Hope View School

Additional Educational Needs Provision

"The only way to learn mathematics is to do mathematics"

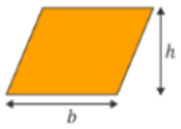
Name		GCSE Maths
Class		

AQA (9-1) need-to-know formulae

Foundation & Higher

Area of a parallelogram:

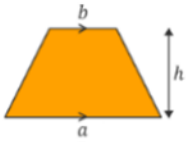
$A = b \times h$



Foundation & Higher

Area of a trapezium:

$A = \frac{1}{2}(a + b)h$



Foundation & Higher

Circumference of a circle:

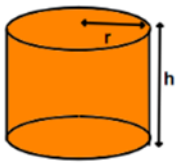
$C = \pi d$

Area of a circle:

$A = \pi r^2$

Foundation & Higher

Volume of a cylinder:

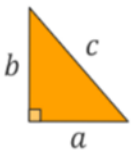


$V = \pi r^2 h$

Foundation & Higher

Pythagoras' theorem:

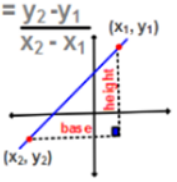
$a^2 + b^2 = c^2$



Foundation & Higher

Gradient of a line (m):

$m = \frac{y_2 - y_1}{x_2 - x_1}$



Foundation & Higher

Equation of a straight line:

$y = mx + c$

gradient y intercept

Foundation & Higher

Volume of a prism:

$V = a \times l$

a is the area of the cross-section

Foundation & Higher

Sum of interior angles:

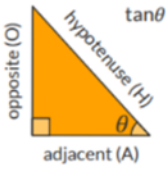
$(n - 2) \times 180$

n is the number of sides the shape has

Foundation & Higher

Trigonometry formulas:

$\sin\theta = \frac{O}{H}$ $\cos\theta = \frac{A}{H}$ $\tan\theta = \frac{O}{A}$



Foundation & Higher

Compound measures:

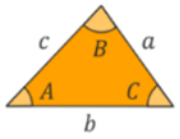
Speed = distance / time

Density = mass / volume

Higher Only

Sine rule:

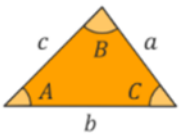
$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$



Higher Only

Cosine rule:

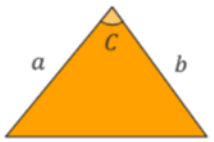
$a^2 = b^2 + c^2 - 2bc\cos A$



Higher Only

Sine area rule:

$\text{Area} = \frac{1}{2}ab\sin C$



Higher Only

Quadratic formula:

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

It solves the quadratic equation:

$ax^2 + bx + c = 0$

Your GCSE Mathematics consists of skills in:	FOUNDATION TIER (%)	HIGHER TIER (%)
NUMBER	25	15
ALGEBRA	20	30
RATIO	25	20
GEOMETRY	15	20
PROBABILITY & STATISTICS	15	15

** Each of the 3 papers will be a mix of question styles, from short, single -mark questions to multi-step problems. The mathematical de-mand will increase as you progresses through the paper.

GCSE Exam Dates 2024

Paper 1 Non-calculator	16th May 2024 (33.3%)
Paper 2 Calculator	3rd June 2024 (33.3%)
Paper 3 Calculator	10th June 2024 (33.3%)

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Simplify – Collect the like terms together or cancel down a fraction.

Solve – Find the value(s) of (x) that makes the equation true.

Calculate – Working out is needed.

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Give reasons – Worded explanations are required

Solving Problems – Break the task down into simple steps.

Literacy

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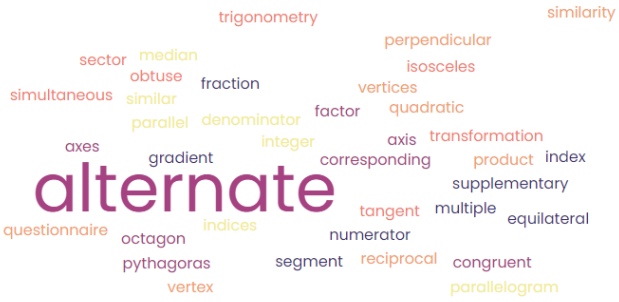


Hope View School

Additional Educational Needs Provision

"The only way to learn mathematics is to do mathematics"

Name		**FS & ELC**	
Class		**Maths**	

PRIME NUMBERS

A number that can only be divided by itself and 1

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 39 .....

SQUARE NUMBERS

A number that is multiplied by itself

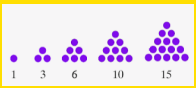
1, 4, 9, 16, 25, 36, 49, 64, 81, 100..

CUBE NUMBERS

A number that is multiplied by itself twice

1, 8, 27, 64, 125, 216, 343, 512, 729, 1000..

TRIANGULAR NUMBERS



1, 3, 6, 10, 15, 21, 28, 36, 45, 55, 66, 78..

