Maths Across
The Curriculum
The Corbet School
2024/25

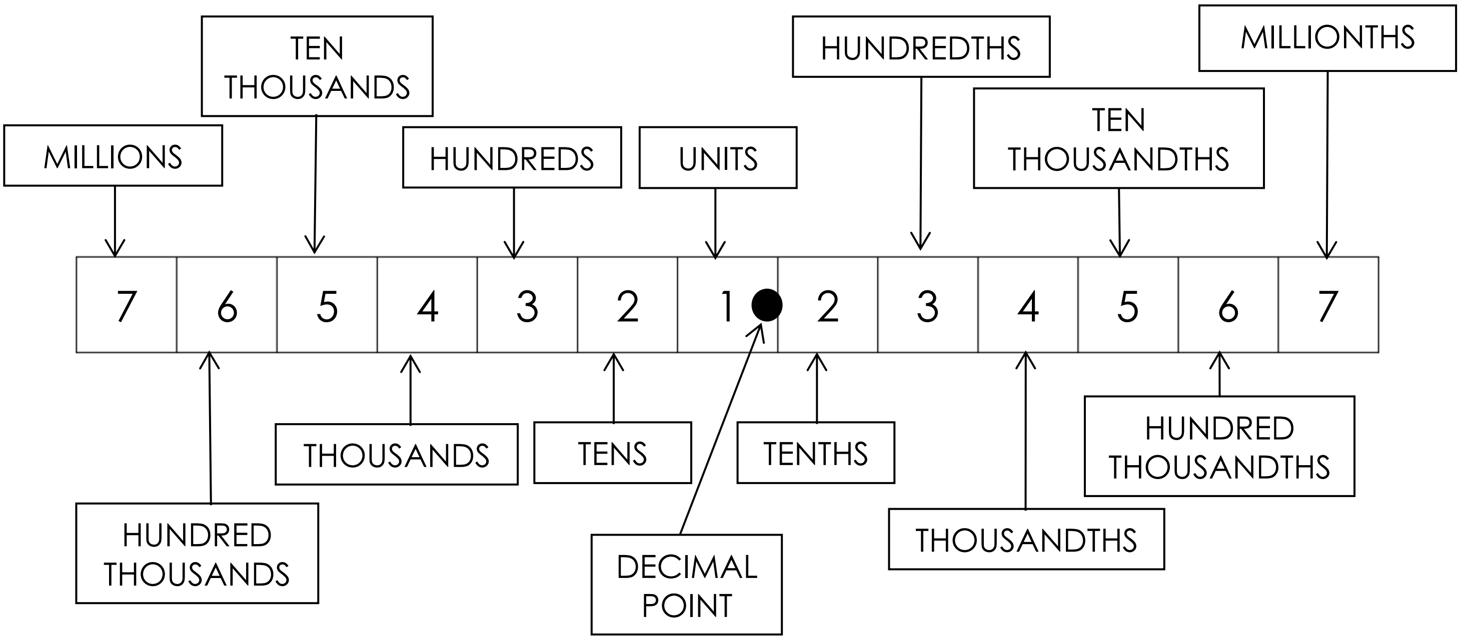
Contents

Place Value

Taught in Autumn term Y7

Pupils need to understand what each digit of a number actually means. This allows them to understand what the numbers are telling them and allows them to approximate and do further calculations in a much more efficient fashion.

When someone sees a number written in digits, they need to be able to say or spell the number and vice versa.



To read a large whole number (an integer), break the number up into groups of three digits from right hand side and then read it in groups from the left…

74194 ⟶ 74,194 ⟶ Seventy four thousand, one hundred and ninety four

9301049 ⟶ 9,301,049 ⟶ Nine million, three hundred and one thousand, and forty nine

Spelling numbers….

1	One	11	Eleven	30	Thirty
2	Two	12	Twelve	40	Forty
3	Three	13	Thirteen	50	Fifty
4	Four	14	Fourteen	60	Sixty
5	Five	15	Fifteen	70	Seventy
6	Six	16	Sixteen	80	Eighty
7	Seven	17	Seventeen	90	Ninety
8	Eight	18	Eighteen	100	One hundred
9	Nine	19	Nineteen	1000	One thousand
10	Ten	20	Twenty	1,000,000	One million
				0	Zero or nought

Times Tables

Taught in Autumn term Y7

Knowing your times tables is so important.
Our memory has two distinct parts – working (or short term) memory and long term memory.
Long term memory is limitless and is where we store things we know or have become habits. Working memory is where we do the mental work for things that aren't familiar. For example if you were asked to remember seven random words in a specific order, this is where you would store these words. The problem with working memory is that it is quite small and things don't stay there for long.
When you are doing calculations, if you don't know your times tables (in other words, they aren't stored in your long term memory) you have to use your precious working memory to try to work it out. If you know your tables and are fluent with them you don't use up your working memory with them and it allows you to do calculations more quickly and more accurately.

Pupils are expected to know their times tables up to 12 x 12.
Below is a times tables grid we often use with students who haven't as yet memorised them…

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

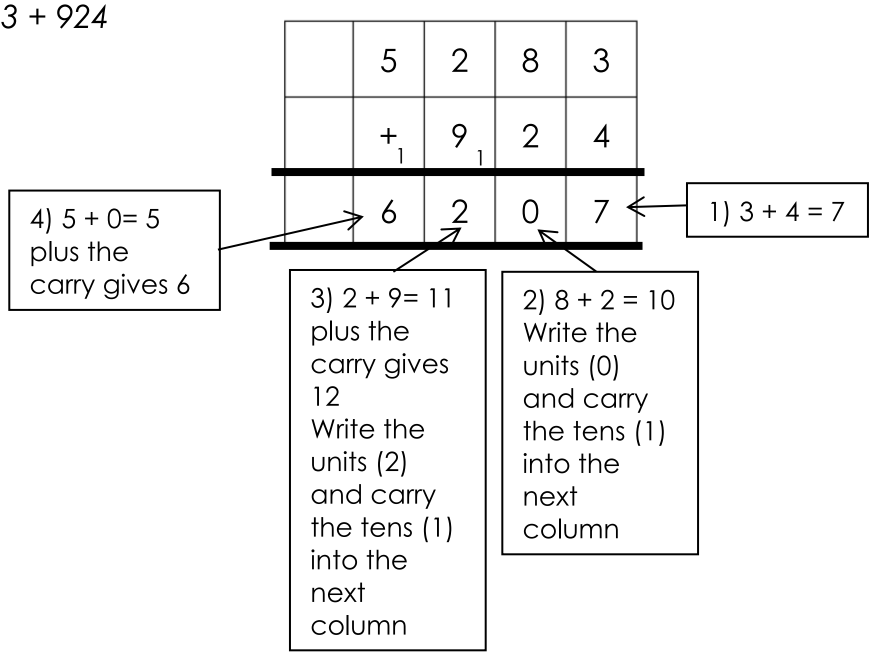
Addition, Subtraction, Multiplication, Division

Taught in Autumn term Y7

We teach the basic column methods for addition and subtraction of large numbers.

