St Thomas More Catholic Primary School, Saffron Walden

CALCULATION POLICY

No. STM-028

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St Thomas More Calculation Policy
2025

Calculation Policy — Overview

This guidance sets out the mental and written calculation methods pupils are taught at St Thomas More (STM) from EYFS through to Year 6 and how they become progressively more sophisticated in successive school years. It aligns with the statutory programmes of study in the National Curriculum for Mathematics (2014). Content is organised by year group and by operation (addition, subtraction, multiplication, and division). The aim of this guidance is to model and explain core concepts for staff and parents so that teaching and learning are consistent across the school.

At STM, we use materials from several organisations. Key Stage 1 (KS1) uses resources predominantly from Primary Stars Education, and Key Stage 2 (KS2) draws mostly on material supplied by White Rose Maths. Its purpose is to help pupils build a deep understanding of numbers and calculation.

We teach through the concrete–pictorial–abstract (CPA) sequence:

- **Concrete**: pupils handle real objects to explore maths ideas.

- **Pictorial**: pupils represent ideas with images, diagrams, and their own notes.

- **Abstract**: pupils use symbols and notation, e.g., $10 \times 3 = 30$.

Mastery of mathematics is strengthened by moving flexibly between these representations, once grasped. All children study the same key content in each year group. Depth is developed through examining varied and demanding problems.

To ensure consistency throughout the school this policy outlines the following Whole School and Year Group expectations:

- A consistent approach to teaching and learning.

- Agreed calculation strategies.

- Standardised methods for written and mental calculations.

- Precise mathematical vocabulary (see Appendix).

- Consistent conventions for setting out work.

- Clear outcomes for each year group and key stage.

Year-group expectations for calculation (overview)

EYFS

• Subitise to 5. Compose and decompose numbers to 10.

• Number bonds within 5 and to 10. Doubling to 5.

• Count beyond 20. Compare quantities using 'more', 'fewer', 'equal'.

• Use manipulatives daily (tens frames, counters, numicon).

Year 1

• Fluency within 10 and 20. Number bonds to 10 and 20.

• Add/subtract within 20. Count in 2s, 5s, 10s.

• Intro to arrays and equal groups. No formal column methods.

Year 2

• Add/subtract two 2-digit numbers using partitioning and column methods (with and without regrouping).

• Recall 2, 5, 10 multiplication facts. Begin 3 and 4 through arrays and repeated addition.

• Intro to division as sharing and grouping. Record simple remainders.

Year 3

• Secure column addition and subtraction with exchanging.

• Recall 3, 4, 8 multiplication facts. Short multiplication (TU × U) using area/partitioning and begin compact column short multiplication.

• Division by a 1-digit divisor with remainders; link to inverse and scaling.

Year 4

• Fluent compact column methods for addition and subtraction with larger numbers.

• Times tables to 12×12 secure. Short multiplication (HTU × U).

• Short division by a 1-digit divisor; interpret remainders contextually.

Year 5
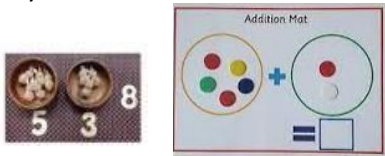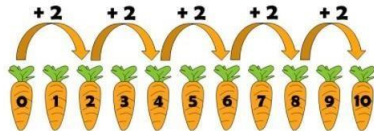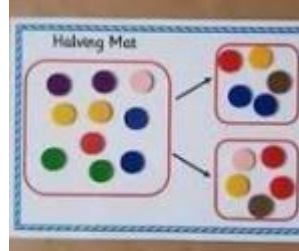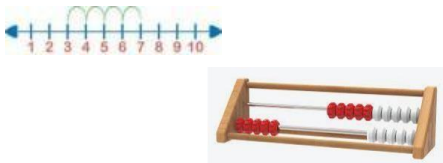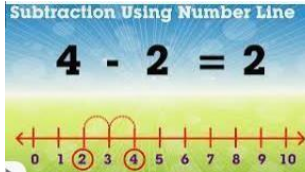
• Addition and subtraction: fluent compact column methods with integers to 1,000,000; decimals to 2 decimal places.

• Estimate and round to check answers. Solve multi-step problems choosing operations and justifying methods.

• Long multiplication (up to 4-digit × 2-digit).

• Short division and introduction to long division for 2-digit divisors where appropriate.

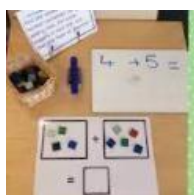• Operate with decimals to 2dp; align decimal points in column methods; rounding and estimation for checking.

Year 6

• Addition and subtraction: fluent compact column methods with integers to 10,000,000; decimals to 3 decimal places.

• Choose efficient strategies, justify methods, and round to a required degree of accuracy in multi-step problems.

• Long division (4-digit ÷ 2-digit).

• Long multiplication consolidation; multi-step problems choosing efficient strategies.

• Fluent operations with decimals and fractions where linked to calculation methods; order of operations (BODMAS).

EYFS

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers (Statutory Framework 2021)

Addition	Subtraction	Multiplication	Division
Children are encouraged to gain a sense of the number system through the use of counting concrete objects.		Children use concrete objects to make and count equal groups of objects.	Children use concrete objects to count and share equally into 2 groups
They combine objects in practical ways and count all.	They understand subtraction as counting out.	They will count on in twos using counters and a number line.	They count a set of objects and halve them by making two equal groups.
They understand addition as counting on. They will count on in ones and twos using objects, cubes, counters, numicon and a number line.	They begin to count back in ones using objects, cubes, numicon and a number line.	They understand doubling as repeated addition. 2 + 2 = 4	They understand sharing and halving as dividing by 2.