CONVERT FDP

Percentage ÷ 100 = decimal
50% ÷ 100 = 0.5
Move the decimal point 2 places to the left.

Decimal x 100 = percentage
0.75 x 100 = 75%
Move the decimal point 2 places to the right.

Percentage to fraction
50% = 50/100 = 5/10 = 1/2

Fraction to decimal
Numerator (top) ÷ denominator (bottom)

1/4 → 1 ÷ 4 = 0.25

BIDMAS

4 + 5 x 8 =

4 + 40 =

44

Brackets ()
Indices ^{2}
Division ÷
Multiplication x
Addition +
Subtraction -

SPLIT USING RATIO

Add
Divide
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Split £100 into the ratio 4 : 1
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20 x 4 = £80
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FRACTIONS

3/7 of £70

70 ÷ 7 = 10

10 x 3 = £30

Divide by the bottom (denominator). Multiply by the top (numerator).

PERCENTAGES

Percent means out of a hundred.

20% of £50

20/100 of £50

50 ÷ 100 x 20 = £10

DECIMALS

Putting decimals in increasing order:

0.1 0.12 0.2

Rounding:

Round 0.84623 to 2 decimal places:

0.85

UNITS AND CONVERSIONS

1cm = 10mm
1m = 100cm
1km = 1,000m
1kg = 1,000g
1L = 1,000ml

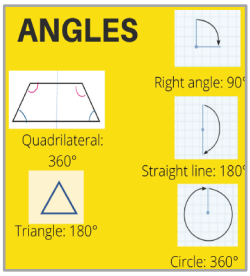
x 10 →
1cm = 10mm
6cm = 60mm
→ x 10

← ÷ 10
1cm = 10mm
7.5cm = 75mm
← ÷ 10

PERIMETER & AREA

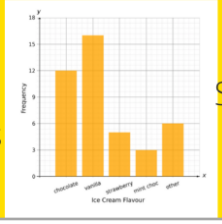
Perimeter: add all the sides
10 + 10 + 6 + 6 = 32**cm**
Area: length x width
10 x 6 = 60**cm²**

ANGLES



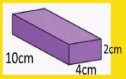
GRAPHS

Line graph: Show data that changes over time



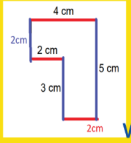
Bar graph: Show groups of data

VOLUME



Volume:
length x width x height
10 x 4 x 2 = 80**cm³**

MISSING LENGTHS



Horizontal lines:
4 - 2 = 2cm

Vertical lines:
5 - 3 = 2cm

MEAN AND RANGE

4, 8, 5, 3

Mean: 4 + 8 + 5 + 3 = 20
20 ÷ 4 = 5

Range: 8 - 3 = 5

Mean (average): add all the numbers, then divide by how many there are

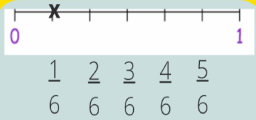
Range (variation): highest minus lowest

PROBABILITY

Probability of pink:

1/6

Number of things you want
Total



Functional Skills Exam Papers

Paper 1 Non-calculator	30min—25%
Paper 2 Calculator	1h30—75%

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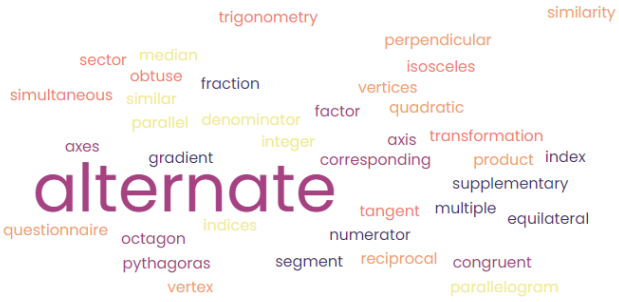

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Class		**Transition**	

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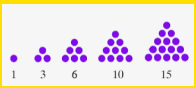

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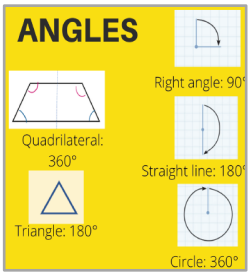

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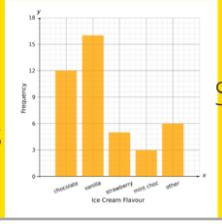

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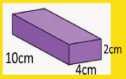

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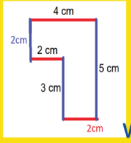

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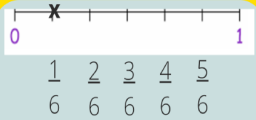

