



Somerset Bridge Primary School
Aspire - Brave - Care - Collaborate

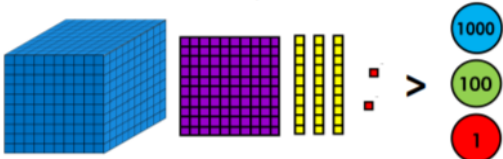
Maths: Place Value

Autumn: Year 5

Comparing Numbers

We can compare numbers using the < and > symbols.

< means less than > means greater than
= means equal to



$$123,518 < 123,845$$

$$549,736 > 547,736$$

Counting in 100s

2841	2941	3041	3141	3241	3341
------	------	------	------	------	------

The hundreds increase until 9 hundreds becomes one more thousand and 0 hundreds.

Counting in 10 000s

276 109	286 109	296 109	306 109
---------	---------	---------	---------

The ten thousands increase until 9 ten thousands become one more hundred thousand and 0 ten thousands.

2 972 151	3 072 151	3 172 151	3 272 151
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The hundred thousands increase until 9 hundred thousands becomes one more million and 0 hundred thousands.

Place Value of Digits

Place value helps us know the value of a digit, depending on its place in the number.

HTH	TTH	TH	H	T	O
7	1	4	8	2	5

In the number above, the 7 digit is in the hundred thousands place so it really means 700,000.

The 1 digit is in the ten thousands place so it really means 10,000.

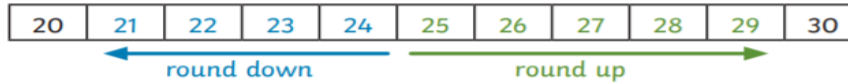
The 4 digit is in the thousands place so it really means 4,000.

The 8 digit is in the hundreds place so it really means 800.

The 2 digit is in the tens place so it really means 20.

The 5 digit is in the ones place so it means 5.

Rounding to the nearest 10



Rounding to the nearest 1000



Rounding to the nearest 100 000



Key Vocabulary

Millions	A thousand thousands.	✓
Thousands	One hundred times greater than 10.	
Hundreds	A number equal to 10 times 10.	
Tens	A set of 10 ones.	
Ones	A quantity of 1.	
Zero	No number is present.	
Place value	The value of a digit.	
Greater than	A quantity that is larger or bigger.	
Less than	A value that is lesser.	
Order	Arranged in a sequence or pattern.	
Rounding	Replacing a number by a simpler number. Example: 543 rounded to the nearest 10 is 540.	

Negative Numbers





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Maths: Place Value

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Roman Numerals

I = 1	II = 2	III = 3
IV = 4	VI = 6	VII = 7
V = 5	XI = 11	XX = 20
IX = 9	X = 10	LX = 60
XL = 40	L = 50	LXX = 70
XC = 90	C = 100	CL = 150
CD = 400	D = 500	CC = 200
CM = 900	DC = 600	DCC = 700
M = 1000	MC = 1100	MD = 1500

VIII = 8
XXX = 30
LXXX = 80
CCC = 300
DCCC = 800
MM = 2000

CCXLVIII = 248

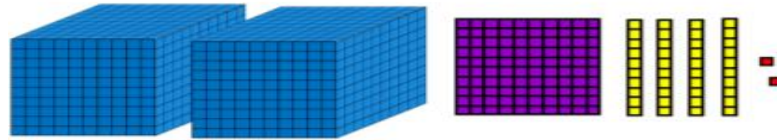
DCCLXXXIV = 784

MMXIX = 2019

Representing Numbers to 10 000

A four-digit number is made up of thousand, hundreds, tens and ones. Different concrete manipulatives and pictorial diagrams can be used to represent these numbers.

The number 2,132 can be represented like this:



This shows 2 thousands, 1 hundred, 4 tens and 2 ones.

