

Year Plan – Book 3.1 for Year 9



Subject	Mathematics	Key Stage	3	Year	9	Course	N/A
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Time period	Term 6	Title	Maths Frameworking Pupil Book 3.1 Unit 1 Percentages Unit 2 Equations and Formulae Unit 3 Polygons
Number of lessons	Unit 1 Percentages (4 hours) Unit 2 Equations and Formulae (6 hours) Unit 3 Polygons (3 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	<p><u>Unit 1 Percentages</u> Although pupils have met percentages before there are some important and quite challenging concepts in this chapter for pupils working at this level. The ideas of percentages as a multiplier and the use of multiplicative reasoning are very important to pupils' confidence and fluency when working with percentages. So, while you may be able to leave out some of the earlier questions in each exercise, be careful not to leave out too much or move on too fast.</p> <p>This challenge gives pupils the opportunity to extend their learning to a real-life context. All the information pupils will need is provided in the Pupil Book but it is quite complex. Pupils working at this level may find it difficult to access the information they need. This is representative of how they are likely to find information presented in real life. Pupils will need to read the questions very carefully to decide what information they need and what mathematical skills to use in each case.</p>	What will pupils learn?	<p><u>Unit 1 Percentages</u> 1.1 Simple Interest 1.2 Percentage increases and decreases 1.3 Calculating the original value 1.4 Using percentages <u>Review Questions</u> <u>Unit 2 Equations and Formulae</u> 2.1 Multiplying out brackets 2.2 Factorising algebraic expressions 2.3 Equations with brackets 2.4 Equations with fractions 2.5 Formulae <u>Review Questions</u> <u>Unit 3 Polygons</u> 3.1 Polygons 3.2 Angles in polygons 3.3 Interior angles of regular polygons <u>Review Questions</u></p>

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	<p><u>Unit 2 Equations and Formulae</u></p> <p>Much of this chapter will be unfamiliar to pupils. However, some pupils may be familiar with expanding brackets. Check that all pupils can expand brackets fluently before moving on to the rest of the chapter. If pupils grasp the concepts quickly they can move on to the more challenging questions that are towards the end of each exercise in the Pupil Book.</p> <p>This financial skills activity gives pupils the opportunity to apply the skills they have learned in the chapter to a practical situation that many pupils may experience in the future. The cost formula used is often encountered in GCSE exams, so it is important for pupils have a good grasp of this.</p> <p><u>Unit 3 Polygons</u></p> <p>Lesson 3.1 should be familiar material for pupils. Check pupils' knowledge by giving them some questions. If all pupils can answer them and you are satisfied that everyone in the class understands the material, then move on to Lesson 3.2.</p> <p>This activity is designed to give pupils the opportunity to apply what they have learnt about the characteristics of polygons to tessellations. Pupils will need to apply what they know about angles in polygons. Tessellations were not part of this chapter but pupils should have met the concept before.</p>		
How will pupils be assessed?		What are the assessment criteria?	

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Time period	Term 1	Title	Maths Frameworking Pupil Book 3.1 Unit 4 Using data Unit 5 Circles Unit 6 Enlargements
Number of lessons	Unit 4 Using data (5 hours) Unit 5 Circles (4 hours) Unit 6 Enlargements (5 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	<p>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.</p> <p>Talk to pupils about deforestation and the fact that for years, the big rainforests of the world have been reduced and chopped down, while the country or countries concerned benefit from the cleared land and the revenue from the wood obtained from the trees. Note that this challenge does not intend to make any judgement values of the country or countries concerned. Instead, it 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</p> <p><u>Unit 5 Circles</u> Pupils will have met the formulae for area and circumference of a circle in Year 8. Check pupils' understanding by giving them some examples and go through the more formal explanation for area at the beginning of Lesson 5.2. If pupils are confident and fluent, move directly to Lesson 5.3.</p> <p>This activity is designed to give pupils the opportunity to apply their knowledge to a multi-step real-life problem. The</p>	What will pupils learn?	<p><u>Unit 4 Using data</u> 4.1 Scatter graphs and correlation 4.2 Interpreting graphs and diagrams 4.3 Two- way tables 4.4 Comparing two or more sets of data 4.5 Statistical Investigation <u>Review Questions</u></p> <p><u>Unit 5 Circles</u> 5.1 The formula for the circumference of a circle 5.2 The formula for the area of a circle 5.3 Mixed problems <u>Review Questions</u></p> <p><u>Unit 6 Enlargements</u> 6.1 Scale factors and enlargements 6.2 The centre of enlargement 6.3 Enlargements on grids <u>Review Questions</u></p>