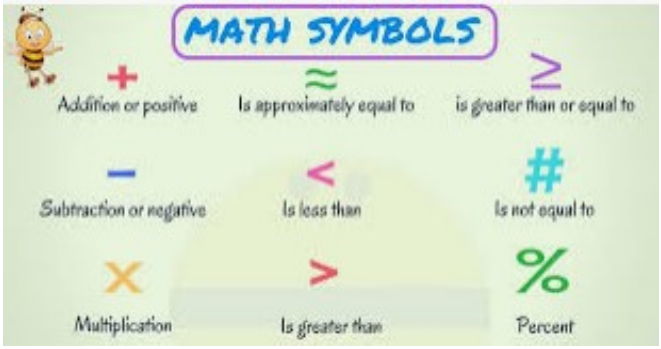

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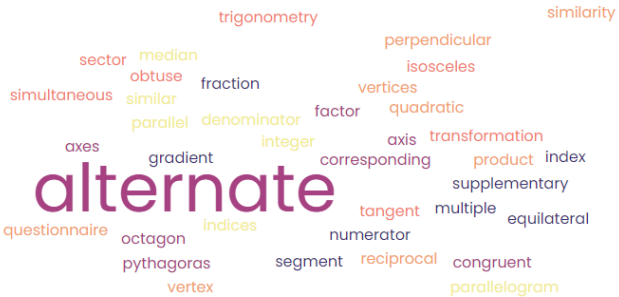

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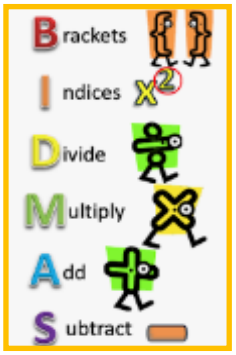
Name		Stage 6
Class		Maths



Multiply up to 4-digit by 2-digit

1	3	2	
	1	5	4
×		2	6
	9	2	4
3	0	8	0
4	0	0	4
1	1		

Start with the ones.

154 × 6 = 924

154 × 20 = 3080

3080 + 924 = 4004

1 times table
1x1= 1
2x1= 2
3x1= 3
4x1= 4
5x1= 5
6x1= 6
7x1= 7
8x1= 8
9x1= 9
10x1=10
11x1=11
12x1=12

2 times table
1x2= 2
2x2= 4
3x2= 6
4x2= 8
5x2=10
6x2=12
7x2=14
8x2=16
9x2=18
10x2=20
11x2=22
12x2=24

3 times table
1x3= 3
2x3= 6
3x3= 9
4x3=12
5x3=15
6x3=18
7x3=21
8x3=24
9x3=27
10x3=30
11x3=33
12x3=36

4 times table
1x4= 4
2x4= 8
3x4=12
4x4=16
5x4=20
6x4=24
7x4=28
8x4=32
9x4=36
10x4=40
11x4=44
12x4=48

5 times table
1x5= 5
2x5=10
3x5=15
4x5=20
5x5=25
6x5=30
7x5=35
8x5=40
9x5=45
10x5=50
11x5=55
12x5=60

6 times table
1x6= 6
2x6=12
3x6=18
4x6=24
5x6=30
6x6=36
7x6=42
8x6=48
9x6=54
10x6=60
11x6=66
12x6=72

7 times table
1x7= 7
2x7=14
3x7=21
4x7=28
5x7=35
6x7=42
7x7=49
8x7=56
9x7=63
10x7=70
11x7=77
12x7=84

8 times tables
1x8= 8
2x8=16
3x8=24
4x8=32
5x8=40
6x8=48
7x8=56
8x8=64
9x8=72
10x8=80
11x8=88
12x8=96

9 times tables
1x9= 9
2x9= 18
3x9= 27
4x9= 36
5x9= 45
6x9= 54
7x9= 63
8x9= 72
9x9= 81
10x9= 90
11x9= 99
12x9=108

10 times tables
1x10= 10
2x10= 20
3x10= 30
4x10= 40
5x10= 50
6x10= 60
7x10= 70
8x10= 80
9x10= 90
10x10=100
11x10=110
12x10=120

11 times tables
1x11= 11
2x11= 22
3x11= 33
4x11= 44
5x11= 55
6x11= 66
7x11= 77
8x11= 88
9x11= 99
10x11=110
11x11=121
12x11=132

12 times tables
1x12= 12
2x12= 24
3x12= 36
4x12= 48
5x12= 60
6x12= 72
7x12= 84
8x12= 96
9x12=108
10x12=120
11x12=132
12x12=144

Short Division

Start from the left.

		4	4	0	5
12	5	$^{5}2$	$^{4}8$	6	$^{6}0$

5 ÷ 12 = 0 r5

52 ÷ 12 = 4 r4

48 ÷ 12 = 4

6 ÷ 12 = 0 r6

Add and Subtract Whole Numbers

Column Method

	4	5	8	6	4
+	2	3	4	9	7
	6	9	3	6	1
		1	1	1	

Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.

	3	5	$^{6}\not{7}$	$^{13}\not{4}$	$^{1}2$
-		3	4	7	6
	3	2	2	6	6

Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.

