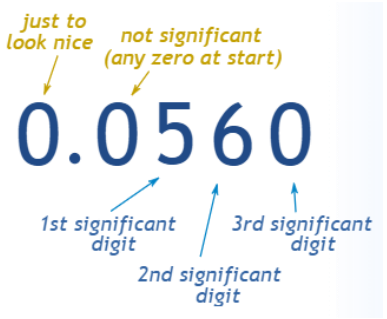
Autumn 1	Rounding: • Comparing and ordering • Rounding decimal places and 1 sf	Autumn 2	Metric units • Converting between metric units of measure, capacity and mass
	Multiplying/Dividing powers of 10 • Multiplying whole and decimals by any power of ten • Dividing whole and decimals by any power of ten		Division • Dividing by two digits • Remainders as decimals • Understanding the significance of remainders
	Multiplication • Multiplying by any number of digits • Multiplying decimals by a whole number		Averages • Calculating mean, median, mode • Calculating range
	Negative Numbers • Use negative numbers in context • Order positive and negative number • Calculating with negative numbers: +, -< x, ÷		Perimeter • Perimeter of basic shapes • Perimeter of compound shapes when missing sides need to be found
	Simplifying algebra • Algebraic notation • Simplifying single term • Simplifying multiple terms		Factors, multiples, primes • Listing factors of a given number • Finding multiples of a given number • Recognising prime numbers • HCF using listing factors • LCM by listing multiples

Year 7 Autumn 1

Significant Figures



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

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

Simplifying Algebra

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

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

Rounding

To 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

Expanding Brackets

$5(a-2)$

$5a - 10$

Multiplying Decimals

3.4 x 2.5

x10 x10

34 x 25

Calculate the answer

34 x 25 = 850

Now divide the answer

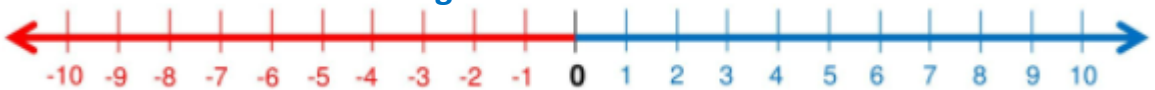
850 ÷10 ÷10 = 8.5

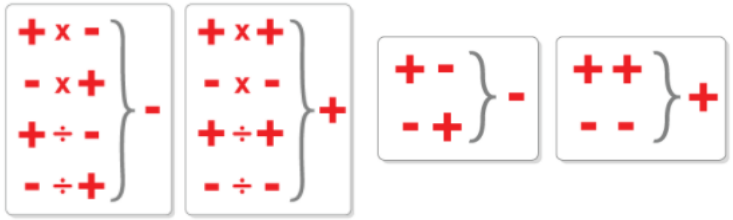
Error Bounds

6.1 rounded to 1dp

6.0 ↓ 6.05 — 6.1 ↓ 6.15 — 6.2

Negative Numbers





Ordering Decimals

Add zeros so that all the numbers have the same number of decimal places. Order the numbers

1.4	1.400	1.045
1.75	1.750	1.231
1.045	1.045	1.4
1.56	1.560	1.56
1.231	1.231	1.75

Place Value

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal point	Tenths	Hundredths	Thousandths	Ten-thousandths	Hundred-thousandths	Millionths
							.						

Multiplying by 10, 100, 1000

When you multiply by 10 all number move one place to the left.
When you multiply by 100 all number move two places to the left.

Dividing by 10, 100, 1000

When you divide by 10 all number move one place to the right.
When you divide by 100 all number move two places to the right.

Standard Form

Positive Power = Large Number

$4.3 \times 10^6 = 4\,300\,000$

Negative Power = Small Number

$2.1 \times 10^{-3} = 0.021$

$(4 \times 10^6) \times (2 \times 10^3)$

$= 8 \times 10^9$

Multiplication

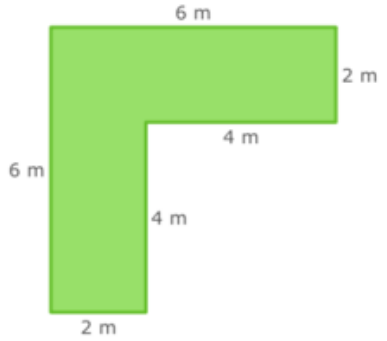
$$\begin{array}{r} 134 \\ \times\ 5 \\ \hline 670 \\ \hline 12 \end{array}$$

$$\begin{array}{rl} & 96 \\ 32 & \times \\ \hline 192 & \Leftarrow \text{this is } 96 \times 2 \\ 2880 & \Leftarrow \text{this is } 96 \times 30 \\ \hline 3072 & \Leftarrow \text{this is } 96 \times 32 \end{array}$$

Year 7 Autumn 2

Perimeter

The distance around a 2D shape



6m + 2m + 4m + 4m + 2m + 6m = 24m

Dividing Decimals

3.6 ÷ 0.4

Multiply the divisor to make it a whole number; multiply the other number by the same amount.

3.6 ÷ 0.4

x10 x10

36 ÷ 4 = 9

Averages

Mode - The most common value

Median - The central number when the data is ordered

Mean - Add all the values up and divide by the number of values

Range - Difference between highest and lowest value

Division

$3\overline{)72}$ 7 ÷ 3 = 2 remainder 1

$3\overline{)7^{1}2}$ 12 ÷ 3 = 4

$3\overline{)7^{1}2}$ so 72 ÷ 3 = 24

$12\overline{)744}$ 7 ÷ 12 = 0 carry 7

$12\overline{)7^{7}4^{2}4}$ 74 ÷ 12 = 6 carry 2

$12\overline{)7^{7}4^{2}4}$ 24 ÷ 12 = 2

113 ÷ 2

$2\overline{)1^{1}1^{1}3.^{1}0}$ = 056.5

Factors, Multiples and Primes

Multiples are numbers in a given times table:

Multiples of 4:
4, 8, 12, 16, 20, 24, ...

