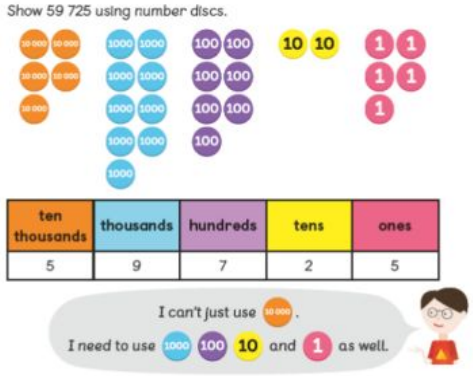
Maths	Year group 5	Autumn 1st half term

Key concepts that will be covered

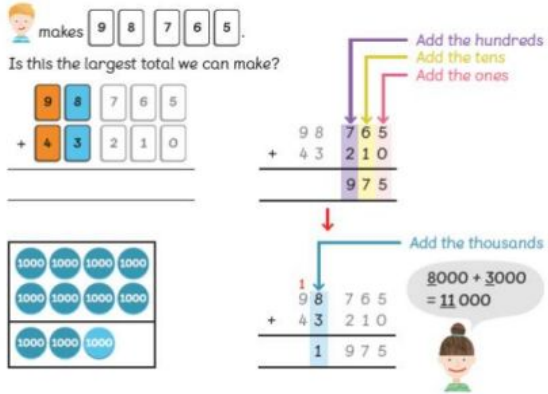
Numbers to 1 000 000

We will be looking at numbers and their place value to 1 000 000. We will learn to read and write numbers to 100 000, quickly moving onto numbers to 1 000 000. We will use concrete materials to represent numbers to 1 000 000, including number discs and place-value charts. We will learn to compare numbers to 1 000 000 using our knowledge of place value. We will explore number patterns and learn to round numbers to the nearest 10, 1000, 10 000 and 100 000.



Whole Numbers: Addition and Subtraction

We will be exploring addition and subtraction of numbers to 1 000 000. We will learn to use simple strategies to add and subtract, such as counting on and counting back. We will then focus on adding within 1 000 000 and subtracting within 1 000 000. We will learn to use a range of methods, such as the column method and number bonds to add and subtract numbers. We will use concrete materials to improve our visualisation and mental skills.



Arithmetic

Counting

Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.

Count on from 34 642 in hundreds.

What four numbers would come next in this counting sequence? 422 734, 412 734...

Count forwards or backwards in decimal steps.

Continue this count: 4.4, 3.8, 3.2...

What four numbers would come next in this counting sequence? 2.16, 2.27, 3.38...

Find 0.01, 0.1, 1, 10, 100, 1000 and other powers of 10 more or less than a given number.

154 041 – 100 474 985 + 1 000

202 883 – 10 000 23.47 + 0.1 6.07 – 0.1

31.09 + 0.01

Number Facts

Recall addition and subtraction facts for 1 and 10 (with numbers to one decimal place).

0.6 + 0.4 = __ 0.2 + __ = 1 1 = __ + 0.5 1 – 0.3 = __ 1 – __ = 0.1 0.7 = 1 – __

Recall related tables facts for multiples of 10

70 x 6 8 x 40 90 x 6

Recall prime numbers up to 19

Instantly know the prime numbers 2, 3, 5, 7, 11, 13, 17 and 19

Recall square (^{2}) numbers up to 12 x 12

Instantly know the square of all numbers to 12:

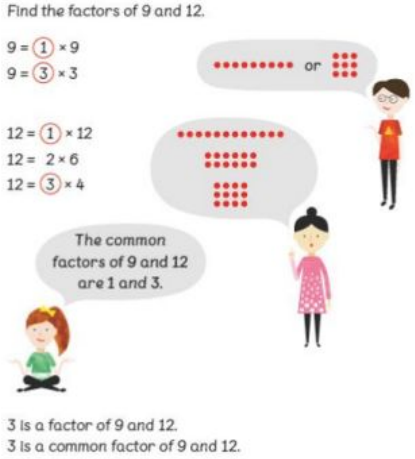
$1^2 = 1$, $2^2 = 4$, $3^2 = 9$, $4^2 = 16$, $5^2 = 25$, $6^2 = 36$, $7^2 = 49$, $8^2 = 64$, $9^2 = 81$, $10^2 = 100$, $11^2 = 121$ and $12^2 = 144$

