



THE EDWARD RICHARDSON PRIMARY SCHOOL

CALCULATIONS POLICY

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Term next due for update	Spring 2027
Member of staff responsible for this update	Maths Lead
Governor responsible for this update	Chair of Governors
Requirement	Non-statutory

Introduction

Children are introduced to the processes of calculation through practical, oral and mental activities. As children begin to understand the underlying ideas, they develop ways of recording to support their thinking and calculation methods, use particular methods that apply to special cases, and learn to interpret and use the signs and symbols involved. Over time, children learn how to use models and images, such as empty number lines, to support their mental and informal written methods of calculation. As children's mental methods are strengthened and refined, so too are their informal written methods. These methods become more efficient and succinct, and lead to efficient written methods that can be used more generally. By the end of Year 6, children are equipped with mental, written and calculator methods that they understand and can use correctly. When faced with a calculation, children are able to decide which method is most appropriate and have strategies to check its accuracy.

At whatever stage in their learning, and whatever method is being used, children's strategies must still be underpinned by a secure and appropriate knowledge of number facts, along with those mental skills that are needed to carry out the process and judge if it was successful.

AIMS

The overall aim is that when children leave primary school they:

- have a secure knowledge of number facts and a good understanding of the four operations;
- are able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using one-digit and two-digit numbers and particular strategies to special cases involving bigger numbers;
- make use of diagrams and informal notes to help record steps and part answers when using mental methods that generate more information than can be kept in their heads;
- have an efficient, reliable, written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally;
- use a calculator effectively, using their mental skills to monitor the process, check the steps involved and decide if the numbers displayed make sense.

Mastery approach to mathematics

The school follows the mastery approach to learning mathematics. Mastering maths means acquiring a deep, long-term, secure and adaptable understanding of the subject. The term 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chance of mastering maths. Throughout all ages, the teaching of maths is underpinned by the concrete, pictorial and abstract (CPA) approach. For example, teachers should ensure that equipment is available to support all learners in all year groups in order to embed the concepts being taught at that time.

Maths No Problem

The school subscribes to the Maths No Problem (MNP) scheme of work. This enables children to move through topics at broadly the same pace as their peers. Pupils are given time to think deeply about maths, and the general principle is that teachers should not move onto the next topic until all children demonstrate they have a clear understanding of the topic being taught. Differentiation should be the depth of learning rather than acceleration through learning.

Mental methods of calculation

Oral and mental work in mathematics is essential, particularly so in calculation. Early practical, oral and mental work must lay the foundations by providing children with a good understanding of how the four operations build on efficient counting strategies and a secure knowledge of place value and number facts. Later work must ensure that children recognise how the operations relate to one another, and how the rules and laws of arithmetic are to be used and applied. Ongoing oral and mental work provides practice and consolidation of these ideas.

Secure mental calculation requires the ability to:

- recall key number facts instantly – for example, all addition and subtraction facts for each number to at least 10 (Year 2), sums and differences of multiples of 10 (Year 3) and multiplication and division facts up to 12×12 (Year 4);
- use taught strategies to work out the calculation – for example, recognise that addition can be done in any order and use this to add mentally a one-digit number or a multiple of 10 to a one-digit or two-digit number (Year 1), partition two-digit numbers in different ways including into multiples of ten and one and add the tens and ones separately and then recombine (Year 2).
- understand how the rules and laws of arithmetic are used and applied – for example, to add or subtract mentally combinations of one-digit and two-digit numbers (Year 3), and to calculate mentally with whole numbers and decimals (Year 6).

Written methods of calculation

The aim is that by the end of Key Stage 2, all children should be able to use an efficient method for each operation with confidence and understanding. Children should be equipped to decide when it is best to use a mental, written or calculator method based on the knowledge that they are in control of this choice as they are able to carry out all three methods with confidence.

Meeting the needs of all children

The content of this policy aims to meet the needs of the majority of children, based on the national expectations for attainment at the end of each academic year. Class teachers use assessment tools to plan and deliver work to meet the needs of all children, which may involve covering objectives from preceding or subsequent year groups.

