3-year scheme of work

The following scheme of work provides a suggestion for how Pupil Book 1.1 can be taught over the course of one year, as part of a 3-year Key Stage 3 course.
Please note that you can recombine the test questions provided on Collins Connect to create new tests if your frequency of assessment differs from that below, or if you wish to combine content from different chapters in your own half-term tests.
This scheme of work is provided in editable Word and Excel format on the CD-ROM accompanying this Teacher Pack.

Chapter	Lesson	No. of hours	Learning objective	Comments/ suggestions
Half-term / Term 1				
1 Using numbers	1.1 The calendar	1	• To read and use calendars	Tables and charts appear all over in real life. It is important that pupils become confident in their ability to extract and use information from tables and charts in increasingly unfamiliar and complex situations. Money problems have to be dealt with daily in real life and pupils need to realise how important their ability to interpret these problems and identify the mathematics involved is to their future financial wellbeing. This chapter provides plenty of financial skills (FS) questions for practice. Pupils often confuse the operation of addition and subtraction of negative numbers as numbers on a number line, especially as the sign is the same for both. Encourage pupils to visualise the number line when making calculations.
	1.2 The 12-hour and 24-hour clocks	1	• To read and use 12-hour and 24-hour clocks • To convert between the 12-hour and 24-hour systems	
	1.3 Managing money	2	• To work out everyday money problems	
	1.4 Positive and negative numbers	1	• To use a number line to order positive and negative whole numbers • To solve problems involving negative temperatures	
	1.5 Adding negative numbers	1	• To carry out additions and subtractions involving negative numbers • To use a number line to calculate with negative numbers	
	1.6 Subtracting negative numbers	1	• To carry out subtractions involving negative numbers	
	Problem solving – Where in the UK?	1		This activity is designed to use both the mathematical reasoning and problem-solving outcomes covered in this chapter in a series of real-life problems.
2 Sequences	2.1 Function machines	1	• To use function machines to generate inputs and outputs	The ability to generalise is crucial in a complex modern society. Being able to identify and generate number sequences is the first step towards progressing from the
	2.2 Sequences and rules	2	• To recognise, describe and write down sequences that are based on a simple rule	

	2.3 Finding terms in patterns	1	• To find missing terms in a sequence	particular to the general in mathematics.
	2.4 The square numbers	1	• To introduce the sequence of square numbers	
	2.5 The triangular numbers	1	• To introduce the sequence of triangular numbers	
	Mathematical reasoning – Valencia Planetarium	1		This is an opportunity to apply what pupils have learnt to a less familiar problem.
3 Perimeter and area	3.1 Length and perimeter	1	• To measure and draw lines • To work out the perimeter of a shape	Measurement, perimeter and area are used widely in many jobs and professions, from farming to astronomy. Encourage pupils to talk to family and relatives to see if anyone uses these skills in their work or to explore specific jobs on the internet. A good example is the building industry, which is totally dependent on workers being able to measure lengths and calculate areas. Pupils could also talk to family and relatives about how they might use area and perimeter in projects such as laying carpets and flooring, and decorating, to estimate how much carpet, flooring or wallpaper is needed.
	3.2 Area	1	• To work out the area of a shape by counting squares	
	3.3 Perimeter and area of rectangles	1	• To work out the perimeter of a rectangle • To work out the area of a rectangle	
	Problem solving – Design a bedroom	1		This activity is designed to show pupils an everyday situation that involves area and perimeter. Pupils are given practice in using their measuring, mathematical reasoning and problem-solving skills.
Chapter 1–3 assessment on Collins Connect				
Half-term				
Half-term / Term 2				
4 Decimal numbers	4.1 Multiplying and dividing by 10, 100 and 1000	1	• To multiply and divide decimal numbers by 10, 100 and 1000	Pupils will be aware of decimals all around them, and should know that the decimal is used to separate: pounds from pence in prices; kilograms from grams in weights;
	4.2 Ordering decimals	1	• To order decimal numbers according to size	