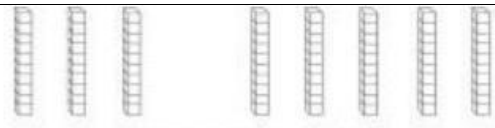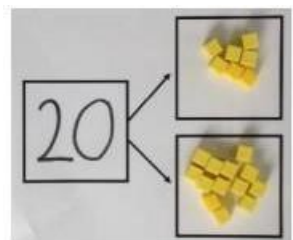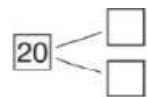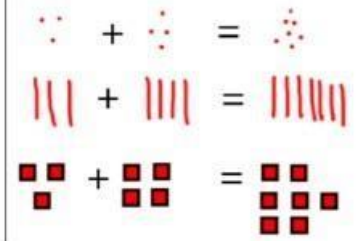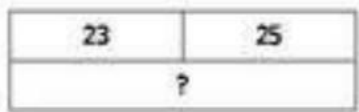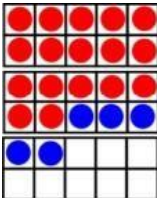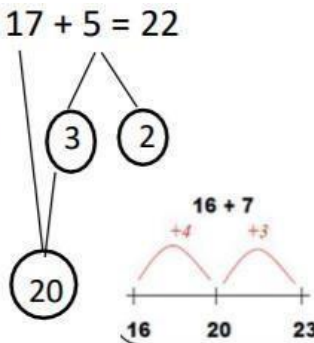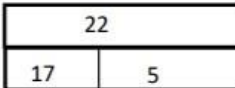|			
They begin to use + and = They are encouraged to develop a mental picture of the number system in their heads to use for calculations. Higher attaining children may be able to represent their calculations using symbols and numbers within a written calculation. 	They use concrete and pictorial representation to record their calculations. They begin to use - and =. Higher attaining children may be able to represent their calculations using symbols and numbers within a written calculation. 	They use concrete and pictorial representation to record their calculations. 	They use concrete and pictorial representation to record their calculations.
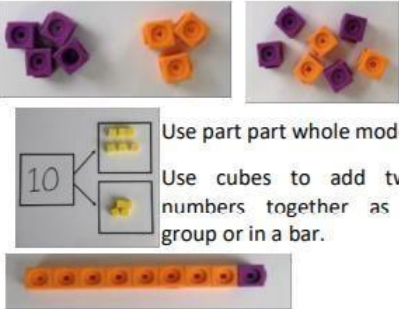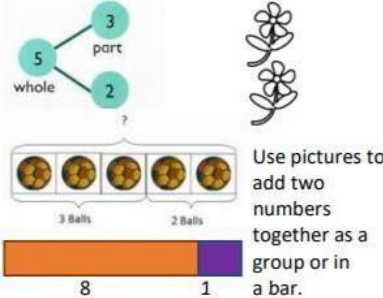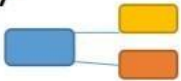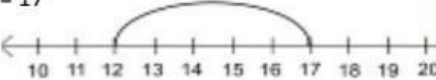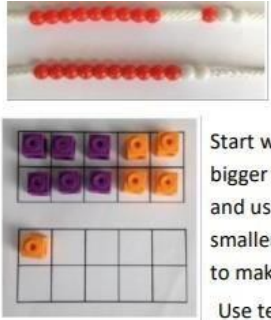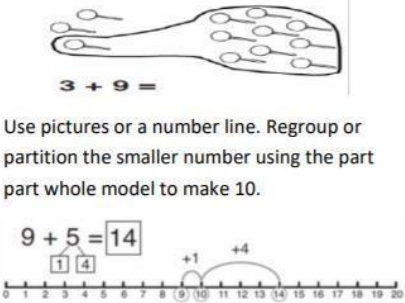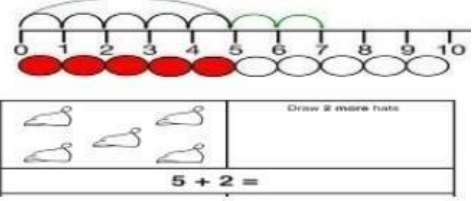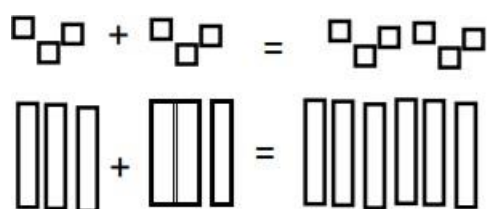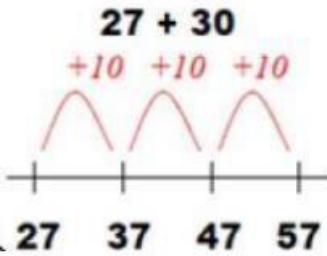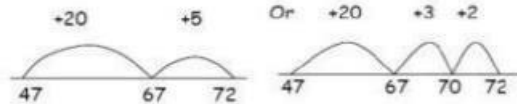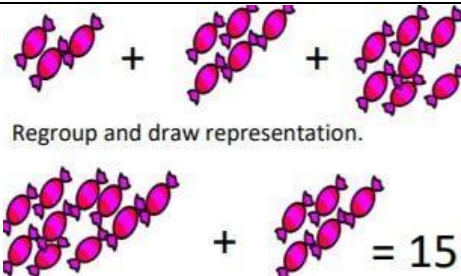
Year 1 Addition

