



YEAR 12 2023-2024 Summer TERM 1

'An ambitious curriculum that meets the needs of all'

Medium Term Planning – Unit 12 PURE Differentiation

Medium Term Planning – Unit 10 APPLIED Forces & Motion

Curriculum Intent

PURE UNIT 12: Differentiation

Skills/Assessment Objective Links

Chapter 12: Differentiation

T P69 I can find the derivative of a simple function
T P70 I can use the derivative to solve problems involving gradients, tangents and normals
T P71 I can identify increasing and decreasing functions
T P72 I can find the second order derivative of a simple function
T P73 I can find stationary points of functions and determine their nature
T P74 I can sketch the gradient function of a given function
T P75 I can model real-life situations with differentiation

Prior knowledge

- Gradients of lines (Y1 Pure Unit 5)
- Simplifying indices (Y1 Pure Unit 1)
- Finding equations of straight lines, given two points (Y1 Pure Unit 5)
- Finding equations of perpendicular lines (Y1 Pure Unit 5)

Learning further developed in the future in:

- Year 1 Pure Unit 13
- Year 1 Pure Unit 14
- Year 1 Applied Unit 11
- Year 2 Pure Unit 9
- Year 2 Pure Unit 10
- Year 2 Pure Unit 11
- Year 2 Applied Unit 11

Skills/Assessment Objective Links

Prior Knowledge

Current learning to be developed in the future

APPLIED UNIT 10: Forces & Motion

Skills/Assessment Objective Links

Chapter 10: Forces and motion

T S40 I can draw force diagrams and calculate resultant forces
T S41 I understand and use Newton's first law
T S42 I can calculate resultant forces by adding vectors
T S43 I understand and use Newton's second law, $F = ma$
T S44 I can apply Newton's second law to vector forces and acceleration
T S45 I understand and use Newton's third law
T S46 I can solve problems involving connected particles

Prior knowledge

- Adding vectors in i and j form (Y1 Applied Unit 8)
- Pythagoras's Theorem (GCSE)

	<ul style="list-style-type: none"> SUVAT equations (Y1 Applied Unit 8) <p>Learning further developed in the future in:</p> <ul style="list-style-type: none"> Year 2 Applied Unit 4 Year 2 Applied Unit 5
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.