



# YEAR 13 FM 2023-2024 Autumn TERM 1

'An ambitious curriculum that meets the needs of all'

## Medium Term Planning – Decision 1: Ch 7 and more differentiation practice Simplex Algorithms

## Medium Term Planning – Core Pure 2: Ch 1, 2 Complex Numbers, Series

### Curriculum Intent

### Decision 1: Ch 7 Simplex Algorithms

#### Skills/Assessment Objective Links

Chapter 7: The simplex algorithm: **Chapter 7: The simplex algorithm**

D29 I can understand and use slack and surplus variables			
D30 I can solve maximising and minimising linear programming problems using simplex tableaux			
D31 I can use the simplex tableau method to solve linear programming problems requiring integer solutions			
D32 I can understand and use the two-stage simplex method for maximising and minimising problems which may include and constraints			
D33 I can understand and use the Big-M method for maximising and minimising problems which may include and constraints			

#### Prior knowledge

- Simultaneous Equations (Pure Y1 Ch3)
- Intersecting Points (Pure Y1 Ch5)
- Linear Programming (Decision 1 Ch6)

### Skills/Assessment Objective Links

#### Learning further developed in the future in:

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### Prior Knowledge

### Current learning to be developed in the future

### Core Pure 2: Ch 1 Complex Numbers

#### Skills/Assessment Objective Links

Chapter 1: Complex numbers: **Chapter 1: Complex numbers**

FM1 I can express a complex number in exponential form			
FM2 I can multiply and divide complex numbers in exponential form			
FM3 I understand de Moivre's theorem			
FM4 I can use de Moivre's theorem to derive trigonometric identities			
FM5 I can use de Moivre's theorem to find sums of series			
FM6 I can solve completely equations of the form $z^n = 1$ .			
FM7 I can use complex roots of unity to solve geometric problems.			

#### Prior knowledge

- Binomial Expansion (Pure Y1 Ch8)
- Complex Numbers 1 (Core Pure 1 Ch 1)
- Argand Diagrams (Core Pure 1 Ch2)

Learning further developed in the future in:

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## Core Pure 2: Ch 2 Series

### Skills/Assessment Objective Links

Chapter 2: Series: **Chapter 2: Series**

FM8 I can understand and use the method of differences to sum finite series			
FM9 I can find and use higher derivatives of functions			
FM10 I know how to express functions as an infinite series in ascending powers using Maclaurin series expansion			
FM11 I am able to find the series expansions of compound functions			

### Prior knowledge

- Sequences and Series (Pure Y1 Ch3)
- Differentiation (Pure Y2 Ch9)
- Series 1 (Core Pure 1 Ch3)

Learning further developed in the future in:

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#### Spiritual, moral, social, and cultural development

**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.

**PSHE/British Values:** Working collaboratively, being respectful during discussion and valuing contributions made by others

**Skills Builder:** Key skills in numeracy used in all topic areas.

#### Numeracy

Focus on key skills.

#### Literacy

**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,  
**Vocabulary Tier 3:** Title slide in all shared resource presentations show the key vocabulary for each topic.  
**Reading:** Underlining command words,  
**Writing:** Modelling solutions  
**Oracy:** Think, pair, share, discussion, verbal feedback (peer to peer), questioning, student modelling

#### Becoming future ready

**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.

**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.

#### Adaptation

<b>QFT/SEND Provision</b>	<ul style="list-style-type: none"> <li>• By progressive questioning: exploring pupils' understanding through interactive dialogue.</li> <li>• By outcome: different learners will produce different outcomes.</li> <li>• By resource: worksheets are clearly presented and accessible.</li> <li>• By intervention: by providing different levels of supervision and support.</li> <li>• By offering optional activities: In class or as homework, to extend learning.</li> </ul>
<b>Implementation Curriculum Delivery</b>	See curriculum intent
<b>Learning Outcomes (Knowledge)</b>	
<b>Assessment</b>	Refer to assessment maps for formative and summative assessment opportunities.
<b>Impact</b>	Attainment and Progress – Refer to assessment results / data review documentation.