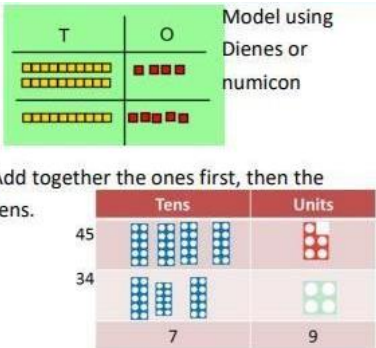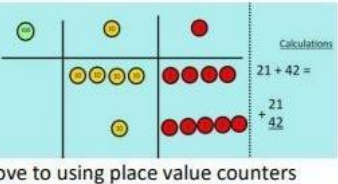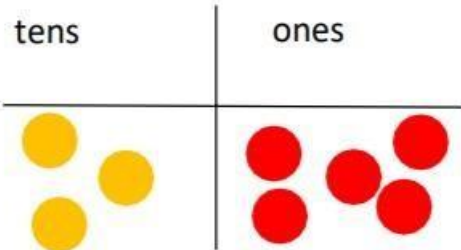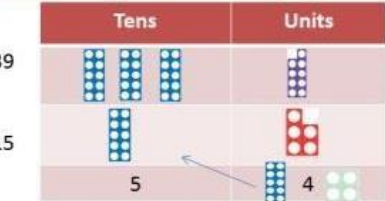| Objective & Strategy	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-part whole model	Use part part whole model. Use cubes to add two numbers together as a group or in a bar.	Use pictures to add two numbers together as a group or in a bar. 3 Balls 2 Balls 8 1	$4 + 3 = 7$ $10 = 6 + 4$ Use the part-part whole diagram as shown above to move into the abstract.
Starting at the bigger number and counting on	Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	$12 + 5 = 17$ Start at the larger number on the number line and count on in ones or in one jump to find the answer.	$5 + 12 = 17$ Place the larger number in your head and count on the smaller number to find your answer.
Regrouping to make 10. This is an essential skill for column addition later on	$6 + 5 = 11$ Start with the bigger number and use the smaller number to make 10. Use ten frames.	$3 + 9 =$ Use pictures or a number line. Regroup or partition the smaller number using the part part whole model to make 10. $9 + 5 = 14$	$7 + 4 = 11$ If I am at seven, how many more do I need to make 10. How many more do I add on now?
Represent & use number bonds and related saddition facts within 20	2 more than 5.	Draw 2 more hats $5 + 2 =$	Emphasis should be on the language '1 more than 5 is equal to 6.' '2 more than 5 is equal to 7.' '8 is 3 more than 5.'
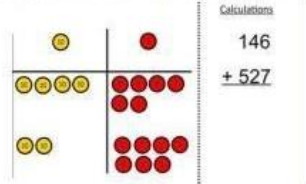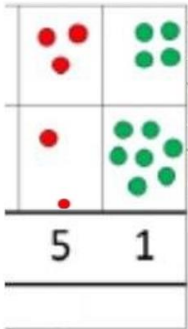
Year 2 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Adding multiples of ten	Model using dienes and bead strings 30 + 20 = 50	3 tens + 5 tens = _____ tens 30 + 50 = _____ Use representations for base ten.	20 + 30 = 50 70 = 50 + 20 40 + ____ = 60
Use known number facts in part-part whole models	Children explore ways of making numbers within 20	$\square$ + $\square$ = 20 20 − $\square$ = $\square$ $\square$ + $\square$ = 20 20 − $\square$ = $\square$	$\square$ + 1 = 16 16 − 1 = $\square$ 1 + $\square$ = 16 16 − $\square$ = 1
Using known facts		Children draw representations of H,T and O	3 + 4 = 7 *leads to* 30 + 40 = 70 *leads to* 300 + 400 = 700
Bar model	3 + 4 = 7	7 + 3 = 10	23 + 25 = 48
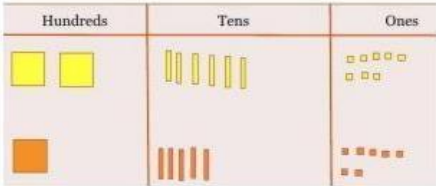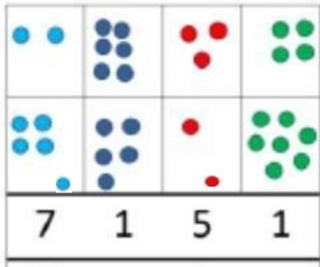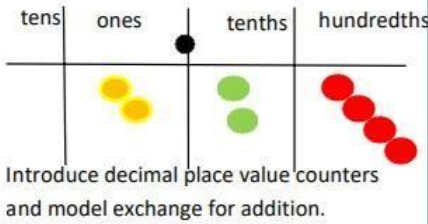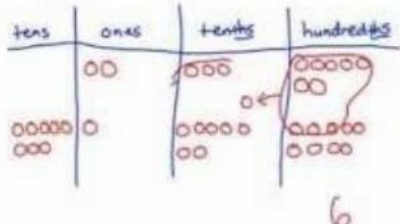
Year 2 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Add a 2-digit number and ones	17 + 5 = 22 Use ten frame to make 'magic ten' Children explore the pattern. 17 + 5 = 22 27 + 5 = 32	17 + 5 = 22 Use part part whole and number line to model. ③ ② → ⑳ 16 + 7 +4 +3 16 20 23	17 + 5 = 22 Explore related facts 17 + 5 = 22 5 + 17 = 22 22—17 = 5 22—5 = 17 22 / 17 / 5
Add a 2-digit number and tens	25 + 10 = 35 Explore that the ones digit does not change	27 + 30 +10 +10 +10 27 37 47 57	27 + 10 = 37 27 + 20 = 47 27 + □ = 57
Add two 2-digit numbers	Model using dienes , place value counters and numicon	+20 +5 Or +20 +3 +2 47 67 72 47 67 70 72 Use number line and bridge ten using part whole if necessary.	25 + 47 20 + 5 40 + 7 20 + 40 = 60 5+ 7 =12 60 + 12 = 72
Add three 1-digit numbers	Combine to make 10 first if possible, or bridge 1o then add third digit	Regroup and draw representation. + = 15	④+ 7 +⑥ = 10 +7 10 = 17 Combine the two numbers that make/ bridge ten then add on the third.
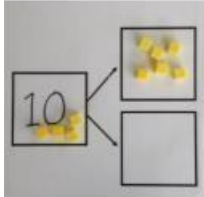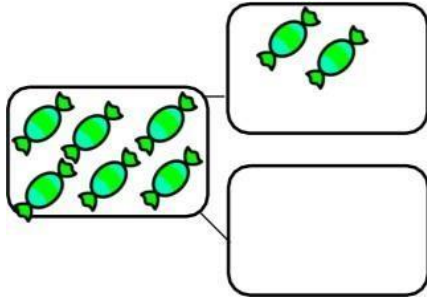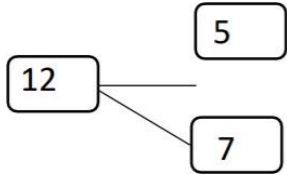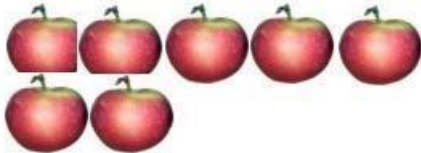
Year 3 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Column Addition—no regrouping (friendly numbers) Add two or three 2 or 3- digit numbers.	Model using Dienes or numicon. Add together the ones first, then the tens. Move to using place value counters	Children move to drawing the counters using a tens and one frame. tens ones	$$2\ 2\ 3$$ $$+\ 1\ 1\ 4$$ $$\overline{3\ 3\ 7}$$ Add the ones first, then the tens, then the hundreds.
Column Addition with regrouping	Exchange ten ones for a ten. Model using numicon and pv counters.	Children can draw a representation of the grid to further support their understanding, carrying the ten **on top of** the line.	20 + 5 40 + 8 60 + 13 = 73 Start by partitioning the numbers before formal column to show the exchange. 536 + 85 ⁺⁺ 621
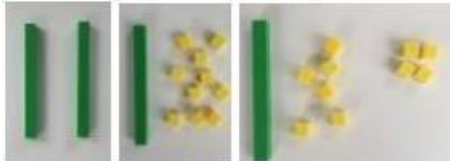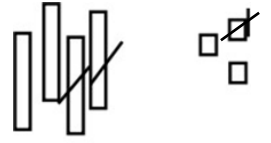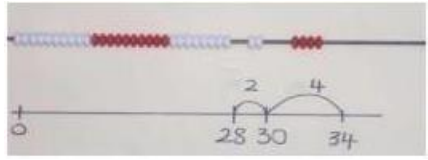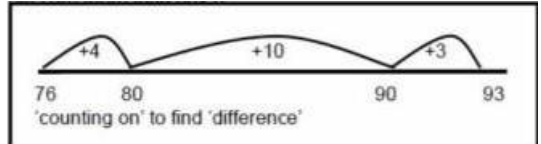
Year 4-6 Addition