	4.3 Estimates	2	• To estimate calculations in order to spot possible errors	kilometres from metres in distances. Make sure they are aware of the impact of incorrect conversions. When solving money problems, pupils need to draw on their financial skills abilities. The zeros in decimals may cause confusion, for example, when comparing and ordering decimals. Provide pupils with plenty of practice in giving values to each digit. When asked to estimate an answer, pupils often think that the full calculation will be better. Pupils may also be unable to see how to simplify a calculation in order to complete it mentally. Provide plenty of practice.
	4.4 Adding and subtracting decimals	1	• To add and subtract decimal numbers	
	4.5 Multiplying and dividing decimals	1	• To be able to multiply and divide decimal numbers by any whole number	
	Financial skills – Shopping for leisure	1		This activity is designed to apply the skills learnt in this chapter to a multi-step problem. The context may be familiar but pupils are unlikely to have engaged with it themselves.
5 Working with numbers	5.1 Square numbers	1	• To recognise and use square numbers up to 225 (15×15)	The objectives in this chapter are probably some of the most widely-used objectives in terms of real-life application. It is important for pupils to build on their mental methods when developing written methods, so that they understand why they are doing this, and are not just applying a set of rules that they do not understand. Remind pupils that these objectives will be very useful in building confidence and fluency in applying their financial skills in the questions and in real life.
	5.2 Rounding	1	• To round numbers to the nearest whole number, 10, 100 or 1000	
	5.3 Order of operations	1	• To use the conventions of BIDMAS to carry out calculations	
	5.4 Long and short multiplication	2	• To choose a written method for multiplying two numbers together • To use written methods to carry out multiplications accurately	
	5.5 Long and short division	2	• To choose a written method for dividing one number by another • To use written methods to carry out divisions accurately	

	5.6 Calculations with measure-ments	1	• To convert between common metric units • To use measurements in calculations • To recognise and use appropriate metric units	
	Problem solving – What is your carbon footprint?	2		This activity is designed to use the skills covered in this and earlier 'number' chapters to give a real-life context to mathematics.
6 Statistics	6.1 Mode, median and range	1	• To understand the meaning of mode, median and range	Pupils need to think about how we use statistics to model populations where it is difficult or in many cases impossible to gather all the population information. Pupils also need to consider how they could present this information.
	6.2 Reading data from tables and charts	1	• To read data from tables and charts	
	6.3 Using a tally chart	1	• To create and use a tally chart	
	6.Using data	1	• To understand how to use data	
	6.5 Grouped frequency	2	• To understand and use grouped frequency	
	6.6 Data collection	2	• To gain a greater understanding of data collection	
	Challenge – Trains in Europe	1		This activity is designed to use both the mathematical reasoning and problem solving outcomes covered in this chapter se in a situation that is familiar to pupils. Ask pupils to summarise what they have learnt in the chapter, as they will use much of this material to complete the activity.
Chapter 4–6 assessment on Collins Connect				
Holidays				
Half-term / Term 3				
7 Algebra	7.1 Expressions and substitution	1	• To use algebra to write simple expressions • To substitute numbers into expressions to work out their value	In algebra, pupils often struggle to recognise that letters represent variables and that the answer can vary depending on the situation. Provide lots of opportunities for pupils to see this in action in familiar contexts such *as 'Think of a number'* word problems.
	7.2 Simplifying expressions	2	• To learn the rules for simplifying expressions	
	7.3 Using formulae	2	• To use formulae	

