Year Plan – Book 3.3 for 9M1

Subject	Mathematics	Key Stage	3	Year	9	Course	N/A

Time period	Term 1	Title	Mathematics Frameworking pupil book 3.3 **Chapter 4 – Using Data** **Chapter 5 – Applications of graphs** **Chapter 6 – Pythagoras' Theorem**
Number of lessons	Chapter 4 – Using Data (5 hours) Chapter 5 – Applications of graphs (4 hours) Chapter 6 – Pythagoras' Theorem (5 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	**Unit 4 Using data** Much of the material in the lessons of this chapter will be new to pupils. Lesson 4.3 and Lesson 4.4 could, however, be combined. Make certain that pupils have a good grasp of correlation and time series before moving on. This challenge does not intend to make any judgement values of the country or countries concerned. Instead, this activity has been devised to allow pupils to find what the statistics may suggest – in other words, that economic growth can affect the amount of deforestation. **Unit 5 Application of graphs** This chapter is mainly new material, so work through each lesson thoroughly. This financial skills 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 more complex way than pupils are used to.	What will pupils learn?	Chapter 4 - Scatter graphs and correlation - Two-way tables - Estimate mean from a grouped table - Cumulative frequency - Statistical investigations - Challenge – Census Chapter 5 - Step graphs - Time graphs - Exponential growth graphs - Problem solving – Mobile phone tariffs Chapter 6 - Introducing Pythagoras - Using Pythagoras to solve problems - The converse of Pythagoras - Activity – Practical Pythagoras

	Unit 6 Pythagoras's Theorem This whole chapter will be new to pupils. However, it is possible to combine Lesson 6.2 and Lesson 6.3. More able pupils could then move on rapidly to Lesson 6.4 if they fully grasp the concepts and methods taught in this chapter. This problem solving activity is designed to give pupils the opportunity to apply their knowledge of enlargements to a multi-step real-life problem.		
How will pupils be assessed?	Units 3 -5 assessment on Collins Connect	What are the assessment criteria?	

Time period	Term 2	Title	Mathematics Frameworking pupil book 3.3 Chapter 7 – Fractions Chapter 8 – Algebra Chapter 9 - Decimals
Number of lessons	Chapter 7 – Fractions (4 hours) Chapter 8 – Algebra (4 hours) Chapter 9 – Decimals (4 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	**Unit 7 Fractions** The material in Lesson 7.1 should be familiar to pupils. Check by working through some examples and then move on to Lesson 7.2. Lessons 7.3 and 7.4 are new but build on concepts that pupils have already met. You could combine these and focus on the more extended questions. **Unit 8 Algebra** In this problem solving activity pupils are required to apply their understanding of fractions to a more complex problem. Pupils need to work methodically and be able to explain their solutions. All the work in this chapter will be new to pupils. However, you could fast-track those pupils who grasp the material quickly to the more challenging questions at the end of each exercise in the Pupil Book. This challenge activity requires pupils to apply their learning in an unfamiliar context. Introduce it with some recent examples of treasure trove finds from the internet and get pupils to research the current price of gold per gram. **Unit 9 Decimals** The content of Lesson 9.1 should be familiar to pupils. Check understanding then move on to Lesson 9.2 on standard form. You could combine Lessons 9.3 and 9.4 by working through the examples and asking pupils to answer the MR and PS questions in Exercise 9C and 9D and/or the	What will pupils learn?	Chapter 7 – Fractions - [Multiplying fractions and mixed numbers](#) - [Dividing fractions and mixed numbers](#) - [Algebraic fractions](#) - [Investigation – Fractions from one to six](#) Chapter 8 – Algebra - [Expanding the product of two brackets](#) - [Expanding the product of more than two brackets](#) - [Factorising quadratics with positive coefficients](#) - [Factorising quadratics with negative coefficients](#) - [Difference of two squares](#) - [Challenge – Graphs from expressions](#) Chapter 9 – Decimals - [Powers of 10](#) - [Standard form](#) - [Multiplying numbers with standard form](#) - [Dividing numbers with standard form](#) - [Upper and lower bounds](#) - [Mathematical reasoning – To the stars and back](#)

	activity and investigation at the end of each exercise, respectively. Then move on to Lesson 9.5. All the information is provided in this mathematical reasoning activity, but it is quite complex. Pupils will need to read the questions very carefully to decide which information they need and what mathematical skills to use in each case.		
How will pupils be assessed?	Units 6 - 8 assessment on Collins Connect	What are the assessment criteria?	