Reason from Known Facts

90 ÷ 10 = 9 **so 90 ÷ 20 = 4.5 and 90 ÷ 5 = 18**

16 × 9 = 144 **so 1.6 × 9 = 14.4**

4352 ÷ 17 = 256
so 256 × 18 = 4352 + 256 = 4608

3786 + 2850 = 6636
so 4786 + 2850 = 7636
and 2786 + 3850 = 6636
and 8636 – 3786 = 4850

Common Factors

Factors of 48

1	2	3	4	6	8	12	16	24	48

Factors of 30

1	2	3	5	6	10	15	30

Common factors: 1, 2, 3, 6

Common Multiples

Multiples of 3

3	...	18	21	24	...	39	42

Multiples of 7

7	14	21	28	35	42

Common multiples: 21, 42...

Mental Calculations and Estimation

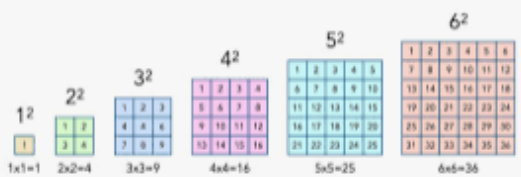
Order of calculations:

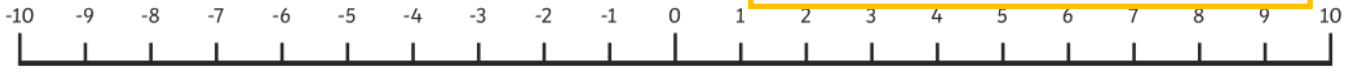
50 × 34 × 2 = 50 × 2 × 34 = 100 × 34 = 3400

Money: £8.99 + £3.49 = £12.48

Use £9 + £3.50 = £12.50 and subtract 2p

Square Numbers





Command words

Estimate – Do not work out the exact answer. Round numbers to 1 significant figure.

Simplify – Collect the like terms together or cancel down a fraction.

Solve – Find the value(s) of (x) that makes the equation true.

Calculate – Working out is needed.

Factorise – Take out the common factors or factorise into two brackets if no common factor exists.

Expand – Multiply out the bracket and simplify if needed.

Work out – A written or mental calculation is needed.

Write down – Written working is not required.

Measure – Use a ruler or protractor.

Draw accurately/Construct – Use a ruler and protractor, lengths and angles must be accurate.

Diagram NOT accurately drawn – Don't measure angles or sides.

Give reasons – Worded explanations are required

Solving Problems – Break the task down into simple steps.

Literacy

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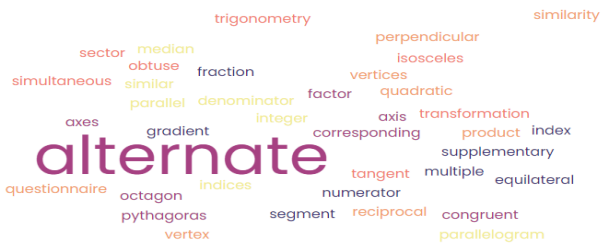
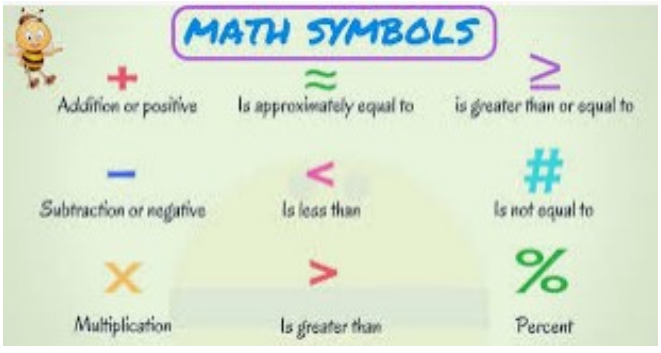


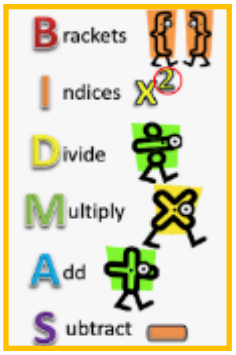


Hope View School

Additional Educational Needs Provision

"The only way to learn mathematics is to do mathematics"

Name		Stage 5
Class		Maths



Multiply up to 4-digit by 2-digit

1	3	2	
	1	5	4
×		2	6
	9	2	4
3	0	8	0
4	0	0	4
1	1		

Start with the ones.

