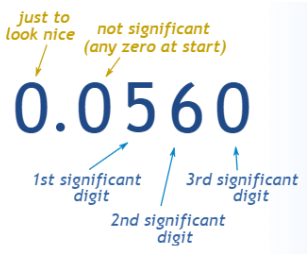
Autumn 1	Place value • Rounding to any given degree of accuracy (dp or sf) • Estimating answers	Autumn 2	Ratio • Writing in the form 1:n • Solving ratio problems • Maps and scales
	FDP • Converting between fractions, decimals and percentages • Ordering FDP • One number as a fraction of another		Proportion • Unitary • Currency • Best buy • Recipes
	Simplifying algebra • Identifying an equation, expression, identity, formulae • Expanding a single bracket • Expanding brackets and simplifying • Factorising by a single term		Area & Perimeter • Area of a trapezium • Area of compound shapes • Parts of a circle • Area of a circle • Circumference of a circle
	Percentages • Calculating a percentage increase or decrease • Expressing one number as a percentage of another		Fractions • Addition of fractions with different denominators • Subtraction of fractions with different denominators • Multiplication of fractions including mixed numbers • Division of fractions including mixed numbers
	Data • Two-way tables • Frequency trees • Displaying grouped data • Compound bar charts • Comparative bar charts		

Year 8 Autumn 1

Significant Figures



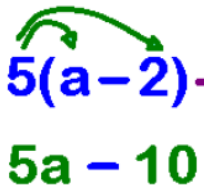
Expression, Equation or Formula?

Expressions: Algebra with no equals sign, eg: 2x+3y

Equations: Two expressions that are equal, eg: 3x+4=2x-5

Formula: A Rule or fact with mathematical symbols, eg: v = u + at

Expanding Brackets



Factorising

$4a - 6$

Common factor = 2

$4a - 6$

÷2 ÷2

$2a - 3$

$2(2a - 3)$

Truncation

47·3|12 --> 47·3

47·3|87 --> 47·3

Error Bounds

6.1 rounded to 1dp

6.0 ↓ 6.05 6.1 ↓ 6.15 6.2

Addition/Multiplication

Upper: upper and upper

Lower: lower and lower

Subtraction/Division

Upper: Upper and lower

Lower: Lower and Upper

Simplifying Algebra

$x + 4y + 6x + 2y \equiv 7x + 6y$

$3x + y - 2x + 4y \equiv x + 5y$

Rounding

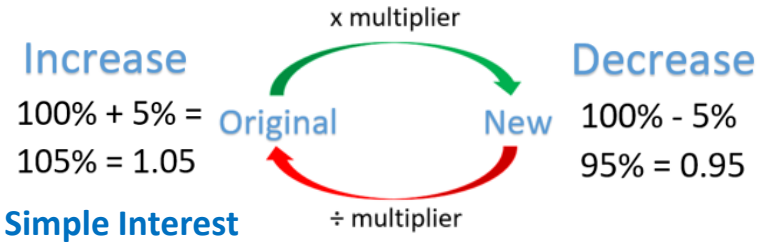
round 7.63 to 1 decimal place

7.63

↑ 3 is less than 5 (half way) so round down

7.63 rounded to 1 decimal place is 7.6

Percentages



Expanding Expressions

$(x+7)(x-4)$

$x^2 - 4x + 7x - 28$

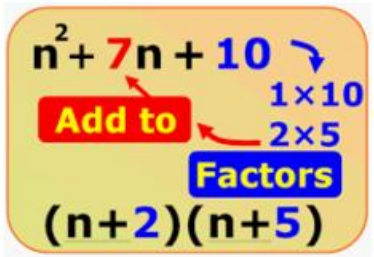
$x^2 + 3x - 28$

$(x-7)(x+7)$

$x^2 + 7x - 7x - 49$

$x^2 - 49$

Factorising Quadratics



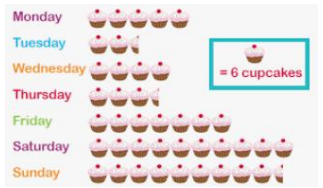
Simple Interest

Interest is calculated on the original investment, then multiplied by the number of years the money is invested.

Fractions, Decimals and Percentages

Decimal	Percentage	Fraction
0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.75	75%	$\frac{3}{4}$
0.2	20%	$\frac{1}{5}$
0.1	10%	$\frac{1}{10}$
$0.\dot{3}$	$33.\dot{3}\%$	$\frac{1}{3}$

Pictogram



Tally

1	I
2	II
3	III
4	IIII
5	𝍸

Rounding 10 / 100 / 1000

Circle the number you are rounding

Look to the number on the right.