Maths	Year group 5	Autumn 2nd half term

Key concepts that will be covered

Whole Numbers: Multiplication and Division

We will be learning to multiply and divide 3-digit and 4-digit numbers by single-digit and double-digit numbers. We will be finding and defining multiples, factors and common factors. We will begin to work with prime numbers and determine what makes a number prime or composite. We will then learn about square and cube numbers before moving on to multiplying and dividing by 10, 100 and 1000. We will be using a variety of methods, including: number bonds, column methods and the grid method.



Whole Numbers: Word Problems

We will be challenging ourselves to apply our learning of all four operations to solve multiple step word problems. We will be using the bar model and other visual representations to help visualise word problems.

She packed all the cupcakes into bags.

What if each bag has 20 cupcakes? How many bags did she need?

What if each bag has 35 cupcakes? How many bags did she need?

What if each bag has 55 cupcakes? How many bags did she need?

Arithmetic

Mental Calculation Strategies – Addition and Subtraction

Derive and use addition and subtraction facts for 1 (with decimal numbers to two decimal places)

0.45 + __ = 1 __ + 0.27 = 1 1 = 0.39 + __

1 = __ + 0.78 1 – 0.08 = __

Partition and combine multiples of thousands, hundreds, tens and ones.

4300 + 1400 4300 **add 1000** = 5300 then **add 400** = 5700

364 + 250 364 **add 200** = 564 then **add 50** = 614

3600 – 1200 3600 **subtract 1000** = 2600 then **subtract 200** = 2400

Partition and combine multiples of ones and tenths.

5.4 + 3.2 5.4 **add 3** = 7.4 then **add 0.2** = 7.6

4.7 – 2.5 4.7 **subtract 2** = 2.7 then **subtract 0.5** = 2.2

Identify and use knowledge of number bonds within a calculation and identify related facts, e.g. 1.5 + 2.7 from 15 + 27

1.2 + 0.8 using knowledge of 12 + 8 = 20

2.5 + 1.3 using knowledge of 25 + 13 = 38

3.8 + 4.5 using knowledge of 38 + 45 = 83

Bridge through 10 when adding or subtracting a single digit number (partitioning, e.g. 58 + 5 = 58 + 2 + 3 or 76 – 8 = 76 – 6 – 2)

1995 + 278 as 1995 + 5 + 273 = 2000 + 273

703 – 128 as 703 – 3 – 125 = 700 – 125

Find differences by counting up through the next multiple of 1, 10, 100 or 1000

604 – 289 289 **+ 11** = 300 **+ 300** = 600 **+ 4** = 604 so the difference is **315**

523 – 160 160 **+ 40** = 200 **+ 300** = 500 **+ 23** = 523 so the difference is **363**

Add or subtract a multiple of 10 and adjust (for those numbers close to multiples of 10)

