.g. 1/3 = 2/6; 3/4 = 6/8; 4/10 = 40/100 Extend to equivalent fractions that are greater than 1 and are equivalent to an integer, e.g. 8/4 = 2, 12/4 = 3**;** relate to division Add **and** subtract fractions with the same denominator, including examples that involve improper fractions (using diagrams and fraction walls to support) e.g. 3/5 + 3/5 = 6/5 = 1 1/5 ; 7/8 – 3/8 = 4/8 =1/2 **Reason** about fractions e.g. If you put these fractions in order, starting with the smallest, which would come third? 3/5, 1/10, 1/5, 7/10, 1/15. How did you work it out? Which would you rather have? 3/5 of £40 or 3/8 of £56 Why?	Whole Unit fraction, non-unit fraction Numerator, denominator Mixed number, improper fraction Equivalent fraction

Number Percentages **Week 8**	5	Introduce the term **percentage**; recognise the per cent symbol (%) and understand that per cent relates to number of parts per hundred; know where we use percentages in real life Write percentages as a fraction with denominator of 100 and as a decimal (use a hundred square to support understanding) e.g.10% = 10/100 = 1/10 =0.1; 1% = 1/100 = 0.01 Know common fraction, decimal and percentage equivalents, e.g. 1/2 = 0.5 = 50%; 1/10 = 0.1 = 10% (2/10 = 0.2 = 20 %......) Solve **simple** percentage problems using knowledge of equivalent fractions and percentages, e.g. What is 50% of 120? How do you know? What is 10% of £120? How did you work it out? Place simple fractions, equivalent decimals and percentages on a number line; know that fractions decimals and percentages are all ways of expressing proportions **Reason** about decimal, fraction, percentage equivalences e.g. put these in order of size, starting with the smallest: 6/10, 65%, 0.5, 40%, 3/10. How did you work it out?	Per cent %, Percentage Equivalent
Measurement (Time) **&** **Statistics** (reading time tables) **Week 9**	3 2	Consolidate telling the time to the nearest minute on an analogue clock (including using clocks with Roman numerals) and on a digital clock; convert between analogue and 12 hr digital time; continue to use noon, midnight, a.m./p.m. (taken from lower key stage 2 programmes of study) Consolidate conversion between 12 hour and 24 hour digital clocks e.g. What time on the 12 hour clock is 13:50? What time on the 24 hour clock is 8:20 pm? (taken from Y4 programmes of study) NB use daily routines to support telling the time Solve problems by converting between units of time, e.g. How many seconds in 10 minutes? How many minutes in 2½ hours? A film lasts for 115 minutes. How long is this in hours and minutes? How many hours in one week? How many days until your next birthday? Read and interpret information in simple **timetables**, e.g. Interpret a **simple** train/bus timetable and answer questions using the timetable, initially using 12 hour digital time and extending to 24 hour digital time Extend by completing a simple timetable with missing information, e.g. The bus takes 20 minutes between each stop. It leaves at 11:05. What time will I arrive at the third stop? Show this on the timetable	All relevant vocabulary from previous years relating to time Duration, Timetable

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Measurement Mass & Capacity **Week 10**	5	Consolidate understanding of kilograms (kg) and grams (g) as units of measurement for **mass** using practical and real life objects e.g. Approximately, how much does a cat weigh? What unit of measurement would you use to weigh a tea bag? Use decimal notation for mass and convert between different units of mass e.g. 2 kg = 2000g; 3.5kg = 3500g; 0.75 kg = 3/4 kg = 750g Estimate and measure mass using appropriate units and equipment, including mixed units of measurement, and record using decimal notation, in practical contexts Consolidate understanding of litres (l) millilitres (ml) as a unit of measurement for **capacity** using practical and real life containers e.g. Approximately, what is the capacity of this cup? What unit of measurement would you use to measure the capacity of the bath? Use decimal notation for capacity and convert between different units of capacity e.g. 2l = 2000ml; 3.5l = 3500ml; 0.5 l = ½ l = 500ml Estimate and measure capacity using appropriate units and equipment, including mixed units of measurement, and record using decimal notation, in practical contexts Use a range of scales for mass and capacity with increasing accuracy, reading and interpreting between marked divisions **(Possible link to Science Curriculum)** Recognise some **common imperial units** of mass and capacity still in use today (stone, pound, pint)	Weight, mass Kilograms, kg, grams, g Capacity, measure Litre, l, millilitre, ml scale, division, interval Imperial units of measurement, stones, pounds, pints
Number Multiplication and division (Mental Methods) **Week 11**	5	Multiply numbers by ten, one hundred and then by one thousand (including decimal numbers) e.g. 0.9 x 100 = 90; 4.2 x 1000 = 420; 35.25 x 10 = 352.5; describe the effect using the language of place value Divide numbers by ten, one hundred and then by one thousand (including decimal answers) e.g. 850 ÷ 100 = 85; 463 ÷ 10 = 46.3; 3200 ÷ 1000 = 3.2; describe the effect using the language of place value Use knowledge of place value to derive doubles and halves of decimal numbers e.g. double 0.34; double 1.25; half of 1.68; half of 5.2 Solve problems involving **mental** multiplication and division, including scaling by simple fractions, e.g. A kilogram of apples cost £1.12. How much would ½ kg cost? How much would 5kg cost? A pencil costs 25p. What would 10 pencils cost? What would a box of 100 pencils cost? What would a crate of 1,000 pencils cost? Use factor pairs to aid multiplication e.g. 6 x 24 = 6 x 2 x 12 = 12 x 12 =144; 8 x 16 = 8 x 8 x 2 = 64 x 2 = 128 **(See Mental Calculation Strategies, 2017)**	Place value, digit, decimal place, decimal point Multiply, multiplication, times, product Divide, division Factors, factor pairs

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Geometry Position and direction **Week 12**	5	Represent the position of a shape following a reflection, using appropriate language and know that the shape has not changed; complete a symmetrical pattern, e.g. on squared paper using one line of symmetry and extend to two lines of symmetry Consolidate describing positions on a 2-D grid as **co-ordinates in the first quadrant** e.g. (4,3); plot specified points using co-ordinates in the first quadrant; plot a set of co-ordinates in the first quadrant to produce a simple picture or polygon; draw sides to complete a given polygon using co-ordinates in the first quadrant Using **co-ordinates in the first quadrant** describe and represent a shape following a **translation** and know that the shape has not changed, e.g. sketch the position of a triangle on a grid after it has moved 2 units to the left and 3 units up. Describe the new position using co-ordinates **Possible link to Christmas theme**	Reflection, symmetry, symmetrical, line of symmetry Co-ordinate, first quadrant, position, translation

Additional weeks

To be used for:

- assessment, consolidation and responding to AfL
- additional using and applying activities
- Christmas maths activities