Calculation Policy

Adopted: Spring 2023
Review: Spring 2026

This calculation policy is intended to aid all staff and parents in their understanding of the four operations and to provide progression in written methods. It details the foci for each year group by operation and provides related key skills, examples and vocabulary. It also details skills required for all operations and provides examples of additional useful skills to extend learning further.

This policy is designed to be used alongside the Mathematics Policy and has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics. It builds upon expectations, skills and methods detailed in the schools scheme of work, Abacus. Early learning of number and calculation in Reception follows the Development Matters EYFS document. This calculation policy is designed to establish a progression between the Foundation Stage and the National Curriculum.

Age expectations

This calculation policy is organised according to year group expectations as set out in the National Curriculum 2014, however it is vital that teachers are flexible in their approach and recognise that some children will be ready to progress to the next stage, whilst others will need consolidation of previous stages. Children need to be able to apply their understanding and demonstrate mastery before moving on. The progression in this document illustrates methods of recording rather than just size of the numbers.

Teaching

When modelling calculations adults must use language that accurately reflects the size of the numbers involved. (E.g. carry ten rather than carry one).When moving on from a familiar method to a new one, it is best practice for both methods to be taught alongside one another to help consolidate and embed. It is expected that addition/subtraction and multiplication/division be taught alongside each other so that pupils can see the inverse relationship between them. Pupils should be encouraged to estimate their answers first and check calculations with a variety of strategies including the inverse operation. To deepen understand, children at all stages children are expected to explain and justify their understanding. They should be asked questions such as 'How do you know that?', 'Can you prove it?', 'Why is that right/wrong?' and 'Why can't the answer be X?' Children should be given ample opportunities to apply knowledge and understanding in order to master a particular skill or method.

Providing a context

Whilst later stages make explicit reference to application in problem solving contexts these should be used throughout at an appropriate level. It is important that calculations are given a real life context whenever possible to help build an understanding of the purpose of calculation. This helps to embed children's learning and to recognise when to use certain operations or methods when faced with problems.

Choosing a method

When approaching a calculation, children should be encouraged to ask the following questions: . . . .

- Can I do this in my head using a mental strategy?
- Do I know the approximate size of the answer? (Can I make an estimation?)
- If I can't answer it in my head, what jottings could I make to help me?
- Is this the most efficient method?
- Which written method would be helpful?

In order to encourage mental calculations strategies, calculations should always be presented to children horizontally so that they can decide how to tackle them.

Resources

It is normal practice for practical equipment to be used in all age groups, and in particular with younger or less able pupils, to demonstrate learning. However all children should have access to a range of mathematical resources during lessons. Children should be encouraged to use resources such as number lines, 100 squares, counters and Numicon to support their calculations and carry out methods in a visual context. When problem solving, children should be allowed to choose resources they feel are

needed to solve the problem and make jottings as they feel necessary. Solving problems practically and visually helps to embed understanding and enables children to apply this understanding more easily when they are required to solve problems without resources.

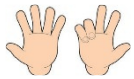
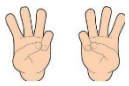
Key

- Statements in **bold** are Key Performance Indicators (KPI) and describe significant skills or knowledge for the related year group.
- Statements in *italic* are taken from the Interim Teacher Assessment Framework for end of Key Stage 1 (Year 2) and Key Stage 2 (Year 6).
- Any mention of 'mental' calculations means that a child is expected to use jottings but not formal written methods.

Meadgate Primary School – Calculation Policy | *Reception*

Skills for all operations

- Understand that numbers can be names (cardinality)
- Understand that numbers can represent an amount
- Understand that numbers can be places in a line or sequence (ordinality)
- Understand that the number in a set doesn't change if it is arranged in a different way (conservation)
- Count in order from 1-20 independently and from 1-100 as part of a larger group
- Understand that 0 means none
- Recognise and write numerals 0-20
- Place numbers to 20 in order

	Focus	Skills	Examples	Vocab
+	**Adding as counting on in 1s.** To understand that adding involves an increase and numbers can be split into pairs of numbers (bonds).	• Use the vocabulary involved in adding in practical activities and discussion • Use quantities and objects to solve addition problems • Identify one more than a number up to 20 • Find the total number of items in two groups by counting them all • Add two 1-digit numbers by counting on • Add by putting the largest number first and counting on • Use fingers and objects to work out, represent and use number bonds of 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 • Recognise that they have 5 fingers on one hand so should begin counting at 5 rather than starting at 1 each time.	Children will consider addition primarily in real life contexts. For 5+3 = 8 they would initially use their fingers then move onto objects, drawings and coins.   As the premise of number bonds, they should investigate different ways to make given amounts by splitting objects into two groups, e.g. 4 + 2 = 6  When children find adding difficult but are able to recognise numbers, they can use a number line to help them understand adding as counting on and getting bigger.	• Count • Count on • Number • Number line • Amount • How many? • Next • Make • Lots • Together • Altogether • And • Add • Addition • Number sentence • Number bonds • Number pairs
-	**Subtracting by counting back in 1s or taking away.** To understand that subtracting involves a decrease numbers can be split into pairs of numbers (bonds).	• Use the vocabulary involved in subtracting in practical activities and discussion • Use quantities and objects to solve subtraction problems • Identify one less than a number up to 20 • Find how many items are left when a given number of objects are removed • Subtract two 1-digit numbers by counting back from the biggest number • Subtract by putting the largest number first • Use fingers and objects to work out, represent and use number bonds up to 10 • Begin to understand the concept of 'difference' in familiar contexts through 'How many more?' scenarios	Children will consider subtraction primarily in real life contexts. For 5+2 = 7 they would initially use their fingers then move onto objects, drawings and coins. Food is often a useful tool to understand when something has been taken away.   As the premise of number bonds, they should investigate different ways to split given numbers into different amounts, e.g. 6 – 2 = 4  When children find subtracting difficult but are able to recognise numbers, they can use a number line to help them understand subtraction as counting back and getting smaller.	• Count • Count back • Number • Number line • Amount • How many? • Take • Take away • Less • Altogether • Subtract • Subtraction • Number sentence • Number bonds • Count back • How many left? • How many more? • What is the difference?
x	**Multiplying as clever counting.** To understand that doubling involves two of the same.	• Count in 2s or skip counting initially by 'whisper counting' (children say each number but some louder/quieter than others). • Understand that counting in 2s involves jumping/skipping numbers. • Double numbers 1 to 5 using fingers on both hands • Use objects to double numbers to 10 as a basis for multiplying by 2	Number lines help children visualise skip counting and objects help to give purpose/meaning, e.g. pairs of socks or gloves and children as partners    For double 3, children would initially use their fingers to find the answer 6.then would use objects and finally drawings.  	• Skip counting • Count in 2s • Jump • Number line • Pairs • Double • Doubling • Exactly the same • Groups • The same again
÷	**Division as sharing.** To understand that halving involves sharing into two groups/amounts that are exactly the same.	• Share a given amount up to 20 into up to 4 groups of the same size • Understand that sharing needs to be fair (each group has the same amount) • Begin to understand 'even' and 'odd' numbers as numbers that 'can' or 'can't' be halved as whole numbers • Understand that some numbers (odd) can be halved into ½	Children will use real objects such as food items to share. Situations that require a level of fairness help children to understand the concept of 'sharing equally'  4 shared between 2 = 2 or Sharing 4 cakes between 2 children means that each child gets 2. For half of 6, children would initially use their fingers to find the answer 3.then would use objects and finally drawings. 	• Share • Sharing • Groups • Equal • Is it fair? • Exactly the same • Half • Halves • Halving • Split in 2

