Queensmead Primary Academy Mental Mathematics Policy

NOTE: This policy should be read in conjunction with the QPA Mathematics Curriculum Policy.

Aims:

In line with the National Curriculum (2014), the teaching of maths within the academy should aim for children to:

- *Become fluent in the fundamentals of mathematics, including practice at increasingly complex problems, so that children can use and apply their knowledge practically.*
- *Reason mathematically by following a line of enquiry, establishing relationships and generalisations, and developing an argument, justification or proof using mathematical language.*
- *Solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into smaller steps and persevering.*

In addition, at QPA we aim to ensure that all pupils develop:

- Conceptual understanding of number, measurement, geometry and statistics;
- A wide range of written and mental methods that they can use to answer questions and solve problems;
- A broad range of skills which can be applied both within the academy (across a range of curriculum areas) and within their everyday lives;
- A deep and lasting interest in mathematics.

In order to achieve these aims, at QPA we believe that it is crucial for all pupils to be given the opportunity to develop their mental mathematics skills.

Classroom Provision – Mental Mathematics:

- All pupils in KS1 and KS2 are given the opportunity to develop mental calculation strategy skills (see Appendix A for guidance) and practise basic facts during the daily mental/oral starter (part of the daily mathematics lesson – *see QPA Mathematics Curriculum Policy*).
- Opportunities for reasoning and communicating are provided within the daily oral/mental starter, enabling pupils to make connections (developing conceptual understanding).
- A programme of basic number facts and multiplication tables learning is in place in each year group (see Appendix B).
- Other opportunities for developing mental strategy skills and practising basic facts will be provided at other points in the school day.

Planning The Oral/Mental Starters:

- Planning is based on the material provided in the National Curriculum 2014, GAT Age-Related Standards for each year-group, the multiplication tables programme and the mental calculation progression table (Appendices A & B).
- A key mental maths skills document has been developed alongside teaching staff for each year-group, mapping out the key facts and skills to be taught during each term (Appendix C). The oral/mental starters within weekly plans, which give specific detail of daily learning objectives and appropriate differentiated activities, should then be developed from this document.
- Maths No Problem and Collins Busy Ants textbooks may also provide additional support and resources in the planning process.

Mental Mathematics Assessment:

In addition to the formative and summative assessments listed in the curriculum policy (*see QPA Mathematics Curriculum Policy*), teachers will carry out the following mental mathematics assessments:

- A basic facts/multiplication tables test in order to track recall of basic facts (**KS1 fortnightly; KS2 weekly).
- A short mental maths test based on the mental maths focus (**KS1 fortnightly; KS2 weekly).
- A termly QPA mental maths assessment (Years 1-6, see Appendix C).

*** The basic facts and mental maths tests are alternated for KS1 (1 test per week).*

Monitoring the effectiveness of the Policy:

The practical application of this policy will be reviewed annually or when the need arises by the Mathematics Leader of Learning, the Principal and other members of the SLT.

Key documents supporting this document:

- Mental Calculation Progression Document (Appendix A)
- Basic Number Facts & Multiplication Tables Programme (Appendix B)
- Mental Maths Key Skills & Assessment Schedule (Appendix C)
- National Curriculum 2014 Mathematics Programme of Study
- GAT ARS
- QPA Mathematics Curriculum Policy
- QPA Calculation Policy
- Collins Busy Ants textbooks
- Maths No Problem textbooks

Appendix A - Mental Calculation Progression:

The following progression table clearly shows the progression of mental maths skills across the year groups. Professional judgement should be used to ensure that children are working on and using appropriate methods for their current attainment. For consistency, only the methods set out below or those found in the QPA Calculation Policy should be taught. Any questions regarding the teaching of these methods need to be addressed to the Mathematics Leader of Learning.

Stage 1:

By the end of Year 1, the majority of pupils should have achieved Stage 1 mental calculation expectations.