Addition and subtraction

Example 5293 + 924



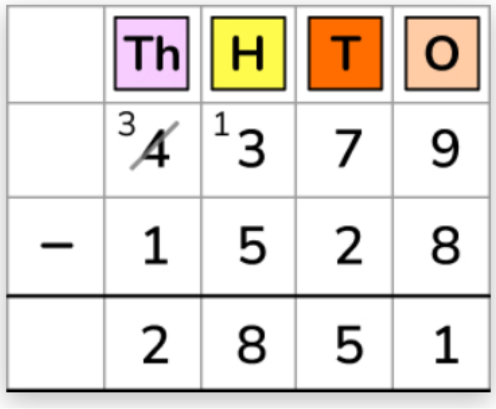
	5	2	8	3
	$+_1$	9_1	2	4
	6	2	0	7

4) 5 + 0= 5 plus the carry gives 6

3) 2 + 9= 11 plus the carry gives 12 Write the units (2) and carry the tens (1) into the next column

2) 8 + 2 = 10 Write the units (0) and carry the tens (1) into the next column

1) 3 + 4 = 7



	Th	H	T	O
	$^{3}\cancel{4}$	$^{1}3$	7	9
−	1	5	2	8
	2	8	5	1

Step 1: Arrange the calculation using place value columns.

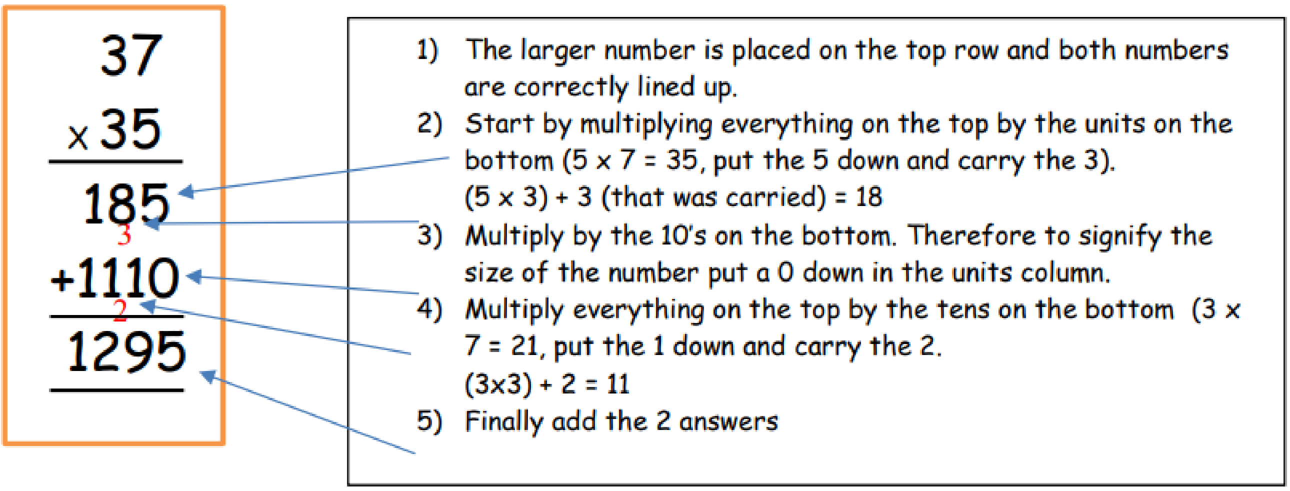
Step 2: Beginning on the right (in this case the ones column), complete the calculation (9-8) and write the answer underneath, in the same column.

Step 3: Calculate the next column to the left of this – here it is the tens column. When explaining this to the children, make sure they understand that it is 7 tens subtract 2 tens or 70-20, not 7-2.

Step 4: Move to the left again. In the example here, we need to exchange in the hundreds column. We cannot subtract 5 hundreds from 3 hundreds without exchanging 1 thousand. We need to exchange one of the thousands for ten hundreds, making the calculation thirteen hundreds subtract five hundreds.

Multiplication

We teach the column method for long multiplication, a continuation of how pupils were taught at primary school

