

Calculation Methods at Allenbourn Middle School

Addition

Ensure that all digits are aligned correctly according to place value and start with the right hand side first.

	5	6	2	1	7
+		3	9	5	8
	6	0	1	7	5
	1	1		1	

Subtraction

Ensure that all digits are aligned correctly according to place value and start with the right hand side first. The largest number is always on top.

	³ 4	¹ 3	⁶ 7	¹² 3	¹ 5
-		9	1	8	6
	3	4	5	4	9

Multiplication

Firstly, the ones digit in the second number by each of the digits in the first number working from right to left.

Secondly, multiply the tens digit in the second number by each of the digits in the first number working from left to right. Don't forget to use a '0' as a placeholder as you are multiplying by 10.

Finally, add the two numbers together.

		1	2	4
×		2	6	
		7	4	4
+	2	¹ 4	² 8	0
	3	2	2	4
	1	1		

Division

Place the number being divided inside the 'bus stop' or frame of the calculation (dividend) and the number that it is being divided by outside (divisor). The answer (quotient) will go above.

Unlike addition and subtraction, we work from the left.

If the answer has a remainder then it can be expressed as a fraction, digit or decimal.

432 ÷ 5 becomes

	8	6	r2
5	4	³ 2	

Answer: 86 remainder 2

496 ÷ 11 becomes

	4	5	r1
1	1	4	⁵ 6

Answer : 45 $\frac{1}{11}$

621 ÷ 4 becomes

	1	5	5	2	5
4	² 6	² 2	1	¹ 0	² 0

Answer: 155.25

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Add and subtract fractions

If the denominators are the same, then we simply add or subtract the numerators

$$\text{e.g. } \frac{2}{3} + \frac{2}{3} = \frac{4}{3} \text{ or } \frac{11}{3}$$



However, when the denominators are different we must find a common denominator using a common multiple which creates equivalent fractions. We then simply add or subtract the numerators.

BIDMAS

A specific method that is used to determine what order calculations are completed.

Multiplying fractions

To multiply fractions, simply multiply the numerators together and then multiply the denominators together.

$$\text{e.g. } \frac{2}{3} \times \frac{3}{5} = \frac{2 \times 3}{3 \times 5} = \frac{6}{15}$$

Dividing fractions by whole numbers

To divide fractions, we multiply the fraction by the reciprocal (flipped version) of the whole number.

$$\text{e.g. } \frac{1}{3} \div 2 = \frac{1}{3 \times 2} = \frac{1}{6}$$



Multiplying and dividing by 10, 100 and 1000

When multiplying or dividing by multiples of 10, we do not use the formal method for multiplication or division. Instead, we shift the place value to the left for multiplication or the right for division.

$$\text{E.g. } 1345 \times 10 = 13,450$$

$$2.987 \times 100 = 298.7$$

$$34,776 \div 1000 = 34.776$$

$$22.43 \div 10 = 2.243$$