Rapid Recall & Counting	Mental Strategies	Mental Calculation Expectations
• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Count in multiples of twos, fives and tens. • Know by heart the number bonds and related subtraction facts up for numbers 10 and up 20. • Recall doubles to at least 10 + 10 and corresponding halves.	• Re-order numbers in a calculation, e.g. 3 + 5 to 5 + 3, noticing that this does not change the answer. • Begin to bridge through 10 when adding a 1-digit number. • Use known number facts and place value to add or subtract pairs of 1-digit numbers. • Add 9 to 1-digit numbers by adding 10 then subtracting 1. • Identify near doubles, using doubles already known, e.g. 5 + 6 is 5 + 5 + 1, or 6 + 6 - 1. • Use patterns of similar calculations, e.g. 5 + 1 = 6, 5 + 2 = 7, 5 + 3 = 8. • Begin to partition to add numbers close to a multiple of 10, e.g. 4 + 9 = 4 + 10 – 1 (using a number line).	• Add or subtract a 1-digit number to or from a 1-digit number without crossing 10, e.g. 4 + 3, 9 – 5. • Add or subtract a 1-digit number to or from 10. • Add or subtract a 1-digit number to or from a 'teens' number, without crossing 20 or 10, e.g. 14 + 3, 18 – 5. • Doubles of all numbers to 20, e.g. 6 + 6, double 8.

Stage 2:

By the end of Year 2, the majority of pupils should have achieved Stage 2 mental calculation expectations.

Rapid Recall & Counting	Mental Strategies	Mental Calculation Expectations
• Count in steps of 2, 3, 5 and 10 from any number forwards and backwards. • Count in fractions up to 10, using ½ and 2/4 equivalence. • Recall and use addition and subtraction facts to 20. • Know by heart which two multiples of 10 make 100. • Know by heart the multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	• Find 10 more or 10 less than numbers to 100. • Find a difference by calculating from the smaller to the larger number. • Re-order numbers in a calculation. • Add three 1-digit numbers by putting the largest number first and/or finding a pair totalling 10, e.g. 2 + 3 + 8 becomes (8 + 2) + 3 = 13. • Respond to problems such as: 'Tell me three numbers that add to 20'. • Work out missing number problems by using the inverse. • Bridge through numbers other than 10, e.g. 1 year = 12 months. • Partition addition calculations (into tens and ones) then recombine mentally with 2-digit numbers that total <100. • Partition bridging through multiples of 10. • Use known number facts and place value to add or subtract pairs of numbers. • Multiply or divide by 10 using place value (i.e. moving digits to the left/right to multiply/divide by 10). • Add or subtract 9, 19, 11 or 21 by rounding then adjusting, i.e. 47 + 9 = 47 + 10 – 1 = 56. • Use near doubles, 13 + 14. • Understand halving as the inverse of doubling. • Use the relationship between addition and subtraction, e.g. 7 + 6 = 13 therefore 13 – 7 = 6 and 13 – 6 = 7. • Use knowledge of number facts and place value to multiply and divide by 2, 5 and 10. • Use patterns of similar calculations, e.g. 13 + 6 = 19; 130 + 60 = 190.	• Add or subtract a 1-digit number to or from any 2-digit number without crossing the tens boundary, e.g. 64 + 3, 69 – 5. • Add or subtract a 1-digit number to or from a multiple of 10, e.g. 70 + 6, 90 – 8. • Add or subtract any 'teens' number to or from any 2-digit number, without crossing the tens boundary, e.g. 34 + 13, 57 – 24. • Find what must be added to any 2-digit multiple of 10 to make 100. • Add or subtract 10 or a multiple of 10 to or from any 2-digit number, recognising patterns and the digit that changes. • Doubles of all numbers to at least 20. • Double any multiple of 5 to at least 50, e.g. double 45. • Halve any multiple of 10 up to 100, e.g. halve 50. • Mental addition and subtraction of two 2-digit numbers, totalling <100.