Reasoning

Children are given regular opportunities within lessons to apply their calculations knowledge, understanding and skills. Reasoning skills are taught alongside procedural maths, and reasoning challenges ensure children have opportunities to work in greater depth once fluent with a concept. Children work collaboratively with others to solve open-ended problems and are encouraged to use specific mathematical language associated with reasoning. Being able to reason mathematically is a key indicator of a child being able to demonstrate a deep knowledge and understanding of a concept.

Early Years Foundation Stage

All mathematical knowledge, skills and understanding are developed through practical play based experiences. Opportunities for maths are developed across all areas of the EYFS Curriculum and are planned for within both the inside and outside classrooms.

By the end of the Foundation Stage it is expected that children will be able to:

- Count reliably with numbers from 1-20
- Place numbers from 1-20 in order.
- Say which number is one more one less than a given number from 1-20

- Add and subtract two single digit numbers using quantities and objects.
- Add and subtract two single digit numbers by counting on or back to find the answer.
- Solve problems including doubling halving and sharing.

The following development statements are the stepping stones towards the above goals. These are not all necessary steps for individual children. They are not used as check lists. These statements taken from Development Matters - Mathematics-Numbers 40-60+months suggest a typical range of development for children in Reception.

A Unique child

- Recognises some numerals of personal significance.
- Recognises numerals 1 to 5.
- Counts up to three or four objects by saying one number name for each item.
- Counts actions or objects which cannot be moved.
- Counts objects to 10, and beginning to count beyond 10.
- Counts out up to six objects from a larger group.
- Selects the correct numeral to represent 1 to 5, then 1 to 10 objects.
- Counts an irregular arrangement of up to ten objects.
- Estimates how many objects they can see and checks by counting them.
- Uses the language of 'more' and 'fewer' to compare two sets of objects.
- Finds the total number of items in two groups by counting all of them.
- Says the number that is one more than a given number.
- Finds one more or one less from a group of up to five objects, then ten objects.
- In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting.
- Records, using marks that they can interpret and explain.
- Begins to identify own mathematical problems based on own interests and fascinations.

These are taught/delivered by adults supporting play and planning discrete activities.

KEY STAGE 1

Children in Years 1 and 2 will be given a solid foundation in the basic building blocks of mental and written arithmetic. Through their learning of place value, children will develop an understanding of how numbers work, so that they are confident with 2-digit numbers and beginning to read and say numbers above 100.

Addition and Subtraction: A focus on number bonds, first via practical hands-on experiences and subsequently using memorisation techniques, enables a good grounding in these crucial facts, and ensures that all children leave Year 2 knowing the pairs of numbers which make all the numbers up to 10 at least. Children will also have experienced and been taught pairs to 20. Children's knowledge of number facts enables them to add several 1-digit numbers, and to add/subtract a 1-digit number to/from a 2-digit number. Another important conceptual tool is the ability to add/subtract 1 or 10, and to understand which digit changes and why. This understanding is extended to enable children to add and subtract multiples of 10 to and from any 2-digit number. The most important application of this knowledge is the ability to add or subtract any pair of 2-digit numbers by counting on or back in 10s and 1s. Children may extend this to adding by partitioning numbers into 10s and 1s.

Multiplication and Division: Children will be taught to count in 2s, 3s, 5s and 10s, and will relate this skill to repeated addition. Children will meet and begin to learn the associated $\times 2$, $\times 3$, $\times 5$ and $\times 10$ tables. Engaging in a practical way with the concept of repeated addition, and the use of arrays, enables children to develop a preliminary understanding of multiplication, and asking them to consider how many groups of a given number make a total, will introduce them to the idea of division. Children will also be taught to double and halve numbers, and will thus experience scaling up or down as a further aspect of multiplication and division.

Fractions: Fractions will be introduced as numbers and as operators, specifically in relation to halves, quarters and thirds.

