The Sutton Academy

Knowledge Rich Curriculum Plan

Year 12 Maths

Unit 8 - The binomial expansion

Maths Year 12	Unit: The binomial expansion			
Lesson/Learning Sequence	**Intended Knowledge:** *Students will know that…*	**Tiered Vocabulary**	**Prior Knowledge:** *In order to know this students, need to already know that…*	**Assessment**
Lesson 38: Pascal's triangle Lesson Objective: To learn how to use Pascal's triangle to expand brackets.	• Students will know how to produce rows of Pascal's triangle by adding adjacent pairs of numbers to find the numbers on the next row. • Students will know that the (n+1) row of Pascal's triangle gives the coefficients in the expansion of brackets with a power of n. • Students will know how to find the coefficients of a particular expansion. • Students will know how to find unknown values in a bracket by using Pascal's triangle and knowing the value of one coefficient. • Students will know how to use Pascal's triangle to fully expand brackets. • Students will know how to use Pascal's triangle to fully expand brackets and then use this to find the product of another bracket.		• *Students need to know that a coefficient is a numerical or constant quantity placed before and multiplying the variable in an algebraic expression.* • *Students need to know how to expand double and triple brackets.* • *Students need to know how to use index laws.* • *Students need to know how to multiply negative numbers.* • *Students need to know how to multiply fractions.* • *Students need to know how to manipulate algebraic expressions.*	
Lesson 39: Factorial notation/The binomial expansion Lesson Objective: To learn how to use factorial notation to expand brackets.	• Students will know how to write the factorial of a number. • Students will know how to use factorial notation to find the coefficient of particular parts of an expansion. • Students will know how to manipulate factorial notation to find unknown values. • Students will know how to use factorial notation to find particular values in Pascal's triangle. • Students will know how to expand brackets using the binomial expansion in ascending powers of x. • Students will know a binomial expression has two terms.		• *Students need to know how to produce Pascal's triangle.* • *Students need to know how to use Pascal's triangle to expand brackets.* • *Students need to know how to manipulate algebraic expressions.* • *Students need to know how to use index laws.* • *Students need to know how to multiply negative numbers.* • *Students need to know how to multiply fractions.*	
Lesson 40: The binomial expansion Lesson Objective: To learn how to use the binomial expansion to expand brackets.	• Students will know how to expand brackets using the binomial expansion in ascending powers of x. • Students will know a binomial expression has two terms.		• *Students need to know how to use factorial notation.* • *Students need to know how to expand brackets.* • *Students need to know how to manipulate algebraic expressions.* • *Students need to know how to use index laws.* • *Students need to know how to multiply negative numbers.* • *Students need to know how to multiply fractions.*	

Maths Year 12	Unit: The binomial expansion			
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Lesson 41: Solving binomial problems Lesson Objective: To learn how to use the binomial expansion to solve problems.	• Students will know how to use the general term of the binomial expansion to find the individual coefficients in a binomial expansion. • Students will know how to use the general term of the binomial expansion to find the individual coefficients in a binomial expansion and use it to find unknowns given in the brackets. • Students will know how to use the general term of the binomial expansion to find expressions for the individual coefficients in a binomial expansion and use it to set up equations to find the unknowns.		• *Students need to know how to use factorial notation.* • *Students need to know how to use Pascal's triangle to expand brackets.* • *Students need to know how to use the binomial expansion to expand brackets.* • *Students need to know how to manipulate algebraic expressions.* • *Students need to know how to use simultaneous equations.* • *Students need to know how to rearrange formulae.* • *Students need to know how to use substitution.*	
Lesson 42: Binomial estimation Lesson Objective: To learn how to use the binomial expansion to find estimations.	• Students will know that if the value of x is less than 1, then x^n gets smaller as n gets larger. • Students will know that if x is small then larger powers of x can be ignored to approximate a function or estimate a value. • Students will know how to find how to find an estimate by equating the value given to the bracket and solving for a value of x. • Students will know to substitute the value of x into the binomial expansion to find the approximation. • Students will know to multiply the binomial expansion by a bracket to find an approximate overall expansion up to a given power of x.		• *Students need to know how to use factorial notation.* • *Students need to know how to use Pascal's triangle to expand brackets.* • *Students need to know how to use the binomial expansion to expand brackets.* • *Students need to understand the concept of estimation.* • *Students need to know how to expand brackets.* • *Students need to know how to manipulate algebraic expressions.* • *Students need to know how to collect like terms.*	