	7.4 Writing formulae	1	• To write formulae	To avoid serious confusion when multiplying brackets, make sure pupils understand that letter symbols used in algebra stand for unknown numbers or variables and *not* labels. For example, '5*b* cannot mean '5 bananas.
	Problem solving –Winter sports	1		A common response to algebra is to ask how it can be used. This activity provides one of the everyday uses of algebra in terms of using a formula to work out costs.
8 Fractions	8.1 Equivalent fractions	1	• To find simple equivalent fractions • To write fractions in their simplest form	Pupils are encouraged to think about and explore the fact that fractions as we know them did not exist in Europe until the 17th century. At first, fractions were not even thought of as numbers in their own right, simply as a means of comparing whole numbers with one another. When working with fractions, pupils are often aware of the role of the denominator when finding equivalent fractions but may fail to understand the role of the numerator. Working with visual images may help.
	8.2 Comparing fractions	1	• To compare and order two fractions	
	8.3 Adding and subtracting fractions	2	• To add and subtract fractions with the same denominator • To add and subtract fractions with different denominators	
	8.4 Mixed numbers and improper fractions	1	• To convert mixed numbers to improper fractions • To convert improper fractions to mixed numbers	
	8.5 Calculations with mixed numbers	1	• To add and subtract simple mixed numbers with the same denominator • To add and subtract simple mixed numbers with different denominators	
	Challenge – Fractional dissection	1		This activity explores partitioning in a familiar context, which is an important concept in understanding fractions. The tasks involve splitting a shape into unequal parts, which will help pupils' understanding of the part–whole relationship between the numerator and denominator in fractions.

9 Angles	9.1 Using the compass to give directions	1	• To use a compass to give directions	In the real world, geometry is everywhere, for example, in buildings, planes, cars and maps, homes. Without an understanding of angles and their properties none of these structures would stay together. Show examples to the class. Another use of angles in real life is how we find our way around the world. Without a basic understanding of angles in terms of a measure of rotation we would not reach our destination. Pupils often do not appreciate the need for accuracy when measuring and drawing angles. Make sure that pupils are given plenty of practice in using a protractor accurately.
	9.2 Measuring angles	1	• To know the different types of angles • To use a protractor to measure an angle	
	9.3 Drawing angles	1	• To use a protractor to draw an angle	
	9.4 Calculating angles	1	• To calculate angles at a point • To calculate angles on a line • To calculate opposite angles	
	9.5 Properties of triangles and quadrilaterals	2	• To understand the properties of parallel, intersecting and perpendicular lines • To understand and use the properties of triangles • To understand and use the properties of quadrilaterals	
	Investigation – Snooker tables	1		This activity encourages pupils to think about how angles can affect a possibly familiar real-life situation – the way one plays the game of snooker. Pupils may find it interesting to see how much mathematical calculation is involved in playing a good game.
Chapter 7–9 assessment on Collins Connect				
Half-term				
Half-term / Term 4				
10 Coordinates and graphs	10.1 Coordinates and graphs	1	• To understand and use coordinates to locate points	The use of graphs to represent data is probably one of the most common uses of mathematics in the modern world. Pupils may be surrounded to such an extent by visual representations of data in the media, and become so used to it, that they no longer notice it. The
	10.2 From mappings to graphs	1	• To work out coordinates from a rule • To draw a graph for a simple rule	
	10.3 Naming graphs	1	• To recognise and draw line graphs of fixed values	

	10.4 Graphs from the real world	1	• To learn how graphs can be used to represent real-life situations • To draw and use real-life graphs	following website provides some interesting insights into the use of data in a modern society: **http://www.gapminder.org**
	Challenge – Global warming	2		This activity is designed to apply pupils' learning in a real-life topical situation.
11 Percentages	11.1 Fractions and percentages	1	• To understand what a percentage is • To understand the equivalence between some simple fractions and percentages	Percentages are everywhere in real life. From bargains in the shops to taxes on payslips. It is important for pupils to be comfortable with calculating percentages if they are going to be functional in a modern society.
	11.2 Fractions of a quantity	1	• To find a fraction of a quantity	
	11.3 Percentages of a quantity	1	• To find a percentage of a quantity	
	11.4 Percentages with a calculator	1	• To write a percentage as a decimal • To use a calculator to find a percentage of a quantity	
	11.5 Percentage increases and decreases	2	• To work out the result of a simple percentage change	
	Financial skills – Income tax	2		This activity is designed to use both the mathematical and transferable process skills covered in this chapter in a very important real-life context, which may be completely unfamiliar to pupils.
12 Probability	12.1 Probability words	1	• To learn and use words about probability	Probability is an area of mathematics that pupils often find interesting but may be contrary to what seems right.
	12.2 Probability scales	1	• To learn about and use probability scales from 0 to 1 • To work out probabilities based on equally likely outcomes	
	12.3 Experimental probability	2	• To learn about and understand experimental probability • To understand the difference between theoretical probability and experimental probability	