Objective & Strategy	Concrete	Pictorial	Abstract
Y4—add numbers with up to 4 digits	Children continue to use dienes or pv counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.	Draw representations using a pv grid.	See Year 3 formal column method and extend to carry hundreds as well as tens. Relate to money and measures.
Y5—add numbers with more than 4 digits. Add decimals to two decimal places, including money.	As year 4 Introduce decimal place value counters and model exchange for addition.	2.37 + 81.79	$\begin{array}{r} 72.8 \\ + \ 54.6 \\ \hline 137.4 \end{array}$ $\begin{array}{r} \pounds 23.59 \\ + \ \pounds \ 7.55 \\ \hline \pounds 31.14 \end{array}$
Y6—add several numbers of increasing complexity Including adding money, measure and decimals with different numbers of decimal points.	As previous years, using base 10 and pv counters.	As previous years drawing on a pv grid.	$\begin{array}{r} 81059 \\ 3668 \\ 15301 \\ + \ 20551 \\ \hline 120579 \end{array}$ $\begin{array}{r} 23.361 \\ 9.080 \\ 59.770 \\ + \ 1.300 \\ \hline 93.511 \end{array}$ Insert zeros for placeholders.
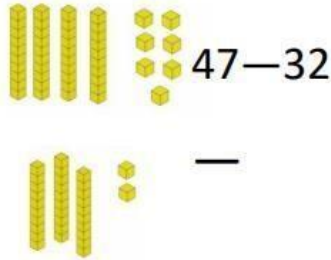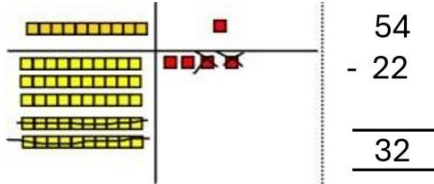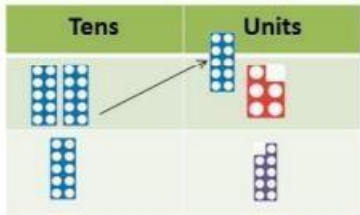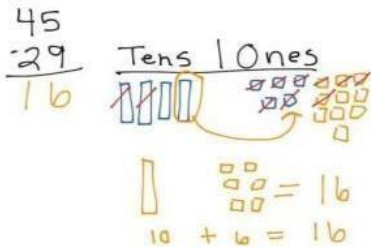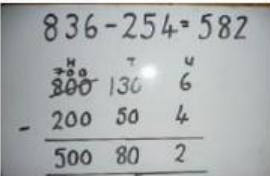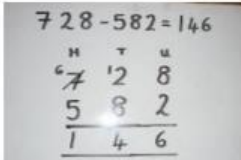
Year 1 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Represent and use number bonds and related subtraction facts within 20. Part-Part Whole Model	Link to addition. Use PPW model to model the inverse. If 10 is the whole and 6 is one of the parts, what is the other part? 10—6 = 4	Use pictorial representations to show the part.	Move to using numbers within the part whole model.
Make 10	**14—9** Make 14 on the tens frame. Take 4 away to make ten, then take one more away so that you have taken 5.	**13—7** 13 – 7 = 6 Jump back 3 first, then another 4. Use ten as the stopping point.	**16—8** How many do we take off first to get to 10? How many left to take off?
Bar Model	**5-2=3**		8 | 2 10 = 8 + 2 10 = 2 + 8 10—2 = 8 10—8 = 2
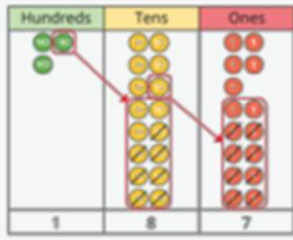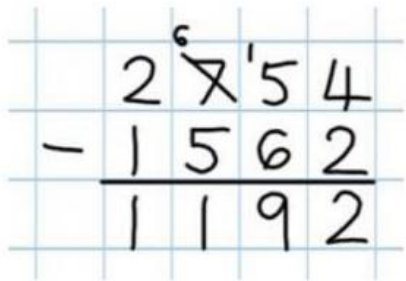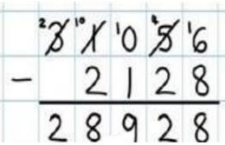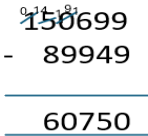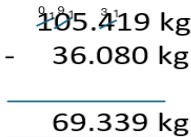
Year 2 Subtraction			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Regroup a ten into ten ones.	Use a PV chart to show how to change a ten into ten ones, use the term 'take and make'	$20 - 4$	$20—4 = 16$
Partitioning to subtract without regrouping. 'Friendly numbers'.	$34—13 = 21$ Use dienes to show how to partition the number when subtracting without regrouping.	Children draw representations of dienes and cross off. $43—21 = 22$	$43—21 = 22$
Make ten strategy progression should be crossing one ten, crossing more than one ten, crossing the hundreds.	$34—28$ Use a bead bar or bead strings to model counting to the next ten and then the rest.	Use a number line to count on to the next ten and then the rest. 'counting on' to find 'difference'	$93—76 = 17$
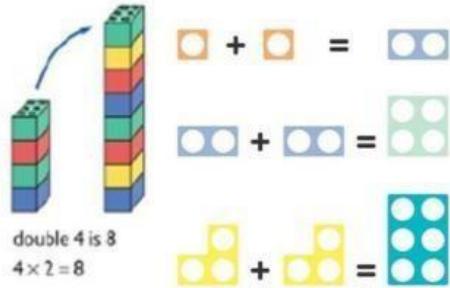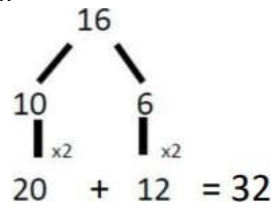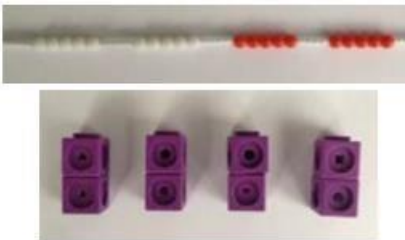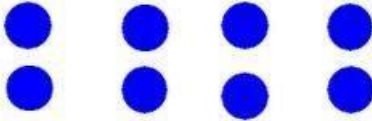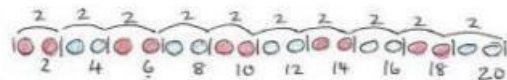
Year 3 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping (friendly numbers)	47—32 Use base 10 or Numicon to model	Draw representations to support understanding 54 - 22 ___ 32	$47-24=23$ $$-\frac{40+7}{20+4}$$ $$20+3$$ Intermediate step may be needed to lead to clear subtraction understanding. $$\frac{32}{-12}$$ $$20$$
Column subtraction with regrouping	Begin with base 10 or Numicon. Move to pv counters, modelling the exchange of a ten into ten ones. Tens	Units	45 -29 ___ 16 Tens	Ones 10 + 6 = 16 = 16 Children may draw base ten or PV counters and cross off.	$836-254=582$ Begin by partitioning into pv columns $728-582=146$ Then move to formal method.
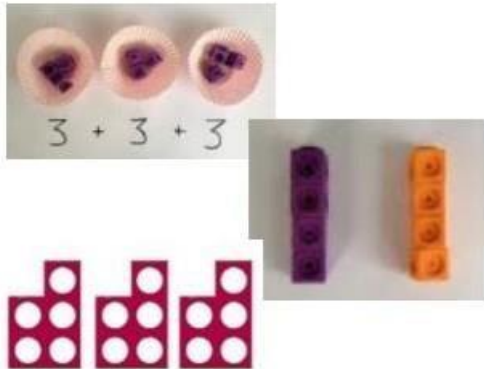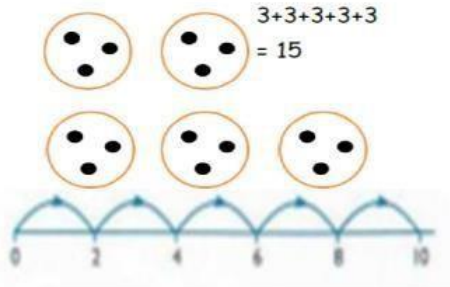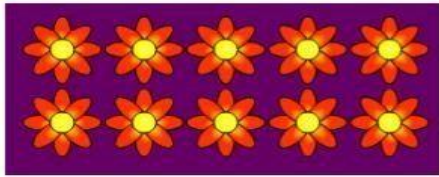
Year 4-6 Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Subtracting tens and ones Year 4 subtract with up to 4 digits. *Introduce decimal subtraction through context of money*	365 - 178 Model process of exchange using base 10 or pv counters.	Children to draw base 10 or pv counters and show their exchange—see Y3	
Year 5- Subtract with at least 4 digits, including money and measures. *Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal*	See Year 4 using larger numbers	Children to draw base 10 or pv counters and show their exchange- see Y3	 Remember to use zeros for placeholders.