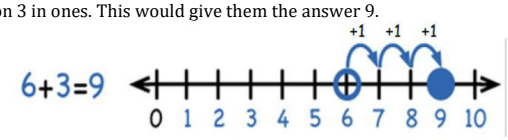
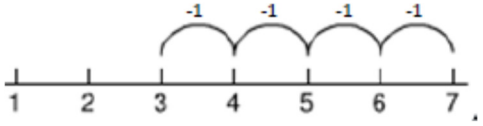
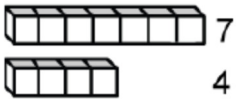
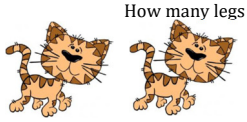
Additional useful skills

- Understand that 0 in 20 or 30 means no 1s or units
- Understand that to find the difference we must subtract or count on
- Recall number bonds from 1 to 10
- Read & record number sentences with + or - and =
- Count in 5s and 10s

Meadgate Primary School – Calculation Policy | *Year 1*

Skills for all operations

- **Count, read & write numbers to 100 in numerals**
- **Read & write numbers to 20 in words, with correct spelling**
- **Count to & across 100 forward & back from any number in 1s**
- **Count in multiples of 2, 5, and 10**
- Identify & represent numbers using objects & pictorial representations including the number line
- Recall number bonds to 10

	Focus	Skills	Examples	Vocab
+	**Adding with numbers up to 20.** Starting with the greatest number and counting on the smaller number. Add using objects and number lines.	• Use counting equipment, everyday objects, pictorial representations (including computer models), 100 squares and number lines to solve addition problems • **Identify one more than a number up to 100** • Add by putting the largest number first • Add two or three 1-digit numbers using objects (number sentences can be visual aids) • Add with 1-digit and 2-digit numbers to 20 (including 0) • **Represent and use/spot number bonds to 10 and 20** to solve addition problems • Add 10 to any 2-digit number • Read and write the addition (+) and equals (=) signs and use them in number sentences • Solve one step addition and missing number problems: 7 + 4 =?, 1 + 2 + 1 = ?, ? + ? = 9 • Use number facts to add 1-digit to a 2-digit number, e.g. use 4+3 to work out 34 + 3.	For 6 + 3, the child would start on the number line at 6 and count on 3 in ones. This would give them the answer 9.  For 8 + 5, children should use their understanding of number bonds to count on 2, and then count on 5. Using bead strings can help to visualise this bridging through 10s.  They should use patterns based on known facts when adding, e.g. 4 + 3 = 7 so we know 24 + 3.	In addition to YR: • More than • Plus • Total • Equal to • Equals • The same as • Double • Most • Count on • How many more? • Put together
-	**Subtracting from numbers up to 20.** To understand subtraction as taking away and the difference/ distance between two numbers.	• Use counting equipment, everyday objects, pictorial representations, 100 squares and number lines to solve subtraction problems • **Identify one less than a given number up to 100** • Subtract 1-digit number from another • Subtract with 1-digit and 2-digit numbers to 20 (including 0) • **Represent and use/spot number bonds to10 and 20** to solve subtraction problems • Subtract 10 from any 2-digit number • Read and write the subtraction (-) and equals (=) signs and use them in number sentences • Solve one step subtraction and missing number problems: 7 - 4 = ?, 6 - 2 - 1 = ?, ? - ? = 2 • Use number facts to subtract 1-digit from a 2-digit number, e.g. use 7-2 to work out 27-2 • Understand that addition is the inverse and can be used to solve subtraction problems	For 7 - 4, the child would start on the numberline at 7 and count back 4 in ones. This would give them the answer 3.  To answer problems such as 'How many more is 7 than 4?' or 'What is the difference between 7 and 4?' cubes should be made into rods so children can see the problem visually. This method can also be used to answer 'find the distance' problems 	In addition to YR: • Equal to • Minus • Leaves • Distance between • Difference between • How many fewer? • How many less than? • Least • How much less?
X	**Repeated addition and counting in 2s, 5s or 10s** To take part in different multiplication activities in a variety of contexts.	• Use objects, arrays and pictorial representations to solve one step multiplication problems with adult support • Make connections between arrays and counting in 2s, 5s and 10s • Practise counting and grouping objects by 2s, 5s and 10s • Begin to say what three 5s are by counting in 5s or four 2s by counting in 2s • Begin to understand doubling using objects and pictorial representations • Double numbers to 10 • Complete practical problem solving activities by counting equal sets or groups	How many legs will 2 cats have?  4 + 4 = 8 Some children may be able to use mental skills by seeing links between multiplication problems and counting in2s, 5s or 10s. There are 5 roses in each garden. How many roses in 3 gardens?  5 + 5 + 5 = 15	In addition to YR: • Groups of • Lots of • Times • Array • Altogether • Multiply • Count
÷	**Grouping and sharing small quantities without remainders** To solve problems in relevant contexts where they have to group and share	• Use objects, arrays (or 'sets of') and pictorial representations to solve one step division problems with adult support • Understand the link between sharing and grouping (teach alongside each other) and use these to solve practical problems with objects • Use grouping and sharing to find simple fractions (half and quarter) • Make connections between arrays and counting in 2s, 5s and 10s • Use visual and concrete arrays to find out how many sets of a smaller number make a larger number • **Find halves of even numbers** up to 20 **by sharing into 2 equal groups** and know that halving odd numbers is hard • Understand that multiplication is the inverse and can be used to solve division problems	A farmer has 15 roses and shares them between 3 friends. How many roses do they each get?  15 roses shared between 3 = 5 roses each Bats fly in groups of 2. How many groups of 2 will there be if there are 8 bats?  8 bats shared into groups of 2= 4 (2 bats in each group)	In addition to YR: • Share equally • One each • Two each • Group • Groups of • Lots of • Array

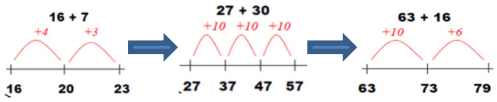
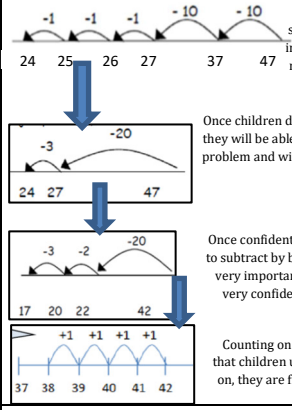
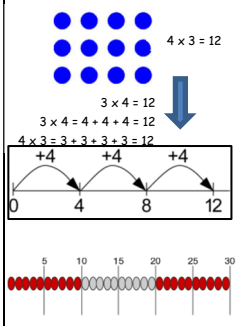
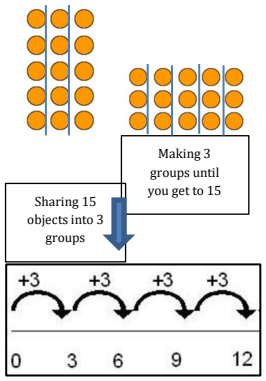
Additional useful skills

- Order items 1st, 2nd, 3rd by quantity
- Recognise place value in numbers beyond 20
- Recall doubles and halves to 20
- Count forward and back in 10s from any given 2digit number
- Recognise odd and even numbers
- Apply understanding of operations in complex questions

Meadgate Primary School – Calculation Policy | *Year 2*

Skills for all operations

- **Read & write numbers to at least 100 in numerals and words, including the correct spelling**
- **Compare and order numbers from 0 to 100 and use <, > and =**
- **Count in steps of 2, 3, 5, and 10 from any number, forward and back**
- **Recognise odd and even numbers**
- ***Recognise and understand the place value of each digit and partition a 2-digit number (tens & ones)*** *into different combinations*
- **Use place value and number facts to solve problems**
- Count to & across 100 forward & backward from any number in 1s or 10s
- Recall number bonds to 12 and 20
- *Use estimation to check answers to calculations are reasonable, e.g. Knowing that 48+ 35 must be less than 100*
- *Use inverse operations to solve missing number problems and check calculations*
- Identify & represent numbers differently, including on a blank number line