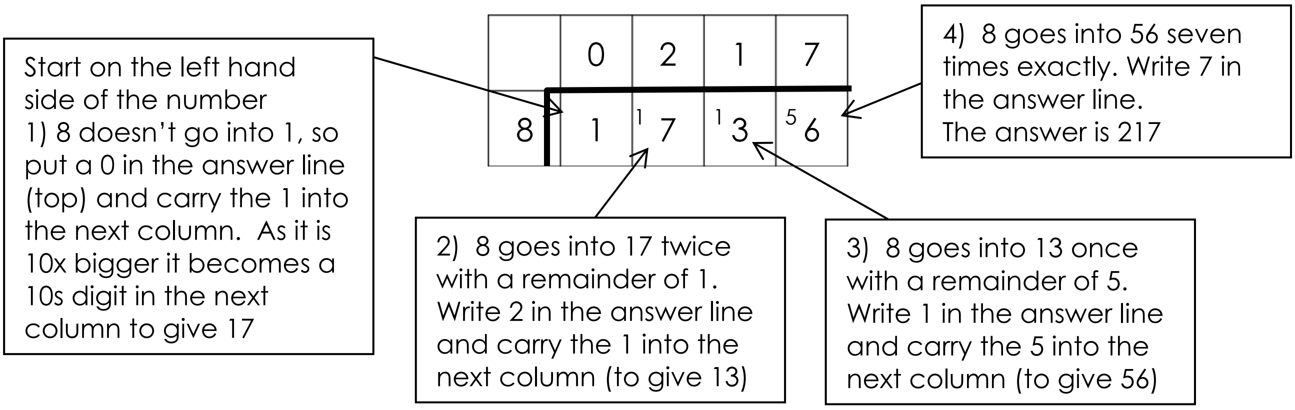


1) The larger number is placed on the top row and both numbers are correctly lined up.
2) Start by multiplying everything on the top by the units on the bottom (5 x 7 = 35, put the 5 down and carry the 3).
(5 x 3) + 3 (that was carried) = 18
3) Multiply by the 10's on the bottom. Therefore to signify the size of the number put a 0 down in the units column.
4) Multiply everything on the top by the tens on the bottom (3 x 7 = 21, put the 1 down and carry the 2.
(3x3) + 2 = 11
5) Finally add the 2 answers

Division

Pupils use the 'bus shelter' method to divide

Example 1736 ÷ 8



Start on the left hand side of the number
1) 8 doesn't go into 1, so put a 0 in the answer line (top) and carry the 1 into the next column. As it is 10x bigger it becomes a 10s digit in the next column to give 17

2) 8 goes into 17 twice with a remainder of 1. Write 2 in the answer line and carry the 1 into the next column (to give 13)

3) 8 goes into 13 once with a remainder of 5. Write 1 in the answer line and carry the 5 into the next column (to give 56)

4) 8 goes into 56 seven times exactly. Write 7 in the answer line.
The answer is 217

Estimating

Taught in
Spring term
Y8

Being able to estimate a quantity or calculation is a particularly important skill to have. Imagine estimating the size of your floor so you can buy the right amount of carpet.

Students need to be able to approximate numbers and estimate calculations.

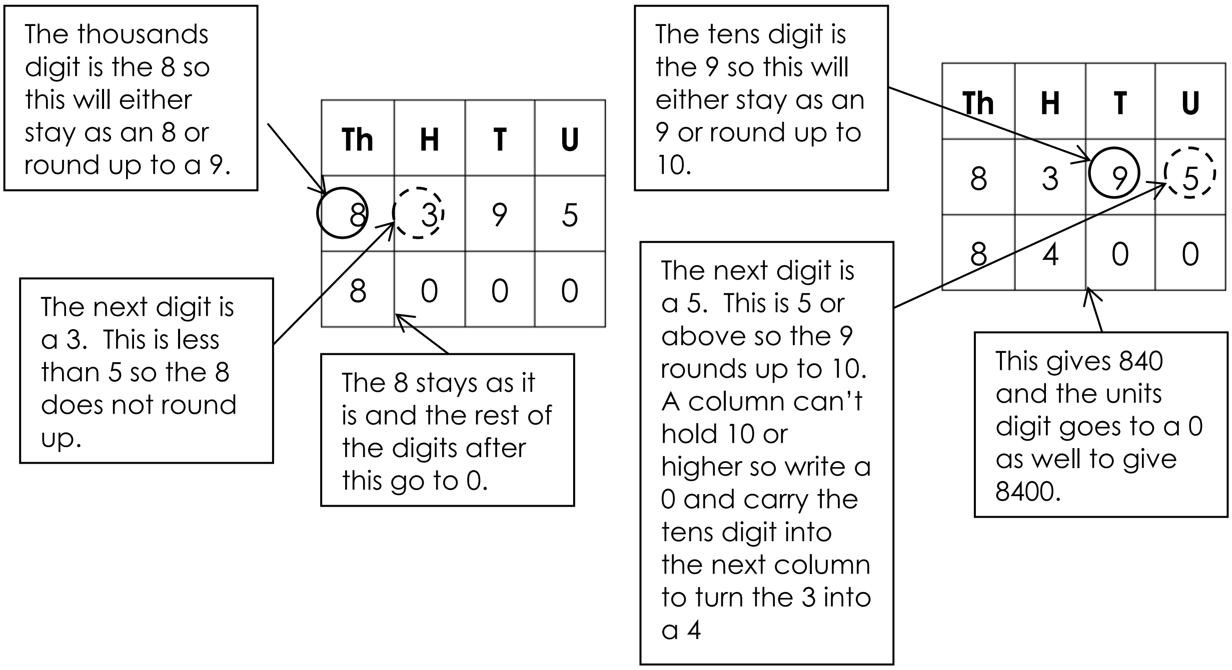
They need to know three ways of estimating numbers:

- Rounding to a particular place value
- Rounding to a particular number of decimal places (d.p.)
- Rounding to a particular number of significant figures (s.f.)

The difference between the three types is how the digit to be rounded is located. The method of rounding is the same – once you have located the digit, look at the next digit – if it is 5 or above, the digit to be rounded goes up 1. If it is less than 5 the digit to be rounded stays as it was.

Rounding to place value

Example: Round 8395 to (a) the nearest thousand (b) the nearest ten



The thousands digit is the 8 so this will either stay as an 8 or round up to a 9.

Th	H	T	U
8	3	9	5
8	0	0	0

The next digit is a 3. This is less than 5 so the 8 does not round up.

The 8 stays as it is and the rest of the digits after this go to 0.

The tens digit is the 9 so this will either stay as an 9 or round up to 10.

Th	H	T	U
8	3	9	5
8	4	0	0

The next digit is a 5. This is 5 or above so the 9 rounds up to 10. A column can't hold 10 or higher so write a 0 and carry the tens digit into the next column to turn the 3 into a 4

This gives 840 and the units digit goes to a 0 as well to give 8400.

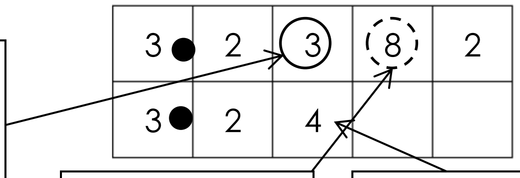
Rounding to decimal places

Taught in Spring term Y8

You start counting decimal places from the first digit after the decimal point.