5 or above: round up

4 or below: stay the same

Estimating

Round to 1 significant figures

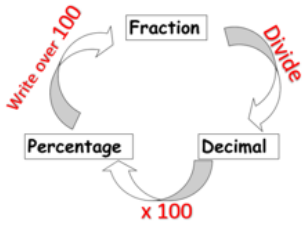
562 → 600

233 → 200

600 x 200 = 120,000

Percentage Change

$$\frac{change}{original\ amount} \times 100$$



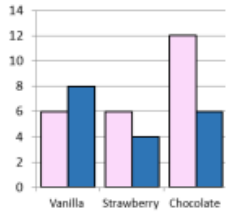
Two-way table

	Baseball	Basketball	Football	Total
Male	13	15	20	48
Female	23	16	13	52
Total	36	31	33	100

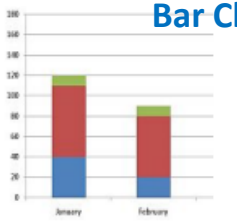
A two way table represents two sets of data.

Look for rows or columns with only one figure missing.

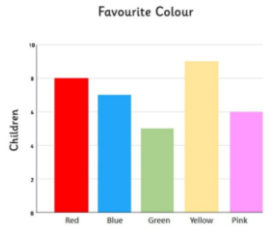
Bar Chart



Comparative bar charts show data side by side



Compound bar charts show data stacked



Percentages – Non-Calculator

Non-calculator	50% ÷2	25% ÷4	10% ÷10
5% ÷10 ÷2	1% ÷100	75% 50% + 25%	20% 10% + 10%

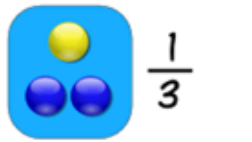
Year 8 Autumn 2

Ratio

Ratio compares the size of one part to another part.

3 : 1

Proportion compares the size of one part to the size of the whole.



Divide all parts of the ratio by the highest common factor.

16 : 20 (÷4, ÷4) → 4 : 5

Sharing in a Ratio

Share £60 in the ratio 3 : 2 : 1.

3 + 2 + 1 = 6

60 ÷ 6 = 10

3 x 10 = 30, 2 x 10 = 20, 1 x 10 = 10

£30 : £20 : £10

Map Scales

Map scale 1 : 10 000

(1cm on the map = 10 000 cm in real life)

3cm on the map

1 : 10 000

3cm : 30 000cm

Now convert it into m

30 000 cm ÷ 100 = 300m

Combining Ratio

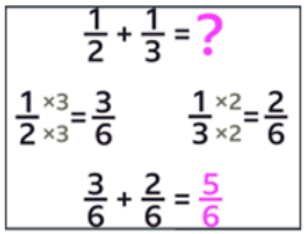
Write out the ratio's. Find the LCM of 2 and 5. Multiply the other part of the ratio by the same number.

Men	:	Children	:	Women
3	:	2		
		5	:	4
15	:	10	:	8

(x5 from 3 to 15; x2 from 5 to 10)

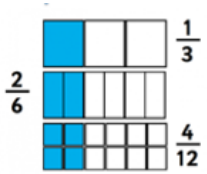
Fractions

Adding/Subtracting



$\frac{2}{4} \times \frac{3}{6} = \frac{6}{24}$

Equivalent fractions



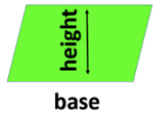
Dividing

$\frac{3}{4} \div \frac{2}{7}$

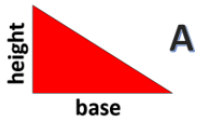
Keep $\frac{3}{4}$ Change $\times$ Flip $\frac{7}{2}$ $= \frac{21}{8}$

Area

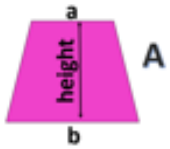
A = bh



A = bh



$A = \frac{bh}{2}$

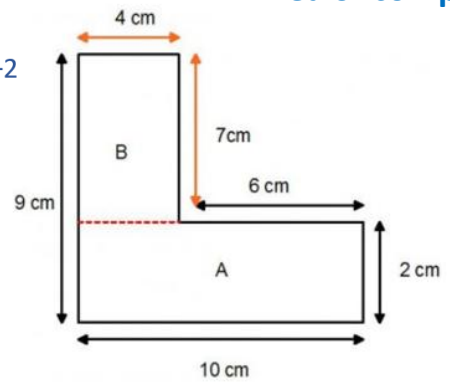


$A = \frac{1}{2}(a+b)h$

1 : n

2 : 7 (÷2, ÷2) → 1 : 3.5

Area of compound shapes



Split the shape.