325 + 298 as 325 + 300 – 2 = 625 – 2

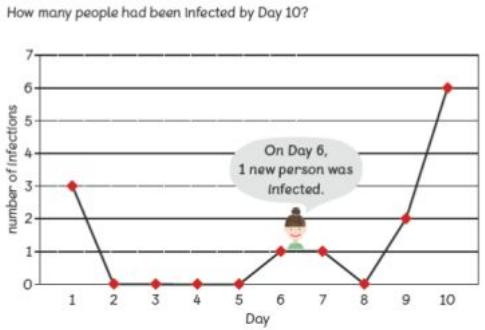
764 – 88 as 764 – 90 + 2 = 674 + 2

Maths	Year group 5	Spring 1st half term

Key concepts that will be covered

Graphs

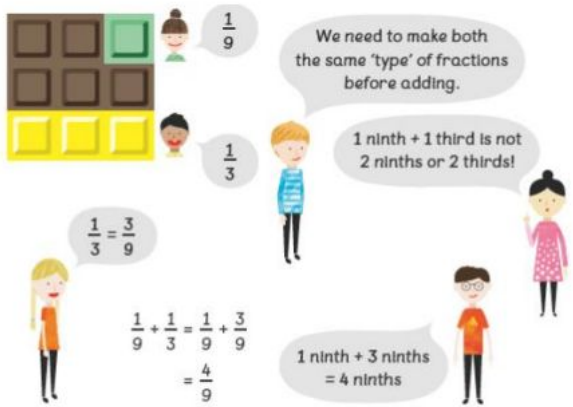
We will be learning to read and interpret information in tables and in line graphs. We will be deepening our understanding of time as we read increasingly complex timetables. We will be comparing line graphs and bar graphs.



Day	1	2	3	4	5	6	7	8	9	10
Cases	3	0	0	0	0	1	1	0	2	6

Fractions

We will be learning to use more diverse problems involving fractions, including dividing and multiplying fractions by whole numbers. We will be supporting our learning with concrete apparatus and diagrams to help visualise fractions. We will learn to add and subtract fractions with different denominators and fractions represented with mixed numbers and improper fractions. We will begin to multiply fractions by whole numbers and multiply mixed numbers by whole numbers. We will solve problems involving fractions using the bar model.



Arithmetic

Mental Calculation Strategies – Multiplication and Division

Multiply/divide whole numbers and decimals by 10, 100 and 1000

75.91 x 10 874 ÷ 10 5.07 x 10 60.1 ÷ 10

670.4 x 100 7043 ÷ 100 360 x 1000 48 750 ÷ 1000

Use related facts to multiply Th000 by a one-digit number and

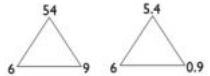
divide a ThH00 by a one-digit number

3000 x 3 related to 3 x 3 = 9

This should be understood as 'three thousand threes'.

As the number of 3s is 1000x greater than three threes, so the product is 1000x greater.

Use related facts to multiply 0.t by a one-digit number



0.3 x 7 related 3 x 7 = 21

The number of 7s is 10x less, so the product will be 10x less.

0.6 x 9 0.5 x 4

Use factor pairs to multiply T0 x T0

30 x 60 becomes 3 x 10 x 6 x 10 reordered as 3 x 6 x 10 x 10

70 x 80 becomes 7 x 10 x 8 x 10 reordered as 7 x 8 x 10 x 10

Use compensation to multiply H99 by a one-digit number

599 x 4 considered as 600 x 4 – 1 x 4 (read as '*six hundred fours subtract one four*')

399 x 6 considered as 400 x 6 – 1 x 6 (read as '*four hundred sixes subtract one six*')

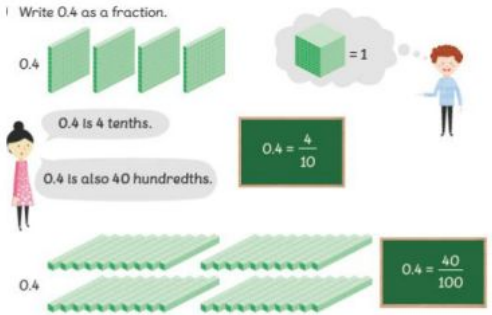
699 x 9 considered as 700 x 9 – 1 x 9 (read as '*seven hundred nines subtract one nine*')

Maths	Year group 5	Spring 2nd half term

Key concepts that will be covered

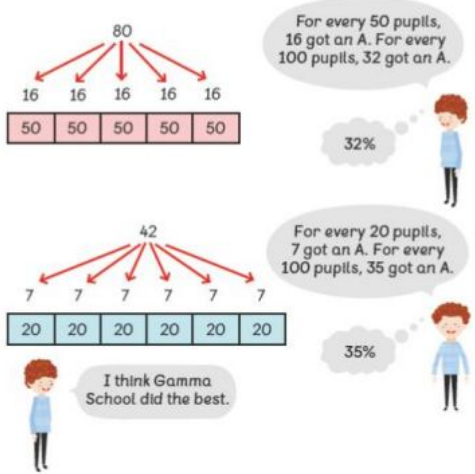
Decimals

We will be learning to read and write decimals to thousandths, using concrete apparatus to support our learning. We will order decimals using our understanding of place value. We will explore the link between hundredths and thousandths written as fractions and decimals. We will apply our understanding of addition and subtraction to add and subtract decimals.



