# Year Plan – Book 2.2 for 8M2

| **Subject** | Mathematics | **Key Stage** | 3 | **Year** | 8 | **Course** | N/A |
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| **Time period** | Term 6 | **Title** | Maths Frameworking Pupil Book 2.2<br>**Unit 1 Working with numbers**<br>**Unit 2 Geometry**<br>**Unit 3 Probability** |
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| Number of lessons | Unit 1 Working with numbers(6 hours)<br>Unit 2 Geometry (6 hours)<br>Unit 3 Probability (5 hours) | ICT links / tasks | |
| Literacy links / tasks | | Numeracy links / tasks | |
| What should pupils know already? | **Unit 1 Working with numbers**<br>Much of this material with be new to Year 8 pupils. Pupils can leave out questions 1 and 2 of Exercise 1A, which was covered in Year 7. If pupils are grasping the concepts in this chapter they can move swiftly through the exercises, leaving out some of the questions.<br><br>This activity is designed to give pupils the opportunity to apply their learning to a real-life multi-step problem.<br><br>**Unit 2 Geometry**<br>Much of the material in this chapter will be familiar to learners. Use the activities and challenges at the end of each lesson to check understanding. If this is secure, move straight to Lesson 2.5.<br><br>This challenge gives pupils the | What will pupils learn? | **Unit1 Working with numbers**<br>1.1 Multiplying and dividing negative numbers<br>1.2 Factors and highest common factors<br>1.3 Lowest common multiples<br>1.4 Power and roots<br>1.5 Prime factors<br>      Review questions and Challenge Blackpool Tower<br>**Unit 2 Geometry**<br>2.1 Angles in parallel lines<br>2.2 The geometric properties of quadrilaterals<br>2.3 Rotations<br>2.4 Translations<br>2.5 Constructions<br>Review Questions and Challenge – More constructionsderrick<br>**Unit 3 Probability**<br>3.1 Probability scales<br>3.2 Mutually exclusive events<br>3.3 Using a sample space to calculate probabilities<br>3.4 Experimental probability |

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| | opportunity to extend their learning to more complex constructions. They need to be able to reproduce a set of instructions that extend what they have already done in the lesson.<br><br>**Unit 3 Probability**<br>Much of this material will be new. Pupils may be familiar with Lesson 3.1 from Year 7 and can move to the activity question at the end if this is the case.<br><br>In this activity learners extend their understanding of probability to a common real-life application that they may not have previously considered. This activity also makes a real-life link between probability and financial skills. | | Review Questions and Financial skills – Fun in the fairground |
| How will pupils be assessed? | Units 1 and 2 assessment on Collins Connect | What are the assessment criteria? | |

| Time period | Term 1 | Title | Maths Frameworking Pupil Book 2.2<br>Unit 4 Percentages<br>Unit 5 Sequences<br>Unit 6 Area of 2D and 3D shapes |
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| Number of lessons | Unit 4 Percentages (4 hours)<br>Unit 5 Sequences (4 hours)<br>Unit 6 Area of 2D and 3D shapes (5 hours) | ICT links / tasks | |
| Literacy links / tasks | | Numeracy links / tasks | |
| What should pupils know already? | **Unit 4 Percentages**<br>Although pupils have met percentages before there are some important and quite challenging concepts in this chapter. The idea of percentages as a multiplier and the use of multiplicative reasoning is very important to pupils' confidence and fluency with percentages. Therefore, while you may be able to leave out some of the earlier questions in each section, be careful about leaving out too much or moving on too fast.<br><br>This activity is designed to give pupils the opportunity to demonstrate their understanding of percentage change to a real-life situation. All the information they need is provided but they will need to read the question carefully to decide which information they need and what mathematical skills to use.<br><br>**Unit 5 Sequences**<br>Pupils can jump to the investigation on the $n$th term if they have met this in Year 7.<br><br>Pupils apply their understanding of sequences to a real-life scenario. They will need to work methodically and be able to justify their solutions. Ask more able pupils to generalise their rules for an $m \times n$ pool. | What will pupils learn? | **Unit 4 Percentages**<br>4.1 Calculating percentages<br>4.2 Calculating percentage increases and decreases<br>4.3 Calculating a change as a percentage<br>Review questions and Challenge – Changes in population<br>**Unit 5 Sequences**<br>5.1 Using flow charts to generate sequences<br>5.2 The nth term of a sequence<br>5.3 Working out the nth term of a sequence<br>5.4 The Fibonacci sequence<br>Review questions and Investigation – Pond boarders<br>**Unit 6 Area of 2D and 3D shapes**<br>6.1 Area of a triangle<br>6.2 Area of a parallelogram<br>6.3 Area of a trapezium<br>6.4 Surface area of cubes and cuboids<br>Review questions and Investigation pond boarders |