Year 6—Subtract with increasingly large and more complex numbers and decimal values.	As above	As above	150699
			- 89949
			———
			  60750
			
			105.419 kg
			- 36.080 kg
			———
			  69.339 kg
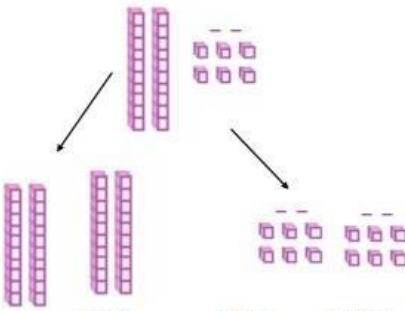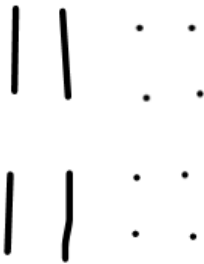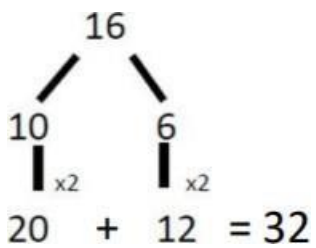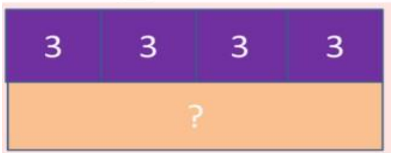
Year 1 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	Use practical activities using manipulatives including cubes and numicon to demonstrate doubling. double 4 is 8 4 × 2 = 8	Draw pictures to show how to double numbers Double 4 is 8	Partition a number and then double each part before recombining it back together. 16 10 6 x2 x2 20 + 12 = 32
Counting in multiples	Count the groups as children are skip counting, children may use their fingers as they are skip counting.	Children make representations to show counting in multiples. 2 2 2 2 2 2 2 2 2 2 2 4 6 8 10 12 14 16 18 20	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25, 30
Making equal groups and counting the total	☐ x ☐ = 8 Use manipulatives to create equal groups.	Draw 🐟 to show 2 x 3 = 6 Draw and make representations	2 x 4 = 8
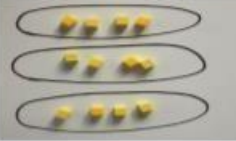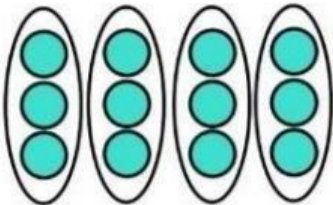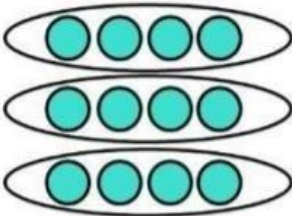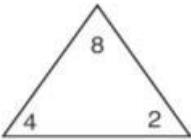
Year 1 Multiplication			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Repeated addition	Use different objects to add equal groups	Use pictorial including number lines to solve problems There are 3 sweets in one bag. How many sweets are in 5 bags altogether?	Write addition sentences to describe objects and pictures. 2 + 2 + 2 + 2 + 2 = 10
Understanding arrays	Use objects laid out in arrays to find the answers to 2 lots 5, 3 lots of 2 etc	Draw representations of arrays to show understanding. Eg draw flowers or circles in arrays.	3 x 2 = 6 2 x 5 = 10