Percentage

We will learn to link hundredths to other equivalent fractions. We will then understand how other fractions can be shown as 'out of 100' and write this as both a decimal and percentage. We will then calculate percentages.



Arithmetic

Mental Calculation Strategies – Multiplication and Division

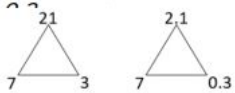
Use partitioning to multiply U.t by a one-digit number

6.7 x 4 becomes **6** x 4 + **0.7** x 4
3.2 x 7 becomes **3** x 7 + **0.2** x 7
8.5 x 6 becomes **8** x 6 + 0.**5** x 6

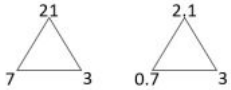
Use partitioning to double or halve numbers including those with two decimal places

Double 56.7 Find half of 4.62
Double 485.6 Find half of 18.46

Use related facts to divide U.t by a one-digit number

e.g. 21 ÷ 7 = 3 then 2.1 ÷ 7 = 

Use related facts to divide U.t by a 0.t



2.1 ÷ 0.7 related to 21 ÷ 7 = 3
This should be understood as 'how many 0.7s in 2.1? Compared to how many sevens in 21?'

Use partitioning to divide HTU by a one-digit number

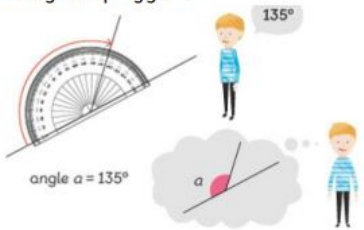
756 ÷ 9 By partitioning into 720 and 36 (two multiples of 9 totalling 756)
765 ÷ 5 By partitioning into 500 and 250 and 15 (three multiples of 5 totalling 765)
861 ÷ 7 By partitioning into 700 and 140 and 21 (three multiples of 7 totalling 861)

Maths	Year group 5	Summer 1st half term

Key concepts that will be covered

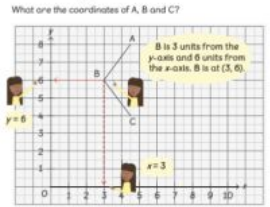
Geometry

We will be learning how to measure angles in degrees using a protractor. We will explore the angles that make 180° or a straight line and those that make a full turn. We will practice drawing lines and angles accurately and use this to create accurate drawings of 2D shapes. We will apply our understanding of angles to solve problems involving angles. We will learn what a polygon is and be able to name regular polygons.



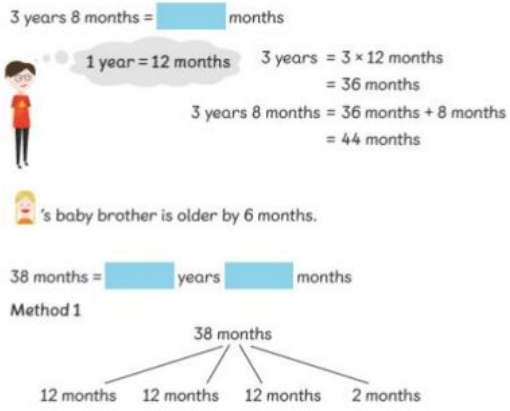
Position and Movement

We will be embedding our understanding of writing co- ordinates of points. We will understand how to translate and reflect shapes on a grid. We will be able to solve problems involving translations and reflections of shapes.



Measurement

We will embed our understanding of how to convert between different units of length, mass and time. We will learn to use negative numbers when reading scales, such as thermometers. We will solve problems involving measurements.