	1st d.p,	2nd d.p,	3rd d.p,	4th d.p,	5th d.p,
9●	1	2	3	4	5

Example Round 3.2382 to 2 decimal places (2 d.p.)



The 2nd d.p. is the 3. This will either stay as a 3 or round up to a 4.

The next digit is an 8 – this is 5 or higher so the 3 rounds up to a 4.

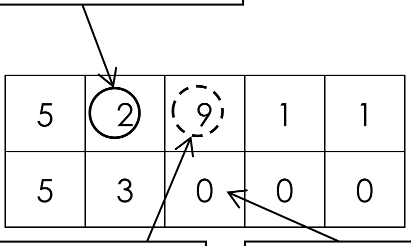
Everything after the digit that has been rounded is ignored – the answer is 3.24

Significant figures

The first significant figure (s.f.) is the first non-zero digit. The 2nd, 3rd, 4th etc s.f. can be a 0. You start counting from the 1st significant figure.

Example Round (a) 52911 to 2 s.f. (b) 0.0861 to 1 s.f.

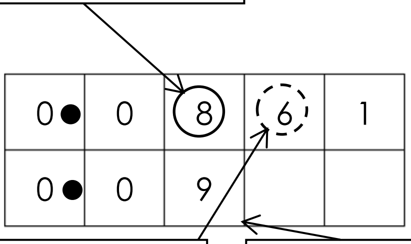
The 1st s.f. is the 5, the 2nd s.f. is the 2. This will either stay as a 2 or round up to a 3



The next digit is an 9 – this is 5 or higher so the 2 rounds up to a 3.

Everything after the digit that has been rounded up to where the decimal point would be changes to 0.

The 1st s.f. cannot be a 0 so the 1st s.f. is the 8. This will either stay as an 8 or round up to 9



The next digit is an 9 – this is 5 or higher so the 2 rounds up to a 3.

The digit being rounded is after the decimal point so everything after it is ignored.

Estimating calculations

When we estimate calculations we usually round each number involved in the calculation to 1 significant figure (depending on the question).

This means that the numbers are much easier to do mental calculations with.

Example Estimate 481.3 x 18.34

481.3: The 1st s.f. is the 4 – the next digit is 8 which means round the 4 up to 5.
So 481.3 to 1 significant figure is 500

18.34: The 1st s.f. is the 1 – the next digit is 8 which means round the 1 up to 2.
So 18.34 to 1 significant figure is 20

So 481.3 x 18.34 is approximately 500 x 20.

To calculate 500 x 20 in your head quickly:
Ignore the 0's first This gives 5 x 2 = 10
We ignored 3 0's which we need to add on the end.
So 500 x 20 = 10000

Example Estimate 4192 ÷ 4.93

4192: The 1st s.f. is the 4 – the next digit is 1 which means leave the 4 alone.
So 4192 to 1 significant figure is 4000

4.93: The 1st s.f. is the 4 – the next digit is 9 which means round the 4 up to 5.
So 4.93 to 1 significant figure is 5

So 4192 ÷ 4.93 is approximately 4000 ÷ 5.

4 ÷ 5 isn't a whole number, but 40 ÷ 5 is 8. We haven't dealt with the extra 2 0's so we tag these on to the end to give 800.

Order of Operations

Taught in
Autumn term
Y7

An operation in mathematics is a mathematical process such as adding or multiplying. When you have a calculation involving a variety of operations, you have to perform the operations in a particular order.

There is a mnemonic to help remember the order:

Brackets
Indices
Division
Multiplication
Addition
Subtraction

(Sometimes the mnemonic BODMAS is used where the O is the 2nd letter of powers)

So brackets take priority over anything else – if you see brackets whatever operation(s) is inside them must be performed first – then indices (powers) are next and so on.

In our calculation 4 + 3 x 5 if you got 35 you did the 4 + 3 first (because you performed the calculation the way you read it – from left to right).

There are no brackets or indices or division but there is a multiplication so this must be done first – 3 x 5 = 15.
Then we do the addition – 4 + 15 = 19.

Example *What is the value of* $5 \times (12 - 5) + 3^2$

Brackets come first $12 - 5 = 7$
So the calculation becomes $5 \times 7 + 3^2$

Indices come next $3^2 = 3 \times 3 = 9$
So the calculation becomes $5 \times 7 + 9$

Next comes multiplication $5 \times 7 = 35$
So the calculation becomes 35 + 9 **= 44**

Fractions

Taught in Spring term Y7

Students need to know about fractions – what one is, how to find the fraction of a quantity as well as add, subtract, multiply and divide fractions.

A fraction is a part of a whole. The words associated with a fraction are:

$$\text{Vinculum} \longrightarrow \frac{3}{5} \begin{matrix} \longleftarrow \text{Numerator} \\ \longleftarrow \text{Denominator} \end{matrix}$$

Finding the fraction of a quantity

To find the fraction of a quantity:

- Divide by the denominator
- Multiply by the numerator

Example *Find* $\frac{4}{9}$ *of £108*

Divide by the denominator: £108 ÷ 9 = £12

Multiply by the numerator: £12 x 4 **= £48**

Adding and subtracting fractions

You can only add or subtract fractions when they have the same denominators

Example *Find* $\frac{3}{7}+\frac{2}{7}$

These have the same denominators so we just add their numerators – we don't add or subtract the denominators

$$\frac{3}{7}+\frac{2}{7} = \frac{3+2}{7} = \frac{5}{7}$$

Example *Find* $\frac{6}{7}-\frac{3}{5}$

This time they have different denominators, so we need to find a common denominator and alter both fractions so they have this denominator.

