



# YEAR 9 2023-2024 SUMMER TERM 2

'An ambitious curriculum that meets the needs of all'

## Medium Term Planning

### 12. Enlargement and Similarity (Continued) 13. Ratio and

#### Curriculum Intent

**UNIT 12: ENLARGEMENT AND SIMILARITY, (7 lessons) continued from before Easter**

#### ***Previously met:***

- This is new content

To be able to:

- Recognise enlargement and similarity
- Enlarge a shape by a positive integer scale factor
- Enlarge a shape by a positive integer scale factor from a point
- Enlarge a shape by a positive fractional scale factor
- **Enlarge a shape by a negative scale factor (H)**
- Work out missing sides and angles in a pair of given similar shapes
- **Solve problems with similar triangles (H)**
- **Explore ratios in right-angled triangles (H)**

#### REMDINER – Strategies for teaching.

- Teach enlargement by counting squares, check using ray lines
- If beginning trig., 'science' triangles should not be used

#### **Links and interleaving**

- Interior angles
- Multiplying and dividing by integers and fractions

#### Skills/Assessment Objective Links

**UNIT 13: RATIO AND PROPORTION PROBLEMS, (7 lessons)**

#### ***Previously met:***

- Ratio and Scale (**Year 8 Aut 1**)
- Multiplicative Change (**Year 8 Aut 1**)

To be able to:

- Solve problems with direct proportion (R)
- Direct proportion and conversion graphs (R)
- Solve problems with inverse proportion
- **Graphs of inverse relationships (H)**
- Solve ratio problems given the whole or a part (R)
- Solve 'best buy' problems
- **Solve problems involving ratio and algebra (H)**

#### REMDINER – Strategies for teaching.

- Teach using ratio tables

	<p><b><u>Links and interleaving</u></b></p> <ul style="list-style-type: none"> <li>• <math>y=mx+c</math>, gradients and y-intercepts</li> <li>• Non-linear graphs</li> <li>• Unit conversions</li> <li>• Solving equations</li> </ul> <p><b>UNIT 14: RATES, (7 lessons)</b></p> <p><b><i>Previously met:</i></b></p> <ul style="list-style-type: none"> <li>• Multiplicative Change (<b>Year 8 Aut 1</b>)</li> </ul> <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Solve speed, distance and time problems without a calculator</li> <li>• Solve speed, distance and time problems without a calculator</li> <li>• Use distance-time graphs</li> <li>• Solve problems with density, mass and volume</li> <li>• Solve flow problems and their graphs</li> <li>• Rates of change and their units</li> <li>• <b>Convert compound units (H)</b></li> </ul> <p><b><u>REMDINER – Strategies for teaching.</u></b></p> <ul style="list-style-type: none"> <li>• Teach using ratio tables</li> <li>• Do not use the ‘science’ triangles</li> </ul> <p><b><u>Links and interleaving</u></b></p> <ul style="list-style-type: none"> <li>• Speed, density calculations (science)</li> <li>• Unit conversion</li> <li>• Gradients</li> <li>• Linear and non-linear graphs</li> </ul> <p><b>CONSOLIDATION (3/4 lessons)</b></p> <p>This time can be used for the following:</p> <ul style="list-style-type: none"> <li>• Catching up on any missed small steps.</li> <li>• Working through any of the suggested extension tasks below.</li> <li>• Working on any misconceptions which may have been identified with either the low stakes quizzes or the half termly assessments.</li> </ul>
	<p><b>Spiritual, moral, social, and cultural development</b></p> <p><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.</p> <p><b>PSHE/British Values:</b> Working collaboratively, being respectful during discussion and valuing contributions made by others</p> <p><b>Skills Builder:</b> Key skills in numeracy used in all topic areas.</p>
	<p><b>Numeracy</b></p> <p>Focus on key skills.</p>
	<p><b>Literacy</b></p> <p><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,</p> <p><b>Vocabulary Tier 3:</b> Title slide in all shared resource presentations show the key vocabulary for each topic.</p> <p><b>Reading:</b> Underlining command words,</p> <p><b>Writing:</b> Modelling solutions</p> <p><b>Oracy:</b> Think, pair, share, discussion, verbal feedback (peer to peer), questioning, student modelling</p>
	<p><b>Becoming future ready</b></p> <p><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</p>

	<p>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><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.</p>
<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 grouping/setting: according to prior attainment, gender, social preference, preferred learning style.</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>	<p><b>Support (S), Core (C), Extension (E).</b></p> <p><b>Enlargement and Similarity - small steps</b></p> <ul style="list-style-type: none"> <li>• Recognise enlargement and similarity (S)</li> <li>• Enlarge a shape by a positive integer scale factor (S)</li> <li>• Enlarge a shape by a positive integer scale factor from a point (S/C/E)</li> <li>• Enlarge a shape by a positive fractional scale factor (C/E)</li> <li>• Enlarge a shape by a negative scale factor (C/E)</li> <li>• Work out missing sides and angles in a pair of given similar shapes (C/E)</li> <li>• Solve problems with similar triangles (C/E)</li> <li>• Explore ratios in right-angled triangles (E)</li> </ul> <p><u>Extension tasks</u></p> <ul style="list-style-type: none"> <li>• Finding missing sides and angles using trigonometry</li> </ul> <p><b>Rates - small steps</b></p> <ul style="list-style-type: none"> <li>• Solve problems with direct proportion (S)</li> <li>• Direct proportion and conversion graphs (S)</li> <li>• Solve problems with inverse proportion (C/E)</li> <li>• <b>Graphs of inverse relationships (E)</b></li> <li>• Solve ratio problems given the whole or a part (C/E)</li> <li>• Solve 'best buy' problems (S/C/E)</li> <li>• <b>Solve problems involving ratio and algebra (E)</b></li> </ul>
<b>Learning Outcomes (Most Powerful Knowledge)</b>	
<b>Current learning to be developed in the future within:</b>	<p><b><u>Enlargement and Similarity</u></b></p> <ul style="list-style-type: none"> <li>• Congruence, similarity and enlargement (<b>Year 10, Aut 2</b>)</li> <li>• Geometric Reasoning (<b>Year 11 Spr 1</b>)</li> <li>• Transforming and Construction (<b>Year 11 Aut 1</b>)</li> </ul> <p><b><u>Rates</u></b></p> <ul style="list-style-type: none"> <li>• Multiplicative Change (<b>Year 11, Aut 2</b>)</li> <li>• Gradients and Lines (<b>Year 11, Aut 1</b>)</li> <li>• Non-linear Graphs (<b>Year 11, Aut 2</b>)</li> <li>• Using Graphs (<b>Year 11, Aut 2</b>)</li> </ul>
<b>Assessment</b>	Refer to assessment maps for formative and summative assessment opportunities.

**Impact**

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