Stage 3:

By the end of Year 3, the majority of pupils should have achieved Stage 3 mental calculation expectations.

Rapid Recall & Counting	Mental Strategies	Mental Calculation Expectations
• Count in multiples of 4, 8, 50 and 100. • Know 10 or 100 more than numbers to 1000. • Count up and down in tenths up to 10. • Know by heart the multiplication and division facts for the 3, 4 and 8 multiplication tables. • Recognise multiples of 2, 5 and 10 up to 1000. • Know all pairs of multiples of 100 with a total of 1000, e.g. 700 + 300. • Know all pairs of multiples of 5 with a total of 100, e.g. 35 + 65.	• Find a difference by calculating from the smaller to the larger number. • Re-order numbers in a calculation. • Add three or four small numbers by putting the largest number first and/or finding pairs totalling 10. • Partition into tens and ones then recombine (answers >100). • Bridge through a multiple of 10 and adjust (including 3-digit numbers, e.g. 139 + 42 = 139 + 1 + 41, 140 + 41 = 181). • Add and subtract: a 3-digit and a 1-digit number; a 3-digit number and tens; a 3-digit number and hundreds using place value. • Recognise and use inverses (add/subtract, multiply/divide, double/halve). • Add or subtract mentally a 'near multiple of 10' to or from a 2-digit number, e.g. 46 + 81 = 46 + 80 + 1. • Identify near doubles. • Use patterns of similar calculations. • Move digits one/two places to the left to multiply by 10/100. • Use knowledge of number facts and place value to multiply and divide by 2, 3, 4, 5 and 8.	• Find what must be added to any multiple of 100 to make 1000. • Add or subtract any pair of 2-digit numbers (including crossing tens boundary or 100). • Add and subtract: a 3-digit and a 1-digit number; a 3-digit number and tens; a 3-digit number and hundreds. • Subtract any 3-digit number from any 3-digit number when the difference is less than 10. • Multiply 1-digit numbers by 10 or 100. • Divide any multiple of 10 by 10.

Stage 4:

By the end of Year 4, the majority of pupils should have achieved Stage 4 mental calculation expectations.

Rapid Recall & Counting	Mental Strategies	Mental Calculation Expectations
• Count in multiples of 6, 7, 9, 25 and 1000. • Say 1000 more or less than a given number. • Count up and down in hundredths. • Recall multiplication and division facts for multiplication tables up to 12 × 12. • Know decimal equivalents to 1/4, 1/2, ¾ and any number of tenths and hundredths. • Double any 2- or 3-digit number. • Halve any 2- or 3-digit number.	• Round any number to the nearest 10, 100 or 1000 using place value. • Show use of number facts and place value in mental calculation and be able to talk about them. • Bridge through 100 or 1000 (e.g. 89 + 57. 89 + 11 = 100, so 89 + 11 + 46 = 146). • Add or subtract by rounding then adjusting (e.g. 9, 19, 29, 11, 21, etc.) • Use knowledge of near doubles. • Use inverses. • Use knowledge of multiplication and division facts to find related facts (e.g. 7 x 8 = 56 therefore 70 x 8 = 560; 560 ÷ 8 = 70, etc.). • Partition to carry out multiplication, e.g. 56 x 7 = (50 x 7) + (6 x 7) = 350 + 42 = 392. • Use factor pairs. • Double 2- and 3-digit numbers.	• Find what must be added to any 2-digit number to make 100. • Add or subtract any pair of 2-digit numbers. • Find out what must be added to / subtracted from any 2- or 3-digit number to make the next multiple of 100 (e.g. 436 + ? = 500). • Subtract any 4-digit number from any 4-digit number when the difference is small (e.g. 8002 – 7991). • Multiply any 2-digit number by 10. • Divide a multiple of 100 by 10. • Multiply any 2-digit multiple of 10 by 2, 3, 4 or 5.

Stage 5:

By the end of Year 5, the majority of pupils should have achieved Stage 5 mental calculation expectations.