	Focus	Skills	Examples	Vocab
+	**Adding with 2-digit numbers.** To use blank number lines. To add using knowledge of place value & know how to partition in different ways.	• ***Use concrete objects, pictorial representation, 100 squares, blank number lines and mental methods to solve problems*** • **Solve contextual addition problems to find totals using written and mental methods** • **Recall, represent and use number bonds to 20 and multiple of 10 bonds to 100 to solve addition problems** • Add a 1-digit number to any 2-digit number • Add three 1- digit numbers • Add 10 and small multiples of 10 to a 2-digit number • *Add two 2-digit numbers* • Know and show that addition can be done in any order (the commutative law)	 Adding a 2-digit number & units Adding a 2-digit number & tens Adding two 2-digit numbers 34 + 23 = 57 30 + 20 = 50 4 + 3 = 7 58 + 43 = 101 50 + 40 = 90 8 + 3 = 11 Partitioning should be started with 2 digits numbers that do not bridge the tens or hundreds so children become fully confident with the method itself. Once children are confident they can start using the partitioning method to add numbers that bridge the tens and hundreds boundaries.	In addition to Y 1: • Sum • Tens • Units • Partition • Addition • Column • Tens boundary
-	**Subtracting with 2-digit numbers.** To use blank number lines. To subtract by counting back.	• ***Use concrete objects, pictorial representation, 100 squares, blank number lines and mental methods to solve problems*** • **Solve contextual subtraction problems using written and mental methods** • **Recall, represent and use number bonds to 20 and multiple of 10 bonds to 100 to solve subtraction problems** • Subtract a 1-digit number from any 2-digit number • Subtract 10 and small multiples of 10 from any 2-digit number • *Subtract a 2-digit number from another when no regrouping is needed, e.g. 74-33* • Subtract a 2-digit number from another by counting back in 10s and 1s or by counting up • Know and show that subtraction cannot be done in any order	 For 47 – 23 = 24, children should start by partitioning the tens number and subtracting that first by counting back in tens. They will then subtract the unit number and subtract that by counting back in 1s. Once children develop their confidence of counting back they will be able to select more efficient jumps to solve a problem and will not have to partition the tens and units numbers separately. Once confident with efficient jumps, children are ready to subtract by bridging through 10, again partitioning is very important here and the children will need to be very confident with partitioning in different ways. Counting on is a super mental method! It is important that children understand that although they are counting on, they are finding the difference which is subtraction!	In addition to Y 1: • Count on • Strategy • Partition • Tens • Units
x	**Multiplying using arrays and repeated addition – 2, 5, 10x table facts.** To make own arrays and use repeated addition on a number line to solve a problem.	• **Use concrete objects, arrays, repeated addition, multiplication facts & mental methods to solve multiplication problems** • ***Solve x problems and write corresponding multiplication number sentences*** • **Begin to understand that multiplication is repeated addition and to use arrays** • ***Recall and use multiplication facts for the 2, 5 and 10 times tables seeing these as 'lots of'*** • Double numbers up to 20 • Double multiples of 10 to 50 • *Know and show that multiplication can be done in any order (the commutative law)*	 Arrays are super for children to solve the answer to simple problems. They are also great for showing children the commutative law, for example, if you turned this array for 3 x4 = 12 sideways you would see that 4 x 3 also equals 12. Repeated addition encourages children to use addition facts on a blank number line and count up to their answer. The example models that 3 x 4 = 12. Mental methods, practical apparatus and visual images are very important to help visualize multiplication and develop stronger mental skills. The example shows 6 x 5 = 30 on a bead string.	In addition to Y 1: • Multiplied by • Repeated addition • Column • Row • Commutative • Sets of • Equal groups • Times as big as • Once Twice • Three times
÷	**Grouping and sharing larger quantities using written methods and symbols.** To use sharing and grouping with objects, arrays and number lines.	• **Use concrete objects, arrays, repeated addition, multiplication facts & simple written methods, such as grouping on a number line, to solve division problems** • ***Solve division problems and write corresponding division number sentences*** • *Recall and use ÷ facts related to 2,5 & 10 times tables* • Know and show that ÷ is not commutative and needs to be solved in a specific order • Say how many rows in a given array • Relate division to grouping, e.g. 'How many groups of 5 are in 15? 'and sharing , e.g. 'How many do each of the 5 groups have?' • Halve numbers to 20 • Find ½ ⅓ ¼ and ¾ of a quantity of objects and amounts with whole number answers and know that all parts must equal a whole. Write fractions.	 To solve problems such as 15 ÷ 3 =, children can share 15 objects into 3 groups or make groups of 3 until they get to 15. Completing both of these processes will help children see the link between sharing and grouping but also the link between 15 ÷ 3 = 5 and 15 ÷ 5 = 3. Children will start to group on a number line- which will help cement their understanding of division as grouping. When grouping on a number line, children will start with a zero at the beginning and will write the dividend at the end of the line, they will then jump in steps of the divisor. The example to the right shows a number line for the calculation 12 ÷ 3 = 4 as there were 4 jumps of 3 to get to 12.	In addition to Y 1: • Divided by • Divided into • Division • Grouping • Number line • Left • Left over

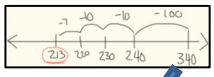
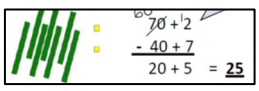
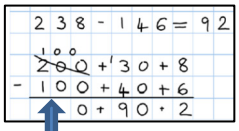
Additional useful skills

- Understand 0 as a place holder
- Work out mental calculations where regrouping is required e.g. 52-27
- Solve word problems with more than 1 step
- Count in fractions to 10 from any number
- Double 2-digit numbers less than 50 with less than 5 units
- Double multiples of 5 to 100
- Halve numbers to 40 and multiples of 10 to 100
- Recall and use 3 x tables
- Determine remainders with given known facts, e.g. knowing 15-3=0 so 16-5 will have a remainder of 1
- Use reason & deduction to justify answers & estimates

Meadgate Primary School – Calculation Policy | *Year 3*

Skills for all operations

- **Read & write numbers to at least 1000 in words, with correct spelling**
- **Can work out if a number is greater/less than 10 or 100**
- **Count from 0 in multiples of 4, 8, 50 and 100**
- **Recognise and understand the place value of each digit in a 3-digit number (hundreds, tens & ones)**
- Count up and down in tenths
- Compare and order numbers from 0 to 1000
- Compare fractions with the same denominator
- Identify, represent and estimate numbers using different representations
- Use mental strategies including recalling number bonds and partitioning
- Rewrite a horizontal calculation into a vertical calculation
- Use known facts and the inverse to derive related facts