The same number can also be represented with place value counters:

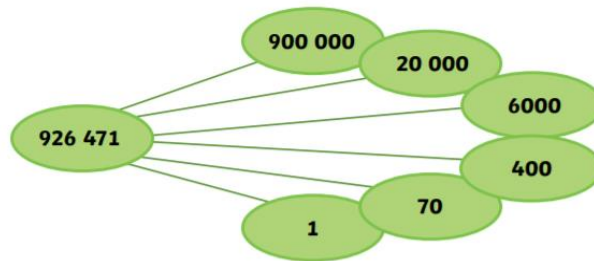


Numbers to One Million

926 471

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
9	2	6	4	7	1

nine hundred and twenty-six thousand, four hundred and seventy-one



Key Vocabulary

Rounded	Making a number simpler but keeping its value close to what it was.
Negative number	Numbers below zero.
Partition	A way of splitting numbers into smaller parts to make them easier to work with.
Digit	A single symbol to make numbers.
Interval	The difference between two numbers.
Sequence	A list of numbers or objects in a special order. Example: 3, 5, 7, 9, ... is a sequence starting at 3 and increasing by 2 each time.
Linear sequence	A number pattern which increases (or decreases) by the same amount each time.



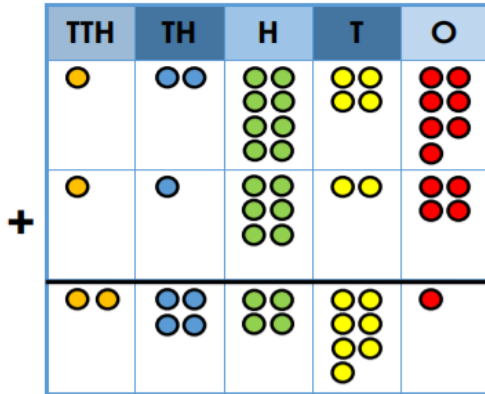


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Maths: Addition and Subtraction

Autumn: Year 5

Addition – Formal Written Method

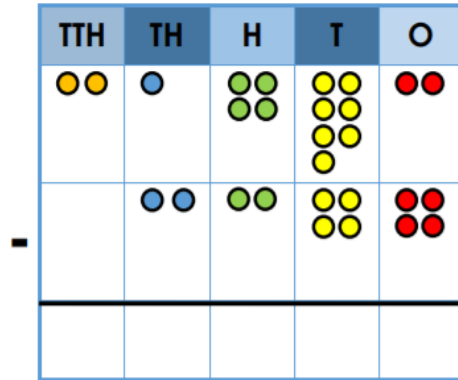


	1	2	8	4	7
+	1	1	6	2	4
	2	4	4	7	1

1 1

With column addition and subtraction, you must always start the calculation with the column on the right. $7 + 4$ is 11. We can not put 11 in the ones column so a ten is placed under the tens column and the one is placed in the ones column. We then add the extra ten when we add that column.

Subtraction – Formal Written Method



	2	1	4	7	2
-		2	2	4	4

In the ones column, we don't have enough subtract 4 from 2. We need to exchange ten for ten ones.

To show this, the 7 is changed to a 6 because we now have 6 tens. The 2 becomes a 12 is the same as $60 + 12$. We still have the same amount, but it has been regrouped. Now we can start subtracting.

$12 - 4 = 8$ so 8 is written in the ones column.

In the tens column, $6 - 4 = 2$ so 2 is written in the tens column.

			6	12
	2	1	4	7
-		2	2	4
			2	8

The hundreds column is a straight forward calculation: $4 - 2 = 2$.

Looking at the thousands column, we do not have enough to subtract 2 from 1. We need to exchange one of the ten thousands for 10 thousands. To show this, the 2 (in the ten thousands place) is changed to a 1. The 1 (thousand) becomes an 11. $11 - 2 = 9$.

Finally, looking at the ten thousands column, $1 - 0 = 1$. The final answer to the subtraction is 19,228.