ADDITION

Year 1	Year 2
- Number bonds ('story' of 5, 6, 7, 8, 9 and 10) - Count on in 1s from a given 2-digit number - Add two 1-digit numbers - Add three 1-digit numbers, spotting doubles or pairs to 10 - Count on in 10s from any given 2-digit number - Add 10 to any given 2-digit number - Use number facts to add 1-digit numbers to 2-digit numbers e.g. <i>Use $4 + 3$ to work out $24 + 3$, $34 + 3$</i> - Add by putting the larger number first	- Number bonds – know all the pairs of numbers which make all the numbers to 12, and pairs with a total of 20 - Count on in 1s and 10s from any given 2-digit number - Add two or three 1-digit numbers - Add a 1-digit number to any 2-digit number using number facts, including bridging multiples of 10 e.g. $45 + 4$ e.g. $38 + 7$ - Add 10 and small multiples of 10 to any given 2-digit number - Add any pair of 2-digit numbers

SUBTRACTION

Year 1	Year 2
- Number bonds ('story' of 5, 6, 7, 8, 9 and 10) - Count back in 1s from a given 2-digit number - Subtract one 1-digit number from another - Count back in 10s from any given 2-digit number - Subtract 10 from any given 2-digit number - Use number facts to subtract 1-digit numbers from 2-digit numbers e.g. <i>Use $7 - 2$ to work out $27 - 2$, $37 - 2$</i>	- Number bonds – know all the pairs of numbers which make all the numbers to 12 - Count back in 1s and 10s from any given 2-digit number - Subtract a 1-digit number from any 2-digit number using number facts, including bridging multiples of 10 e.g. $56 - 3$ e.g. $53 - 5$ - Subtract 10 and small multiples of 10 from any given 2-digit number - Subtract any pair of 2-digit numbers by counting back in 10s and 1s or by counting up

MULTIPLICATION

Year 1	Year 2
- Begin to count in 2s, 5s and 10s - Begin to say what three 5s are by counting in 5s, or what four 2s are by counting in 2s, etc. - Double numbers to 10	- Count in 2s, 5s and 10s - Begin to count in 3s - Begin to understand that multiplication is repeated addition and to use arrays e.g. 3×4 is three rows of 4 dots - Begin to learn the $\times 2$, $\times 3$, $\times 5$ and $\times 10$ tables, seeing these as 'lots of' e.g. 5 lots of 2, 6 lots of 2, 7 lots of 2 - Double numbers up to 20 - Begin to double multiples of 5 to 100 - Begin to double 2-digit numbers less than 50 with 1s digits of 1, 2, 3, 4 or 5

DIVISION

Year 1	Year 2
• Begin to count in 2s, 5s and 10s • Find half of even numbers to 12 and know it is hard to halve odd numbers • Find half of even numbers by sharing • Begin to use visual and concrete arrays or 'sets of' to find how many sets of a small number make a larger number	• Count in 2s, 5s and 10s • Begin to count in 3s • Using fingers, say where a given number is in the 2s, 5s or 10s count e.g. <i>8 is the fourth number when I count in 2s</i> • Relate division to grouping e.g. <i>How many groups of 5 in 15?</i> • Halve numbers to 20 • Begin to halve numbers to 40 and multiples of 10 to 100 • Find $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{3}{4}$ of a quantity of objects and of amounts (whole number answers)

LOWER KEY STAGE 2

In Lower Key Stage 2, children build on the concrete and conceptual understandings they have gained in Key Stage 1 to develop a real mathematical understanding of the four operations, in particular developing arithmetical competence in relation to larger numbers.

Addition and subtraction: Children are taught to use place value and number facts to add and subtract numbers mentally and they will develop a range of strategies to enable them to discard the 'counting in 1s' or fingers-based methods of Key Stage 1. In particular, children will learn to add and subtract multiples and near multiples of 10, 100 and 1000, and will become fluent in complementary addition as an accurate means of achieving fast and accurate answers to 3-digit subtractions. Standard written methods for adding larger numbers are taught, learned and consolidated, and written column subtraction is also introduced.

