

Year 9 Unit 2: Algebraic Expressions

SEQUENCES

sequence	a pattern of terms/numbers which follow a rule
position-to-term rule (n^{th} Term)	a rule which allows you to calculate any term that is in the n^{th} position of the sequence
generate	to produce or create
linear sequences	a sequence where the difference between terms increases or decreases by the same amount each time also known as an arithmetic sequence use DiNO to find the n^{th} term to generate a sequence substitute values of 'n' in, e.g. 2nd term, $n=2$ <i>algebraically: $x_n = an + b$</i>
common difference	the amount we add or subtract each time in a linear sequence
quadratic sequences	a sequence of numbers with an n^2 in the position to term rule (n^{th} term) the second difference between consecutive terms is constant <i>algebraically: $x_n = an^2 + bn + c$</i>
geometric sequences	a sequence of numbers where each term is found by multiplying the previous one by a number called the common ratio 'r' <i>algebraically: $x_n = ar^{n-1}$</i> increasing: the ratio is an integer , decreasing: the ratio is a fraction
common ratio (r)	the amount we multiply by each time in a geometric sequence, can be a fraction

INSTRUCTIONS: GENERAL

expand	multiply terms inside a bracket by those outside the bracket, remove the brackets using the grid method
simplify	to reduce to its simplest form

FACTORISING

factorise	finding the factors of an expression the reverse of expand , it is when we write an expression using brackets , use reverse grid
factor	a quantity which divides equally into a number, e.g. <i>factors of 8 are 1, 2, 4 and 8</i>
factorising a general quadratic	quadratic: $x^2 + bx + c$, factorised form: $(x + ?)(x + ?)$ '?' are two numbers whose product is ' c ' and sum is ' b ', split the middle term and put into a reverse grid to find the brackets
difference of two squares	quadratic: $a^2 - b^2$ factorised form: $(a - b)(a + b)$ square root each number from the original expression

INSTRUCTIONS: EQUATIONS AND INEQUALITIES

rearrange	changing the subject of a formula sometimes called transposing use inverse operations and the balancing method , like when we solve an equation
inverse	the opposite
balance an equation	do the same to both sides of the "=" use to solve an equation, or rearrange a formula
subject of an equation	a single unknown or variable that everything else is equal to
solution of an equation	a value we can put in place of a variable that makes the equation true
order of operations	the laws regarding the order in which to calculate , used in algebra too brackets, other, multiply and divide, add and subtract
solving inequalities	using the balancing method to write an inequality in its simplest form
solving quadratic equations	To solve you must factorise the quadratic equation then set each bracket equal to zero to find solutions for x .

LINEAR SEQUENCES links to: LINEAR GRAPHS

$y = mx + c$	the general equation of a linear graph m is the gradient c is the y-intercept
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ALGEBRAIC NOTATION

coefficient	a number used to multiply a variable the number that comes in front of a letter , e.g. $3b$ means $3 \times b$ the coefficient is 3 , the variable is b
simplifying algebraic fractions	factorise the numerator and denominator and cancel common factors , sometimes requires factorisation
identity	an equation that is true for all of its variables , indicated by the \equiv symbol e.g. $b + b \equiv 2b$
prove	even number: $2n$, odd number: $2n+1$ or $2n-1$, consecutive numbers: $n, n+1, n+2$, consecutive even numbers: $2n, 2n+2, 2n+4$, consecutive odd numbers: $2n+1, 2n+3, 2n+5$ or $2n-1, 2n-3, 2n-5$, multiples of a number: it will factorise by that number