Rapid Recall & Counting	Mental Strategies	Mental Calculation Expectations
• Count in steps of powers of 10 for any given number up to 1000000. • Round any number to 10, 100, 1000, 10000 or 100000. • Count in fractions and decimals understanding the place value of each digit (including thousandths). • Double /halve any number with up to 2 decimal places. • Recall quickly multiplication and division facts up to 12 x 12 and use them to multiply and divide pairs of multiples of 10 and 100. • Identify pairs of factors for 2-digit whole numbers. • Recall prime numbers to 19. • Recall square numbers. • Know connections between fractions, decimals and percentages.	• Use estimation in calculating (and verbalise). • Use partitioning and place value. • Add or subtract to the nearest multiple of 10, 100 or 1000, then adjust. • Use doubling and halving. • Identify near doubles. • Use factors and prime factors (e.g. 15 x 6: 15 x 3 = 45, 45 x 2 = 90). • Work out fractions using known fractions (e.g. work out sixths by halving thirds). • Use knowledge of multiplication and division facts to find related facts, e.g. 13 x 15 = (10 x 15) + (3 x 15). • Use inverses.	• Add or subtract any pair of 3-digit numbers. • Find what must be added to a decimal with ones and tenths to make the next whole number. • Add or subtract any pair of decimals (both to either 1 or 2 decimal places). • Subtract a 4-digit number just less than a multiple of 1000 from a 4-digit number just more than a multiple of 1000, e.g. 8002 – 2999. • Multiply or divide whole numbers and those involving decimals by 10, 100 and 1000. • Find 50%, 25% or 10% of a small whole number or quantity. • Calculate complements of 1 with two decimal numbers to 2 places.

Stage 6:

By the end of Year 6, the majority of pupils should have achieved Stage 6 mental calculation expectations.

Rapid Recall & Counting	Mental Strategies	Mental Calculation Expectations
• Continue to count regularly: whole numbers, fractions, decimals & negative numbers. • Know by heart all the squares and square roots of numbers between 12 x 12. • Know common factors and common multiples. • Recognise and recall factors of numbers up to 100 and corresponding multiples of 100. • Use knowledge of place value and number facts to derive related facts, e.g. 0.7 x 8 = 5.6. • Know by heart tests of divisibility for multiples of 2, 3, 4, 5, 6, 9, 10 and 12.	• Consolidate all strategies from previous years. • Use partitioning and place value. • Add or subtract to the nearest multiple of 10, 100, 1000 or 10000, then adjust. • Use doubling and halving. • Identify near doubles. • Use factors and prime factors (e.g. 35 x 18 = 35 x 2 x 3 x 3). • Use knowledge of multiplication and division facts to find related facts (e.g. 17 times tables using 10 and 7 times tables). • Use inverses. • Use knowledge of fractions and decimals to calculate remainders.	• Practise mental calculations (speed and accuracy). • Perform mental calculations with mixed operations. • Multiply any 2-digit number by a 1-digit number. • Multiply any 2-digit number by 50 (x 100, then halve) or by 25 (x 100, then ÷ 4). • Multiply or divide numbers by 10, 100 and 1000 giving answers up to three decimal places. • Find squares of multiples of 10 to 100. • Find any multiple of 10% of a whole number or quantity.

Appendix B - Basic Number Facts & Multiplication Tables Programme:

** The majority of children should know these facts by the end of this year-group (based on NC2014 Mathematics Programme of Study).*

Basic Number Facts in KS1

Facts	Number bonds to 20	Subtraction facts to 20	Doubles to double 10	Halves to half of 20	Addition facts to 100	Subtraction facts to 100
Year *	Y1	Y1	Y1	Y1	Y2	Y2

Multiplication Tables

Pupils should learn the multiplication tables (and related division facts) in the following order to provide opportunities to make connections (NCETM, 2015: 3 https://www.ncetm.org.uk/public/files/25120980/NCETM+Calculation+Guidance+October+2015.pdf):