Multiplication and division: This key stage is also the period during which all the multiplication and division facts are thoroughly memorised, including all facts up to 12×12 . Efficient written methods for multiplying or dividing a 2-digit or 3-digit number by a 1-digit number are taught, as are mental strategies for multiplication or division with large but 'friendly' numbers, e.g. when dividing by 5 or multiplying by 20.

Fractions and decimals: Children will develop their understanding of fractions, learning to reduce a fraction to its simplest form, as well as finding non-unit fractions of amounts and quantities. The concept of a decimal number is introduced and children consolidate a firm understanding of 1-place decimals, multiplying and dividing whole numbers by 10 and 100.

YEAR 3

ADDITION

Mental	Written
• Know pairs with each total to 20 e.g. $2 + 6 = 8$, $12 + 6 = 18$, $7 + 8 = 15$ • Know pairs of multiples of 10 with a total of 100 • Add any two 2-digit numbers by counting on in 10s and 1s or by using partitioning • Add multiples and near multiples of 10 and 100 • Perform place-value additions without a struggle	• Use expanded column addition to add two or three 3-digit numbers or three 2-digit numbers • Begin to use compact column addition to add numbers with 3 digits • Begin to add like fractions e.g. $\frac{3}{8} + \frac{1}{8} + \frac{1}{8}$ • Recognise fractions that add to 1

e.g. $300 + 8 + 50 = 358$ - Use place value and number facts to add a 1-digit or 2-digit number to a 3-digit number e.g. $104 + 56$ is 160 since $104 + 50 = 154$ and $6 + 4 = 10$ $676 + 8$ is 684 since $8 = 4 + 4$ and $76 + 4 + 4 = 84$ - Add pairs of 'friendly' 3-digit numbers - e.g. $320 + 450$ - Begin to add amounts of money using partitioning	e.g. $\frac{1}{4} + \frac{3}{4}$ e.g. $\frac{3}{5} + \frac{2}{5}$
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SUBTRACTION

Mental	Written
- Know pairs with each total to 20 e.g. $8 - 2 = 6$ e.g. $18 - 6 = 12$ e.g. $15 - 8 = 7$ - Subtract any two 2-digit numbers - Perform place-value subtractions without a struggle e.g. $536 - 30 = 506$ - Subtract 2-digit numbers from numbers > 100 by counting up e.g. $143 - 76$ is done by starting at 76. - Then add 4 (80), then add 20 (100), then add 43, making the difference a total of 67 - Subtract multiples and near multiples of 10 and 100 - Subtract, when appropriate, by counting back or taking away, using place value and number facts - Find change from £1, £5 and £10	- Use counting up as an informal written strategy for subtracting pairs of 3-digit numbers e.g. $423 - 357$ - Begin to subtract like fractions e.g. $\frac{7}{8} - \frac{3}{8}$

MULTIPLICATION

Mental	Written
- Know by heart all the multiplication facts in the $\times 2$, $\times 3$, $\times 4$, $\times 5$, $\times 8$ and $\times 10$ tables - Multiply whole numbers by 10 and 100 - Recognise that multiplication is commutative - Use place value and number facts in mental multiplication e.g. 30×5 is 15×10 - Partition teen numbers to multiply by a 1-digit number e.g. 3×14 as 3×10 and 3×4 - Double numbers up to 50	- Use partitioning (grid multiplication) to multiply 2-digit and 3-digit numbers by 'friendly' 1-digit numbers - Children will also be introduced to formal methods, e.g. long multiplication or the grid method, as appropriate

DIVISION

Mental	Written
- Know by heart all the division facts derived from the $\times 2$, $\times 3$, $\times 4$, $\times 5$, $\times 8$ and $\times 10$ tables - Divide whole numbers by 10 or 100 to give whole number answers - Recognise that division is not commutative - Use place value and number facts in mental division e.g. $84 \div 4$ is half of 42 - Divide larger numbers mentally by subtracting the 10th multiple as appropriate, including those with remainders e.g. $57 \div 3$ is $10 + 9$ as $10 \times 3 = 30$ and $9 \times 3 = 27$ - Halve even numbers to 100, halve odd numbers to 20	- Perform divisions just above the 10th multiple using horizontal or vertical jottings and understanding how to give a remainder as a whole number - Find unit fractions of quantities and begin to find non-unit fractions of quantities