The denominators are 7 and 5 so we need a number which is a multiple of both 7 and 5. The first number which fits this description is 35. So we change both fractions so they have a denominator of 35

$$\overset{\text{x5}}{\underset{\text{x5}}{\frac{6}{7}}} = \frac{30}{35} \qquad \overset{\text{x7}}{\underset{\text{x7}}{\frac{3}{5}}} = \frac{21}{35}$$

Now we can add or subtract the fractions like we did before…

$$\frac{6}{7}-\frac{3}{5} = \frac{30}{35}-\frac{21}{35} = \frac{30-21}{35} = \mathbf{\frac{9}{35}}$$

Multiplying fractions

Multiplying fractions is easy

- Multiply the numerators to get the new numerator
- Multiply the denominators to get the new denominator

Find $\frac{5}{8} \times \frac{3}{11}$

$$\frac{5}{8} \times \frac{3}{11} = \frac{5 \times 3}{8 \times 11} = \frac{15}{88}$$

Dividing fractions

To divide fractions, we multiply by the reciprocal

Example $\frac{11}{12} \div \frac{3}{7}$

$$\frac{11}{12} \div \frac{3}{7} \quad = \quad \frac{11}{12} \times \frac{7}{3} \quad = \quad \frac{11 \times 7}{12 \times 3} \quad = \quad \frac{77}{36}$$

1) Leave the first fraction the same

2) Find the reciprocal of the second fraction

3) Change the ÷ sign to a x sign

Percentages

Taught in Summer term Y7

Percentages are widely used across a variety of subjects in school but are also common in real life. A percentage is a fraction of one hundred (the word percent comes from the Latin meaning "by the hundred").

How to work out some common percentages mentally should be known in a way times tables are know – they can also be used in combination to work out more challenging percentages.

Percent	How to work it out
50%	Halve the quantity
25%	Quarter the quantity (halve then halve again)
10%	Tenth (divide by 10)
5%	Find 10% then halve it
1%	Hundredth (divide by 100)

You can use these basic percentages to find more complicated ones…

Example   Find 37% of £250

37% can be broken down into 3 lots of 10%, 1 lot of 5% and 2 lots of 1%.

10% of £250 = £250 ÷ 10 = £25
5% of £250 = £25 ÷ 2 = £12.50
1% = £250 ÷ 100 = £2.50
37% = (3 x £25) + £12.50 + (2 x £2.50) **= £92.50**

Much of the percentage work we do in school however is done using a calculator.
One thing to know is that **we <u>never</u> use the % button on the calculator.**
We reduce the percentage down to its decimal multiplier and then use this to calculate the various types of percentages.

To reduce a percentage to its decimal multiplier we simply divide it by 100.

Example   Find 8.2% of £420

The decimal multiplier for 8.2% = 8.2% ÷ 100 = 0.082

8.2% of £420 = 0.082 x £420 **= £34.44**

To increase or decrease a quantity by a percentage we start with 100% which represents the original quantity (unchanged).

If we are increasing, we add the % increase to 100%
If we are decreasing, we subtract the % decrease from 100%
We then find the decimal multiplier of the result.

Example Increase £500 by 18.1%	*Decrease £500 by 9.3%*
100% + 18.1% = 118.1%	100% - 9.3% = 90.7%
Decimal multiplier = 118.1% ÷ 100 = 1.181	Decimal multiplier = 90.7%÷100 = 0.907
1.181 x £500 = £590.50	0.907 x £500 = £453.50

Students are also expected to work out one quantity as a percentage of another quantity and to find the percentage increase or decrease.

To do this we turn the question into a fraction first.
If we are working out A as a percentage of B our fraction would be $\frac{A}{B}$.
We then turn the fraction into a decimal (numerator ÷ denominator) and then into a percentage by multiplying by 100.

Example There are 14 boys and 18 girls in a class. What percentage of the class are girls?

We are finding the girls as a percentage of all those in the class, so 18 out of 32 are girls, which as a fraction is $\frac{18}{32}$

$$\frac{18}{32} = 18 \div 32 \times 100 = \mathbf{56.25}\%$$

Turn fraction to a decimal

Turn decimal to a %

% of the class who are girls

To find the percentage increase or decrease our fraction is $\frac{\text{Difference}}{\text{Original}}$.
We then compare the final % to 100 to work out the % increase or decrease

Example In 2016 the population of a town was 14,000. In 2017 it had grown to 15,140. Find the % increase.

Population after the increase →

Original population →

$$\frac{15140}{14000} = 15140 \div 14000 \times 100 = 108\%$$

This is 8% more than 100% so it has increased by 8%

Example A car was bought for £8000. It was sold for £5200. Work out the % loss in value.

Sale price →

Original price →

$$\frac{5200}{8000} = 5200 \div 8000 \times 100 = 65\%$$

This is 35% less than 100% so there was a loss of 35%

Proportion and Ratio

Taught in Spring term Y7

Proportion and ratio is a key area of mathematics. Many other mathematical topics use a good understanding of proportion and ratio and it is one of the area of mathematics we use in real life.

Proportion questions can usually be answered using the unitary method. This is a method where one part of the proportion is reduced to one (a unit) which can then be transformed into another quantity very easily. Both steps are easy (particularly if you have a calculator).

Example 5 miles is approximately 8km.
(a) Convert 17 miles into km.
(b) Convert 19km into miles.

(a) Start with the original proportion

It is the miles we are converting so this needs to be reduced to 1 so divide by itself (5)

Now we know how many km 1 mile is, it is easy to convert 1 mile into 17 miles by x by 17

5 miles = 8 km
÷ 5
1 mile = 1.6km
x 17
17 miles = 27.2km

(b) Start with the original proportion

5 miles = 8 km
÷ 8
0.625 mile = 1km
x 19
11.875 miles = 27.2km

This time it is the km we are converting so this needs to be reduced to 1 so divide by itself (8)

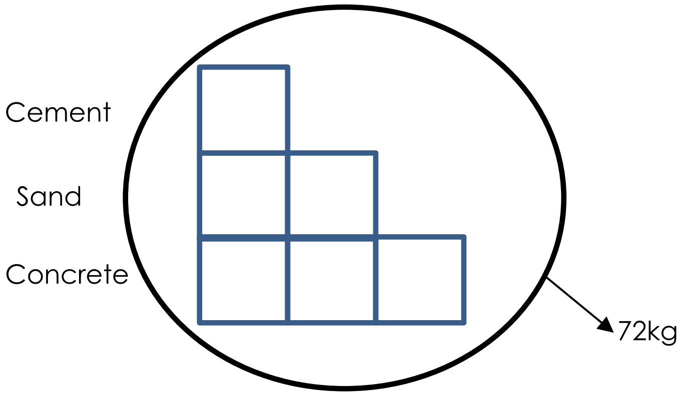
Now we know how many miles 1km is, it is easy to convert 1 km into 19 miles by x by 19

Ratios are closely related to fractions but are often mistaken for fractions.
How you read a ratio is how you write it, so if we say there are 3 red counters to every 5 blue counters we write this as a ratio 3 : 5 – the red comes first in the sentence so it comes first in the ratio.