	1		6	12
	2	1	4	7
-		2	2	4
	1	9	2	2
			2	8

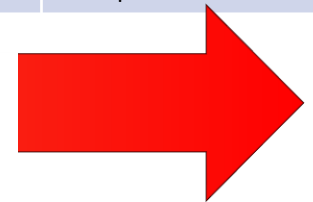
Key Vocabulary

Addend	The numbers added together to form the sum.
Sum	The result of an addition, the answer.
Subtract	To subtract means to take away from a group or a number of things.
Subtrahend	A quantity which is subtracted from another.
Minuend	A number from which the subtrahend is to be subtracted. E.g. $53247 - 823$, where 53247 is the minuend.
Difference	The result of subtracting one number from another. E.g. The difference between 8 and 3 is 5.
Column addition	Addition by writing one number below the other and then adding one column at a time.
Column subtraction	the numbers to be added or subtracted are set out above one another in columns.
Inverse Operation	pairs of mathematical manipulations in which one operation undoes the action of the other—for example, addition and subtraction, multiplication and division.

Using a bar model

The sum of two numbers is 25 567

The difference is 1875





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Maths: Multiplication and Division Autumn: Year 5

Short Multiplication

$$2543 \times 7 = 17801$$

	2	5	4	3	
x				7	
	1	7	8	0	1
	1	3	3	2	

Remember to move any regrouped digits into the next column. After the next multiplication, add the regrouped number to the answer.

Related Calculations

$$8 \times 9 = 72$$

$$80 \times 9 = 720$$

$$9 \times 8 = 72$$

$$90 \times 8 = 720$$

$$72 \div 9 = 8$$

$$720 \div 9 = 80$$

$$72 \div 8 = 9$$

$$720 \div 8 = 90$$

Long Multiplication

$$2543 \times 67 = 170381$$

		2	5	4	3	
x				6	7	
	1	7	8	0	1	
	1	3	3	2		
1	5	2	5	8	0	
1	3	2	1			
	1	7	0	3	8	1
	1	1				

Before multiplying by the number in the tens column, remember to use zero as a placeholder because the 6 in 67 is 6 tens (60).

Short Division

		3	8
4	1	5	2

$$15 \div 4 = 3 \text{ remainder } 3$$

Remember to regroup any remainders and move them into the next column.

		4	5	5	r	3
5	2	2	7	8		

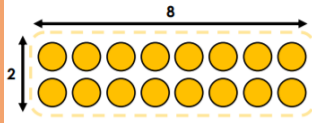
$$28 \div 5 = 5 \text{ remainder } 3$$

If your calculation has a remainder, remember to record it in the answer using the letter **r**.

Key Vocabulary

Factor	Factors are numbers that divide exactly into another number.	✓
Multiple	A multiple is the product result of one number multiplied by another number.	
Common	A number that can be divided into two different numbers, without leaving a remainder.	
Remainder	An amount left over after division.	
Product	The answer when two or more values are multiplied together.	

Factors are the numbers that multiply together to make a product.



$$\boxed{2} \times \boxed{8} = \boxed{16}$$

factor factor product

To find all factors of a given number, it is best to work systematically. Start at one and ask yourself what factor it is paired with to make the product you are requiring.



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Maths: Multiplication and Division Autumn: Year 5

Multiplying and Dividing by 10, 100 and 1000

When a number is multiplied by 10, 100 or 1,000, the digits move to the left in the place value column. The digits move **1 place left** when we multiply by 10, **2 places** to multiply by 100 and **3 places** to multiply by 1,000.

The empty place value spaces are filled with a **0 as a place holder**.