Year 2 Multiplication			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Doubling	Model doubling using dienes and PV counters. 40 + 12 = 52	Draw pictures and representations to show how to double numbers. Double 24 Add up the tens and the ones to give the answer of 48.	Partition a number and then double each part before recombining it back together 16 10 6 x2 x2 20 + 12 = 32
Counting in multiples of 2, 3, 4, 5, 10 from 0 (repeated addition)	Count the groups as children are skip counting, children may use their fingers as they are skip counting. Use bar models. 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40 ?	Number lines, counting sticks and bar models should be used to show representation of counting in multiples. 3 3 3 3 ?	Count in multiples of a number aloud. Write sequences with multiples of numbers. 0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 4 × 3 = ☐ 0, 5, 10, 15, 20, 25, 30
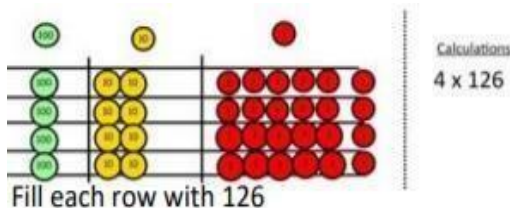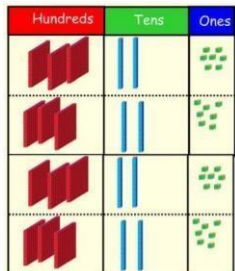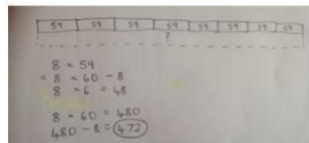
Year 2 Multiplication			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Multiplication is commutative	Create arrays using counters and cubes and Numicon. Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not affect the answer.	Use representations of arrays to show different calculations and explore commutativity.	$12 = 3 \times 4$ $12 = 4 \times 3$ Use an array to write multiplication sentences and reinforce repeated addition. $5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $5 \times 3 = 15$ $3 \times 5 = 15$
Using the Inverse. This should be taught alongside division, so pupils learn how they work alongside each other.			$2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 8$ $8 = 2 \times 4$ $8 = 4 \times 2$ $2 = 8 \div 4$ $4 = 8 \div 2$ Show all 8 related fact family sentences
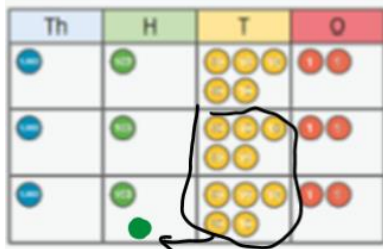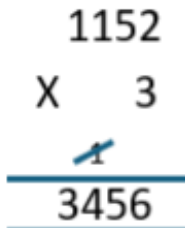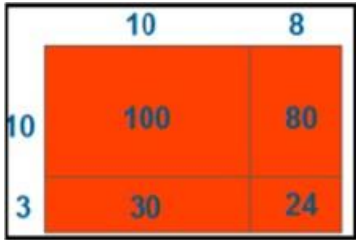
Year 3 Multiplication			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Grid Method	Show the links with arrays to first introduce the grid method. 4 rows of 10 4 rows of 3 Move onto base ten to move towards a more compact method. 4 rows of 13 Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows Calculations 4 x 126 Fill each row with 126 Add up each column, starting with the ones, making any exchanges needed Then you have your answer.	Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking. Bar models are used to explore missing numbers $4 \times \boxed{} = 20$ 	Start with multiplying by one-digit numbers and show the clear addition alongside the grid. | ✗	30	5
---	---	---
7	210	35	 $210 + 35 = 245$ Moving forward, multiply by a 2-digit number showing the different rows within the grid method.