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
+	**Adding with 3-digit numbers.** To apply partitioning skills using the partitioning column method.	• Mentally add 2-digit numbers including those that bridge 100 by counting on or partitioning • **Mentally add a 3-digit number and ones, tens or hundreds** • Mentally add multiples and near multiples of 10, 100 or 100 • Mentally perform place value additions, e.g. 300 + 8 + 50 = 358 or 320 + 450 = 770 • Mentally add a 1-digit or 2-digit number to a 3-digit number using place value and number facts, e.g. 104 + 56 = 100 + 50 + (4+6) = 160 • Start to mentally add amounts of money by partitioning • Add two or three 2- digit or 3-digit numbers using formal written methods of the expanded column method then the compact method • Find 10 or 100 more than a given number • Estimate answers to addition calculations and use inverse operation of subtraction to check • **Solve addition problems** with 2 or more steps **including missing number problems using number facts and place value** • Begin to add like fractions and recognise that those that add to 1, e.g. $^3/_8 + {}^1/_8 + {}^1/_8$ or ¼ + ¾	246 + 132 = *378* 200 + 40 + 6 100 + 30 + 2 300 + 70 + 8 = 378 Introduce the partitioning column method with numbers that do not bridge so children become confident with the method itself. 337 + 188 = *525* 300 + 30 + 7 100 + 80 + 8 400 + 110 + 15 = 525 Once confident, children can start using the partitioning column method to solve problems that bridge tens and hundreds. 116 + 343 = *459* 343 + 116 459 Now teach the traditional column method. Introduce with numbers that don't bridge boundaries. Children must know that it is 300 + 100 not 3 + 1! 245 + 84 = *329* 245 + 84 *1* 329 Once the method is secure children are now ready to be introduced to 'carrying' which happens when bridging in the column method. Make sure children add the units first and 'carry' numbers into the carry row above the answer line	In addition to Y 2: • Increase • Horizontal • Vertical • Carry • Expanded • Hundreds boundary
-	**Subtracting with 2 and 3-digit numbers.** To consolidate counting back and using a blank number line to subtract partitioning skills using partitioning column method.	• Mentally subtract 2-digit numbers including those that bridge 100 • **Mentally subtract ones, tens or hundreds from a 3-digit number** • Mentally subtract multiples and near multiples of 10, 100 or 100 • Mentally perform place value subtractions, e.g. 536 – 30 = 506 • Mentally subtract 2-digit numbers from 3-digit numbers by counting up, e.g. 143-76: 76 +4 = 80, 80 + 20 = 100, 100 + 43 = 143 Difference = 67 • Subtract two 3-digit numbers using informal strategy of counting up then formal written method of the expanded column method • Mentally find change from £1, £5 and £10 • Find 10 or 100 less than a given number • Estimate answers to subtraction calculations and use inverse operation of addition to check • **Solve subtraction problems** with 2 or more steps **including missing number problems using number facts and place value** • Begin to subtract like fractions, e.g. $^7/_8 - {}^3/_8$	 Children will continue to subtract on a number line using efficient jumps and apply these to 3 digit number problems. Here is an efficient example of 340 – 127= 213. A 100 square can support with problems greater than 100. 80 + 9 - 30 + 5 50 + 4 Children will now have mental skills required to approach the partitioning column method of subtraction. At first they should attempt this where no exchanging is required. Here is an example for 89 – 35 = 54  Children who are secure with the concept of 'exchanging' should now be able to use the partitioning column method to subtract any 2.  Children should be introduced to exchanging practically. Base 10 is a good tool for partitioning. It is important children know the value has not changed. As you can see here for 72 – 47, before subtracting 7 units, a tens row will need to be exchanged for 10 units.	In addition to Y 2: • Exchange • Decrease • Hundreds • Value • Digit

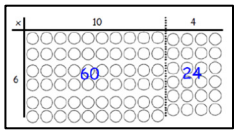
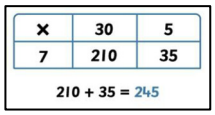
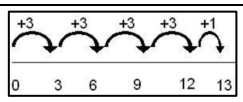
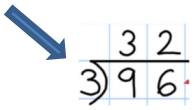
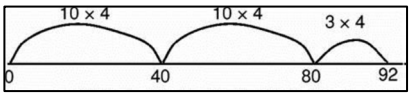
Additional useful skills

- Use multiples of 2, 3, 4, 5, 8, 10, 50 and 100
- Solve problems involving more than one operation
- Connect 2, 4 and 8 multiplication tables with doubling

Meadgate Primary School – Calculation Policy | *Year 3*

Skills for all operations

- **Read & write numbers to at least 1000 in words, with correct spelling**
- **Can work out if a number is greater/less than 10 or 100**
- **Count from 0 in multiples of 4, 8, 50 and 100**
- **Recognise and understand the place value of each digit in a 3-digit number (hundreds, tens & ones)**
- Count up and down in tenths
- Compare and order numbers from 0 to 1000
- Compare fractions with the same denominator
- Identify, represent and estimate numbers using different representations
- Use mental strategies including recalling number bonds and partitioning
- Rewrite a horizontal calculation into a vertical calculation
- Use known facts and the inverse to derive related facts

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
X	**Multiplying 2-digit numbers by 1-digit numbers.** To use the grid method when have a solid understanding of mental methods and partitioning.	• **Quickly recall and use multiplication facts for the 2, 3, 4, 5, 6, 8 and 10 x tables** • Mentally multiply numbers by 10 or 100 • Mentally perform multiplications using place value and number facts, e.g. 30 x 5 is 15 x10 • Mentally double numbers up to 50 • **Accurately write and calculate number sentences using known x tables** • **Multiply 2- and 3-digits by 1-digit numbers using mental and written partitioning methods (grid)** • Multiply single digits by multiples of 10/100 • Solve x problems in context, such as missing number problems, scaling contexts (e.g. four times as high) and correspondence (e.g. 3 hats & 4 coats, how many different outfits?) • Develop mental strategies using associativity and commutativity (e.g.4x12x5=4x5x12 =20x12=240)	 The grid method should be introduced using an arrays model (e.g. 14 x 6 = 84). Children need to use partitioning skills to partition two digit numbers then use existing knowledge of arrays to find an answer with minimal support.  Multiplication grid method requires good organization and a solid understanding of partitioning and multiplication facts (e.g., 35 x 7 = 245). Children need to remember that once they have multiplied the partitioned parts of the number, they then need to add them together.	In addition to Y 2: • Partition • Grid method • Multiple • Product • Values
÷	**Dividing 2-digit numbers by 1-digit numbers.** To use a number line, jump multiple steps by ' chunking' and begin short division.	• **Quickly recall and use division facts for the 2, 3, 4, 5, 6, 8 and 10 multiplication tables** • Mentally perform divisions using place value and number facts, e.g. 84 ÷4 is half of 42 • Mentally divide larger numbers using chunking • Mentally halve even numbers to 100 and odd numbers to 20 • **Accurately write and calculate number sentences using known ÷ facts** • **Divide 2- by 1-digit numbers using mental and written methods** • Divide single digits by multiples of 10/100 • Solve ÷ problems in context including missing number problems, scaling contexts (e.g. four times as short) • Derive related facts e.g. 9 ÷ 3 = 3 so 90 ÷ 3 = 30 or 90 ÷ 30 = 3 • Give a remainder as a whole number • Find, recognise and use unit fractions (numerator that is 1) of quantities and begin to find non-unit fractions (numerator that isn't 1) of quantities • Show and recognise fractions as diagrams	 Children will begin grouping on a number line to solve problems with remainders, e.g. 13÷ 3 = 4r1. Start on zero and write the dividend at the end (13). Jump in steps of the divisor (3) until as close to the end as possible (12). Whatever is left is the remainder (1). Using cubes or arrays alongside will consolidate understanding.  Children should then learn short division without remainders. This should be taught alongside arrays and short multiplication.. Place value should be discussed so children know they are partitioning the dividend (96) and dividing the units (6) then tens (9) by the divisor (3).  When bigger numbers are used children need to subtract chunks of the divisor, e.g. 92 ÷ 4 involves a chunk of 10 groups/jumps of 4, followed by another chunk of 10, then a chunk of 3. This means that in total 4 was jumped 23 times (10 + 10 + 3) making the calculation 92 ÷ 4 = 23.	In addition to Y 2: • Inverse • Short division • Carry • Remainder • Multiple

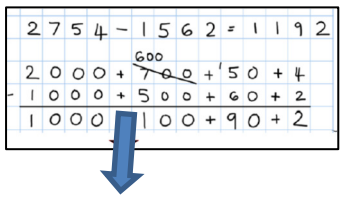
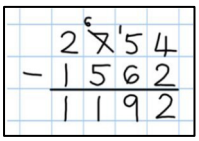
Additional useful skills