154 × 6 = 924

154 × 20 = 3080

3080 + 924 = 4004

1 times table
1x1= 1
2x1= 2
3x1= 3
4x1= 4
5x1= 5
6x1= 6
7x1= 7
8x1= 8
9x1= 9
10x1=10
11x1=11
12x1=12

2 times table
1x2= 2
2x2= 4
3x2= 6
4x2= 8
5x2=10
6x2=12
7x2=14
8x2=16
9x2=18
10x2=20
11x2=22
12x2=24

3 times table
1x3= 3
2x3= 6
3x3= 9
4x3=12
5x3=15
6x3=18
7x3=21
8x3=24
9x3=27
10x3=30
11x3=33
12x3=36

4 times table
1x4= 4
2x4= 8
3x4=12
4x4=16
5x4=20
6x4=24
7x4=28
8x4=32
9x4=36
10x4=40
11x4=44
12x4=48

5 times table
1x5= 5
2x5=10
3x5=15
4x5=20
5x5=25
6x5=30
7x5=35
8x5=40
9x5=45
10x5=50
11x5=55
12x5=60

6 times table
1x6= 6
2x6=12
3x6=18
4x6=24
5x6=30
6x6=36
7x6=42
8x6=48
9x6=54
10x6=60
11x6=66
12x6=72

7 times table
1x7= 7
2x7=14
3x7=21
4x7=28
5x7=35
6x7=42
7x7=49
8x7=56
9x7=63
10x7=70
11x7=77
12x7=84

8 times tables
1x8= 8
2x8=16
3x8=24
4x8=32
5x8=40
6x8=48
7x8=56
8x8=64
9x8=72
10x8=80
11x8=88
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9 times tables
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2x9= 18
3x9= 27
4x9= 36
5x9= 45
6x9= 54
7x9= 63
8x9= 72
9x9= 81
10x9= 90
11x9= 99
12x9=108

10 times tables
1x10= 10
2x10= 20
3x10= 30
4x10= 40
5x10= 50
6x10= 60
7x10= 70
8x10= 80
9x10= 90
10x10=100
11x10=110
12x10=120

11 times tables
1x11= 11
2x11= 22
3x11= 33
4x11= 44
5x11= 55
6x11= 66
7x11= 77
8x11= 88
9x11= 99
10x11=110
11x11=121
12x11=132

12 times tables
1x12= 12
2x12= 24
3x12= 36
4x12= 48
5x12= 60
6x12= 72
7x12= 84
8x12= 96
9x12=108
10x12=120
11x12=132
12x12=144

Short Division

Start from the left.

		4	4	0	5
12	5	$^{5}2$	$^{4}8$	6	$^{6}0$

5 ÷ 12 = 0 r5

52 ÷ 12 = 4 r4

48 ÷ 12 = 4

6 ÷ 12 = 0 r6

Add and Subtract Whole Numbers

Column Method

	4	5	8	6	4
+	2	3	4	9	7
	6	9	3	6	1
		1	1	1	

Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.

	3	5	$^{6}\not{7}$	$^{13}\not{4}$	$^{1}\not{2}$
-		3	4	7	6
	3	2	2	6	6

Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.

Reason from Known Facts

90 ÷ 10 = 9 **so 90 ÷ 20 = 4.5 and 90 ÷ 5 = 18**

16 × 9 = 144 **so 1.6 × 9 = 14.4**

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Factors of 48

1	2	3	4	6	8	12	16	24	48

Factors of 30

1	2	3	5	6	10	15	30

Common factors: 1, 2, 3, 6

Common Multiples

Multiples of 3

3	...	18	21	24	...	39	42

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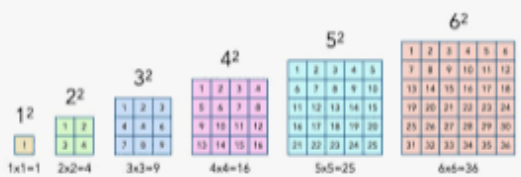

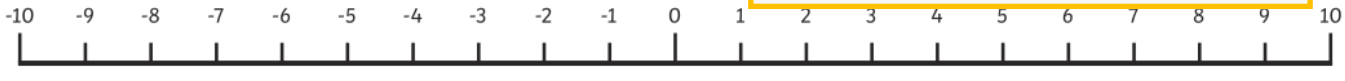

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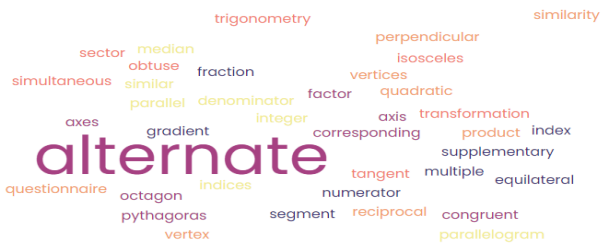

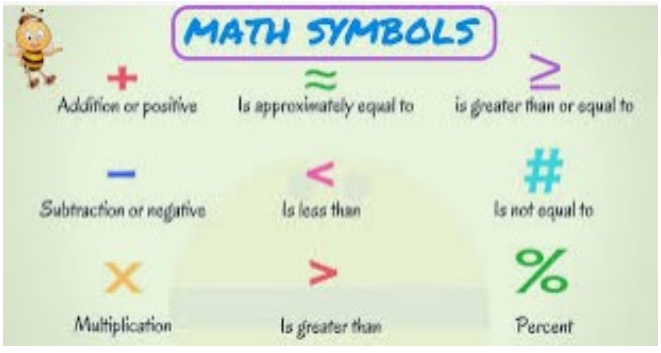

Hope View School

Additional Educational Needs Provision

"The only way to learn mathematics is to do mathematics"