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	<p>context is familiar, but the activity is presented in a slightly more complex way than pupils may be used to. All the information required to answer the questions is in the text, but pupils will need to read and then think carefully about how they access the information. Remind them to highlight the key information they will need. Tell pupils that they will need to combine their skills not only from this chapter, but also from different areas of mathematics, for example, number.</p> <p><u>Unit 6 Enlargement</u> If pupils in the class grasp concepts quickly, then it will be possible for you to combine Lesson 6.1 and Lesson 6.2. Encourage more able pupils to move straight to the more challenging questions towards and at the end of each exercise in this chapter.</p> <p>This problem-solving activity consolidates topics previously covered on extracting data, area and ratio.</p>		
How will pupils be assessed?	Chapters 1 – 4 assessment on Collins Connect	What are the assessment criteria?	

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Time period	Term 2	Title	Maths Frameworking Pupil Book 3.1 Unit 7 Fractions Unit 8 Algebra Unit 9 Decimal Numbers
Number of lessons	Unit 7 Fractions (4 hours) Unit 8 Algebra (4 hours) Unit 9 Decimal Numbers (4 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	<p><u>Unit 7 Fractions</u> The material in Lesson 7.1 should be familiar to pupils but pupils working at this level are likely to need reinforcing of the work. Check pupils' understanding by working through some examples. Only if appropriate, move on to Lesson 7.2.</p> <p>Pupils apply their understanding of fractions to a topical but more complex problem. Pupils need to work methodically to identify all the information required to answer the questions. Remind them to highlight the key information they will need. Pupils will also need to combine their understanding across fractions, decimals and percentages as well as their understanding of averages.</p> <p><u>Unit 8 Algebra</u> Much of the work in this chapter will be new to pupils, although they will know certain concepts, which are expanded on from Chapter 2. 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.</p> <p>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.</p>	What will pupils learn?	<p><u>Unit 7 Fractions</u> 7.1 Adding and subtracting fractions 7.2 Multiplying fractions 7.3 Dividing fractions <u>Review Questions</u></p> <p><u>Unit 8 Algebra</u> 8.1 Expanding brackets 8.2 Factorising algebraic expressions 8.3 Expand and simplify <u>Review Questions</u></p> <p><u>Unit 9 Decimal Numbers</u> 9.1 Multiplication of decimals 9.2 Powers of 10 9.3 Rounding suitably 9.4 Dividing decimals 9.5 Solving problems <u>Review Questions</u></p>

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	<p><u>Unit 9 Decimal Numbers</u></p> <p>Pupils should have met most of the material in this chapter before. However, this material may challenge some pupils. It is important to remember that lack of confidence and fluency with basic number skills can be a significant barrier to further learning for pupils working at this level. However, if you feel your pupils are able to move on faster, you could combine Lesson 9.1 and Lesson 9.4, and then Lesson 9.2 and Lesson 9.3, by choosing key questions in each pair of lessons. Then move on to Lesson 9.5.</p> <p>This activity uses the context of paper, with which pupils may be very familiar. All the information pupils need is provided in the text in the Pupil Book, but it is quite complex. Pupils will need to read the questions very carefully to decide on the information that they will need and what mathematical skills to use in each case.</p> <p>The questions move freely between fractions and decimals. This is something that pupils need to be comfortable with, which also develops their conceptual understanding of fractions and decimals being ways of expressing parts of a whole.</p>		
How will pupils be assessed?	Chapter 5-7 on Collins Connect	What are the assessment criteria?	