YEAR 4

ADDITION

Mental	Written
- Add any two 2-digit numbers by partitioning or counting on - Know by heart/quickly derive number bonds to 100 and to £1 - Add to the next 100, £1 and whole number e.g. $234 + 66 = 300$ e.g. $3.4 + 0.6 = 4$ - Perform place-value additions without a struggle e.g. $300 + 8 + 50 + 4000 = 4358$ - Add multiples and near multiples of 10, 100 and 1000 - Add £1, 10p, 1p to amounts of money - Use place value and number facts to add 1-, 2-, 3- and 4-digit numbers where a mental calculation is appropriate e.g. $4004 + 156$ by knowing that $6 + 4 = 10$ and that $4004 + 150 = 4154$ so the total is 4160	- Column addition for 3-digit and 4-digit numbers e.g. $\begin{array}{r} 5441 \\ 3133 \\ 554+ \\ \hline 9128 \\ 1 \end{array}$ - Add like fractions e.g. $\frac{3}{5} + \frac{4}{5} = \frac{7}{5} = 1\frac{2}{5}$ - Be confident with fractions that add to 1 and fraction complements to 1 e.g. $\frac{2}{3} + _ = 1$

SUBTRACTION

Mental	Written
- Subtract any two 2-digit numbers - Know by heart/quickly derive number bonds to 100 - Perform place-value subtractions without a struggle e.g. $4736 - 706 = 4030$ - Subtract multiples and near multiples of 10, 100, 1000, £1 and 10p	- Use expanded column subtraction for 3- and 4-digit numbers - Use complementary addition to subtract amounts of money, and for subtractions where the larger number is a near multiple of 1000 or 100 e.g. $2002 - 1865$ - Subtract like fractions

- Subtract multiples of 0.1 - Subtract by counting up e.g. $503 - 368$ is done by adding $368 + 2 + 30 + 100 + 3$ (so we added 135) - Subtract, when appropriate, by counting back or taking away, using place value and number facts - Subtract £1, 10p, 1p from amounts of money - Find change from £10, £20 and £50	e.g. $\frac{4}{5} - \frac{3}{5} = \frac{1}{5}$ Use fractions that add to 1 to find fraction complements to 1 e.g. $1 - \frac{2}{3} = \frac{1}{3}$
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MULTIPLICATION

Mental	Written
- Know by heart all the multiplication facts up to 12×12 - Recognise factors up to 12 of 2-digit numbers - Multiply whole numbers and 1-place decimals by 10, 100, 1000 - Multiply multiples of 10, 100 and 1000 by 1-digit numbers e.g. 300×6 e.g. 4000×8 - Use understanding of place value and number facts in mental multiplication e.g. 36×5 is half of 36×10 e.g. $50 \times 60 = 3000$ - Partition 2-digit numbers to multiply by a 1-digit number mentally e.g. 4×24 as 4×20 and 4×4 - Multiply near multiples by rounding e.g. 33×19 as $(33 \times 20) - 33$ - Find doubles to double 100 and beyond using partitioning - Begin to double amounts of money e.g. £35.60 doubled is £71.20	- Use a vertical written method to multiply a 1-digit number by a 3-digit number (ladder method) - Use an efficient written method to multiply a 2-digit number by a number between 10 and 20 by partitioning (grid method) - Children will also be introduced to the formal method of long multiplication when appropriate (which may be taught alongside the grid method)

DIVISION

Mental	Written
- Know by heart all the division facts up to $144 \div 12$ - Divide whole numbers by 10, 100, to give whole number answers or answers with 1 decimal place - Divide multiples of 100 by 1-digit numbers using division facts e.g. $3200 \div 8 = 400$ - Use place value and number facts in mental division e.g. $245 \div 20$ is half of $245 \div 10$ - Divide larger numbers mentally by subtracting the 10th or 20th multiple as appropriate e.g. $156 \div 6$ is $20 + 6$ as $20 \times 6 = 120$ and	- Use a written method to divide a 2-digit or a 3-digit number by a 1-digit number - Give remainders as whole numbers - Begin to reduce fractions to their simplest forms - Find unit and non-unit fractions of larger amounts

$$6 \times 6 = 36$$

- Find halves of even numbers to 200 and beyond using partitioning
- Begin to halve amounts of money
e.g. *half of £52.40 is £26.20*

UPPER KEY STAGE 2

Children move on from dealing mainly with whole numbers to performing arithmetic operations with both decimals and fractions.