- Use multiples of 2, 3, 4, 5, 8, 10, 50 and 100
- Solve problems involving more than one operation
- Connect 2, 4 and 8 multiplication tables with doubling

Meadgate Primary School – Calculation Policy | *Year 4*

Skills for all operations

- **Compare and order numbers beyond 1000**
- Compare numbers with the same number of decimal places (up to 2)
- **Count from 0 in multiples of 6, 7, 9, 25 and 1000**
- **Count backwards through zero to include negative numbers**
- Count up and down in hundredths
- Understand the place value of each digit in a 4-digit number (thousands, hundreds, tens & ones)
- **Select most appropriate method: mental, jottings or written & explain why**
- Identify, represent and estimate numbers using different representations
- Mentally recall number bonds to 100 or £1
- **Round any number up or down to the nearest 10, 100, 1000 or 100ths**
- Round decimals with one decimal place to nearest whole number
- **Solve two step problems deciding the correct operation and method**
- Solve problems involving more than one operation, fractions and decimals to two decimal places
- Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value
- Recognise and write decimal equivalents to ¼, ½, ¾ and any number of tenths or hundredths

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
+	**Adding with up to 4-digit numbers.** To consolidate traditional column method and use to add 4-digit numbers, including carrying units, tens and hundreds.	• **Solve addition problems with 2** or more **steps in different contexts** • Mentally add to the next 100, £1 or whole number, e.g. 234 + 66 = 300 or 3.4 + 0.6 = 4 • Mentally add multiples and near multiples of 10, 100 and 1000 • Mentally add £1, 10p and 1p to amounts of money • Mentally perform place value additions, e.g. 300 + 8 + 50 + 4000 = 4358 • Mentally add a 1-, 2-, 3- and 4-digit numbers using place value and number facts, e.g. 4004 + 156 can be solved by 4 + 6 = 10 then 4000 + 160 = 4160 • Add two 4-digit numbers using formal written methods of the column method • Add using numbers with 2 decimal points in the context of money • Find 1000 more than a given number • Estimate answers to addition calculations and use inverse operation of subtraction to check • Add like fractions, e.g. $^3/_5 + {}^4/_5 = {}^7/_5 = 1^2/_5$ • Confidently know fractions that add to 1 and fraction complements to 1, e.g. $^2/_3 + \_ = 1$	4267 + 1584 = *5851* 4267 + 1584 *11* 5851 Children should already be familiar with the column method from year 3 but it is very important to go over the method again ensuring children understand why they start with the units, have to carry a number etc. Remember! 1) Add units first 2) Carry numbers in the 'carry row' above the answer line. 3) Reinforce place value. It is 6 tens add 8 tens, not 6 add 8.	In addition to Y 3: • Thousands • Digits • Inverse • Negative • Decimal point • Decimal place • Tenths • Hundredths
-	**Subtracting with up to 4-digit numbers.** To consolidate partitioning column method and use to subtract 4-digit numbers, including those where exchanging is required. Begin use of traditional column addition.	• **Solve subtraction problems with 2** or more **steps in different contexts** • Mentally perform place value subtractions, e.g. 4736 – 706 = 4030 • Mentally subtract £1, 10p and 1p from amounts of money • Mentally find change from £10, £20 and £50 • Mentally subtract multiples of 0.1 • Mentally subtract by counting up, e.g. 503 – 368 is solved by 368 + 2 (370) + 30 (400) + 100 (500) + 3 (503) = 135 • Subtract two 3- or 4-digit numbers using formal written methods of expanded column method • Subtract using numbers with 2 decimal points in the context of money • Using complementary additions to subtract amounts of money and where numbers are close together or are near to multiples of 10, 100, e.g. 2002 - 1865 • Find 1000 less than a given number • Estimate answers to subtraction calculations and use inverse operation of addition to check • Subtract like fractions, e.g. $^4/_5 - {}^3/_5 = {}^1/_5$ • Use fractions that add to 1 to find fraction complements to 1, e.g. $1 - {}^2/_3 = 1/_3$	Children will consolidate their learning of the partitioning column method of subtraction and exchanging by solving calculations with more complex numbers. Place value counters will come in handy here when building children's confidence.   Once confident, children are ready to move on to the compact method of subtraction. Encourage children to complete a calculation in the partitioning column methods and then model compact method. See if children can see how they are linked and discuss which is simpler. Children need to carefully select the best method for the problem they are solving.	In addition to Y 3: • Thousands • Digits • Inverse • Negative • Decimal point • Decimal place • Tenths • Hundredths

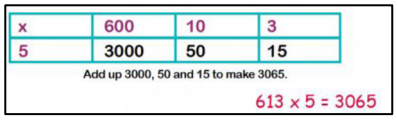
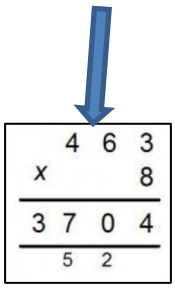
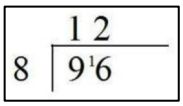
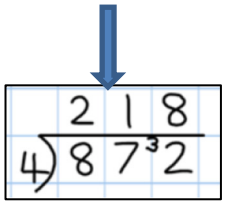
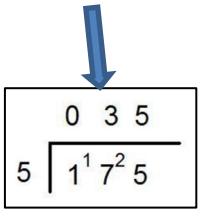
Additional useful skills

- Write statements using distributive law, e.g. 39 x 7 = 30 x 7 + 9 x7
- Write statements using associative law, e.g. (2 x 3) x 4 = 2 x (3 x 4)

Meadgate Primary School – Calculation Policy | *Year 4*

Skills for all operations

- **Compare and order numbers beyond 1000**
- Compare numbers with the same number of decimal places (up to 2)
- **Count from 0 in multiples of 6, 7, 9, 25 and 1000**
- **Count backwards through zero to include negative numbers**
- Count up and down in hundredths
- Understand the place value of each digit in a 4-digit number (thousands, hundreds, tens & ones)
- **Select most appropriate method: mental, jottings or written & explain why**
- Identify, represent and estimate numbers using different representations
- Mentally recall number bonds to 100 or £1
- **Round any number up or down to the nearest 10, 100, 1000 or 100ths**
- Round decimals with one decimal place to nearest whole number
- **Solve two step problems deciding the correct operation and method**
- Solve problems involving more than one operation, fractions and decimals to two decimal places
- Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value
- Recognise and write decimal equivalents to ¼, ½, ¾ and any number of tenths or hundredths