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Time period	Term 3	Title	**Mathematics Frameworking pupil book 3.3** **Chapter 10 – Surface area and volume of cylinders** **Chapter 11 – Solving equations graphically** **Chapter 12 – Compound units**
Number of lessons	Chapter 10 – Surface area and volume of cylinders (5 hours) Chapter 11 – Solving equations graphically (5 hours) Chapter 12 – Compound units (4 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	

What should pupils know already?	**Unit 10 Surface Area and volume of cylinders**
	The material in this chapter will be new to pupils. However, you could combine Lessons 10.2 and 10.3.
	
	Pupils apply their understanding of area to a more complex problem in this investigation. They will need to work methodically and be able to explain their solutions. Start by introducing them to the use of isometric paper. Ask more able pupils to justify any rules they discover by revisiting the structure of the problem.
	
	Unit 11 Solving equations graphically
	The material in this chapter is complex and is likely to be new to many pupils. If pupils are confident and fluent with linear graphs and rearranging equations you could move straight on to Lesson 11.2. First, however, check pupils' understanding by giving them some examples.
	
	This problem solving activity gives pupils the opportunity to involve themselves in the practical aspects of using data in real life contexts. Make sure pupils have a good understanding of correlation.
		What will pupils learn?	Chapter 10 – Surface area and volume of cylinders
			- Volume of cylinders
			- Surface area of cylinders
			- Composite shapes
			- Problem solving – Packaging soup
			Chapter 11 – Solving equations graphically
			   - Graphs from equations in the form ay ± bx = c
			   - Solving simultaneous equations by drawing graphs
			   - Solving quadratic equations by drawing graphs
			   - Solving cubic equations by drawing graphs
			   - Challenge – Maximum packages
			Chapter 12 – Compound Units
			- Speed
			- More compound units
			- Unit costs
			- Challenge – Population density

	Unit 12 Compound Measures All the material in this chapter will be new to pupils. However, you could combine Lesson 12.1 and Lesson 12.2 to make it one lesson. This challenge activity requires pupils to apply their learning from this chapter in a less familiar practical context.		
How will pupils be assessed?		What are the assessment criteria?	

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Time period	Term 4	Title	Mathematics Frameworking pupil book 3.3 Chapter 13 Chapter13 – Right angled triangles Chapter 14 – Revision and prep for year 10
Number of lessons	Chapter 13 – Right angled triangles (6 hours) Chapter 14 – Revision and prep for year 10 (4 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	**Unit 13 Right angled triangles** This chapter is new material and in many cases quite complex. Choose examples carefully to support or challenge pupils. This investigation is an interesting application of the learning in this unit. Pupils may be familiar with the idea from films but will probably be surprised at its use here. This is a good opportunity to demonstrate links to other subjects, in this case history. **Unit 14 GCSE Preparation** The exercises in this chapter of the Pupil Book cover the following mathematical strands: • Algebra • Geometry and measures • Statistics • Number The material will provide excellent practice so that pupils become mathematically fluent. Encourage pupils to work through this whole chapter before their End of Year 9 tests.	What will pupils learn?	Chapter 13 – Right angled triangles - Introduction to trigonometric ratios - How to find trigonometric ratios of angles - Using trigonometric ratios to find angles - Using trigonometric ratios to find lengths - Investigation – Barnes Wallis and the bouncing bomb Chapter 14 – Revision and prep for year 10 - Practice - Revision - GCSE preparation: solving quadratic equations - GCSE-type questions
How will pupils be assessed?	Units 11 – 13 assessment on Collins Connect	What are the assessment criteria?	

Time period		Title	
Number of lessons		ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?		What will pupils learn?	
How will pupils be assessed?		What are the assessment criteria?	

Time period		Title	
Number of lessons		ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?		What will pupils learn?	
How will pupils be assessed?		What are the assessment criteria?	