	Financial skills – School Easter Fayre	1		This activity combines pupils' understanding of experimental and theoretical probability and applies it in a real-life context.
Chapter 10–12 assessment on Collins Connect				
Holidays				
Half-term / Term 5				
13 Symmetry	13.1 Line symmetry	1	• To recognise shapes that have reflective symmetry • To draw lines of symmetry on a shape	Symmetry is everywhere around us, both natural and human-made. Symmetry is probably one of the easier topics for pupils to see links to the real world, although some links may not be as obvious as others. This chapter provides many real-life examples, and each lesson has links to a number of these.
	13.2 Rotational symmetry	1	• To recognise shapes that have rotational symmetry • To find the order of rotational symmetry for a shape	
	13.3 Reflections	1	• To understand how to reflect a shape • To use a coordinate grid to reflect shapes	
	13. 4 Tessellations	1	• To understand how to tessellate shapes	
	Activity – Landmark spotting	1		This activity is designed to show pupils some of the aspects of symmetry used in the real world, by examining the line symmetry of six famous landmarks.
14 Equations	14.1 Finding unknown numbers	1	• To find missing numbers in simple calculations	The history of algebra goes back to ancient Egypt and Babylon. However, it is not just an ancient topic. Most of our modern society is dependent on the use of algebra. For more information search the internet for: 'mathematician Andrew Wiles' or 'Fermat's last theorem'.
	14.2 Solving equations	1	• To understand what an equation is • To solve equations involving one operation	
	14.3 Solving more complex equations	1	• To solve equations involving two operations	
	14.4 Setting up and solving equations	2	• To use algebra to set up and solve equations	
	Challenge – Number puzzles	1		In this activity pupils apply what they know to an abstract number problem. They need to identify and solve multi-step linear equations to solve the problem.

15 Interpreting data	15.1 Pie charts	1	• To read data from pie charts, where the data is given in simple sectors	Statistical data is everywhere in a modern society and to function in this society it is important to be able to critically analyse the data being presented.
	15.2 Comparing data by median and range	1	• To use the median and range to compare data • To make sensible decisions by comparing the median and range of two sets of data	
	15.3 Statistical surveys	2	• To use charts and diagrams to interpret data	
	Challenge – Dancing competition	1		This activity is designed to use both the interpretation and communication skills covered in this chapter in a familiar scenario.
Chapter 13–15 assessment on Collins Connect				
Half-term				
Half-term / Term 6				
16 3D shapes	16.1 3D shapes and nets	1	• To know how to count the faces, vertices and edges on a 3D shape • To draw nets for 3D shapes	There are only five regular 3D shapes or (regular polyhedra) that can be made using the same regular polygon throughout. Problems can occur with the change of vocabulary between 2D and 3D, for example, sides become faces. Use visual images to support understanding and memory. The imprecise use of language in real life can also confuse pupils. Discuss examples of this. Also discuss the concept of subsets, for example, a cube is a regular cuboid. Identify this concept of subsets as being applicable across mathematics.
	16.2 Using nets to construct 3D shapes	1	• To construct 3D shapes from nets	
	16.3 3D investigations	2	• To work out the rule connecting faces, edges and vertices of 3D shapes • To solve problems involving 3D shapes	
	Problem solving – Delivering packages	1		This is a common type of problem used at GCSE so it is important that pupils can identify this type of problem.
17 Ratio	17.1 Introduction to ratios	1	• To introduce ratio notation • To use ratios to compare quantities	Ratios are a very useful way to compare quantities without the distraction of the actual values. For example, saying that the diameter of Saturn is 10
	17.2 Simplifying ratios	1	• To write a ratio as simply as possible	

	17.3 Ratios and sharing	1	• To use ratios to find missing quantities	times the diameter of the Earth (or the ratio is 10 : 1) provides an immediate mental image. This would not be as obvious just by quoting the diameters.
	17.4 Ratios and fractions	1	• To understand the connection between fractions and ratios	
	Problem solving –Smoothie bar	1		This problem-solving activity is designed to reinforce the use of ratios by putting ratios in a realistic context.
Chapter 16–17 assessment on Collins Connect				

2-year scheme of work

The following scheme of work provides a suggestion for how Pupil Book 1.1 can be taught over the course of one year, as part of a 2-year Key Stage 3 course.