Year 4 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Grid method recap from Year 3 for 2 digits x 1 digit. Move to multiplying 3 digit numbers by 1 digit. (Year 4 expectation)	Use place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows. Calculations 4 x 126. Fill each row with 126	Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking.	Start with multiplying by one-digit numbers, showing the clear addition alongside the grid. Use a 3-digit number following the method below. 210 + 35 = 245
Column multiplication	Children can continue to be supported by place value counters at the stage of multiplication. This is initially done where there is no regrouping 321 x 2 = 642 Always multiply the ones first. The corresponding multiplication is modelled alongside.	The grid method may be used to show how this relates to a formal written method. Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.	327 x 4 ___ 28 80 1200 ___ 1308 327 x 4 ___ 1308 This will lead to a compact method.
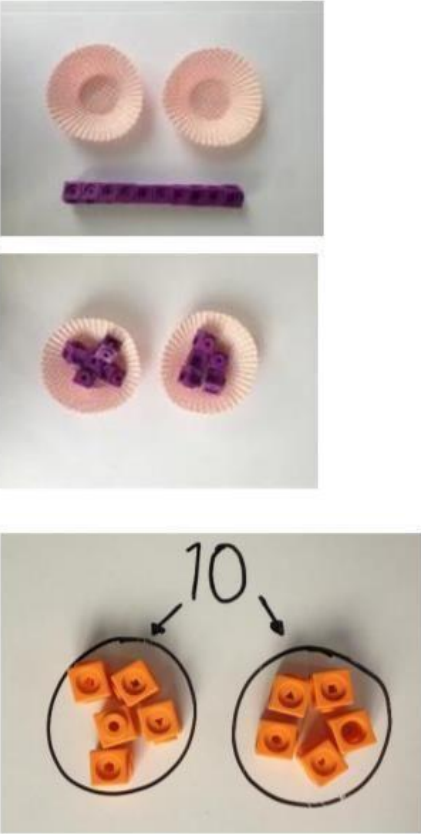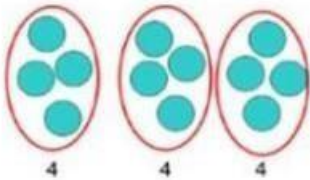
Year 5/6 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Column Multiplication for 3 and 4 digit numbers x 1 digit.	See Year 4, using 3 and 4-digit numbers.	1152 x 3 = 3456, drawing an exchange to show regrouping or draw a grid 3000 + 300 + 150 + 6 = 3456	1152 X 3 3456
Long multiplication	Manipulatives may still be used with the corresponding long multiplication modelled alongside.	Continue to use bar modelling to support problem solving.	18 x13 2 54 180 234 1234 x 16 x 22 7404 12340 19744 18 x 3 in the first row (8 x 3 = 24, carrying the 2 for 20 above the tens line in the tens column, then 1 x 3). Next, multiply 18 x 10. Show multiplying by 10 by putting the zero in the ones column first.
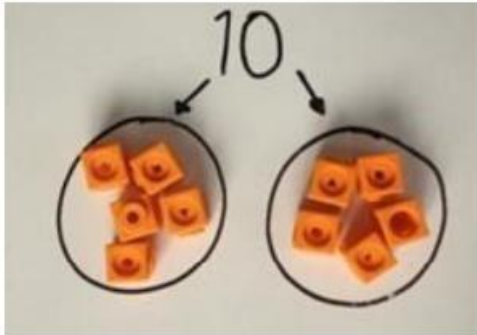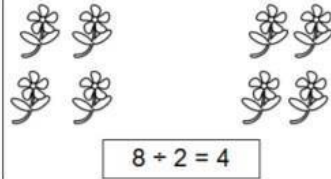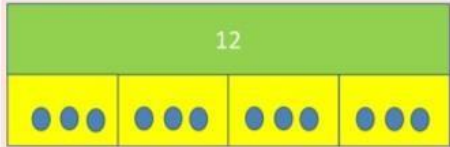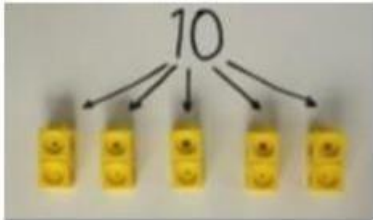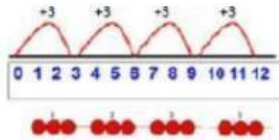
Year 6 Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplying decimals up to 2 decimal places by a single digit.	Earlier concrete / pictorial examples can be adapted as appropriate, using base 10 and pv counters.		3.19 x 8 ~~17~~ 25.52 Multiply using the short multiplication method, keeping the decimal point in line. When appropriate, children can use their place value knowledge to make the number being multiplied 10, 100 or 1000 times bigger and then multiply and make the answer 10, 100 or 1000 times smaller. $319^{(x100)}$ x 8 $\overline{2552}_{(\div100)} = 25.52$
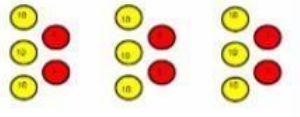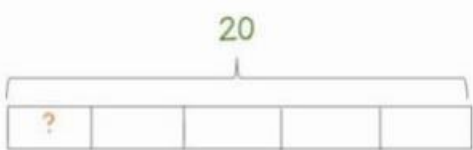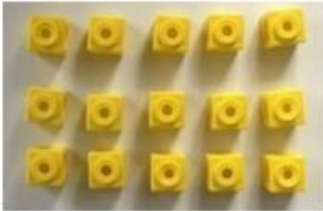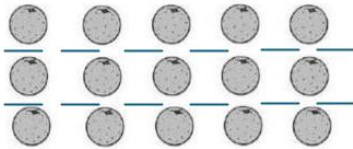
Year 1 Division			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Division as sharing		Children use pictures or shapes to share quantities. 8 shared between 2 is 4	12 shared between 3 is 4
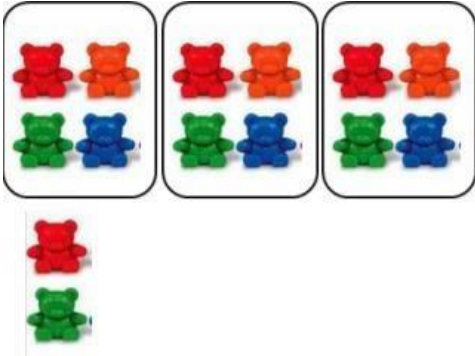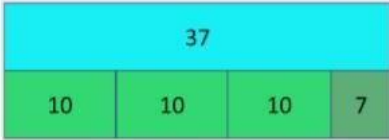
Year 2 Division			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Division as sharing	I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities $8 \div 2 = 4$ Children use bar modelling to show and support understanding. $12 \div 4 = 3$	$12 \div 3 = 4$
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.	Use number lines for grouping. Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. $20 \div 5 = ?$ $5 \times ? = 20$	$28 \div 7 = 4$ Divide 28 into 7 groups. How many are in each group?
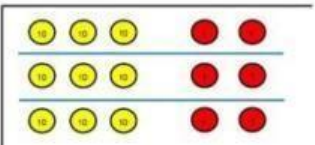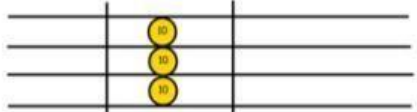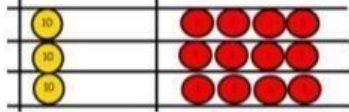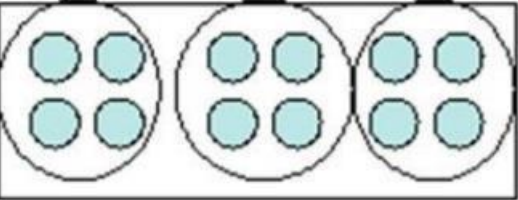
Year 3 Division			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Division as grouping	Use cubes, counters, objects or place value counters to aid understanding. 24 divided into groups of 6 = 4 $96 \div 3 = 32$ 	Continue to use bar modelling to aid solving division problems. $20 \div 5 = ?$ $5 \times ? = 20$	How many groups of 6 in 24? $24 \div 6 = 4$
Division with arrays	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$	Draw an array and use lines to split the array into groups to make multiplication and division sentences 15 divided by 3 equals 5. $15 \div 3 = 5$	Find the inverse of multiplication and division sentences by creating eight linking number sentences. $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$ $28 = 7 \times 4$ $28 = 4 \times 7$ $4 = 28 \div 7$ $7 = 28 \div 4$

Year 3 Division			
Objective & Strategy	**Concrete**	**Pictorial**	**Abstract**
Division with remainders	$14 \div 3 =$ Divide objects between groups and see how much is left over 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder Draw dots and group them to divide an amount and clearly show a remainder. Use bar models to show division with remainders. 	Complete written divisions and show the remainder using r. $29 \div 8 = 3$ REMAINDER 5 ↑ ↑ ↑ ↑ dividend divisor quotient remainder

Year 4-6 Division

Objective & Strategy	Concrete	Pictorial	Abstract
Divide at least 3 digit numbers by 1 digit. Short Division (also referred to as the bus stop method)	$96 \div 3$ Tens Units 3 2 Use place value counters to divide using the bus stop method alongside Calculations $42 \div 3$ $42 \div 3 =$ Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over. We exchange this ten for ten ones and then share the ones equally among the groups. We look how much in 1 group so the answer is 14.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups. Encourage them to move towards counting in multiples to divide more efficiently.	Begin with divisions that divide equally with no remainder. Begin with divisions that divide equally with no remainder. $$\begin{array}{r} 2\ 1\ 8 \\ \hline 4\,|\,8\ 7\ ^{3}2 \end{array}$$ Move onto divisions with a remainder. $$\begin{array}{r} 8\ 6\ \text{r}\ 2 \\ \hline 5\,|\,4\ 3\ ^{3}2 \end{array}$$ Finally move into decimal places to divide the total accurately. $$\begin{array}{r} 1\ 4\ .\ 6 \\ \hline 3\ 5\,|\,5\ 1\ ^{16}1\ .\ ^{21}0 \end{array}$$

Year 6 Long Division

Step 1 – a remainder in the ones

```
         h t o
        0 4 1 R1
      _____
   4 ) 1 6 5
```

4 does not go into 1 (hundred). So combine the 1 hundred with the 6 tens (160).