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
X	**Multiplying 2- and 3-digit numbers by 1-digit numbers.** To use the grid method confidently then move on to short multiplication to solve problems.	• **Quickly recall multiplication facts for multiplication tables up to 12 × 12** • Mentally recognise factors up to 12 of 2-digit numbers • Mentally multiply whole numbers and 1-pplace decimals by 10, 100, 1000 • Mentally multiply multiples of 10, 100 and 1000 by 1-digit numbers, e.g. 300 x 6 • Mentally perform multiplications with large numbers and 3 numbers using place value, known and derived facts, e.g. 36 x 5 is half of 36 x 10. 50 x 60 = 3000 • Mentally partition 2-digit numbers to multiply by a 1-digit number, e.g. 4 x 24 becomes 4 x 20 (80) and 4 x 4 (16) = 96 • Mentally multiply near multiples by rounding, e.g. 33 x 19 as (33 x 20) – 33 • Mentally find doubles to double 100 and beyond using partitioning • Begin to mentally double amounts of money, e.g. £35.60 doubled is £71.20 • Recognise and use factor pairs and commutativity to mentally solve calculations • Multiply 2- and 3-digit numbers by a 1-digit number using formal written layout • Use approximation and estimation before using a method to know if an answer is accurate, e.g 253 x 9 is approximately 250 x 10 = 2500 • Solve correspondence problems, e.g.'1 man has 6 cats so how many cats do 3 men have	 The grid method is extended in year 4 so children will now multiply 3 digit numbers by 1 digit numbers. When adding the 3 answers up to create a total, column addition could be used to ensure accuracy, especially where bridging will be needed.  Compact 'short multiplication' (ladder method) is tricky and needs to be approached carefully. At first children should solve a problem using grid method and then observe the teacher solve a problem using short multiplication and make comparisons. How are they similar? Children need to go through it very slowly and carefully, unpicking each step until they are fully confident.	In addition to Y 3: • Digits • Inverse • Short multiplication
÷	**Consolidating and extending use of short division.** To solve problems with remainders including when there are remainders in the first numbers but not the final answer.	• **Quickly recall division facts for up to 12 × 12** • Mentally divide whole numbers by 10 or 100 to give whole numbers or answers with 1-decimal place • Mentally divide multiples of 100 by 1-digit numbers using facts, e.g. 3200 ÷ 8 = 400 • Mentally perform multiplications using place value, known and derived facts, e.g. 245 ÷ 20 is half of 245 ÷ 10 • Mentally divide larger numbers by subtracting the 10th or 20th multiple, e.g. 156 ÷ 6 can be solved by (20 x 6 = 120) + (6 x 6 = 36) • Mentally find halves of even numbers to 200 and beyond using partitioning • Begin to mentally halve amounts of money, e.g. half of £52.40 is £26.20 • Recognise and use factor pairs and commutativity to mentally solve calculations • Divide 2-digit and 3-digit numbers by a 1-digit number using formal written layout • Use approximation and estimation before a method to know if an answer is accurate, e.g. 253 ÷ 9 is approximately 250 ÷ 10 = 25 • Solve correspondence problems, e.g. '3 cakes are shared equally between 10 children. How many cakes does each child have? • **Recognise 100ths arise when ÷ an object by 100 and ÷ 10ths by 10** • Begin to reduce fractions to their simplest forms • Find unit (e.g. ½, ¼) and non-unit (⅔, ¾) fractions of larger amounts	 Once confident with short division, children will move on to problems where the 1st digit (9) of the dividend (96) is not a multiple of the divisor (8) and therefore a remainder will need to be carried. Other equipment can be used if children do not yet have accurate recall of these multiplication facts.  The next stage is to work on 3 digit problems. Again, there should be remainders in the calculation but not in the final answer.  Once children are confident at dividing with 3 digits, they need to attempt problems where the answer in the first column (hundreds column) is a zero. They may wish to record the hundred initially as this will help them remember its place and the numbers value.	In addition to Y 3: • Divisible by • Factor • Dividend • Divisor • Multiple

Additional useful skills

- Write statements using distributive law, e.g. 39 x 7 = 30 x 7 + 9 x7
- Write statements using associative law, e.g. (2 x 3) x 4 = 2 x (3 x 4)

Meadgate Primary School – Calculation Policy | *Year 5*

Skills for all operations

- **Read, write, order and compare numbers to at least 1,000,000 and with up to 3 decimal places**
- **Determine the value of each digit in a number up to 1,000,000**
- Understand what a decimal number represents, including the place value of tenths and hundredths and zero as a place holder
- Count from 0 in multiples of 6, 7, 9, 25 and 1,000
- Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 1,000,000 and use this to make estimates and check answers
- Know number bonds to 1 and to the next whole number
- Recognise and understand % and percentages as fractions or decimals
- Understand the meaning of the equals sign
- Round decimals with 2 places to nearest whole number/1 decimal place
- Read Roman numerals to 1000 (M) and recognise these written as years
- Solve problems involving a combination of all four operations, numbers up to 3 decimal places and involving & and decimal equivalents
- **Count forwards and backwards with positive and negative whole numbers, including through zero**
- Recognise mixed numbers and improper fractions and convert from one form to the other
- **Read and write decimal numbers as fractions, e.g. 0.7 1= 71/100**
- **Know % equivalents of ½, ¼, 1/5, 2/5, 4/5 and fractions with a denominator of a multiple of 10 or 25**

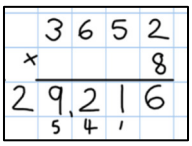
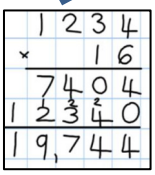
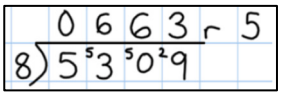
	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
+	**Adding with numbers beyond 4-digits including decimals.** To add decimals in the context of money and measures using the column method.	• **Mentally add numbers with increasingly large numbers using a wide range of strategies , e.g. 12,462 + 2,300 = 14,562** • Mentally add to the next 10 from a decimal number, e.g. 13.6 + 6.4 = 20 • Mentally add 1- or 2-digit multiples of 10, 100, 100, 10000, 100000, e.g. 8000 + 7000 • Mentally add near multiples of 10, 100, 1000, 10000 or 1000000 to other numbers, e.g. 82472 + 30004 • Mentally add decimal numbers which are near multiples of 1 or 10, e.g. 6.34 + 1.99 • Mentally perform additions with 2 or more numbers including money and decimals, e.g. 0.6 + 0.7 + 0.4 or 3 + 8 + 6 + 4 + 7 • **Add two whole numbers with more than 4 digits using column addition** • Add any pair of 2 place decimal numbers including money • Solve addition multi-step problems in contexts, deciding which operations and methods to use and why • Use rounding to check answers to addition calculations and determine levels of accuracy in the context of a problem • Add fractions with the same denominator or denominators that are multiples of the same number, e.g. ½ + 1/6 = 3/6 + 1/6	£23.59 + £ 7. 55 *11.1* £31.14 The decimal point needs to be lined up like the other place value columns. It is important children understand why and get into this habit very quickly. It is important that children say 6 tenths add 7 tenths so they know they are adding part of a number not a whole number. 23,481 + 1,362 *1* 24,843 Children should be working with numbers greater than 4 digits including numbers in the ten thousands and hundred thousands 19.01 3.65 + 0.70 *11* 23.36 Children need to start using the column method to add more than two values, still considering place value very carefully. Remember! Spaces should be filled with a zero to show the value of that place.	In addition to Y 4: • Thousandths
-	**Subtracting with numbers beyond 4-digits including decimals.** To subtract decimals in the context of money and measures using the column method.	• **Subtract numbers mentally with increasingly large numbers using a wide range of strategies , e.g. 12,462 – 2,300 = 10,162** • Mentally subtract 1- or 2-digit multiples of 10, 100, 1000, 10000, 1000000, e.g. 8000 – 30000 • Mentally subtract 1- or 2-digit near multiples of 10, 100, 1000, 10000 or 1000000 to other nos, e.g. 82472 - 30004 • Mentally subtract decimal numbers which are near multiples of 1 or 10, e.g. 6.34 - 1.99 • Mentally use counting up subtractions with knowledge of number bonds to 10, 100 or £1, e.g. £10 - £3.45 • Use complementary addition for subtractions where the larger numbers is a multiple or near multiple of 1000, e.g. 3000 – 2387 • Use complementary addition for subtractions with up to 2 place decimals , e.g. 2.05 – 1.62 • **Subtract whole numbers with more than 4 digits using column addition** • Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Use rounding to check answers to subtraction calculations and determine levels of accuracy in the context of a problem • Recognise fraction complements to 1 and the next whole number, e.g. 1 2/5 + 3/5 = 2 • Subtract fractions with the same denominator or denominators that are multiples of the same number, e.g.. ½ - 1/6 = 2/6	2 3 1 0 5 6 – 2 1 2 8 2 8,9 2 8 Children will come across problems where exchanging will need to take place several times to complete the problem. Once confident with large integers, children will now be ready to move onto decimal numbers including lots in the context of measures and money. Just like addition, it is important that the children line up the decimal point and understand why they are doing this. 7 10 8 6 7 1 6 9 · 0 – 3 7 2 · 5 6 7 9 6 · 5 Remember! Spaces should be filled with a zero to show the value of that place.	In addition to Y 4: • Thousandths