Please note that you can recombine the test questions provided on Collins Connect to create new tests if your frequency of assessment differs from that below, or if you wish to combine content from different chapters in your own half-term tests.

This scheme of work is provided in editable Word and Excel format on the CD-ROM accompanying this Teacher Pack.

Chapter	Lesson	No. of hours	Learning objective	Comments/ suggestions
Half-term / Term 1				
1 Using numbers	1.1 The calendar	1	• To read and use calendars	If pupils are familiar with the material in lessons 1.1 and 1.2 from KS2, they can leave out Exercise 1A and 1B, and jump straight to the PS questions at the end of each exercise. Ensure that pupils understand all the rules that they are applying throughout the chapter.
	1.2 The 12-hour and 24-hour clocks		• To read and use 12-hour and 24-hour clocks • To convert between the 12-hour and 24-hour systems	
	1.3 Managing money		• To work out everyday money problems	
	1.4 Positive and negative numbers	1	• To use a number line to order positive and negative whole numbers • To solve problems involving negative temperatures	
	1.5 Adding negative numbers	1	• To carry out additions and subtractions involving negative numbers • To use a number line to calculate with negative numbers	
	1.6 Subtracting negative numbers		• To carry out subtractions involving negative numbers	
	Problem solving – Where in the UK?	1		This activity is designed to use both the mathematical reasoning and problem-solving outcomes covered in this chapter in a series of real-life problems.
2 Sequences	2.1 Function machines	1	• To use function machines to generate inputs and outputs	For more able pupils, put greater emphasis on inverse functions.

	2.2 Sequences and rules	1	• To recognise, describe and write down sequences that are based on a simple rule	Make sure pupils realise that there is a range of types of sequences, and that within this range, specific examples often follow specific patterns. Provide opportunities for pupils to become fluent in identifying types of sequences. Increase the emphasis on being able to explain and justify the patterns spotted, using the structure of the problem. This will start to make the link between pattern spotting and mathematical proof.
	2.3 Finding terms in patterns	1	• To find missing terms in a sequence	
	2.4 The square numbers	1	• To introduce the sequence of square numbers	
	2.5 The triangular numbers		• To introduce the sequence of triangular numbers	
	Mathematical reasoning – Valencia Planetarium	1		This is an opportunity to apply what pupils have learnt to a less familiar problem.
3 Perimeter, area and volume	3.1 Length and perimeter	1	• To measure and draw lines to work out the perimeter of a shape	Leave out Exercises 3.1 and 3.2 in the Pupil Book if you are happy that the class is familiar with this material from KS2. Most pupils will have met the basic concepts in this chapter. If they can demonstrate that they are confident and fluent with these basic concepts they can move on to the activity, challenge or investigation questions at the end of each exercise.
	3.2 Area		• To work out the area of a shape by counting squares	
	3.3 Perimeter and area of rectangles	1	• To work out the perimeter and area of a compound shape	
	3.4 Volume of cubes and cuboids	1	• To work out the perimeter of a rectangle • To work out the area of a rectangle	
	Problem solving – Design a bedroom	1		This activity is designed to show pupils an everyday situation that involves area and perimeter.
Chapters 1–3 assessment on Collins Connect				
4 Decimal numbers	4.1 Multiplying and dividing by 10, 100 and 1000		• To multiply and divide decimal numbers by 10, 100 and 1000	You could leave out Lesson 4.1 if you are confident that your class is familiar with this material from KS2. Most pupils will have met the basic concepts in this chapter, although
	4.2 Ordering decimals	1	• To order decimal numbers according to size	

