

MATHS: Module 1

Calculations 1
Expressions
Angles and Polygons
Handling Data 1

Calculations 1

Keywords	Definition/Tips	Example
Integer	A whole number that can be positive, negative or zero.	-3, 0, 92
Decimal	A number with a decimal point in it. Can be positive or negative.	3.7, 0.94, -24.1
Negative number	A number that is less than zero. Can be decimals.	-8, -2.5
Estimate	Calculate a value that is approximate to the real answer	$35 \times 27 \approx$ $40 \times 30 = 1200$

BIDMAS

() x^y \div or \times + or -

Brackets Indices Divide & Multiply Add & Subtract

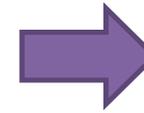
Order of Operations

Place Values

The position of each digit in a number tells you its value:

Whole Part						Decimal Part		
Ten Thousands (T Th)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)	Decimal Point	Tenths (t)	Hundredths (h)	Thousandths (th)
1	3	5	4	8	.	2	5	3

Place value of 1 = 10000
Place value of 3 = 3000
Place value of 5 = 500
Place value of 4 = 40
Place value of 8 = 8
Place value of 2 = 0.2
Place value of 5 = 0.05
Place value of 3 = 0.003



The number above in words is:
Thirteen thousand, five hundreds and forty-eight point two five three

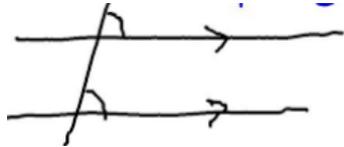
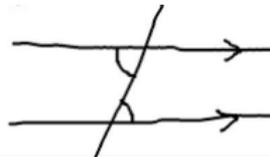
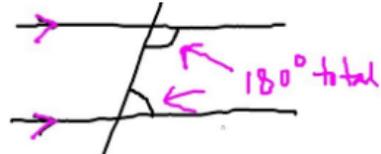
Handling Data 1

Keywords	Definition/Tips
Mode	The piece of data that appears the most
Median	The 'middle' of a sorted list of data
Mean	The calculated central value of data
Range	The difference between the lowest and highest values
Inter-quartile range	The difference between quartile 3 and quartile 1

Expressions

Keywords	Definition/Tips	Example
Variable	A symbol for a number we don't know yet	6z means 6 times z, and 'z' is a variable, so 6 is a co-efficient
Co-efficient	A number used to multiply a variable	
Term	A single number or variable, or numbers and variables multiplied together	$4x - 7 = 5$
Expression	A mathematical statement written using symbols, numbers or letters,	$3x + 2$ or $5y^2$
Equation	A statement showing that two expressions are equal	$2y - 17 = 15$
Formula	Shows the relationship between two or more variables	Area of a rectangle = length x width or $A = L \times W$
Identity	An equation that is true no matter what values are chosen. Usually contains ' \equiv '	$3x + 6 \equiv 3(x + 2)$
Simplifying Expressions	Collect 'like terms'.	$2x + 3y + 4x - 5y + 3$ $= 6x - 2y + 3$ $3x + 4 - x^2 + 2x - 1$ $= 5x - x^2 + 3$
	Be careful with negatives. x^2 and x are not like terms.	
x times x	The answer is x^2 not $2x$.	Squaring is multiplying by itself, not by 2.
$p \times p \times p$	The answer is p^3 not $3p$	
$p + p + p$	The answer is $3p$ not p^3	
Expand	Multiply to remove the brackets	$2(y+3) \xrightarrow{\text{Expand}} 2y+6$ $2y+6 \xrightarrow{\text{Factor}} 2(y+3)$
Factorise	Put the brackets back into an expression by identifying HCF of terms	

Angles and Polygons

Keywords	Definition/Tips
Acute	An angle less than 90°
Obtuse	An angle greater than 90° and less than 180°
Reflex	An angle greater than 180°
Right-angle	A 90° angle
Angles on a straight line	Add up to 180°
Angles around a point	Add up to 360°
Vertically opposite angles	Are equal
Angles in a triangle	Add up to 180°
Equilateral triangle	Each angle is 60°
Isosceles triangle	Two, base angles are equal
Angles in a quadrilateral	Add up to 360°
Corresponding angles are equal	
Alternate angles are equal	
Co-interior/allied angles add up to 180°	
Sum of interior angles of a polygon	$(n-2) \times 180^\circ$
Exterior angles of a polygon	$360^\circ \div$ number of sides
Interior angles of a polygon	$180^\circ -$ exterior angle