Additional useful skills

- Recognise and describe linear number sequences, including those involving fractions and decimals
- Use and explain the equals sign to indicate equivalence, including in missing number problems
- Write statements using distributive law, e.g. a(b +c) = ab + ac
- Write equivalence statements using factors, multiples, prime, square and cube numbers, e.g. 4 x 35 = 2 x 2 x 25 and 2 x 270 = 3 x 3 x 9 x 10 = 9^2 x 10
- Interpret non-integer answers to division by expressing results in different ways: fractions, decimals or by rounding

Skills for all operations

- **Read, write, order and compare numbers to at least 1,000,000 and with up to 3 decimal places**
- **Determine the value of each digit in a number up to 1,000,000**
- Understand what a decimal number represents, including the place value of tenths and hundredths and zero as a place holder
- Count from 0 in multiples of 6, 7, 9, 25 and 1,000
- Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 1,000,000 and use this to make estimates and check answers
- Know number bonds to 1 and to the next whole number
- Recognise and understand % and percentages as fractions or decimals
- Understand the meaning of the equals sign
- Round decimals with 2 places to nearest whole number/1 decimal place
- Read Roman numerals to 1000 (M) and recognise these written as years
- Solve problems involving a combination of all four operations, numbers up to 3 decimal places and involving & and decimal equivalents
- **Count forwards and backwards with positive and negative whole numbers, including through zero**
- Recognise mixed numbers and improper fractions and convert from one form to the other
- **Read and write decimal numbers as fractions, e.g. 0.7 1= 71/100**
- **Know % equivalents of ½, ¼, 1/5, 2/5, 4/5 and fractions with a denominator of a multiple of 10 or 25**

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
X	**Multiplying up to 4-digits by 1- or 2-digit numbers** To solve more complex problems using short multiplication then move to long multiplication using approximation as an important checking tool.	• Mentally multiply using place value and rounding, e.g. 67 x 199 as (67 x 200) – 67 • Mentally use doubling and halving as a strategy, e.g. 58 x 5 is half of 58 x 10 • Mentally partition 2-digits, including decimals, to multiply by a 1-digit, e.g. 6.3 x 7 = 6 x 7 (42) plus 0.3 x 7 (2.1) = 44.1 • Mentally double amounts of money by partitioning,, e.g. £37.45 = double 337 + double 45p • **Identify multiples and factors, using secure x table facts to 12 x 12** • Establish whether a number up to 100 is prime and recall prime numbers up to 30 • Multiply up to 4 digits by a one-digit number using short x written methods • Multiply up to 4 digits by a two-digit number between 11 and 20 using written methods • Multiply numbers mentally drawing upon known facts • Multiply whole numbers and those involving 1 or 2 place decimals by 10, 100 and 1,000 • Recognise and use square numbers (²) and cube numbers (³) • **Solve problems including those involving factors, multiples, squares, cubes, scaling by simple fractions and simple rates** • Find % of amounts • Begin to multiply fractions and mixed numbers by 1-digit whole numbers, e.g. 4 x 2/3 = 8/3 = 2 2/3	 Children will use short multiplication in a range of increasingly challenging problems. Using the grid method then comparing to the short multiplication method will help cement children's understanding..  When multiplying by more than 1 digit, children need to use long multiplication. To deepen understanding they should solve a problem using the grid method first then make comparisons. In the example below the top row shows 18 x 3 and the bottom shows 18 x 10. The final row shows the total of both calculations.   Once long multiplication is secure, children need more challenging problems with greater levels of mental calculation, e.g.1234 x 6 on the top line, 1234 x 10 on the bottom line and the total of both calculations on the final row.	In addition to Y 4: • Prime numbers • Prime factors • Composite (non-prime) numbers • Square • Cube • Factors • Decimal • Long multiplication • Carry
÷	**Extending use of short division to 4 digits and remainders.** To solve problems up to 4-digits long and with a remainder in the final answer.	• Mentally use doubling and halving as a strategy, e.g. 34 ÷ 5 is (34 ÷ 10) x 2 • Use knowledge of multiples and factors, and tests for divisibility, e.g. 246 ÷ 6 is 123 ÷ 3 • Mentally halve amounts of money by partitioning • Mentally divide by chunking larger numbers by multiples of 10, 1000 • **Find all factor pairs of a number, and common factors of two numbers** • Divide 4 digit numbers by a number up to 12 using formal written method of short division • Divide whole numbers by 10, 100 and 1,000 to give whole number answers and answers with 1, 2 or 3 decimal places • Work out whether a number up to 100 is prime and know all the prime numbers to 30 • Interpret and present remainders appropriately depending on context: as a fraction, decimal or whole number by rounding • **Solve problems including those involving scaling by simple fractions and simple rates, e.g. 'A model needs to be 1/10 of given measurement. What should dimensions be?'** • Know tests for divisibility by 2, 3, 4, 5, 6, 9 and 25 • Know square numbers and cube numbers • Give remainders as whole numbers or fractions • Find non-unit fractions of large amounts • Turn improper fractions into mixed numbers and vice versa, e.g. 7/4 = 1 ¾ • Reduce fractions to their simplest form	 Children will begin to solve division problems where a number up to 4 digits is divided by a single digit number including answers with remainders. These division problems need to be contextual so the children learn how to express the remainder- as a number (8 r5), a fraction (8 5/8), a decimal (8.5), rounded (9) up or rounded down (8).	In addition to Y 4: • Quotient • Prime numbers • Prime factors • Composite (non-prime) numbers

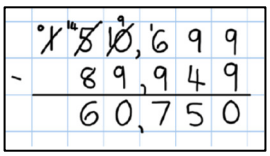
Additional useful skills

- Recognise and describe linear number sequences, including those involving fractions and decimals
- Use and explain the equals sign to indicate equivalence, including in missing number problems
- Write statements using distributive law, e.g. a(b +c) = ab + ac
- Write equivalence statements using factors, multiples, prime, square and cube numbers, e.g. 4 x 35 = 2 x 2 x 25 and 2 x 270 = 3 x 3 x 9 x 10 = 9^2 x 10
- Interpret non-integer answers to division by expressing results in different ways: fractions, decimals or by rounding

Meadgate Primary School – Calculation Policy | *Year 6*

Skills for all operations

- Read, write, order and compare numbers to at least 10,000,000
- *Determine value of each digit in a number up to 10,000,000 incl. decimals*
- Perform mental calculations, including with mixed operations and large numbers
- *Simplify calculations mentally using commutative and distributive properties*
- **Use estimation to check answers to a calculation and determine an appropriate level of accuracy based on context**
- Justify answers and explain choices of methods and recordings
- Know number bonds to 100 and 1000 and derive related facts
- **Use negative numbers in context and calculate intervals across zero**
- Give remainders as whole numbers, fractions or decimals
- Round decimal numbers to the nearest whole number
- **Round any whole number to a required degree of accuracy**: to the nearest 10, 100, 1,000, 10,000, 100,000, 1,000,000 or 10,000,000
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- **Recalls and uses equivalences between simple fractions, decimals & percentages**
- Use common factors to simplify fractions and common multiples to express fractions
- Generate and describe linear number sequences
- Enumerate possibilities of combinations of two variables
- Use simple formulae, express missing number problems algebraically and find pairs of numbers that satisfy an equation with two unknowns