	4.3 Estimates	1	• To estimate calculations in order to spot possible errors	they may not have applied them to decimals. If pupils can demonstrate their ability to transfer this understanding efficiently, they can move on to the activities in the boxes at the end of each exercise in this chapter of the Pupil Book.
	4.4 Adding and subtracting decimals	1	• To add and subtract decimal numbers	
	4.5 Multiplying and dividing decimals		• To be able to multiply and divide decimal numbers by any whole number	
	Financial skills – Shopping for leisure	1		This activity is designed to apply the skills learnt in this chapter to a multi-step problem. The context may be familiar but pupils are unlikely to have engaged with it themselves.
Half-term				
Half-term / Term 2				
5 Working with numbers	5.1 Square numbers	1	• To recognise and use square numbers up to 225 (15×15)	Pupils will have considered written methods for working with numbers in KS2. After a brief recap of methods, pupils should concentrate on the MR and PS questions in Exercise 5D and Exercise 5E of lessons 5.4 and 5.5.
	5.2 Rounding	1	• To round numbers to the nearest whole number, 10, 100 or 1000	
	5.3 Order of operations	1	• To use the conventions of BIDMAS to carry out calculations	
	5.4 Long and short multiplication	1	• To choose a written method for multiplying two numbers together • To use written methods to carry out multiplications accurately	
	5.5 Long and short division	1	• To choose a written method for dividing one number by another • To use written methods to carry out divisions accurately	
	5.6 Calculations with measurements	1	• To convert between common metric units • To use measurements in calculations • To recognise and use appropriate metric units	

	Problem solving – What is your carbon footprint?	1		This activity is designed to use the skills covered in this and earlier 'number' chapters to give a real-life context to mathematics.
6 Statistics	6.1 Mode, median and range	1	• To understand the meaning of mode, median and range	If your pupils are confident with measures of central tendency and range (covered in KS2), you could leave out Lesson 6.1. Provide a brief recap and move on to the later lessons where you will need to encourage pupils to interrogate data and make choices and decisions about the statistical measures they use.
	6.2 Reading data from tables and charts		• To read data from tables and charts	
	6.3 Statistical diagrams		• To be able to read and interpret different statistical diagrams	
	6.4 Collecting and using data	1	• To create and use a tally chart	
	6.5 Grouped frequency	1	• To understand and use grouped frequencies	
	6.6 Data collection	1	• To develop greater understanding of data collection	
	Challenge – Trains in Europe	1		This activity is designed to use both the mathematical reasoning and problem solving outcomes covered in this chapter se in a situation that is familiar to pupils. This activity encourages pupils to think about statistics in train travel – a form of travel with which many pupils may be familiar Ask pupils to summarise what they have learnt in the chapter, as they will use much of this material to complete the activity.
Chapter 4–6 assessment on Collins Connect				
7 Using algebra	7.1 Expressions and substitution	1	• To use algebra to write simple expressions • To substitute numbers into expressions to work out their value	More able pupils could skip every other question in the Pupil Book exercises of this chapter if they grasp the material quickly. However, it would be unwise to miss large chunks, as much of this material will be unfamiliar to the majority of pupils.
	7.2 Simplifying expressions	1	• To learn the rules for simplifying expressions	
	7.3 Using formulae	1	• To use formulae	
	7.4 Writing formulae	1	• To write formulae	