This is where the most common misconception between ratios and fractions occurs.
A ratio of 3 : 5 is often incorrectly written as a fraction $^3/_5$. If you think about it there are 3 red for every 5 blue counters so in every 8 counters there are 3 red and 5 blue so the fraction of red counters is $^3/_8$ and the fraction of blue counters is $^5/_8$.

When performing calculations with ratios, we sometimes use a bar-model method to illustrate the ratio – this often makes the ratio much easier to understand. Consider these examples which show the two different kinds of ratio questions we usually encounter.

Example The ratio of concrete is 1 part cement to 2 parts sand and 3 parts gravel. How much of each element will be needed for 72kg of concrete?

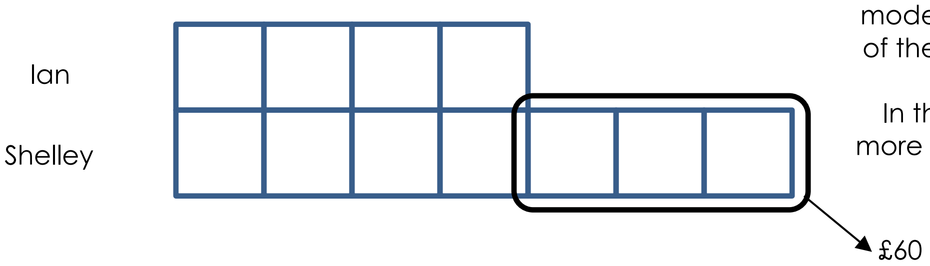


Each row of the bar model represents one element of the ratio. Each box represents 1 part of the ratio.
In this case we want 72kg of concrete so the whole diagram represents 72kg.

So 72kg needs to be shared equally amongst 6 parts (6 boxes)
1 part = 72 ÷ 6 = 12kg.
So each box represents 12kg.
Cement = 1 box = 12kg
Sand = 2 boxes = 2 x 12 = 24kg
Concrete = 3 boxes = 3 x 12 = 36kg.

Example Ian and Shelley share money in the ratio 4 : 7.
Shelley gets £60 more than Ian.
How much do they each get?

This time the quantity isn't representative of the whole ratio…



Again, each row of the bar model represents one element of the ratio and each box one part.
In this case Shelley gets £60 more so the extra boxes Shelley has equate to £60

So 3 parts = £60
1 part = £20
Ian = 4 parts = 4 x £20 = £80
Shelley = 7 parts = 7 x £20 = £140

Algebra

Taught in Spring term Y7

Algebra is the one area of mathematics that seems to evoke the most 'fear'. This is often because of the use of letters to represent numbers. The letters represent unknown quantities and obviously the letter x is commonly used to represent this unknown quantity (but it could be any letter).

Just a word about some of the terms used in algebra…

Variable	this is something which can vary. This is the quantity that is represented by a letter in algebra
Constant	This is something that does not vary
Coefficient	A number attached to a variable – for example in $9x$, 9 is the coefficient and x is the variable
Expression	This is a collection of constants and variable – but no = sign. $5x + 7$ is an example of an expression
Equation	This is an expression with an = sign – this allows us to solve the equation (find the value of the unknown). For example $3x + 6 = 12$
Formula	This looks like an equation but shows how one variable is related to another variable – it will have at least two variable in it. For example $y = 3x + 5$
Identity	This has an ≡ rather than an = sign. This means the left hand side is ALWAYS the same as the right hand side irrespective of the value of the variable. For example $5(2x + 3) \equiv 10x + 15$
Expand	This is when we get rid of (expand) brackets
Factorise	This is the opposite of expanding – we put brackets back into an expression.

Solving equations – to solve an equation we use the inverse operation method. This means if you want to eliminate something, you do its opposite (the inverse of adding is subtracting and vice versa and the inverse of multiplying is dividing and vice versa).

Example Solve the equations

$5x + 9 = 24$
We need to get rid of the +9
So -9 from both sides
$5x = 15$
Now we need to get rid of the x5
So ÷5 on both sides
$x = 3$

$6x – 5 = 2x + 23$
We have unknowns on both sides
Get rid of the smallest (-2x from both sides)
$4x – 5 = 23$
Now we need to get rid of the -5
So +5 on both sides
$4x = 28$
Now we need to get rid of the x4
So ÷4 on both sides
$x = 7$