Name		Stage 4 Maths
Class		

1 times table

1x1= 1
2x1= 2
3x1= 3
4x1= 4
5x1= 5
6x1= 6
7x1= 7
8x1= 8
9x1= 9
10x1=10
11x1=11
12x1=12

2 times table

1x2= 2
2x2= 4
3x2= 6
4x2= 8
5x2=10
6x2=12
7x2=14
8x2=16
9x2=18
10x2=20
11x2=22
12x2=24

3 times table

1x3= 3
2x3= 6
3x3= 9
4x3=12
5x3=15
6x3=18
7x3=21
8x3=24
9x3=27
10x3=30
11x3=33
12x3=36

4 times table

1x4= 4
2x4= 8
3x4=12
4x4=16
5x4=20
6x4=24
7x4=28
8x4=32
9x4=36
10x4=40
11x4=44
12x4=48

5 times table

1x5= 5
2x5=10
3x5=15
4x5=20
5x5=25
6x5=30
7x5=35
8x5=40
9x5=45
10x5=50
11x5=55
12x5=60

6 times table

1x6= 6
2x6=12
3x6=18
4x6=24
5x6=30
6x6=36
7x6=42
8x6=48
9x6=54
10x6=60
11x6=66
12x6=72

7 times table

1x7= 7
2x7=14
3x7=21
4x7=28
5x7=35
6x7=42
7x7=49
8x7=56
9x7=63
10x7=70
11x7=77
12x7=84

8 times tables

1x8= 8
2x8=16
3x8=24
4x8=32
5x8=40
6x8=48
7x8=56
8x8=64
9x8=72
10x8=80
11x8=88
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9 times tables

1x9= 9
2x9= 18
3x9= 27
4x9= 36
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6x9= 54
7x9= 63
8x9= 72
9x9= 81
10x9= 90
11x9= 99
12x9=108

10 times tables

1x10= 10
2x10= 20
3x10= 30
4x10= 40
5x10= 50
6x10= 60
7x10= 70
8x10= 80
9x10= 90
10x10=100
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1x11= 11
2x11= 22
3x11= 33
4x11= 44
5x11= 55
6x11= 66
7x11= 77
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2x12= 24
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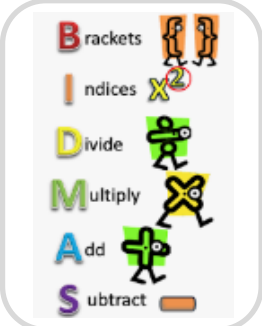

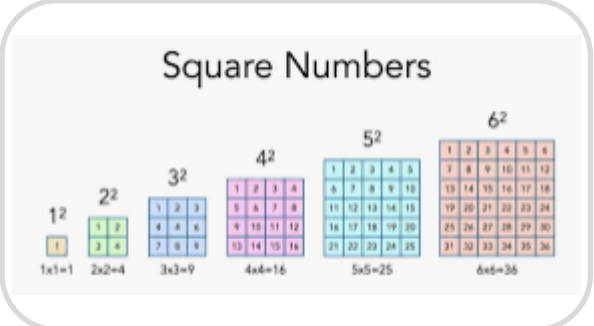

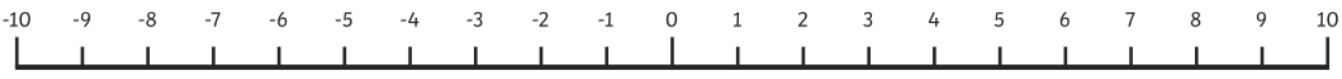

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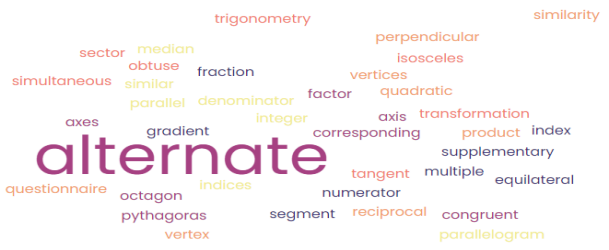

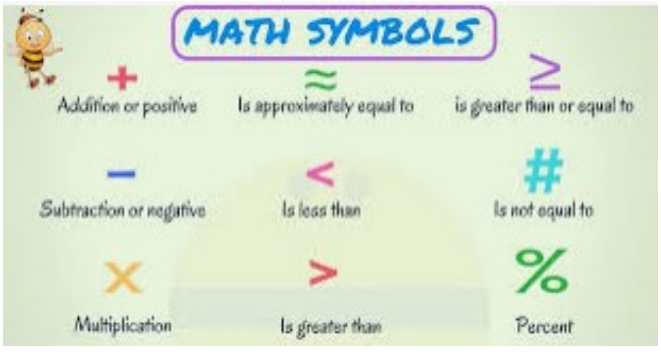

Hope View School

Additional Educational Needs Provision

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Class		

1 times table

1x1= 1
2x1= 2
3x1= 3
4x1= 4
5x1= 5
6x1= 6
7x1= 7
8x1= 8
9x1= 9
10x1=10
11x1=11
12x1=12