TH	H	T	O	
	4	2	3	
	100 100 100 100	10 10	1 1	
100 100 100 100	10 10	1 1		0

x10

$423 \times 10 = 4,230$

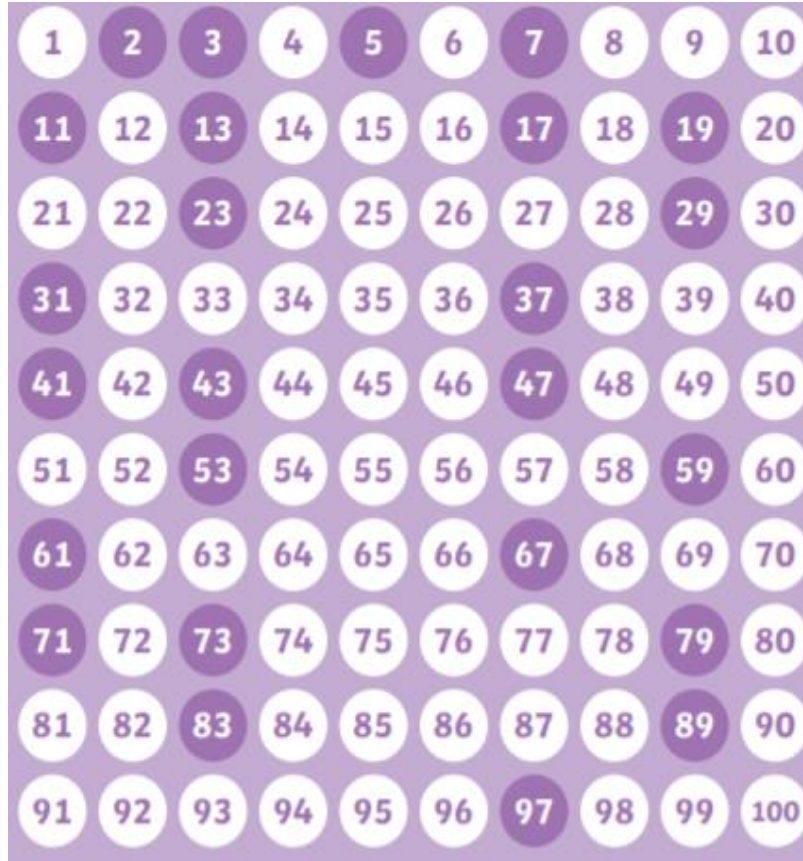
When a number is divided by 10, 100 or 1,000, the digits move to the right in the place value column: **1 place** when dividing by 10, **2 places** to divide by 100 and **3 places** to divide by 1,000.

Look what happens when we divide 7,900 by 10, 100 and 1,000:

TH	H	T	O	.	t
7	9	0	0		
	7	9	0		
		7	9		
			7	.	9

÷10
÷100
÷1,000

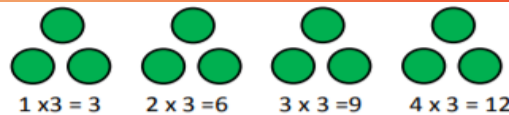
Prime Numbers



Key Vocabulary

Square Number	A square number is the result when a number has been multiplied by itself. For example, 25 is a square number because it's 5 lots of 5, or 5 x 5.
Prime Number	A whole number above 1 that can not be made by multiplying other whole numbers. Example: 5 is a prime.
Remainder	An amount left over after division.
Product	The answer when two or more values are multiplied together.

Multiples are the result of multiplying the two numbers together. They can be seen as extended times tables.



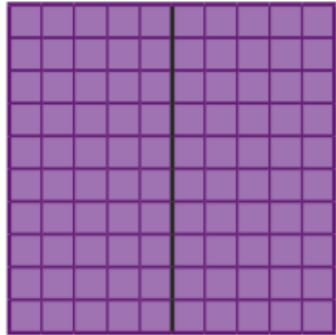
Multiples of 3 would be 3, 6, 9, 12, 15, 18...



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Equivalent Fractions

To find equivalent fractions, we multiply or divide the numerator and denominator by the same number.

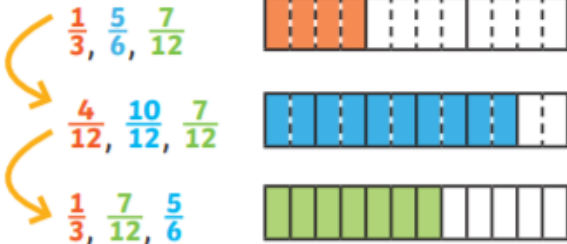


$$\frac{1}{2} \xrightarrow{\times 5} \frac{5}{10} \xrightarrow{\times 10} \frac{50}{100}$$

$$\frac{50}{100} \xrightarrow{\div 10} \frac{5}{10} \xrightarrow{\div 5} \frac{1}{2}$$

Compare and Order Fractions

We can compare and order fractions by using common denominators.