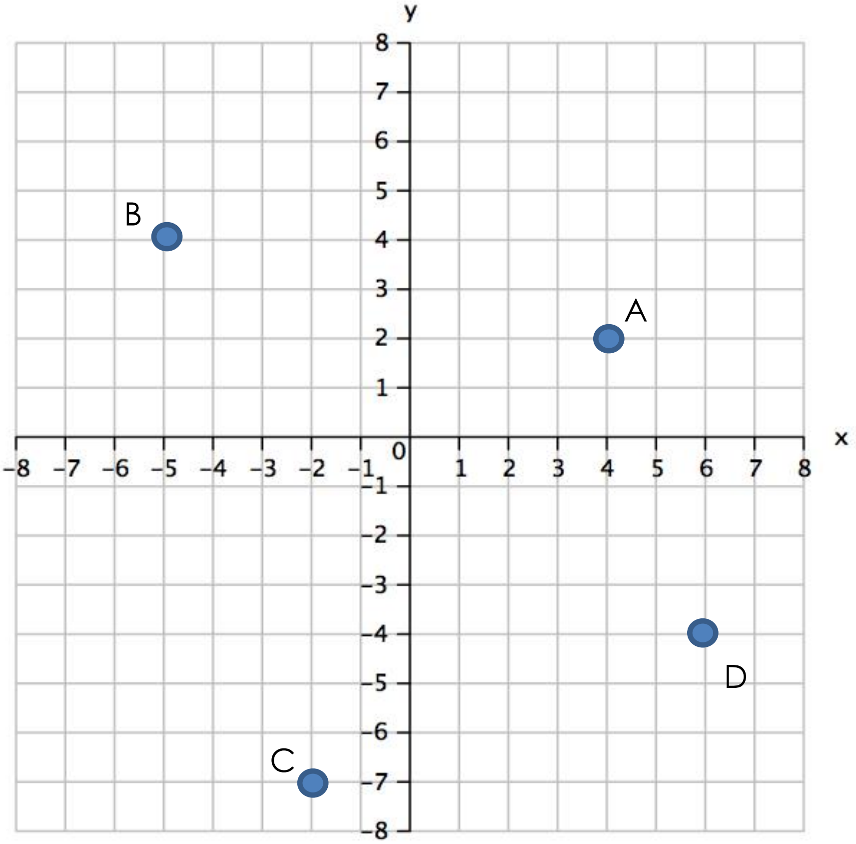
Graphs and Coordinates

Taught in Spring term Y7

A coordinate is a location. We usually work with 2-dimensional coordinates. They are written in brackets such as (4, 2).
The first number is the x-coordinate and tells you have far horizontally from the origin (the coordinate (0, 0)) you need to go and the second number is the y-coordinate and tells you the vertical distance to go from the origin. So (4, 2) means 4 right and 2 up. If the signs were negative this would indicate the opposite direction, so (-4, -2) would mean 4 left and 2 down.

When plotting coordinates use the grid lines rather than the squares…

In the diagram A has coordinate (4, 2), B is (-5, 4), C is (-2, -7) and D is (6, -4)



When plotting a graph you will usually substitute the x-coordinates into a formula which generates the y-coordinate which then creates a set of coordinates you can plot. So for y = 3x + 5 the following table could be created (the x-values are called the independent variables as you can choose these, the y-values are the dependent variables as they depend on the x-variable.)

x	-2	-1	0	1	2	3	4	5
y	-1	2	5	8	11	14	17	20

You will be told or will be free to choose the x-values. The y-values are found by substituting the x-value into the formula being plotted so for x = 4, we get y = (3x4) + 5 = 12 + 5 = 17

This creates a set of coordinates (-2, -1), (-1, 2), (0, 5), (1, 8), (2, 11), (3, 14), (4, 17) and (5, 20) which can be plotted on a set of axes.

Statistics

Taught in Summer term Y7

Statistics is the mathematics behind collecting, representing and analysing data.

Bar Charts, pictograms and line graphs are fairly straight-forward – remember that axes should be drawn with a ruler and labelled.

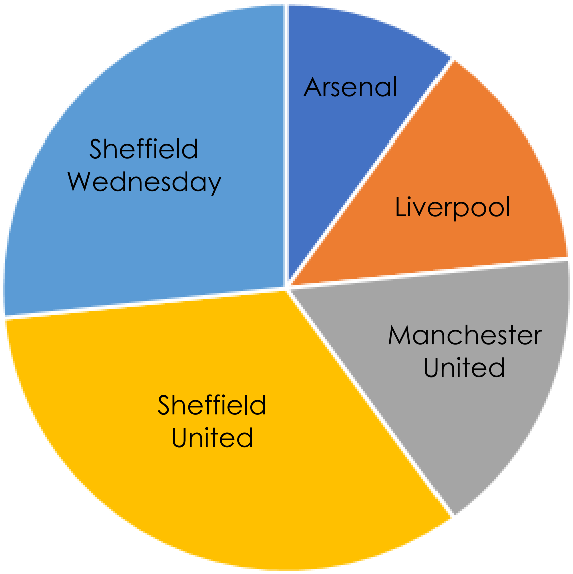
Pie-Charts often cause problems.
The draw a pie-chart a pair of compasses, ruler and protractor is needed.

Example The favourite football teams of 30 Year 7 students was surveyed
Draw a pie chart to illustrate this.

Team	Frequency
Arsenal	3
Liverpool	4
Manchester United	5
Sheffield United	10
Sheffield Wednesday	8

To find the size of each slice
we add the frequencies.
This is shared amongst 360˚
So 1 person = 360˚ ÷ 30 = 12˚

3 x 12 = 36˚
4 x 12 = 48˚
5 x 12 = 60˚
10 x 12 = 120˚
8 x 12 = 96˚



The main measures we use for average and spread are mode, median, mean and range.

Mode: The is the MOST popular piece of data. This is the only average that doesn’t have to be a number. If more than one piece of data is equally the most popular there can be more than one mode. However if each different piece of data appears the same number of times there is no mode.

Median: This is the middle value AFTER the data has been put in order.
If there is an odd number of pieces of data there will be one middle number which will be the median. If there is an even number of pieces of data there will be two middle numbers – the median will be half-way between these two values.

Mean: This is when the sum of all the data is found and divided by the number of pieces of data there were.

These are measures of average.

The main measure of spread we use in early secondary school is range.
This is simply the difference between the highest and lowest piece of data.

Example Find the mode, median, mean and range for the set of data
11, 5, 9, 5, 8, 9, 10, 12, 2, 4

Mode: 5 and 9 appear twice, all the other pieces of data appear once.
The mode is 5 and 9.

Median: Put the numbers in order first…
2, 4, 5, 5, 8, 9, 9, 10, 11, 12
There are two middle numbers – 8 and 9 – so the median is halfway between these so the median is 8.5.