4 goes into 16 four times.

4 goes into 5 once, leaving a remainder of 1.

```
        th h t o
        0 4 0 0 R7
       _____
    8 ) 3 2 0 7
```

8 does not go into 3 of the thousands. So combine the 3 thousands with the 2 hundreds (3,200).

8 goes into 32 four times (3,200 ÷ 8 = 400)
8 goes into 0 zero times (tens).
8 goes into 7 zero times, and leaves a remainder of 7.

Step 2 – a remainder in the tens

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
t o 2 2) 5 8	t o 2 2) 5 8 - 4 1	t o 2 9 2) 5 8 - 4 ↓ 1 8
Two goes into 5 two times, or 5 tens ÷ 2 = 2 whole tens -- but there is a remainder!	To find it, multiply 2 × 2 = 4, write that 4 under the five, and subtract to find the remainder of 1 ten.	Next, drop down the 8 of the ones next to the leftover 1 ten. You combine the remainder ten with 8 ones, and get 18.

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
t o 2 9 2) 5 8 - 4 1 8	t o 2 9 2) 5 8 - 4 1 8 - 1 8 0	t o 2 9 2) 5 8 - 4 1 8 - 1 8 0
Divide 2 into 18. Place 9 into the quotient.	Multiply 9 × 2 = 18, write that 18 under the 18, and subtract.	The division is over since there are no more digits in the dividend. The quotient is 29.

Step 3 – a remainder in any of the place values.

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
h t o **1** 2)**2**78	h t o 1 2)**2**78 **-2** **0**	h t o 1 8 2)2**7**8 -2 ↓ 0 **7**
Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.	Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.	Next, drop down the 7 of the tens next to the zero.
Divide.	**Multiply & subtract.**	**Drop down the next digit.**
h t o 1 **3** **2**)278 -2 **0 7**	h t o 1 3 2)278 -2 **0 7** **- 6** **1**	h t o 1 3 2)27**8** -2 0 7 - 6 1 **8**
Divide 2 into 7. Place 3 into the quotient.	Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.	Next, drop down the 8 of the ones next to the 1 leftover ten.
1. Divide.	**2. Multiply & subtract.**	**3. Drop down the next digit.**
h t o 1 3 **9** **2**)278 -2 0 7 - 6 **1 8**	h t o 1 3 9 2)278 -2 0 7 - 6 **1 8** **- 1 8** **0**	h t o **1 3 9** 2)278 -2 0 7 - 6 1 8 - 1 8 0
Divide 2 into 18. Place 9 into the quotient.	Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.	There are no more digits to drop down. The quotient is 139.

Appendix: Vocabulary and Conventions

Addition

add, plus, sum, total, increase, altogether, more than, addend.

Subtraction

subtract, minus, take away, difference, decrease, fewer than, count back.

Multiplication

multiply, times, groups of, lots of, product, multiple, factor, array.

Division

divide, share, group, quotient, remainder, divisible by, factor pair.

Equality and comparison

equal to, equals, not equal to, greater than, less than, at least, at most.

Place value

digit, ones (ones), tens, hundreds, thousands, ten-thousands, hundred-thousands, millions, decimal point, tenths, hundredths, thousandths.

General calculation language

estimate, approximate, round, strategy, efficient, regroup (exchange), carry (use 'regroup' preferred), decompose, inverse, commutative, associative, distributive.

Fractions, decimals, percentages

fraction, numerator, denominator, unit fraction, equivalent, simplify, mixed number, improper fraction, decimal, percent, percentage.

Representation sequence (CPA)

All new ideas move through concrete → pictorial → abstract. Pupils move back and forth between representations to secure understanding.

Concrete: manipulatives such as counters, bead strings, base ten (Dienes), place-value counters, place-value charts, fraction strips.

Pictorial: drawn images such as tens frames, bar models, number lines, arrays, part–part–whole diagrams.

Abstract: mathematical symbols and notation, e.g. $12 \times 2 = 24$.

Approved notation and symbols

Use × for multiplication and ÷ for division.

Use = to state equality, not as 'and the answer is'.

Use commas as thousands separators in whole numbers ≥ 10,000 (e.g., 12,345).

Write leading zero for values < 1 (e.g., 0.5 not .5).

Use brackets for clarity in multi-step expressions when needed.

Use standard fraction bar (e.g., 3/4) and mixed number spacing (e.g., 1 3/4).

Use degree symbol only for angles or temperature where appropriate.

Layout conventions for written calculations

One digit per square on squared paper where possible.

Right-align digits by place value for column methods; line up the decimal points for decimals.

Record regrouping above the relevant column. Use clear arrows or notes when exchanging.

Operators and equals signs written in a straight vertical line for multi-line workings.

Show written notes and representation where it supports understanding (number line, bar model, PV chart).

State the method name above the calculation on first use (e.g., 'short division').

Final answer clearly indicated and unit included where relevant.

Reasoning and explanation stems

• Addition: __ + __ = __. The sum of __ and __ is __.

• Subtraction: __ − __ = __. The difference between __ and __ is __.

• Multiplication: __ groups of __ equals __. __ × __ = __.

• Division (grouping): __ divided by __ equals __ with remainder __.

• Inverse: Because __ + __ = __, I know __ − __ = __.

• Structure: __ is composed of __ and __, so __ × (__ + __) = __ × __ + __ × __.

• Generalising: If __, then __. This will always/sometimes/never be true because __.

Common models and images

Tens frames, bead strings, number lines (forward/back, open number lines).

Base-ten (Dienes), place-value counters, place-value charts.

Arrays and area models for multiplication and division.

Bar models and part–part–whole for structure and comparison.

Fraction strips, number rods, and double number lines for proportional reasoning (as appropriate).

Avoid list

Using 'sum' to mean any calculation. Use 'answer' or 'result' unless referring to addition.

Saying 'and' for the decimal point. Say 'point'.

Ambiguous prompts such as 'does it go?' without specifying place value or unit.

Omitting units in final answers for measures or money.