X table	10	5	2	4	8	3	6	9	12	11	7
Year *	Y2	Y2	Y2	Y3	Y3	Y3	Y4	Y4	Y4	Y4	Y4

*Basic Number Facts in Year 5 & 6 (** = be able to derive quickly)*

Facts	Prime Numbers (to 19)	Composite Numbers	Prime Factors **	Square Numbers	Cube Numbers **	Common Factors	Common Multiples	Prime Numbers (>100) **
Year *	Y5	Y5	Y5	Y5	Y5	Y6	Y6	Y6

NOTE:

All children need to have accurate and rapid recall of basic number bonds to 20 and multiplication table facts (NCETM, 2015: 2). Therefore, any pupils who have not yet become fluent in these basic facts will continue to learn the facts after the year-group stated. In order to accurately target pupils, weekly basic facts / multiplication tables tests will take place for each year-group.

Appendix C – Mental Maths Key Skills & Assessment Schedule:

Year 1 Autumn Term		Year 1 Spring Term		Year 1 Summer Term	
Key skills to be taught this term (linked to ARS). • I can write 1-10 in words and numerals. • I can say one more or one less than any number up to 10. • I know my number bonds for any number up to 10. • I know the days of the week in order. • I can recognise 2-D shapes (rectangle, square, circle and triangle). • I can recognise 3-D shapes (cube, cuboid, pyramid, cone and sphere).		Key skills to be taught this term (linked to ARS). • I can write 1-20 in words and numerals. • I can say one more or one less than any number up to 20. • I know my number bonds for any number up to 10 and related subtraction facts. • I know which digit is the tens and ones in a 2-digit number up to 30. • I know the months of the year in order. • I can count in 2s and 10s.		Key skills to be taught this term (linked to ARS). • I can write 1-100 in numerals. • I can say one more or one less than any number up to 100. • I know my number bonds for any number up to 20 and related subtraction facts. • I know which digit is the tens and ones in any 2-digit number. • I know doubles and halves (to 20). • I can count in 2s, 5s and 10s. • I can tell the time to half an hour and an hour. • I can find and name a half of an object, shape or amount. • I can find and name a quarter of an object, shape or amount.	
Baseline test given at start of term.	Test repeated at end of term.	Baseline test given at start of term.	Test repeated at end of term.	Baseline test given at start of term.	Test repeated at end of term.
Mental Maths Test A	Mental Maths Test A	Mental Maths Test B	Mental Maths Test B	Mental Maths Test C	Mental Maths Test C