Mean: Add the numbers together first
11 + 5 + 9 + 5 + 8 + 9 + 10 + 12 + 2 + 4 = 75
There are 10 pieces of data so divide by 10
Mean = 75 ÷ 10 = 7.5

Range: The largest piece of data is 12, the smallest is 2
Range = 12 – 2 = 10

Key Mathematical Vocabulary

This is a list of mathematical terms that we would expect students to know…

Multiple	A number in another numbers times table. For example the multiples of 4 are the numbers in the 4 times table.
Factor	A number which can be divided exactly into another number without a remainder. For example the factors of 12 are 1, 2, 3, 4, 6 and 12 because these numbers divide exactly into 12.
Lowest Common Multiple (LCM)	The smallest multiple that is a multiple of more than one number. For example, the LCM of 5 and 7 is 35 because this is the smallest number which is a multiple of 5 and 7.
Highest Common Factor (HCF)	The highest number which is a factor of two or more numbers. For example the HCF of 12 and 20 is 4 because this is the largest number which is a factor of 12 and 20.
Prime Number	A number which has exactly 2 factors. These are the building blocks of all numbers. The first 10 prime numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29. 1 is NOT a prime number because it only has 1 factor (1).
Sum	The sum of two numbers is when two numbers are added together
Difference	The difference is when one number is subtracted from another
Product	This is when two or more numbers are multiplied
Quotient	The result of a division. In $24 \div 4 = 6$, 24 is the dividend, 4 is the divisor and 6 is the quotient.
Square Number	When one number is multiplied by itself. The first 5 square numbers are 1, 4, 9, 16 and 25 because they are the results of 1x1, 2x2, 3x3, 4x4, 5x5.
Cube Number	When one number is multiplied by itself and by itself again. The first 5 cube numbers are 1, 8, 27, 64 and 125 because they are the results of 1x1x1, 2x2x2, 3x3x3, 4x4x4 and 5x5x5.
Integer	A whole number
Even Number	A number which can be divided exactly by 2. An even number ends with a 0, 2, 4, 6 or 8.
Odd Number	A number which ends in a 1, 3, 5, 7 or 9. Odd numbers cannot be divided exactly by 2.

Year 7 order of topics

Topic	Approximate dates
Shape – 2D and 3D shapes with appropriate terminology and notation	September
Arithmetic – place value and methods for + - x ÷	September and October
Negative numbers – in context, zero pairs and methods for + - x ÷	September
Algebra – writing expressions, multiple representations and substitution	October
Angles – types, drawing and reading, angle facts inc in parallel lines	October and November
Decimals - + - x ÷ with decimals and BODMAS	October and November
Sequences – continuing sequences, function machines & nth term	November and December
Fractions – equivalence and + - x ÷ with fractions	December and January
3D shapes – plans & elevations, using isometric paper and volume	December and January
Equations – inverses, algebra tiles and solving equations	January
Approximations – rounding to the nearest 10,100, 1000 and decimal places	January
Graphs – plotting coordinates and plotting graphs from rules	February
Fractions/decimals/percentages – equivalence between all 3	February
Area – rectangles, triangles, parallelograms, compound & circumference	February and March
Probability – terminology, listing outcomes of single events, Venn diagrams	March
Ratio – simplifying and sharing. Direct proportion	March
Number properties – square, cube, multiples, factors and primes	March
Transformations – symmetry, reflection, rotation and translation	April and May
Algebra – simplifying, expanding brackets, balancing	May and June
Fractions and percentages – fractions & percentage of an amount inc calc	May and June
Time – difference between time. 12 & 24 hour clock conversion	June
Statistics – mean, median, mode and range. Tally, pictograms, bar chart, pie chart	June

Year 8 order of topics

Topic	Approximate dates
Transformations – reflection, rotation, translation and enlargement	September
Negative numbers - + - x ÷ with negative numbers	September
Indices – using indices and laws of indices	September and October
Equations – balancing equations including with negatives	October
Statistics – two-way data, pie charts, scatter graphs	October
Fractions – equivalent, of an amount and + - x ÷	October and November
Algebra – substitute, simplify, expand brackets and factorise	November
Measures – mass, capacity and conversions	November and December
Probability – basic, relative frequency, combined events, two-way data and Venn diagrams	December and January
Decimals - + - x ÷ with decimals and problem solve	December and January
Sequences – nth term and sequences from diagrams	January
Approximations – rounding to decimal places, significant figures and estimation	January and February
Area – rectangles, parallelograms, trapezium, circles, compound shapes and circumference	February and March
Ratio – simplify, share, proportion and speed	February and March
Graphs – linear graphs, real life graphs and distance/time	March
Number properties – types of numbers, prime factorisation and inequalities	March and April
Equations – balancing equations, including with brackets	March and April
Area and volume – circles, surface area and volume of prisms	April and May
FDP – equivalent FDP and proportion	April and May
Percentages – percentage of an amount and increase/decrease	May
Algebra – expanding brackets, factorising, rearranging and expanding double brackets	May
Shapes and angles – angle facts, including in parallel lines	June
Statistics – averages, stem and leaf diagrams, frequency tables, grouping data and grouped frequency tables	June
Graphs – linear graphs, gradient and y-intercept, equation of a straight line and quadratic graphs	July

Year 9 order of topics

Topic	Approximate dates
Number – rounding and estimation, bounds and error intervals, negative numbers, multiplying and dividing decimals	September
Bearings – scale drawings, bearings and journeys	September
Fractions - + - x ÷ fractions including mixed numbers	September
Constructions – constructing triangles, congruent triangles, bisectors and loci	October
Graphs – substitution, linear graphs, quadratic graphs, gradient and y-intercept, y=mx+c	November
Ratio – ratio, proportion, best buys, speed calculations and density calculations	November
Real life graphs – travel graphs, real life graphs and using graphs to model real life situations	December
Number properties – evaluate indices, rules of indices, converting between ordinary numbers and standard form	December
Algebra – collecting like terms, expanding brackets, factorising, expanding double brackets, factorising quadratics	January
FDP – equivalent FDP and expressing proportion	January
Shape – properties of 2D shapes, 3D shapes on isometric paper and nets of 3D shapes	January and February
Equations – solve linear equations, solving linear inequalities, re-arranging formulae	February and March
Perimeter and area – compound shapes, circumference and arc length, area of circles and sectors	March
Pythagoras – applying formula to finding both the longest and shorter sides	March
Angles – angle rules, angles in parallel lines, angle problems, angles in polygons	March and April
Percentages – calculating percentages with both NC and calc methods, using multipliers, calculating reverse percentages	April and May
Sequences – numerical and diagrammatical	May
Probability – single and combined events, relative frequency, Venn diagrams using set notation	May and June
Transformations – reflect, rotate, translate, enlarge and combined transformation	May and June
Equations and Graphs – simultaneous equations	June
Statistics – pie charts, scatter graphs, averages including from grouped frequency table	June
Area and volume – surface area and volume of prisms	June
Trigonometry – finding missing sides and angles	June and July