

Year 8 Knowledge Organisers Unit 4

Topic: Sequences, expressions and equations

Topic/Skill	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: \equiv	$2x \equiv x+x$
4. Formula	Shows the relationship between two or more variables	Area of a rectangle = length x width or $A = L \times W$
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 $p^3 = 2 \times 2 \times 2 = 8$, not $2 \times 3 = 6$
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.	$3(m + 7) = 3x + 21$
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.
11. Linear Sequence	A number pattern with a common difference .	2, 5, 8, 11... is a linear sequence
12. 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.
13. 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...
14. 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.	nth term is $3n - 1$ The 100 th term is $3 \times 100 - 1 = 299$

	n refers to the position of a term in a sequence.	
15. Finding the nth term of a linear sequence	<p>1. Find the difference.</p> <p>2. Multiply that by n.</p> <p>3. Substitute $n = 1$ to find out what number you need to add or subtract to get the first number in the sequence.</p>	<p>Find the nth term of: 3, 7, 11, 15...</p> <p>1. Difference is +4 2. Start with $4n$ 3. $4 \times 1 = 4$, so we need to subtract 1 to get 3. nth term = $4n - 1$</p>