Addition and subtraction: Children will consolidate their use of written procedures in adding and subtracting whole numbers with up to 6 digits and also decimal numbers with up to 2 decimal places. Mental strategies for adding and subtracting increasingly large numbers will also be taught. These will draw upon children's robust understanding of place value and knowledge of number facts. Negative numbers will be added and subtracted.

Multiplication and division: Efficient and flexible strategies for mental multiplication and division are taught and practised, so that children can perform appropriate calculations even when the numbers are large, such as $40\,000 \times 6$ or $40\,000 \div 8$. In addition, it is in Years 5 and 6 that children extend their knowledge and confidence in using written algorithms for multiplication and division.

Fractions, decimals, percentages and ratio: Fractions and decimals are also added, subtracted, divided and multiplied, within the bounds of children's understanding of these more complicated numbers. Children will also calculate simple percentages and ratios.

YEAR 5

ADDITION

Mental	Written
• Know number bonds to 1 and to the next whole number • Add to the next 10 from a decimal number e.g. $13.6 + 6.4 = 20$ • Add numbers with 2 significant digits only, using mental strategies e.g. $3.4 + 4.8$ e.g. $23\,000 + 47\,000$ • Add 1- or 2-digit multiples of 10, 100, 1000, 10 000 and 100 000 e.g. $8000 + 7000$ e.g. $600\,000 + 700\,000$ • Add near multiples of 10, 100, 1000, 10 000 and 100 000 to other numbers e.g. $82\,472 + 30\,004$ • Add decimal numbers which are near multiples of 1 or 10, including money e.g. $6.34 + 1.99$ e.g. $£34.59 + £19.95$ • Use place value and number facts to add two or more 'friendly' numbers, including money and decimals e.g. $3 + 8 + 6 + 4 + 7$ e.g. $0.6 + 0.7 + 0.4$ e.g. $2056 + 44$	• Use column addition to add two or three whole numbers with up to 5 digits • Use column addition to add any pair of 2-place decimal numbers, including amounts of money • Begin to add related fractions using equivalences e.g. $\frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6}$ • Choose the most efficient method in any given situation

SUBTRACTION

Mental	Written
- Subtract numbers with 2 significant digits only, using mental strategies e.g. $6.2 - 4.5$ e.g. $72\,000 - 47\,000$ - Subtract 1- or 2-digit multiples of 10, 100, 1000, 10 000 and 100 000 e.g. $8000 - 3000$ e.g. $60\,000 - 200\,000$ - Subtract 1- or 2-digit near multiples of 10, 100, 1000, 10 000 and 100 000 from other numbers e.g. $82\,472 - 30\,004$ - Subtract decimal numbers which are near multiples of 1 or 10, including money e.g. $6.34 - 1.99$ e.g. $\pounds 34.59 - \pounds 19.95$ - Use counting up subtraction, with knowledge of number bonds to 10, 100 or £1, as a strategy to perform mental subtraction e.g. $\pounds 10 - \pounds 3.45$ e.g. $1000 - 782$ - Recognise fraction complements to 1 and to the next whole number e.g. $1\frac{2}{5} + \frac{3}{5} = 2$	- Use compact or expanded column subtraction to subtract numbers with up to 5 digits - Use complementary addition for subtractions where the larger number is a multiple or near multiple of 1000 - Use complementary addition for subtractions of decimal numbers with up to 2 places, including amounts of money - Begin to subtract related fractions using equivalences e.g. $\frac{1}{2} - \frac{1}{6} = \frac{2}{6}$ - Choose the most efficient method in any given situation