<table>
<tr><th colspan="2">Year 2 Autumn Term</th><th colspan="2">Year 2 Spring Term</th><th colspan="2">Year 2 Summer Term</th></tr>
<tr><td colspan="2">Key skills to be taught this term (linked to ARS).
I can write 1-100 in words and numerals.
I can recall addition and subtraction facts to 20.
I can count in steps of 10 from any number forwards and backwards (to 100).
I know which digit is the tens and ones in any 2-digit number.
I can add a multiple of 10 to any 2-digit number.
I know which two multiples of 10 make 100.
I can use the inverse to solve missing number problems (addition / subtraction).
I can name and describe the properties of 2-D shapes, including the number of sides and line of symmetry.
I can name and describe the properties of 3-D shapes, including the number of edges, vertices and faces.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in steps of 5 and 2 from any number forwards and backwards (to 100).
I know the multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
I know that 2/4 is the same as a ½.
I can tell and write the time to the nearest fifteen minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.
I know the number of minutes in an hour and the number of hours in a day.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in steps of 10, 5, 2 and 3 from any number forwards or backwards (to 100).
I can compare numbers from 0 up to 100 and use the < > signs correctly.
I can find, name and write fractions one third, one quarter, two quarters and three quarters.
I can find a quarter, a half, two quarters and a third of a length, shapes, set of objects or quantity.
I can solve problems involving multiplication and division using mental methods.
I can compare and order measurements using the <> signs correctly.</td></tr>
<tr><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td></tr>
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<table>
<tr><th colspan="2">Year 3 Autumn Term</th><th colspan="2">Year 3 Spring Term</th><th colspan="2">Year 3 Summer Term</th></tr>
<tr><td colspan="2">Key skills to be taught this term (linked to ARS).
I can write numbers to 1000 in words and numerals.
I can order numbers to 1000.
I can count in multiples of 4.
I can partition a 3-digit number.
I can add a 1-digit number to a 3-digit number mentally.
I can add a tens number to a 3-digit number mentally.
I can use my knowledge of number facts to solve problems including missing number problems.
I know and use multiplication and division facts for the 4 multiplication tables.
I can recognise 3-D shapes in different orientations and describe them.
I can name the right angles in 2-D shapes.
I know that two right angles make a half-turn, three make three quarters of a turn and four a complete turn.
I can measure, compare, add and subtract: lengths (m/cm/mm).
I know how to measure the perimeter of a 2-D shape.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in multiples of 8 and 100.
I can solve missing number patterns.
I can add a multiple of 100 to a 3-digit number mentally.
I know and use multiplication and division facts for the 8 multiplication tables.
I can multiply and divide by 2-digit numbers and 1-digit numbers, using mental methods to help me.
I can recognise and show, using diagrams, equivalent fractions with small denominators.
I can add and subtract amounts of money to give change, using both £ and p.
I know the number of seconds in a minute and the number of days in each month, year and leap year.
I can record and compare time in terms of seconds, minutes and hours.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in multiples of 50.
I know and use the multiplication and division facts for the 3 multiplication tables.
I can count up and down in tenths and know that tenths come from dividing an object into 10 equal parts and in dividing 1-digit numbers or quantities by 10.
I can find and write fractions of a set of objects: unit fractions and non-unit fractions with small denominators.
I can add and subtract fractions with the same denominator within one whole [e.g. 5/6 + 1/7 = 6/7].
I can measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).</td></tr>
<tr><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td></tr>
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<table>
<tr><th colspan="2">Year 4 Autumn Term</th><th colspan="2">Year 4 Spring Term</th><th colspan="2">Year 4 Summer Term</th></tr>
<tr><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in multiples of 6 and 9.
I can count in steps of 1000 from any number.
I can find 1000 more or less than a given number.
I can partition a 4-digit number.
I can say which number is more or less and order numbers past 1000.
I can round any number to the nearest 10, 100 or 1000.
I can solve missing number problems using my knowledge of ordering numbers, more or less than and counting in multiples.
I can use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1.
I can recall multiplication and division facts for the 6 and 9 multiplication tables.
I can compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.
I can find acute and obtuse angles.
I can compare and order angles up to two right angles by size.
I can find lines of symmetry in 2-D shapes presented in different orientations.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in steps of 25 from any given number.
I can count backwards through zero to include negative numbers.
I can multiply together three numbers.
I can recognise and use factor pairs in mental calculations.
I can recall multiplication and division facts for the 12 and 11 multiplication tables.
I can recognise and show, using diagrams, families of common equivalent fractions.
I can count up and down in hundredths.