2 times table

1x2= 2
2x2= 4
3x2= 6
4x2= 8
5x2=10
6x2=12
7x2=14
8x2=16
9x2=18
10x2=20
11x2=22
12x2=24

3 times table

1x3= 3
2x3= 6
3x3= 9
4x3=12
5x3=15
6x3=18
7x3=21
8x3=24
9x3=27
10x3=30
11x3=33
12x3=36

4 times table

1x4= 4
2x4= 8
3x4=12
4x4=16
5x4=20
6x4=24
7x4=28
8x4=32
9x4=36
10x4=40
11x4=44
12x4=48

5 times table

1x5= 5
2x5=10
3x5=15
4x5=20
5x5=25
6x5=30
7x5=35
8x5=40
9x5=45
10x5=50
11x5=55
12x5=60

6 times table

1x6= 6
2x6=12
3x6=18
4x6=24
5x6=30
6x6=36
7x6=42
8x6=48
9x6=54
10x6=60
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7 times table

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2x7=14
3x7=21
4x7=28
5x7=35
6x7=42
7x7=49
8x7=56
9x7=63
10x7=70
11x7=77
12x7=84

8 times tables

1x8= 8
2x8=16
3x8=24
4x8=32
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9 times tables

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2x9= 18
3x9= 27
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6x9= 54
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1x10= 10
2x10= 20
3x10= 30
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5x10= 50
6x10= 60
7x10= 70
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1x11= 11
2x11= 22
3x11= 33
4x11= 44
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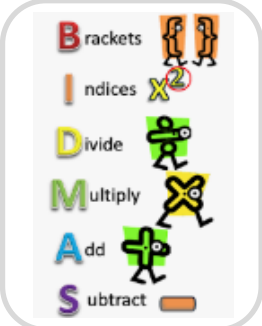

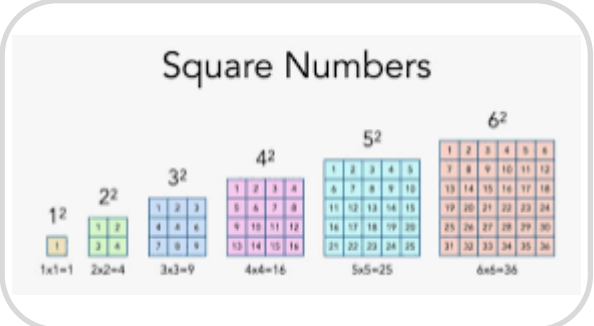

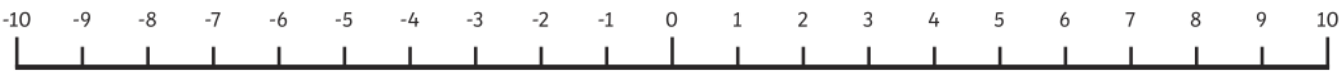

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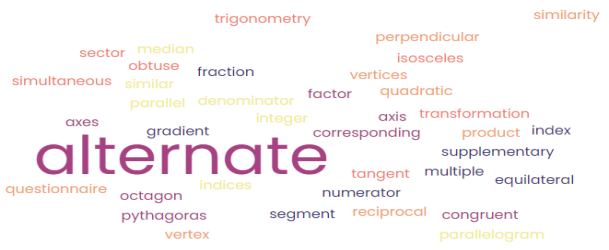
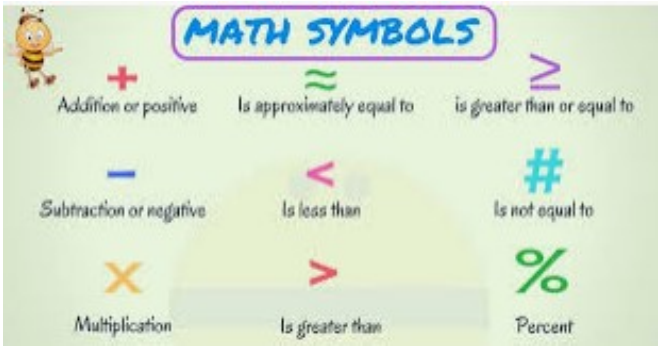




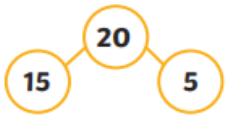
Hope View School

Additional Educational Needs Provision

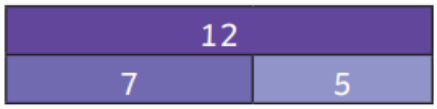
"The only way to learn mathematics is to do mathematics"