Arithmetic

Progression Towards Written Calculation Strategies – Addition

5 + 8 = 13, put 3 down and carry the 10 *(written as a 1 in the tens column)*

20 + 40 + 10 that was carried over = 70 *(7 written in the tens column)*

600 + 0 = 600 *(6 written in the hundreds column)*

Children will be expected to use this method for adding numbers with up to seven digits, numbers involving decimals and adding any number of amounts together.

HTU		321	
625	367	+ 7	£3.48
+ 48	+ 85	+ 48	+ £0.78
673	452	376	£4.26
1	11	1	1 1

Progression Towards Written Calculation Strategies – Subtraction

Children will be expected to use this method for subtracting numbers with up to seven digits and numbers involving decimals.

The example shown would be explained as follows:

We are subtracting 86 from 754. Start with the least significant place value column.

Are there enough hundredths to subtract 3 hundredths?

No – so let's exchange a tenth from the tenths column for ten hundredths. 2 tenths and 0 hundredths becomes 41 tenth and 10 hundredths.

10 hundredths subtract 3 hundredths = 8 hundredths

Are there enough tenths to subtract 8 tenths?

No – so let's exchange a one from the ones column for ten tenths.

1 one and 1 tenth becomes 0 ones and 1 tenths.

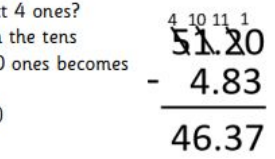
11 tenths subtract 8 tenths = 3 tenths.

Are there enough ones to subtract 4 ones?

No – so let's exchange a ten from the tens column for ten ones. 5 tens and 0 ones becomes 4 tens and 10 ones 10 – 4 = 6

4 tens (40) – 0 tens = 4 tens (40)

Answer 46.37

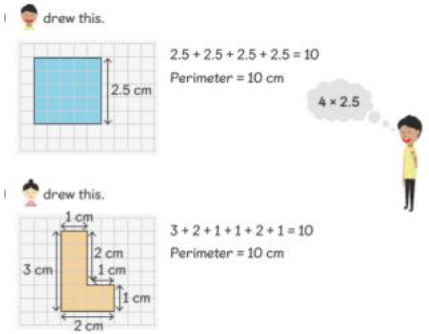


Maths	Year group 5	Summer 2nd half term

Key concepts that will be covered

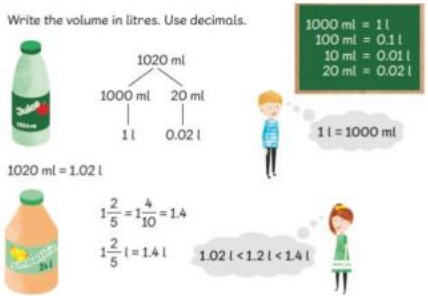
Area and Perimeter

We will embed our understanding of how to calculate area and perimeter of shapes. We will be learning how to use scale diagrams to find the area and perimeter of figures. We will understand how to estimate area and when this might be useful.



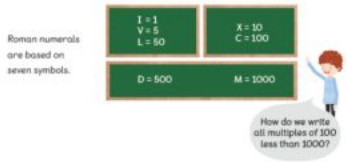
Volume

We will be learning how to find the volume of solid shapes. We will explore how we can find and compare the capacity of cuboids. We will understand how to convert between units of measurement for volume, estimate volume and solve word problems involving volume.



Roman Numerals

We will be learning to read and write Roman numerals up to 1000 and writing years in this way.



Arithmetic

Progression Towards Written Calculation Strategies – Multiplication

As the grid method for multiplication supports children's number sense and appreciation of the values of each digit, schools can decide if this is the final stage of written multiplication.

4.92 × 3

×	4	0.9	0.02
3	12	2.7	0.06

12
+ 2.7
+ 0.06
14.76

72 × 38

×	70	2
30	2100	60
8	560	16

2100
+ 560
+ 60
+ 16
2736

Progression Towards Written Calculation Strategies – Division

32 r4
6 | 196
- 180 (30x)
16
- 12 (2x)
4

1x = 6
2x = 12
5x = 30
10x = 60
20x = 120

640 r2
8 | 5122
- 4800 (600x)
322
- 320 (40x)
2