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| | **Unit 6 Area of 2D and 3D shapes**<br>Pupils should be familiar with many of the concepts in this chapter. Check their understanding with a couple of examples and the move to the MR, PS and challenge or investigation questions in each lesson.<br>You may want to combine lessons 1 to 3.<br><br>Pupils apply their understanding of area to a more complex problem. They will need to work methodically and be able to explain their solutions. Ask more able pupils to justify any rules by revisiting the structure of the problem. | | |
| How will pupils be assessed? | Units 3 – 5 assessment on Collins Connect | What are the assessment criteria? | |

| Time period | Term 2 | Title | Maths Frameworking Pupil Book 2.2<br>Unit 7 Graphs<br>Unit 8 Simplifying number<br>Unit 9 Interpreting data |
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| Number of lessons | Unit 7 Graphs (5 hours)<br>Unit 8 Simplifying number (6 hours)<br>Unit 9 Interpreting data (5 hours) | ICT links / tasks | |
| Literacy links / tasks | | Numeracy links / tasks | |
| What should pupils know already? | **Unit 7 Graphs**<br>It is important to take time over the examples in this chapter. However, it may often be more worthwhile to work through one or two examples in depth as a class, followed by picking out one or two examples for pupils to complete.<br><br>A common response to algebra is to ask how it can be used. This activity provides an everyday use of algebra in terms of graphical representation of algebraic relationships set in real-life contexts. Encourage pupils to suggest possible questions.<br><br>**Unit 8 Simplifying Number**<br>There are new ideas in all these lessons, which build on pupils' existing knowledge of rounding and the number system. Check understanding by doing a couple of examples as a class; then ask pupils to focus on the PS and MR questions, activities and investigations.<br><br>This activity is designed to combine the skills covered across this chapter to explore an interesting real-life problem in a slightly more abstract context.<br><br>**Unit 9 Interpreting data** | What will pupils learn? | **Unit 7 Graphs**<br>7.1 Graphs from linear equations<br>7.2 Gradient (steepness) of a straight line<br>7.3 Graphs from simple quadratic equations<br>7.4 Real-life graphs<br>Review and Challenge – M25<br>**Unit 8 Simplifying numbers**<br>8.1 Powers of 10<br>8.2 Large numbers and rounding<br>8.3 Significant figures<br>8.4 Standard form with large numbers<br>8.5 Multiplying with numbers in standard form<br>Review questions and challenge – Space<br>**Unit 9 Interpreting data**<br>9.1 Pie charts<br>9.2 Creating pie charts<br>9.3 Scatter graphs and correlation<br>9.4 Creating scatter graphs<br>Review Questions and Challenge – Football Attendance |

| | Much of the material in lessons 9.3 and 9.4 will be new to pupils. However, the material could again be combined. Make certain that pupils have a good grasp of correlation before moving on.<br><br>This activity consolidates the previous work on statistics. | | |
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| How will pupils be assessed? | Units 6 – 8 assessment on Collins Connect | What are the assessment criteria? | |

# Year Plan – Book 2.2 for 8M2

| Time period | Term 3 | Title | Maths Frameworking Pupil Book 2.2<br>**Unit 10 Algebra**<br>**Unit 11 Congruence and scaling**<br>**Unit 12 Fractions and decimals** |
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| Number of lessons | Unit 10 Algebra (6 hours)<br>Unit 11 Congruence and scaling (6 hours)<br>Unit 12 Fractions and decimals (6 hours) | ICT links / tasks | |
| Literacy links / tasks | | Numeracy links / tasks | |
| What should pupils know already? | **Unit 10 Algebra**<br>Pupils should have met the concepts in lessons 1 and 2 before. Work through a couple of examples to check understanding and then move on to Lesson 3<br><br>This activity develops confidence and fluency with algebraic notation. Pupils often struggle to decode everyday language into mathematics. This activity gives them the opportunity to practise this in a range of contexts.<br><br>**Unit 11 Congruence and scaling**<br>Pupils will have met some of the basic concepts in this chapter. If they can demonstrate that they are confident and fluent with these basic concepts, pupils can move on to the more challenging questions at the end of each exercise in the Pupil Book.<br><br>This activity consolidates topics previously covered on extracting data, area and ratio.<br><br>**Units 12 Fractions and Decimals**<br>Much of the material in this chapter will be unfamiliar to pupils. Make sure that all pupils fully understand each concept before moving on to the MR and PS questions in the exercises in the Pupil Book. | What will pupils learn? | **Unit 10 Algebra**<br>10.1 Algebraic notation<br>10.2 Like terms<br>10.3 Expanding brackets<br>10.4 Using algebraic expressions<br>10.5 Using index notation<br><br>Review questions and Mathematical reasoning – Writing in algebra<br>**Unit 11 Congruence and scaling**<br>11.1 Congruent shapes<br>11.2 Enlargement<br>11.3 Shape and ratio<br>11.4 Scale<br>Review questions and Problem solving – Photographs<br>**Unit 12 Fractions and decimals**<br>12.1 Adding and subtracting fractions<br>12.2 Multiplying fractions and Integers<br>12.3 Dividing with integers and fractions<br>12.4 Multiplication with large and small numbers<br>12.5 Division with large and small numbers<br>Review questions and Mathematical reasoning - Guesstimates |