Maths: Fractions Autumn: Year 5

Convert an Improper Fraction to a Mixed Number

$\frac{9}{4}$

$9 \div 4 = 2r1$ $2\frac{1}{4}$

Divide the numerator by the denominator.

This shows you the whole number and the fraction.

Convert a Mixed Number to an Improper Fraction

Multiply the whole by the denominator to make an improper fraction.

$2\frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$

Add the fractions together.

Add Fractions Where the Total is Greater Than 1

$\frac{1}{2} + \frac{3}{4} + \frac{5}{8} = \frac{4}{8} + \frac{6}{8} + \frac{5}{8} = \frac{15}{8} = 1\frac{7}{8}$

Adding Mixed Numbers

$1\frac{1}{4} + \frac{3}{8} = 1\frac{2}{8} + \frac{3}{8} = 1 + \frac{5}{8} = 1\frac{5}{8}$

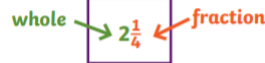
$1\frac{1}{4} + \frac{3}{8} = \frac{5}{4} + \frac{3}{8} = \frac{10}{8} + \frac{3}{8} = \frac{13}{8} = 1\frac{5}{8}$

Key Vocabulary

Numerator	The number above the line in a fraction.	✓
Denominator	The number below the line in a fraction.	
Unit fraction	Any fraction with 1 as the numerator.	
Non-unit fraction	A fraction where the numerator is greater than 1.	
Mixed Number	A number with three parts: a whole number, a numerator, and a denominator. E.g $1\frac{3}{4}$	
Improper Fraction	When the numerator is greater than the denominator, such as $\frac{5}{4}$.	
Simplest Form	When the numerator and the denominator have no common factors besides one.	
Common Denominator	A common multiple of the denominators of a number of fractions.	

Mixed Numbers.

Mixed numbers contain a whole number and a fraction.



Improper Fractions.

An improper fraction has a numerator which is greater than or equal to the denominator.

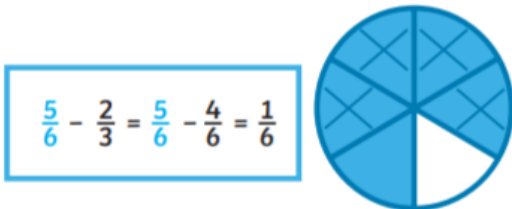
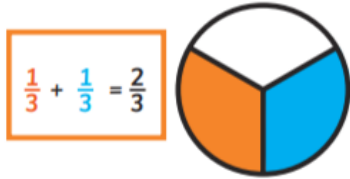
$\frac{5}{3}$



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Adding and Subtracting Fractions

To add or subtract fractions with denominators that are multiples of the same number, we must change one fraction to have the same denominator.



Maths: Fractions Autumn: Year 5

Mixed Numbers

Mixed numbers contain a whole number and a fraction.

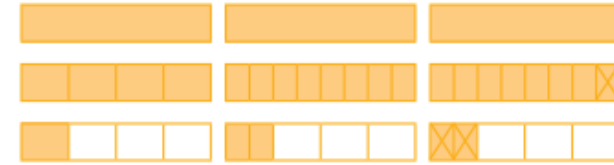
Subtract From a Mixed Number

$$1\frac{2}{3} - \frac{2}{9} = 1\frac{6}{9} - \frac{2}{9} = 1\frac{4}{9}$$

starting number	find the equivalent fraction	subtract

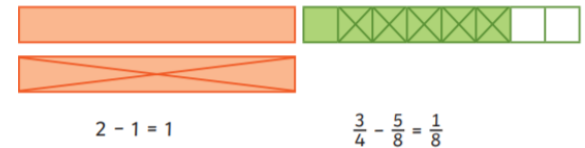
Subtract from a Mixed Number – Breaking the Whole

$$2\frac{1}{4} - \frac{3}{8} = 2\frac{2}{8} - \frac{3}{8} = 1\frac{10}{8} - \frac{3}{8} = 1\frac{7}{8}$$



Subtracting Two Mixed Numbers

$$2\frac{3}{4} - 1\frac{5}{8} = 1\frac{1}{8}$$



Integer = A number which is not a fraction, a whole number.