Find the area of each shape then add them together.

A: 10cm x 2cm = 20cm²

B: 7cm x 4cm = 28cm²

Total Area: 20 + 28 = 48cm²

Best Buy

160g = 188p (÷160, ÷160) → 1g = 1.175p

1000g = 1355p (÷1000, ÷1000) → 1g = 1.355p

Currency Exchange

British Pound	1.00 GBP
Euro	1.24
US Dollar	1.68

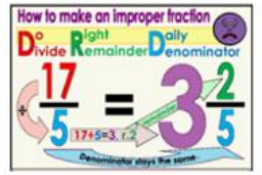
£200 in Euros is:

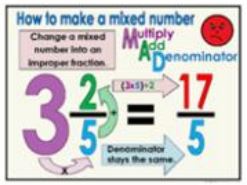
200 x 1.24 = 248 Euros

200 US Dollars in Pounds is:

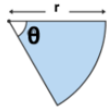
200 ÷ 1.68 = £119.05

Mixed Numbers & Improper Fractions



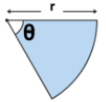


Length of an arc



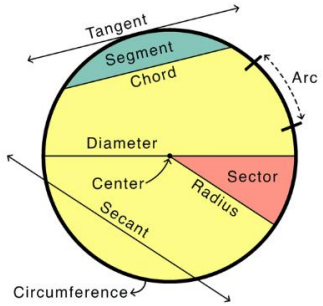
$A = \frac{\theta}{360} 2\pi r$

Area of a sector

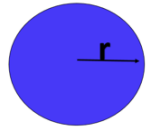


$A = \frac{\theta}{360} \pi r^2$

Parts of a circle

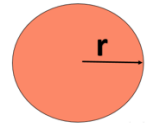


Area of a circle



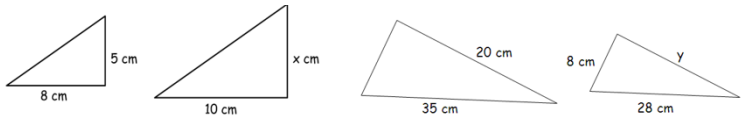
$A = \pi r^2$

Circumference of a circle



$C = 2\pi r$

Similarity



Scale Factor = 10 ÷ 8 = 1.25

x = 5 x 1.25 = 6.25 cm

Scale Factor = 35 ÷ 28 = 1.25

x = 20 ÷ 1.25 = 16 cm

Recipes

Ingredients to make **16** gingerbread men

180 g	flour
40 g	ginger
110 g	butter
30 g	sugar

Recipe for 32 people

Double the recipe

Recipe for 24 people

Find a half and add on

Spring 1	Linear graphs • Midpoint of a line • Graphs in form $y = mx + c$ • Do coordinates lie on, above or below a line	Spring 2	Scatter Diagrams • Representing data • Understanding correlation • Using a line of best fit • Interpreting a scatter diagram
	Sequences • Generating a sequence from a rule (linear) • Finding a specific term • Recognise the difference between linear and non-linear sequences • Finding the missing term of a linear sequence		Angles • Angle notation • Alternate • Corresponding • Co-interior
	Indices • Multiplying • Dividing • Brackets		Division • Dividing by a decimal
	Product of prime factors • Expressing numbers as product of prime factors • HCF • LCM		Substitution • Substituting into more complex formula including rearranging • Writing formulae
	Data • Averages • Comparing data • Misleading data		Volume and Surface Area • Volume cuboids • Surface Area Cuboids

Summer 1	Angles in polygons • Exterior angles • Interior angles • Sum of interior angles	Summer 2	Transformations • Reflecting shapes in any given line • Describing reflections • Rotating about a given point • Describing rotations • Translating a shape using a vector • Describing translations
	Compound measures • Calculating using speed distance and time • Changing units of speed		Enlargement • Enlarging a shape • Enlarging a shape given a centre of enlargement • Describing enlargements
	Standard Form • Writing large and small numbers in standard form • Writing ordinary numbers from standard form • Correcting standard form • Ordering numbers		Real life graphs • Proportion graphs • Distance time graphs
	Solving Equations • Solving equations with unknowns on both sides • Solving equations involving brackets • Forming equations using perimeter and angle rules		• **Assessment** • **Consolidation work/projects: Individual academies to decide.**