



# YEAR 13 Spring TERM 2

'An ambitious curriculum that meets the needs of all'

## Medium Term Planning – Unit 11 PURE Integration

## Medium Term Planning – Units 6, 7 APPLIED Projectiles, Applications of Forces

### Curriculum Intent

### PURE UNIT 11: Integration

#### Skills/Assessment Objective Links

##### Chapter 11: Integration

**T** P59 I can integrate standard mathematical functions including trigonometric and exponential functions and use the reverse of the chain rule to integrate functions of the form  $f(ax + b)$

**T** P60 I can use trigonometric identities in integration

**T** P61 I can use the reverse of the chain rule to integrate more complex functions

**T** P62 I can integrate functions by making a substitution, using integration by parts and using partial fractions

**T** P63 I can use integration to find the area under a curve

**T** P64 I can use the trapezium rule to approximate the area under a curve

**T** P65 I can solve simple differential equations and model real-life situations with differential equations

#### Prior knowledge

- Differentiation (Y2 PURE Unit 9)
- Integration (Y1 PURE Unit 13)
- Partial Fractions (Y2 PURE Unit 1)
- Area under a curve (Y1 PURE Unit 13)

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

- Year 2 APPLIED Unit 8

### Skills/Assessment Objective Links

#### Prior Knowledge

#### Current learning to be developed in the future

### APPLIED UNIT 6: Projectiles

#### Skills/Assessment Objective Links

##### Chapter 6: Projectiles

**T** S27 I can model motion under gravity for an object projected horizontally

**T** S28 I can resolve velocity into components

**T** S29 I can solve problems involving particles projected at an angle

**T** S30 I can derive the formulae for time of flight, range and greatest height, and the equation of the path of a projectile

#### Prior knowledge

- SUVAT (Y1 APPLIED Unit 9)
- Using Pythagoras's Theorem to change between sin, cos, tan (Y1 PURE Unit 10)

### APPLIED UNIT 7: Applications of forces

#### Skills/Assessment Objective Links

	<b>Chapter 7: Applications of forces</b> <b>T</b> S31 I can find an unknown force when a system is in equilibrium <b>T</b> S32 I can solve statics problems involving weight, tension and pulleys <b>T</b> S33 I can understand and solve problems involving limiting equilibrium <b>T</b> S34 I can solve problems involving motion on rough or smooth inclined planes <b>T</b> S35 I can solve problems involving connected particles that require the resolution of forces
	<b>Prior knowledge</b> <ul style="list-style-type: none"> <li>Friction (Y2 APPLIED Unit 5)</li> <li>Moments (Y2 APPLIED Unit 4)</li> </ul>
	<b>Spiritual, moral, social, and cultural development</b> <b>SMSC:</b> 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. <b>PSHE/British Values:</b> Working collaboratively, being respectful during discussion and valuing contributions made by others <b>Skills Builder:</b> Key skills in numeracy used in all topic areas.
	<b>Numeracy</b> <b>Focus on key skills.</b>
	<b>Literacy</b> <b>Vocabulary Tier 2:</b> Command words displayed in the classroom and italicized/bold font used in shared resources/presentations. These are a constant focus in discussion and questioning, <b>Vocabulary Tier 3:</b> Title slide in all shared resource presentations show the key vocabulary for each topic. <b>Reading:</b> Underlining command words, <b>Writing:</b> Modelling solutions <b>Oracy:</b> Think, pair, share, discussion, verbal feedback (peer to peer), questioning, student modelling
	<b>Becoming future ready</b> <b>Personal Skills:</b> 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. <b>Employability:</b> 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.
<b>Adaptation</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>QFT/SEND Provision</b>	
<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.

**Impact**

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