	Problem solving – Winter sports	1		A common response to algebra is to ask how it can be used. This activity provides one of the everyday uses of algebra in terms of using a formula to work out costs.
8 Fractions	8.1 Equivalent fractions	1	• To find simple equivalent fractions • To write fractions in their simplest form	By the end of KS2, pupils will have compared and ordered fractions and identified simple equivalent fractions. If they can demonstrate confidence and fluency with the KS2 content they could move straight to applying their understanding to the problem solving and mathematical reasoning questions in each exercise in the Pupil Book of this chapter. Check pupils' understanding by using one or two simple examples and/or the probing questions. More able pupils could leave out Exercise 8A and Exercise 8B and move on to Exercise 8C.
	8.2 Comparing fractions	1	• To compare and order two fractions	
	8.3 Add and subtracting fractions	1	• To add and subtract fractions with the same denominator • To add and subtract fractions with different denominators	
	8.4 Mixed numbers and improper fractions	1	• To convert mixed numbers to improper fractions • To convert improper fractions to mixed numbers	
	8.5 Calculations with mixed numbers		• To add and subtract simple mixed numbers with the same denominator • To add and subtract simple mixed numbers with different denominators	
	Challenge – Fractional dissection	1		This activity explores partitioning in a familiar context, which is an important concept in understanding fractions. The tasks involve splitting a shape into unequal parts, which will help pupils' understanding of the part–whole relationship between the numerator and denominator in fractions.
Chapter 7–9 assessment on Collins Connect				
Holidays				
Half-term / Term 3				
9 Angles	9.1 Using the compass to give directions	1	• To use a compass to give directions	Pupils following a two-year scheme of work will most likely be proficient

	9.2 Measuring angles	1	• To know the different types of angles • To use a protractor to measure an angle	at using a compass. If this is the case, then leave out Lesson 9.1 and start with Lesson 9.2.
	9.3 Drawing angles	1	• To use a protractor to draw an angle	
	9.4 Calculating angles	1	• To calculate angles at a point • To calculate angles on a line • To calculate opposite angles	
	9.5 Properties of triangles and quadrilaterals	1	• To understand the properties of parallel, intersecting and perpendicular lines • To understand and use the properties of triangles • To understand and use the properties of quadrilaterals	
	Investigation – Snooker tables	1		This activity encourages pupils to think about how angles can affect a possibly familiar real-life situation – the way one plays the game of snooker. Pupils may find it interesting to see how much mathematical calculation is involved in playing a good game.
10 Coordinates and graphs	10.1 Coordinates and graphs	1	• To understand and use coordinates to locate points	If your class is confident at working with coordinates, they could move straight on to questions 7 and 8 and the investigation at the end of Exercise 10A in the Pupil Book, which is intended to be used as consolidating work from KS2.
	10.2 From mappings to graphs	1	• To work out coordinates from a rule • To draw a graph for a simple rule	
	10.3 Naming graphs	1	• To recognise and draw line graphs with fixed values	
	10.6 Graphs form the real world	1	• To learn how graphs can be used to represent real-life situations • To draw and use real-life graphs	
	Challenge – Global warming	2		This activity is designed to apply pupils learning in a real-life topical situation.

11 Percentages	11.1 Fractions and percentages	2	• To understand what a percentage is • To understand the equivalence between some simple fractions and percentages	Work through some of the examples in in the first three lessons as a class. Then work on the investigations or challenge questions at the end of each exercise, either as a class or pupils could work independently. Then move straight on to Lesson 11.4.
	11.2 Fractions of a quantity		• To find a fraction of a quantity	
	11.3 Percentages of a quantity		• To find a percentage of a quantity	
	11.4 Percentages with a calculator		• To write a percentage as a decimal • To use a calculator to find a percentage of a quantity	
	11.5 Percentage increases and decreases		• To work out the result of a simple percentage change	
	Financial skills – Income tax	2		This activity is designed to use both the mathematical and transferable process skills covered in this chapter in a very important real-life context that may be completely unfamiliar to pupils.
12 Probability	12.1 Probability words	1	• To learn and use words about probability	You could briefly recap probability scales and equally likely outcomes using some of the examples in the Pupil Book if necessary. Check pupils' understanding using some of the probing questions. Provided pupils seem confident they could then move straight on to Lesson 12.3 on experimental probability.
	12.2 Probability scales		• To learn about and use probability scales from 0 to 1 • To work out probabilities based on equally likely outcomes	
	12.3 Experimental probability		• To learn about and understand experimental probability • To understand the difference between theoretical probability and experimental probability	
	Financial skills – School Easter Fayre	1		This activity combines pupils' understanding of experimental and theoretical probability and applies it in a real life context.
Chapter 10–12 assessment on Collins Connect				
Half-term				