Factors are numbers that divide into a given number with no remainders.

Factors of 12: 1, 2, 3, 4, 6, 12
1 x 12
2 x 6
3 x 4

Prime numbers have two factors: one and itself

eg: 7 = 1 x 7 so is prime

6 = 1 x 6 and 2 x 3 so is not prime

Standard Form

Positive Power = Large Number

$4.3 \times 10^{6} = 4\,300\,000$

Negative Power = Small Number

$2.1 \times 10^{-3} = 0.021$

$(4 \times 10^{6}) \div (2 \times 10^{3})$

$= 2 \times 10^{3}$

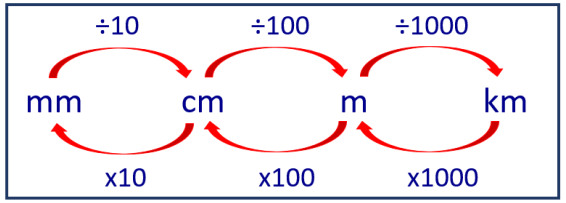
Metric Units

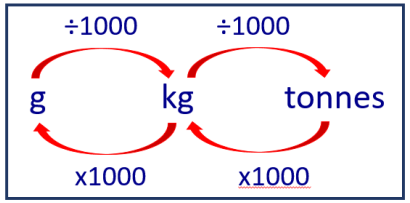
Length: mm, cm, m, km

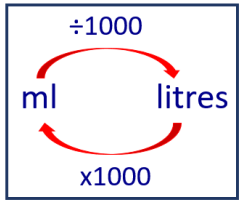
Mass: mg, g, kg

Volume: ml, cl, l

Metric Conversions







Reverse Mean

The mean of 4 numbers is 15, if 3 of the numbers are 11, 17, and 12, what is the forth number?

First we need the total of the four numbers

$$\text{mean} = \frac{\text{total of the data}}{\text{number of pieces data}}$$

$$15 = \frac{\text{total of the data}}{4}$$

total of the data = 15 x 4 = 60

11 + 17 + 12 + ? = 60 ? = 20

Mean of Tabled data

No of portions		Girls	
0	X	6	0
1	X	7	7
2	X	7	14
3	X	12	36
4	X	17	68
5	X	16	80
6	X	15	90
7	X	12	84
		92	379

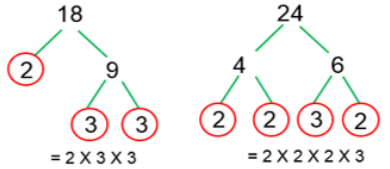
Mean is the total portions divided by the total girls.

Mean: $\frac{379}{92} = 4.1$ **portions**

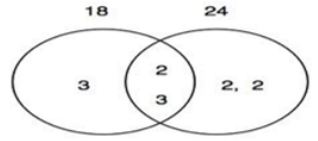
HCF and LCM

To find the LCM and HCF of 18 and 24 using a Venn diagram:

Find the product of primes for 18 and 24.



Place the numbers in the Venn diagram. Any numbers in both go into the centre.

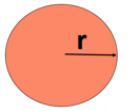


HCF - multiply all the numbers in the centre. **HCF = 2 x 3 = 6**

LCM - multiply all the numbers in the Venn diagram.

LCM = 3 x 2 x 3 x 2 x 2 = 72

Circumference of a Circle



$C = 2\pi r$

Spring 1	Substitution • Function machines • Substitution into expressions • Substitution into formulae	Spring 2	Fractions • Fractions of amounts • Equivalent fractions • Ordering fractions
	FDP • Mental conversions for the basic fractions • Ordering FDP		Order of operation • Use order of operations • Add brackets to make calculations correct
	Powers • Square and cube numbers and their associated roots • Basic index notation: 3^4=3x3x3x3		Percentages • Calculating percentages mentally • Calculating percentages with a calculator • Calculating a percentage increase and decrease
	Solving two step equations • Solve two step equations • Form and solve simple one step and two step equations		2d Shapes • Angle and line properties • Constructing 2d shapes • Properties of triangles, quadrilaterals, polygons
	Area • Area of rectangles, triangles and parallelograms • Area of compound shapes		Addition and subtraction of fractions • Converting between mixed numbers and improper fractions • Adding and subtracting fractions where the denominators are multiples of each other

Summer 1	Angle Rules • Angles on a straight line • Angles about a point • Vertically opposite angles • Angles in a triangle • Angles in a quadrilateral	Summer 2	Interpreting and displaying data • Interpret data in the form of bar charts, pictograms and pie charts • Display data in the form of bar charts, pictograms and pie charts
	Coordinates • Plot and read coordinates in four quadrants • Draw and identify; x=, y=, y=x • Draw linear graphs in the form y=mx+c		Probability • Probability scale • Probability adds up to 1 • Sample space diagrams • Venn diagrams
	Multiplying and dividing Fractions • Multiplying fractions by a whole number • Multiplying fractions • Dividing fractions by a whole number • Dividing fractions		Ratio • Simplify ratios • Simplify ratios in different units • Share in a given ratio
	Sequences • Continue a sequence • Term to term rule of a sequence • Generating a sequence		• **Assessment** • **Consolidation work/projects: Individual academies to decide.**
	Transformations • Reflect in a given line • Translation (left/right, up/down)		