



YEAR 12 2023-2024 Spring TERM 1

'An ambitious curriculum that meets the needs of all'

Medium Term Planning – Units 8-10 PURE

The binomial expansion, Trigonometric ratios, Trigonometric identities and equations

Medium Term Planning – Units 7-8 APPLIED

Hypothesis Testing, Modelling in Mechanics

Curriculum Intent

PURE UNIT 8: The binomial expansion

Skills/Assessment Objective Links

Chapter 8: The binomial expansion

T P45 I can use Pascal's triangle to identify binomial coefficients and use them to expand simple binomial expressions

T P46 I can use combinations and factorial notation

T P47 I can use the binomial expansion to expand brackets

T P48 I can find individual coefficients in a binomial expansion

T P49 I can make approximations using the binomial expansion

Prior knowledge

- Expanding polynomials (Y1 PURE Unit 1)
- Simplify expressions involving indices (Y1 PURE Unit 1)
- Simplifying expressions involving negative and fractional powers (Y1 PURE Unit 1)

Learning further developed in the future in:

- Year 2 Pure Unit 4
- Year 2 Pure Unit 9

Skills/Assessment Objective Links

Prior Knowledge

Current learning to be developed in the future

PURE UNIT 9: Trigonometric Ratios

Skills/Assessment Objective Links

Chapter 9: Trigonometric ratios

T P50 I can use the cosine rule to find a missing side or angle

T P51 I can use the sine rule to find a missing side or angle

T P52 I can find the area of a triangle using an appropriate formula

T P53 I can solve problems involving triangles

T P54 I can sketch the graphs of the sine, cosine and tangent functions

T P55 I can sketch simple transformations of these graphs

Prior knowledge

- SOHCAHTOA (GCSE)
- Graph transformations (Y1 PURE Unit 4)

Learning further developed in the future in:

- Year 1 Pure Unit 10
- Year 1 Pure Unit 11
- Year 2 Pure Unit 10

- Year 2 Applied Unit 8

PURE UNIT 10: Trigonometric equations and identities

Skills/Assessment Objective Links

Chapter 10: Trigonometric identities and equations
T P56 I can calculate the sine, cosine and tangent of any angle
T P57 I know the exact trigonometric ratios for 30
T P58 I know and can use the trigonometric identities
T P59 I can solve simple trigonometric equations of the forms $\sin x = k$, $\cos x = k$ and $\tan x = k$
T P60 I can solve more complicated trigonometric equations
T P61 I can solve trigonometric equations that produce quadratics

Prior knowledge

- Sketch the sine function (Y1 PURE Unit 9)
- SOHCAHTOA (GCSE)
- Solving equations (Y1 PURE Unit 2)

Learning further developed in the future in:

- Year 2 Pure Unit 6
- Year 2 Pure Unit 7

APPLIED UNIT 7: Hypothesis Testing

Skills/Assessment Objective Links

Chapter 7 : Hypothesis testing
T S27 I understand the language and concept of hypothesis testing
T S28 I understand that a sample is used to make an inference about a population
T S29 I can find critical values of a binomial distribution using tables
T S30 I can carry out a one-tailed test for the proportion of the binomial distribution and interpret the results
T S31 I can carry out a two-tailed test for the proportion of the binomial distribution and interpret the results

Prior knowledge

- Binomial Distribution (Y1 APPLIED Unit 6)

Learning further developed in the future in:

- Year 2 Applied Unit 1

APPLIED UNIT 8: Modelling in Mechanics

Skills/Assessment Objective Links

Chapter 8: Modelling in mechanics
T S32 I understand how the concept of a mathematical model applies to mechanics
T S33 I can understand and am able to apply some of the common assumptions used in mechanical models
T S34 I know SI units for quantities and derived quantities used in mechanics
T S35 I know the difference between scalar and vector quantities

Prior knowledge

- Solve quadratic equations (GCSE)

	<ul style="list-style-type: none"> • SOHCAHTOA (GCSE) • Converting compound units (GCSE) • Standard form (GCSE) <p>Learning further developed in the future in:</p> <ul style="list-style-type: none"> • Year 1 Applied Unit 9
Spiritual, moral, social, and cultural development	<p>SMSC: Making choices, looking for patterns which may reflect the natural world, supporting and collaborating with each other, realisation that mathematics is an international language and making cultural links as we explore the history of mathematics.</p> <p>PSHE/British Values: Working collaboratively, being respectful during discussion and valuing contributions made by others</p> <p>Skills Builder: Key skills in numeracy used in all topic areas.</p>
Numeracy	Focus on key skills.
Literacy	<p>Vocabulary Tier 2: Command words displayed in the classroom and italicized/bold font used in shared resources/presentations. These are a constant focus in discussion and questioning,</p> <p>Vocabulary Tier 3: Title slide in all shared resource presentations show the key vocabulary for each topic.</p> <p>Reading: Underlining command words,</p> <p>Writing: Modelling solutions</p> <p>Oracy: Think, pair, share, discussion, verbal feedback (peer to peer), questioning, student modelling</p>
Becoming future ready	<p>Personal Skills: As a Mathematics student you will learn many skills: you will gain opportunities to listen to others supportively and to use questioning to develop your own understanding, you will learn how to cope with challenging questions and how to build up your resilience, you will get the chance to work on your own and with others. You will develop problem solving skills and you will learn how to break a problem down into smaller more manageable steps. You will learn how to collaborate with others when solving problems and you will learn how to articulate your solution to a problem.</p> <p>Employability: Mathematical skills are invaluable in the workplace. There are many transferable skills which are much valued by employers. Specific career paths for each topic are discussed at the beginning of each unit of work.</p>
Adaptation	<ul style="list-style-type: none"> • By progressive questioning: exploring pupils' understanding through interactive dialogue. • By outcome: different learners will produce different outcomes. • By resource: worksheets are clearly presented and accessible. • By intervention: by providing different levels of supervision and support. • By offering optional activities: In class or as homework, to extend learning.
QFT/SEND Provision	
Implementation Curriculum Delivery	See curriculum intent
Learning Outcomes (Knowledge)	
Assessment	Refer to assessment maps for formative and summative assessment opportunities.

Impact

Attainment and Progress – Refer to assessment results / data review documentation.