MULTIPLICATION

Mental	Written
- Know by heart all the multiplication facts up to 12×12 - Multiply whole numbers and 1- and 2-place decimals by 10, 100, 1000, 10 000 - Use knowledge of factors and multiples in multiplication e.g. 43×6 is double 43×3 e.g. 28×50 is $\frac{1}{2}$ of $28 \times 100 = 1400$ - Use knowledge of place value and rounding in mental multiplication e.g. 67×199 as $67 \times 200 - 67$ - Use doubling and halving as a strategy in mental multiplication e.g. 58×5 is half of 58×10 e.g. 34×4 is 34 doubled twice - Partition 2-digit numbers, including decimals, to multiply by a 1-digit number mentally e.g. 6×27 as 6×20 (120) plus 6×7 (42) e.g. 6.3×7 as 6×7 (42) plus 0.3×7 (2.1) - Double amounts of money by partitioning e.g. $\pounds 37.45$ doubled is $\pounds 37$ doubled ($\pounds 74$) plus 45p doubled (90p) giving a total of $\pounds 74.90$	- Use short multiplication to multiply a 1-digit number by a number with up to 4 digits - Use long multiplication to multiply 3-digit and 4-digit numbers by a number between 11 and 20 - Choose the most efficient method in any given situation - Find simple percentages of amounts e.g. 10%, 5%, 20%, 15% and 50% - Begin to multiply fractions and mixed numbers by whole numbers ≤ 10 e.g. $4 \times \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$

DIVISION

Mental	Written
- Know by heart all the division facts up to $144 \div 12$ - Divide whole numbers by 10, 100, 1000, 10 000 to give whole number answers or answers with 1, 2 or 3 decimal places - Use doubling and halving as mental division strategies e.g. $34 \div 5$ is $(34 \div 10) \times 2$ - Use knowledge of multiples and factors, as well as tests for divisibility, in mental division e.g. $246 \div 6$ is $123 \div 3$ e.g. We know that 525 divides by 25 and by 3 - Halve amounts of money by partitioning e.g. $1/2$ of $\pounds 75.40 = 1/2$ of $\pounds 75$ ($\pounds 37.50$) plus half of 40p (20p) which is $\pounds 37.70$ - Divide larger numbers mentally by subtracting the 10th or 100th multiple as appropriate e.g. $96 \div 6$ is $10 + 6$, as $10 \times 6 = 60$ and $6 \times 6 = 36$ e.g. $312 \div 3$ is $100 + 4$ as $100 \times 3 = 300$ and $4 \times 3 = 12$ - Know tests for divisibility by 2, 3, 4, 5, 6, 9 and 25 - Know square numbers and cube numbers - Reduce fractions to their simplest form	- Use short division to divide a number with up to 4 digits by a number ≤ 12 - Give remainders as whole numbers or as fractions - Find non-unit fractions of large amounts - Turn improper fractions into mixed numbers and vice versa - Choose the most efficient method in any given situation

YEAR 6

ADDITION

Mental	Written
- Know by heart number bonds to 100 and use these to derive related facts e.g. $3.46 + 0.54$ - Derive, quickly and without difficulty, number bonds to 1000 - Add small and large whole numbers where the use of place value or number facts makes the calculation do-able mentally e.g. $34\ 000 + 8000$ - Add multiples of powers of 10 and near multiples of the same e.g. $6345 + 199$ - Add negative numbers in a context such as temperature where the numbers make sense - Add two 1-place decimal numbers or two 2-place decimal numbers less than 1 e.g. $4.5 + 6.3$ e.g. $0.74 + 0.33$ - Add positive numbers to negative numbers e.g. Calculate a rise in temperature or continue a sequence beginning with a negative number	- Use column addition to add numbers with up to 5 digits - Use column addition to add decimal numbers with up to 3 decimal places - Add mixed numbers and fractions with different denominators