Name		Stage 2 Maths
Class		

Addition and Subtraction Bonds to 20



15 + 5 = 20
20 – 5 = 15
20 – 15 = 5

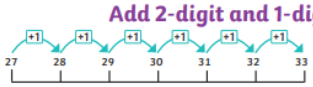


7 + 5 = 12
12 – 5 = 7
12 – 7 = 5

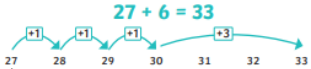
4 + 3 = 7

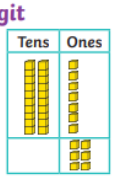
15 – 7 = 8

Add 2-digit and 1-digit

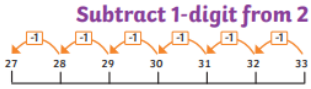


27 + 6 = 33

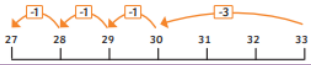


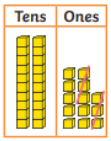


Subtract 1-digit from 2 digit



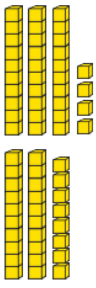
33 - 6 = 27





Add 2-digit numbers

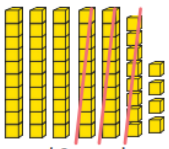
34 + 28 = 62



3 tens and 4 ones
add
2 tens and 8 ones
equals
5 tens and 12 ones
becomes
6 tens and 2 ones

Subtract 2-digit numbers

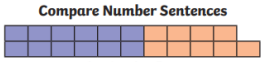
62 – 28 = 34



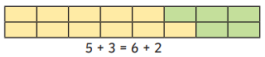
6 tens and 2 ones becomes
5 tens and 12 ones subtract
2 tens and 8 ones equals
3 tens and 4 ones

Mental Methods

Compare Number Sentences



6 + 4 < 6 + 5

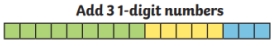


5 + 3 = 6 + 2

Related facts

5 + 4 = 9 so 50 + 40 = 90

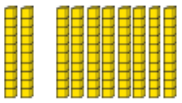
Add 3 1-digit numbers

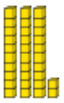


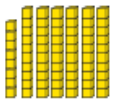
9 + 5 + 3 = 17

Addition and Subtraction Bonds to 100

2 + 8 = 10
so 20 + 80 = 100







32 + 68 = 100
3 tens and 2 ones + 6 tens and 8 ones
= 9 tens and 10 ones = 10 tens =one hundred

More or Less/ Add and Subtract 1s and 10s

Add and subtract 1s

24 + 1 = 25
24 + 2 = 26
24 + 3 = 27

24	25	26	27	28	29	30	31

37 – 1 = 36
37 – 2 = 35
37 – 3 = 34

There are 7 flowers in a vase. One more is added. Now there are 8 flowers.

10 More or Less

30	40	50	60	70	80
47	57	67	77	87	97

The ones digit stays the same.

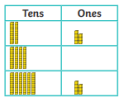
10 less	Number	10 more
	1	
	11	
34		21
	44	
		54

Take care when crossing hundreds:

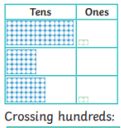
86	96	106	116

Add and Subtract 10s

10	30	50	70	90
3	33	63	93	



27
+ 40
67

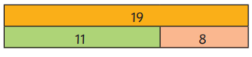


72
- 30
42

Crossing hundreds:

74	94	114	134

Check Calculations



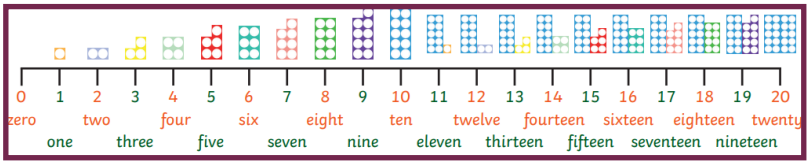
19 – 8 = 11 can be checked using 8 + 11 = 19

32 + 5 = 82 x Spot that 5 tens have been added not 5 ones

28 – 26 = 12 x Spot that 28 and 26 are very close together, so difference won't be 12.

37 – 4 = 41 x Spot that if subtracting 4 the answer will be smaller.

68 – 40 = 64 x Spot that 4 ones have been subtracted and not 4 tens.



Command words

Estimate – Do not work out the exact answer. Round numbers to 1 significant figure.

Simplify – Collect the like terms together or cancel down a fraction.

Solve – Find the value(s) of (x) that makes the equation true.

Calculate – Working out is needed.

Factorise – Take out the common factors or factorise into two brackets if no common factor exists.

Expand – Multiply out the bracket and simplify if needed.

Work out – A written or mental calcula-

hundreds
tens
ones
zero
place value
greater than
less than
order
partition
digit

Literacy

Add
Total
Make
Plus
Sum
More
Altogether
Difference
Leave
Subtract
Difference between
Less
Minus
Take away
Mentally, Orally
Column Addition
Column Subtraction
Estimate
Inverse operation
Solve problems
Number facts
Place Value