Half-term / Term 4				
13 Symmetry	13.1 Line symmetry	1	• To recognise shapes that have reflective symmetry • To draw lines of symmetry on a shape	Many concepts in this chapter will be familiar to pupils from KS2. If pupils can demonstrate confidence with these basic concepts they can focus on working through the exercises and doing the activities after each exercise. Encourage pupils to explore the suggested links to real-life contexts.
	13.2 Rotational symmetry	1	• To recognise shapes that have rotational symmetry • To find the order of rotational symmetry for a shape	
	13.3 Reflections	1	• To understand how to reflect a shape • To use a coordinate grid to reflect shapes	
	13. 4 Tessellations	1	• To understand how to tessellate shapes	
	Activity – Landmark spotting	1		This activity is designed to show pupils some of the aspects of symmetry used in the real world, by examining the line symmetry of six famous landmarks
14 Equations	14.1 Finding unknown numbers	1	• To find missing numbers in simple calculations	Recap 'Finding unknown numbers' in Lesson 14.1 and run through 'Solving equations' in Lesson 14.2, before moving on to Lesson 14.3 and Lesson 14.4.
	14.2 Solving equations		• To understand what an equation is • To solve equations involving one operation	
	14.3 Solving more complex equations		• To solve equations involving two operations	
	14.4 Setting up and solving equations	1	• To use algebra to set up and solve equations	
	Challenge – Number puzzles	1		In this activity pupils apply what they know to an abstract number problem. They need to identify and solve multi-step linear equations to solve the problem.
15 Interpreting data	15.1 Pie charts	1	• To read data from pie charts, where the data is given in simple sectors	You could leave out Lesson 15.1 on pie charts.

	15.2 Comparing data by median and range		• To use the median and range to compare data • To make sensible decisions by comparing the median and range of two sets of data	During Lesson 15.2, comparing data by median and range, you could focus on the activity at the end of Exercise 15B in the Pupil Book. Then move straight on to the application of skills to do with statistical surveys in Lesson 15.3.
	15.3 Statistical surveys	1	• To use charts and diagrams to interpret data	
	Challenge – Dancing competition	1		This activity is designed to use both the interpretation and communication skills covered in this chapter
Chapter 13–15 assessment on Collins Connect				
16 3D shapes	16.1 3D shapes and nets	1	• To know how to count the faces, vertices and edges on a 3D shape' • To draw nets for 3D shapes	Use discussion to check recall of terminology then focus on the MR and PS questions in the exercises in each lesson, and on the challenge and practical activities at the end of Exercise 16A and Exercise 16B in the Pupil Book.
	16.2 Using nets to construct 3D shapes		• To construct 3D shapes from nets	
	16.3 3D investigations	1	• To work out the rule connecting faces, edges and vertices of 3D shapes • To solve problems involving 3D shapes	
	Problem solving – Delivering packages	1		This is a common type of problem used at GCSE so it is important that pupils can identify this type of problem.
Holidays				
Half-term / Term 5				
17 Ratio	17.1 Introduction to ratios	1	• To introduce ratio notation • To use ratios to compare quantities	Pupils will have worked with ratio in KS2, when comparing quantities and in problems involving unequal sharing. Pupils may have been introduced to the $a : b$ notation. If pupils can show understanding by answering one or more
	17.2 Simplifying ratios		• To write a ratio as simply as possible	
	17.3 Ratios and sharing	1	• To use ratios to find missing quantities	

	17.4 Ratios and fractions	1	• To understand the connection between fractions and ratios	of the later questions in Exercise 17A of the Pupil Book, they can move on to simplifying ratios in Exercise 17B. Similarly, if pupils are confident about simple sharing problems, as provided in Exercise 17C, then they can move on to concentrate on the mixed questions in Exercise 17D.
	Problem solving – Smoothie bar	1		This problem-solving activity is designed to reinforce the use of ratios by putting ratios in a realistic context.
Chapter 16–17 assessment on Collins Connect				
Work continues with Pupil Book 2.1				
Half-term				
Half-term / **Term 6**				
Work continues with Pupil Book 2.1				