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| | This activity gives pupils the opportunity to practise their mental strategies in some real-life contexts. It also encourages them to make links to the use of estimation as well as the need to make assumptions when tackling real-life problems. | | |
| How will pupils be assessed? | Units 9 – 11 assessment on Collins Connect | What are the assessment criteria? | |

# Year Plan – Book 2.2 for 8M2

| Time period | Term 4 | Title | Maths Frameworking Pupil Book 2.2 Unit 13 Proportion Unit 14 Circles Unit 15 Equations and formulae |
|---|---|---|---|
| Number of lessons | Unit 13 Proportion (5 hours) Unit 14 Circles (5 hours) Unit 15 Equations and formulae (4 hours) | ICT links / tasks | |
| Literacy links / tasks | | Numeracy links / tasks | |
| What should pupils know already? | **Unit 13 Proportion** Much of this material in this chapter will be unfamiliar to pupils. Make sure that each concept is fully understood by all pupils before moving on to the MR and PS questions in the exercises.<br><br>For this challenge pupils apply their understanding of proportion to a typical real-life context including speed, time and fuel consumption. The questions increase in complexity and pupils can use a range of graphical and algebraic skills to tackle them. They also need to be able to interpret some quite complex language.<br><br>**Unit 14 Circles** Pupils may be familiar with the contents of lessons 1 and 2. Check understanding with a couple of example and if pupils are confident and fluent move straight on to lessons 3 and 4.<br><br>This activity is designed to give pupils the opportunity to apply their knowledge to a multi-step real-life problem. The context is common, but is presented in a slightly more | What will pupils learn? | **Unit 13 Proportion** 13.1 Direct proportion 13.2 Graphs and direct proportion 13.3 Inverse proportion 13.4 Comparing direct proportion and inverse proportion **Unit 14 Circles** 14.1 The circle and its parts 14.2 Circumference of a circle 14.3 Formula for the circumference of a circle 14.4 Formula for the area of a circle Review questions and Financial skills Athletics stadium **Unit 15 Equations and formulae** 15.1 Equations with brackets 15.2 Equations with the variable on both sides 15.3 More complex equations 15.4 Rearranging formulae Review questions and Mathematical reasoning – Using graphs to solve equations |

| | | What are the assessment criteria? | |
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| | complex way than pupils are used to.<br><br>**Unit 15 Equations and Formulae**<br>Much of this chapter will be new material. However, pupils who are familiar with multiplying brackets and solving simple equations can quickly complete Exercise 15A or move straight on to exercise15B.<br><br>In this activity pupils use mathematical reasoning to make links between equations and formula and their graphical representation. By comparing graphical and algebraic representations pupils check their ability to solve equations. This ability to use different representations to check their understanding is a valuable generic skill. | | |
| How will pupils be assessed? | | What are the assessment criteria? | |

# Year Plan – Book 2.2 for 8M2

| Time period | Term 5 | Title | Maths Frameworking Pupil Book 2.2<br>Unit 16 Comparing data |
|---|---|---|---|
| Number of lessons | Unit 16 Comparing data (3 hours) | ICT links / tasks | |
| Literacy links / tasks | | Numeracy links / tasks | |
| What should pupils know already? | **Unit 16 Comparing data**<br>Use one or two examples to check understanding from lessons 1 and 2, and if pupils are fluent and confident with the concepts, move straight to lessons 3 and 4. Compare and make decisions on the most appropriate statistical measures.<br><br>This activity is designed to combine all the lessons in this chapter by taking pupils sequentially through the steps of tabulating and displaying data for a very familiar real-life problem.<br>All the data is given but pupils will need to read and think carefully about how they display the data so that they can make valid comparisons. | What will pupils learn? | **16 Comparing data**<br>16.1 Grouped frequency tables<br>16.2 Drawing frequency diagrams<br>16.3 Comparing data<br>16.4 Which average to use<br>Review questions and problem solving – Technology Questionnaire |
| How will pupils be assessed? | Units 14 – 16 assessment on Collins Connect | What are the assessment criteria? | |