SUBTRACTION

Mental	Written
- Use number bonds to 100 to perform mental subtraction of any pair of integers by complementary addition e.g. $1000 - 654$ as $46 + 300$ in our heads - Use number bonds to 1 and 10 to perform mental subtraction of any pair of 1-place or 2-place decimal numbers using complementary addition and including money e.g. $10 - 3.65$ as $0.35 + 6$ e.g. $£50 - £34.29$ as $71p + £15$ - Use number facts and place value to perform mental subtraction of large numbers or decimal numbers with up to 2 places e.g. $467\ 900 - 3005$ e.g. $4.63 - 1.02$ - Subtract multiples of powers of 10 and near multiples of the same - Subtract negative numbers in a context such as temperature where the numbers make sense	- Use column subtraction to subtract numbers with up to 6 digits - Use complementary addition for subtractions where the larger number is a multiple or near multiple of 1000 or 10 000 - Use complementary addition for subtractions of decimal numbers with up to 3 places, including money - Subtract mixed numbers and fractions with different denominators

MULTIPLICATION

Mental	Written
- Know by heart all the multiplication facts up to 12×12 - Multiply whole numbers and decimals with up to 3 places by 10, 100 or 1000 e.g. $234 \times 1000 = 234\ 000$ e.g. $0.23 \times 1000 = 230$ - Identify common factors, common multiples and prime numbers and use factors in mental multiplication e.g. 326×6 is 652×3 which is 1956 - Use place value and number facts in mental multiplication e.g. $4000 \times 6 = 24\ 000$ e.g. $0.03 \times 6 = 0.18$ - Use doubling and halving as mental multiplication strategies, including to multiply by 2, 4, 8, 5, 20, 50 and 25 e.g. 28×25 is a quarter of $28 \times 100 = 700$ - Use rounding in mental multiplication e.g. 34×19 as $(34 \times 20) - 34$ - Multiply 1- and 2-place decimals by numbers up to and including 10 using place value and partitioning e.g. 3.6×4 is $12 + 2.4$ e.g. 2.53×3 is $6 + 1.5 + 0.09$ - Double decimal numbers with up to 2 places using partitioning e.g. 36.73 doubled is double 36 (72) plus double 0.73 (1.46)	- Use short multiplication to multiply a 1-digit number by a number with up to 4 digits - Use long multiplication to multiply a 2-digit number by a number with up to 4 digits - Use short multiplication to multiply a 1-digit number by a number with 1 or 2 decimal places, including amounts of money - Multiply fractions and mixed numbers by whole numbers - Multiply fractions by proper fractions - Use percentages for comparison and calculate simple percentages

DIVISION

Mental	Written
• Know by heart all the division facts up to $144 \div 12$ • Divide whole numbers by powers of 10 to give whole number answers or answers with up to 3 decimal places • Identify common factors, common multiples and primes numbers and use factors in mental division e.g. $438 \div 6$ is $219 \div 3$ which is 73 • Use tests for divisibility to aid mental calculation • Use doubling and halving as mental division strategies, for example to divide by 2, 4, 8, 5, 20 and 25 e.g. $628 \div 8$ is halved three times: 314, 157, 78.5 • Divide 1- and 2-place decimals by numbers up to and including 10 using place value e.g. $2.4 \div 6 = 0.4$ e.g. $0.65 \div 5 = 0.13$ e.g. $\pounds 6.33 \div 3 = \pounds 2.11$ • Halve decimal numbers with up to 2 places using partitioning e.g. Half of 36.86 is half of 36 (18) plus half of 0.86 (0.43) • Know and use equivalence between simple fractions, decimals and percentages, including in different contexts • Recognise a given ratio and reduce a given ratio to its lowest terms	• Use short division to divide a number with up to 4 digits by a 1-digit or a 2-digit number • Use long division to divide 3-digit and 4-digit numbers by 'friendly' 2-digit numbers • Give remainders as whole numbers or as fractions or as decimals • Divide a 1-place or a 2-place decimal number by a number ≤ 12 using multiples of the divisors • Divide proper fractions by whole numbers

Approved by (Chair of Governors): _____

Date: _____