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Time period	Term 3	Title	Maths Frameworking Pupil Book 3.1 Unit 10 Surface area and volume of 3D shapes Unit 11 Solving equations graphically Unit 12 Distance, speed and time
Number of lessons	Unit 10 Surface area and volume of 3D shapes (6 hours) Unit 11 Solving equations graphically (5 hours) Unit 12 Distance, speed and time (4 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	<p><u>Unit 10 Surface area and volume of 3D shapes</u> Pupils should be familiar with many of the concepts in this chapter. Check pupils' understanding by giving them different examples to see if they have any problems finding the answers. Once you are happy that pupils are confident, move on to the MR questions towards the end of each exercise, and the investigation and problem-solving activities at the end of each exercise.</p> <p>Pupils apply their understanding of area to a more complex problem. Pupils need to work methodically and be able to explain their solutions. This is a good transferable skills objective to share with pupils when doing this investigation. Ask pupils to share not only their solutions but also <i>how</i> they approached working on the problem.</p> <p><u>Unit 11 Solving equations graphically</u> Pupils may be familiar with the material in the first two lessons of this chapter. Check pupils' understanding by giving them some well-targeted questions about $y = mx + c$. If they are confident, you may want to combine Lesson 11.1 and Lesson 11.2 using the MR and PS questions, and the end of lesson activities.</p> <p>Pupils often ask why they have to do mathematics that is not familiar to them. Say that using graphs to monitor</p>	What will pupils learn?	<p><u>Unit 10 Surface area and volume of 3D shapes</u> 10.1 Surface area of cubes and cuboids 10.2 Volume formulae for cubes and cuboids 10.3 Volumes of triangular prisms <u>Review Questions</u></p> <p><u>Unit 11 Solving equations graphically</u> 11.1 Graphs from equations in the form $y = mx + c$ 11.2 Problems involving straight-line graphs 11.3 Solving simple quadratic equations by drawing graphs 11.4 Problems involving quadratic graphs <u>Review Questions</u></p> <p><u>Unit 12 Distance, speed and time</u> 12.1 Distance 12.2 Speed 12.3 Time <u>Review Questions</u></p>

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	<p>wildlife is a good example of how mathematics can be used to benefit society.</p> <p><u>Unit 12 Distance, speed and time</u></p> <p>The material in all three lessons of this chapter will be new to pupils. However, if you feel that your pupils are confident with the different units for speed, distance and time, then you could combine the three lessons into one lesson. You could do this by using the speed, distance, time triangle.</p> <p>This financial skills exercise will help pupils to make their learning relevant by applying it to a real-life situation.</p>		
How will pupils be assessed?		What are the assessment criteria?	

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Time period	Term 4	Title	Maths Frameworking Pupil Book 3.1 Unit 13 Similar triangles Unit 14 Revision and GCSE Preparation
Number of lessons	Unit 13 Similar triangles (5 hours) Unit 14 Revision and GCSE Preparation (6 hours)	ICT links / tasks	
Literacy links / tasks		Numeracy links / tasks	
What should pupils know already?	<p><u>Unit 13 Similar Triangles</u> This chapter is new material and in many cases quite complex. Choose examples carefully to support or challenge pupils.</p> <p>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.</p> <p><u>Unit 14 Revision and GCSE Practice</u> The exercises in this chapter of the Pupil Book cover the following mathematical strands:</p> <ul style="list-style-type: none"> • Algebra • Geometry and measures • Statistics • Number <p>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.</p>	What will pupils learn?	<p>Unit 13 Similar triangles</p> <p>13.1 Similar triangles</p> <p>13.2 A summary of similar triangles</p> <p>13.3 Using triangles to solve problems</p> <p>Review Questions</p> <p>14 Revision and GCSE preparation</p> <p>14A Practice in fractions, decimals and percentages</p> <p>14B Practice in four rules, ratios and directed number</p> <p>14C Practice in basic rules of algebra and solving linear equations</p> <p>14D Practice in graphs</p> <p>14E Practice in geometry and measures</p> <p>14F Practice in statistics and probability</p> <p>14G Revision of BIDMAS</p> <p>14H Revision of adding and subtracting negative numbers</p> <p>14I Revision of multiples, factors and primes</p> <p>14J Revision of squares, square roots and powers</p> <p>14K Revision of decimals in context: addition and subtraction</p> <p>14L Revision of decimals in context: multiplication and division</p> <p>14M Revision of long multiplication and long division in real life problems</p> <p>14N Revision of geometry</p> <p>14O Revision of symmetry</p> <p>14P Revision of statistics and statistical techniques</p>

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			14Q Revision of probability GCSE Type questions
How will pupils be assessed?	Chapters 11–14 assessment on Collins Connect	What are the assessment criteria?	

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Time period	Term 5	Title	Maths Frameworking Pupil Book
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?	