I can recognise and write decimal equivalents of any number of tenths or hundredths.
I can write decimal equivalents to ¼, ½, ¾.
I know what happens when I divide a 1- or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.
I can round decimals with 1 decimal place to the nearest whole number.
I can compare numbers with the same number of decimal places up to 2 decimal places.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can count in multiples of 7.
I can recall multiplication and division facts for multiplication tables up to 12 x 12.
I can convert kilometres to metres and hours to minutes.
I can measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m.
I can find the area of rectilinear shapes by counting squares.</td></tr>
<tr><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td></tr>
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<tr><th colspan="2">Year 5 Autumn Term</th><th colspan="2">Year 5 Spring Term</th><th colspan="2">Year 5 Summer Term</th></tr>
<tr><td colspan="2">Key skills to be taught this term (linked to ARS).
I can read and write numbers to at least 1000000.
I can order numbers up to at least 1000000.
I know the value of each digit of numbers up to 1000000.
I can count in steps of powers of 10 for any given number up to 1000000.
I can round any number to 10, 100, 1000, 10000 or 100000.
I can add and subtract mentally using larger numbers.
I can multiply and divide mentally using the facts that I already know.
I can multiply and divide whole numbers by 10, 100 and 1000.
I know what this symbol means %.
I know that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal.
I can estimate and compare acute, obtuse and reflex angles.
I can identify angles at a point and one whole turn (360°) and angles at a point on a straight line and ½ turn (180°).
I can distinguish between regular and irregular polygons.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can understand negative numbers in context and count forwards and backwards with positive and negative whole numbers, including through zero.
I can multiply and divide numbers mentally using the facts that I already know.
I can multiply and divide numbers involving decimals by 10, 100 and 1000.
I can compare and order fractions whose denominators are all multiples of the same number.
I can name and write equivalent fractions of a given fraction, including tenths and hundredths.
I can read and write decimal numbers as fractions [e.g. 0.71 = 71/100].
I can round decimals with 2 decimal places to the nearest whole number and to 1 decimal place.
I can solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.
I can convert between different units of measure (e.g. km/m; cm/ m; cm/mm; g/kg; l/ml).</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can multiply and divide numbers mentally using the facts that I already know.
I know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
I know whether a number up to 100 is prime and recall prime numbers up to 19.
I can recognise and use square numbers and cube numbers, and use the sign for squared and cubed numbers.
I can solve problems involving converting between units of time.
I can name 3-D shapes, including cubes and other cuboids, from 2-D representations.
I can use the properties of rectangles to deduce related facts and find missing lengths and angles.</td></tr>
<tr><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td></tr>
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<tr><th colspan="2">Year 6 Autumn Term</th><th colspan="2">Year 6 Spring Term</th><th colspan="2">Year 6 Summer Term</th></tr>
<tr><td colspan="2">Key skills to be taught this term (linked to ARS).
I can read and write numbers to 10000000 and determine the value of each digit.
I can order and compare numbers up to 10000000.
I can round any whole number.
I can use negative numbers in context, and calculate intervals across zero.
I can complete mental calculations, with mixed operations and large numbers.
I know common factors, common multiples and prime numbers.
I can use my knowledge of the order of operations to carry out calculations involving the four operations.
I can use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit.
I can convert between miles and kilometres.
I can compare and classify geometric shapes based on their properties.
I can find unknown angles in any triangles, quadrilaterals and regular polygons.
I can draw and name parts of circles, including radius, diameter and circumference.
I know that the diameter is twice the radius.
I can recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</td><td colspan="2">Key skills to be taught this term (linked to ARS).
I can identify the value of each digit in numbers given to 3 decimal places.
I can multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places.
I can associate a fraction with division and calculate the decimal fraction equivalent for a simple fraction.
I can recall and use equivalences between simple fractions, decimals and percentages.
Also revise and apply Autumn Term key skills (focus on number-based key skills).</td><td colspan="2">Key skills to be taught this term (linked to ARS).
Revision and application of key skills from Autumn and Spring Term.</td></tr>
<tr><td>Baseline test given at start of term.</td><td>Test repeated at end of term.</td><td>Assessment through PiXL testing & Y6 SATS.</td><td>Assessment through PiXL testing & Y6 SATS.</td><td>Assessment through PiXL testing & Y6 SATS.</td><td>Assessment through PiXL testing & Y6 SATS.</td></tr>
<tr><td>Mental Maths Test A</td><td>Mental Maths Test A</td><td>See Y6 Assessment Cycle</td><td>See Y6 Assessment Cycle</td><td>See Y6 Assessment Cycle</td><td>See Y6 Assessment Cycle</td></tr>
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