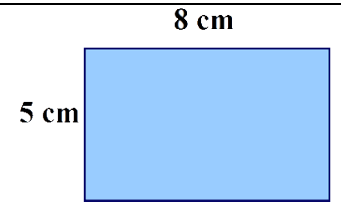
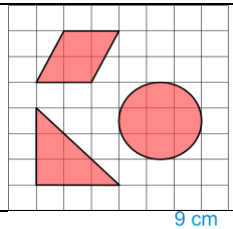
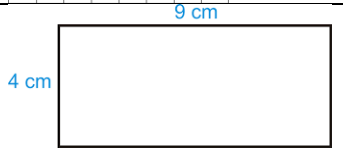
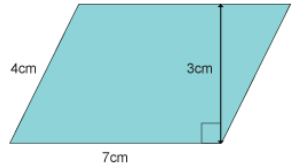
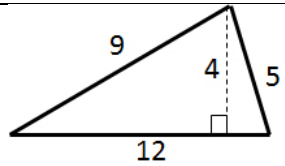
Algebra	Definition/Tips	Example
1. Expression	A mathematical statement written using **symbols**, **numbers** or **letters**,	$3x + 2$ or $5y^2$
2. Equation	A statement showing that **two expressions are equal**	$2y - 17 = 15$
3. Identity	An equation that is **true for all values** of the variables An identity uses the symbol: ≡	$2x \equiv x+x$
4. Formula	Shows the **relationship** between **two or more variables**	Area of a rectangle = length x width or A= LxW
5. Simplifying Expressions	**Collect 'like terms'.** Be careful with negatives. x^2 and x are not like terms.	$2x + 3y + 4x - 5y + 3 = 6x - 2y + 3$ $3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$
6. x times x	The answer is x^2 not $2x$.	Squaring is multiplying by itself, not by 2.
7. $p \times p \times p$	The answer is p^3 not $3p$	If p=2, then p^3=2x2x2=8, not 2x3=6
8. $p + p + p$	The answer is 3p not p^3	If p=2, then 2+2+2=6, not $2^3 = 8$
9. Expand	To expand a bracket, **multiply** each term **in the bracket** by the expression **outside** the bracket.	$3(m + 7) = 3m + 21$
10. Factorise	The **reverse** of **expanding**. Factorising is writing an expression as a product of terms by '**taking out' a common factor**.	$6x - 15 = 3(2x - 5)$, where 3 is the common factor.

Perimeter/ Area	Definition/Tips	Example
1. Perimeter	The **total distance** around the **outside** of a shape.Units include: mm, cm, m etc.	 $P = 8 + 5 + 8 + 5 = 26cm$
2. Area	The amount of **space inside** a shape. Units include: mm^2, cm^2, m^2	
3. Area of a Rectangle	**Length x Width**	 $A = 36cm^2$
4. Area of a Parallelogram	**Base x Perpendicular Height** Not the slant height.	 $A = 21cm^2$
5. Area of a Triangle	**Base x Height ÷ 2**	 $A = 24cm^2$

Multiplication Index Law	When **multiplying** with the same base (number or letter), **add the powers**. $\boldsymbol{a^m \times a^n = a^{m+n}}$	$7^5 \times 7^3 = 7^8$ $a^{12} \times a = a^{13}$ $4x^5 \times 2x^8 = 8x^{13}$
Division Index Law	When **dividing** with the same base (number or letter), **subtract the powers**. $\boldsymbol{a^m \div a^n = a^{m-n}}$	$15^7 \div 15^4 = 15^3$ $x^9 \div x^2 = x^7$ $20a^{11} \div 5a^3 = 4a^8$
Brackets Index Laws	When raising a power to another power, multiply the powers together. $\boldsymbol{(a^m)^n = a^{mn}}$	$(y^2)^5 = y^{10}$ $(6^3)^4 = 6^{12}$ $(5x^6)^3 = 125x^{18}$
Notable Powers	$\boldsymbol{p = p^1}$ $\boldsymbol{p^0 = 1}$	$99999^0 = 1$

Fraction
A mathematical expression representing the division of one integer by another. Fractions are written as two numbers separated by a horizontal line.

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Rounding: To make a number simpler but keep its value close to what it was.
If the **digit to the right** of the rounding digit is **less than 5, round down**.
If the **digit to the right** of the rounding digit is **5 or more, round up**.
74 rounded to the nearest ten is 70, because 74 is closer to 70 than 80.
152,879 rounded to the nearest thousand is 153,000.
Decimal Place: The position of a digit to the right of a decimal point.
In the number 0.372, the 7 is in the second decimal place.
0.372 rounded to two decimal places is 0.37, because the 2 tells us to round down.
Careful with money - don't write £27.4, instead write £27.40
Significant Figure: The significant figures of a number are the digits which **carry meaning** (ie. are significant) to the size of the number.
The **first significant figure** of a number **cannot be zero**.
In a number with a decimal, trailing zeros are not significant.
In the number 0.00821, the first significant figure is the 8.
In the number 2.740, the 0 is not a significant figure.
0.00821 rounded to 2 significant figures is 0.0082.
19357 rounded to 3 significant figures is 19400. We need to include the two zeros at the end to keep the digits in the same place value columns.

BIDMAS

An acronym for the **order** you should do calculations in.
BIDMAS stands for **'Brackets, Indices, Division, Multiplication, Addition and Subtraction'**.
Indices are also known as 'powers' or 'orders'.
$6 + 3 \times 5 = 21, not\ 45$
$5^2 = 25$, where the 2 is the index/power
$12 \div 4 \div 2 = 1.5, not\ 6$

Linear Sequence: A number pattern with a **common difference**.
2, 5, 8, 11… is a linear sequence
Term: **Each value** in a sequence is called a term.
In the sequence 2, 5, 8, 11…, 8 is the third term of the sequence.
Term-to-term rule: A rule which allows you to **find the next term** in a sequence if you **know the previous term**.
First term is 2. Term-to-term rule is 'add 3'
Sequence is: 2, 5, 8, 11…
nth term: A rule which allows you to **calculate the term** that is in the **nth position** of the sequence.
Also known as the 'position-to-term' rule.
n refers to the **position** of a term in a sequence.
nth term is $3n - 1$
The 100th term is $3 \times 100 - 1 = 299$
Finding the nth term of a linear sequence:
1. Find the **difference**.
2. **Multiply that by n.**
3. Substitute $n = 1$ to **find out what number you need to add or subtract to get the first number in the sequence**.
Find the nth term of: 3, 7, 11, 15…
1. Difference is +4
2. Start with $4n$
3. $4 \times 1 = 4$, so we need to subtract 1 to get 3.
nth term = $4n - 1$

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.
$3.7, 0.94, -24.07$
Negative Number
A number that is **less than zero**. Can be decimals.
$-8, -2.5$