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
+	**Adding several numbers with increasing level of complexity.** To add several numbers with a variety of different decimal places often in the context of money or measures.	• Mentally add two 1-place decimal numbers or two 2-place decimals lower than 1, e.g. 4.5 + 6.3 and 0.74 + 0.33 • Mentally add positive numbers to negative numbers • Mentally add negative numbers in context, e.g. temperature • ***Solve addition multi-step problems in contexts, deciding which operations and methods to use and why*** • 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, e.g. 3 ½ + 2 $^{2}/_{3}$	23.361 9.080 59.770 + 1.300 *21.2* 93.511 Children need to use their knowledge of the decimal point to line up their amounts correctly in the column. Zeroes should be added to support place value, showing that there is no value to add. 81,059 3,668 15,301 + 20,551 *1111* 120,579 Children should also continue to add multiple integers with 4 digits or more.	In addition to Y5: • Integer • Mixed number
-	**Subtracting several numbers with increasing level of complexity.** To subtract several numbers with a variety of different decimal places often in the context of money or measures.	• Use number bonds to 1, 10 or 100 to mentally subtract large numbers or those with 1- or 2-place decimals, e.g. 10 – 3.65 is solved by 4 (3.65 + 0.35) + 6 • Mentally subtract large numbers or those with 1- or 2-place decimals, using place value and number facts, e.g. 467900 – 3005 or 4.63 – 1.02 • Mentally subtract negative numbers in context • ***Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why*** • Use column subtraction to subtract numbers with up to 6 digits • Use complementary addition where the larger number is a multiple or near multiple of 1000 or 10000, e.g. 1000 – 654 as 654 + 46 (700) + 300 • Use complementary addition for subtractions with up to 3- place decimals, e.g. £7.30 - £3.55 • Subtract mixed numbers and fractions with different denominators, e.g. 3 ½ - 2 $^{2}/_{3}$	 Children will use the compact method to solve problems involving integers up to 6 digits and beyond and solve problems where they will need to use 'exchanging' several times.  They will also solve problems in context involving increasingly large decimals. They will need to continue using their knowledge of decimal points to line up their numbers and place zeroes in any empty places so they fully understand the value of that column.	In addition to Y5: • Integer • Mixed number

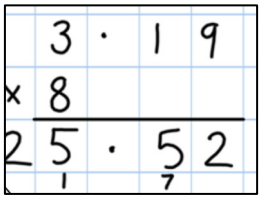
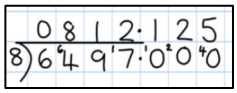
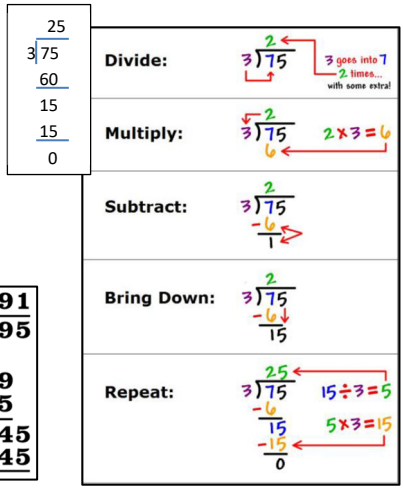
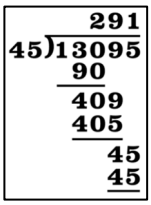
Additional useful skills

- Explore the order of operations using brackets, e.g. 2 + 1 x 3 = 5 and (2+1) x 3 = 9

Meadgate Primary School – Calculation Policy | *Year 6*

Skills for all operations

- Read, write, order and compare numbers to at least 10,000,000
- *Determine value of each digit in a number up to 10,000,000 incl. decimals*
- Perform mental calculations, including with mixed operations and large numbers
- *Simplify calculations mentally using commutative and distributive properties*
- **Use estimation to check answers to a calculation and determine an appropriate level of accuracy based on context**
- Justify answers and explain choices of methods and recordings
- Know number bonds to 100 and 1000 and derive related facts
- **Use negative numbers in context and calculate intervals across zero**
- Give remainders as whole numbers, fractions or decimals
- Round decimal numbers to the nearest whole number
- **Round any whole number to a required degree of accuracy**: to the nearest 10, 100, 1,000, 10,000, 100,000, 1,000,000 or 10,000,000
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- **Recalls and uses equivalences between simple fractions, decimals & percentages**
- Use common factors to simplify fractions and common multiples to express fractions
- Generate and describe linear number sequences
- Enumerate possibilities of combinations of two variables
- Use simple formulae, express missing number problems algebraically and find pairs of numbers that satisfy an equation with two unknowns

	Focus	Skills *(Mentally = with jottings)*	Examples	Vocab
X	**Consolidating written methods and multiplying decimals by 1-digit numbers** To consolidate short and long multiplication methods.	• Mentally double and halve to help multiply by 2, 4, 8, 5, 20, 50 and 25, e.g. 28 x 25 is a quarter of 28 x 100 (2800) = 700 • Use rounding in mental multiplication, e.g. 34 x 19 as (34 x 20) – 34 • Mentally multiply 1- and 2-place decimals by numbers up to 10 using place value and partitioning, e.g. 3.6 x 4 is 12 (3 x 4) + 2.4 (0.6 x 4) = 14.4 • Mentally double decimal numbers with up to 2-decimal places using partitioning, e.g. 36.73 doubled is 36 (72) plus double 0.73 (1.46) = 73.46 • Solve multiplication multi-step problems in contexts, deciding which operations and methods to use and why • Multiply up to 4 digits by 2 digits using long multiplication • Multiply single digit whole numbers by numbers with 2 decimal places using short multiplication • Multiply fractions and mixed numbers by whole numbers, e.g. 3 ½ x 2 $^{2}/_{3}$ • Multiply fractions (improper or proper) by whole numbers or proper fractions, e.g. 2 x $^{8}/_{3}$ or ½ x $^{8}/_{3}$ writing answer in simplest form	 When multiplying decimals it is important to remember that the digit you are multiplying by needs to be lined up with the ones digits. As with all decimal work, the decimal points must be lined up and the children need to have a clear understanding why.	In addition to Y5: • Tenths • Hundredths • Decimals
÷	**Divide 2 digit numbers using long division.** To use short division to divide decimal numbers by single digit numbers, express remainders as decimals and use long division.	• Mentally double and halve to help divide by 2, 4, 8, 5, 20, 50 and 25, e.g. 628 ÷ 8 is halved three times: 314 > 157 > 78.5 • Mentally divide 1- and 2-place decimals by numbers up to 10 using place value, e.g. £6.33 ÷ 3 = £2.11 • Mentally halve decimal numbers with up to 2 places using partitioning, e.g. half of 36.86 = half of 36 (18) + 0.86 (0.43) = 18.43 • Use tests for divisibility to aid mental calculation, e.g. digits within multiples of 9 add to a total of 9 (digital route) • Solve division multi-step problems in contexts, deciding which operations and methods to use and why • Use division facts up to 12 x 12 to solve more complex problems • Decide whether short or long division is more appropriate for a calculation • Use written methods of division to solve decimal problems up to 2 decimal places • Use long division to divide 3- and 4-digit numbers by 2-digit numbers • Divide a 1- or 2-place decimals by a no. below 12 using multiples of the divisor • Divide proper fractions by whole numbers, e.g. $^{1}/_{3} \div 2 = {}^{1}/_{6}$ • Recognise a given ratio and reduce a given ratio to its lowest term	 Children need to express remainders as decimals and fractions with more complex numbers. The remainder in this answer would have been 1 but it has been expressed as a decimal. To do this, children need to insert a decimal point next to the units and carry the remainder over the decimal point. Zeroes are inserted to the right of the decimal point to show that there was no value.   To divide by 2 digit numbers, children will use long division. The example to the right shows the method in the 'Burger' steps (**D**oes **M**cDonalds **S**erve **B**urgers?). The example to the left shows what a completed method would look like. Remainders need to be expressed to match the context.	In addition to Y5: • Common factor • Long division

Additional useful skills

- Explore the order of operations using brackets, e.g. 2 + 1 x 3 = 5 and (2+1) x 3 = 9