Subject: Maths
Year: 9 **Overview**

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Key content – knowledge and skills	National Curriculum focus
Autumn 1: Calculations review; Prime factorization; Index laws; Standard form **Autumn 2:** Quadratic expressions; Forming and solving equations; Arithmetic sequences; Linear graphs **Spring 1:** Decimals review; Area of 2D shapes; Volume and surface area of 3D shapes; Pythagoras' theorem **Spring 2:** Bearings and angles; Angles in polygons; Congruence and similarity; Loci **Summer 1:** Fractions review; Percentage change; Compound percentages **Summer 2:** Ratio review; Measures of average and spread; Probabilities of combined events Curriculum Document	**Subject content from the National Curriculum Framework Document September 2013:** **N1-16** **A1-16** **R1-10** **G1-16** **P1-4** **S1-3**

Key assessment points

There will be one assessment each half-term
Autumn 1: Unit 1-4 test
Autumn 2: Unit 1-8 test
Spring 1: Unit 1-12 test
Spring 2: Unit 1-16 test
Summer 1: Unit 1-20 test
Summer 2: End of Year exams Unit 1-24

Christian ethos

With all mathematics studied we will be exploring how skills such as problem solving, numerical reasoning and real life applications, covered in each topic, will make our students confident and motivaited, fully equipped to make a positive contribution to society.

British values

An explicit opportunity in the Year 9 curriculum to explore British values falls within the discussion and debate created from exploring real life applications created from mathematics. Teachers will guide and advise students appropriately.

Subject: Maths **Year:** 9
Long-term plan

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Week	Month	Learning Intentions and/or Key Questions
Aut1-1	September	Calculations review Prime factorization Index laws Standard form **Half term assessment**
Aut1-2		
Aut1-3		
Aut1-4		
Aut1-5	October	
Aut1-6		
Aut1-7		
		Half term holiday
Aut2-1	November	Quadratic expressions Forming and solving equations Arithmetic sequences Linear graphs **End of term assessment**
Aut2-2		
Aut2-3		
Aut2-4		
Aut2-5		
Aut2-6	December	
Aut2-7		
		Christmas holiday
Spr1-1	January	Decimals review Area of 2D shapes Volume and surface area of 3D shapes Pythagoras' theorem **Half term assessment**
Spr1-2		
Spr1-3		
Spr1-4		
Spr1-5		
Spr1-6	February	
		Half term holiday
Spr2-1		Bearings and angles Angles in polygons Congruence and similarity Loci **End of term assessment**
Spr2-2		
Spr2-3	March	
Spr2-4		
Spr2-5		
Spr2-6		
	April	**Easter holiday**
Sum1-1		Operations with fractions Reverse percentages and reverse fractions Multipliers and compound interest Percentage change and fractional change **Half term assessment**
Sum1-2		
Sum1-3	May	
Sum1-4		
Sum1-5		
Sum1-6		
	June	**Half term holiday**
Sum2-1		Ratio and proportion Averages Statistical diagrams Combined events **End of year exam**
Sum2-2		
Sum2-3		
Sum2-4		
Sum2-5	July	
Sum2-6		
Sum2-7		

Subject: Maths **Year:** 9
Unit: 1 to 4
Medium-term plan
Autumn 1

Week	Module Overview	Cross-Curricular	Planning Links
1	**Calculations Review** At this stage pupils should be comfortable with written methods for all four operations, and be able to use them in context. Where they are not teachers may want to spend longer on this unit over future units in the half-term to prevent barriers to learning from appearing later on.	Cross-Curriculuar Activity on Using Fractions to Read Music	Curriculum Document Complete Maths platform Planning Proforma Department padlet Resources folder
2 3	**Prime factorisation** This unit follows on from 8.3, so teachers will need to determine the starting points of their pupils, and teach them from this point in the unit. All pupils should finish this unit being able to answer AO2 and AO3 questions on HCF and LCM, and should be able to perform prime factorisation.		
4 5	**Index laws** This unit continues from 7.3, and pupils should have been using integer powers and roots throughout their learning in Year 8. The focus here should be for pupils to use this knowledge to reason and deduce index laws, with careful consideration given to misconceptions. Further opportunity for fractional indices is given in Y10.		
6 7	**Standard Form** This unit offers a good opportunity for pupils to apply their knowledge of index laws in context, and also tests understanding of place value. Furthermore, there is opportunity to revise operations with decimals as a prerequisite for operations in standard form. Again there is time to develop this in Year 10.		

Subject: Maths **Year:** 9
Unit: 5 to 8
Medium-term plan
Autumn 2

Week	Module Overview	Cross-Curricular	Planning Links
1 2	**Quadratic expressions** This is the first time pupils meet quadratic expressions, so some time may be needed for lower attainers to revisit and consolidate expanding and factorising into single brackets. Both expanding and factorising should be covered (not solving!). The grid model should be used so pupils are building in prior knowledge.	Cross-Curriculuar Activity on Using Fractions to Read Music	Curriculum Document Complete Maths platform Planning Proforma Department padlet Resources folder
3 4	**Forming and solving equations** As with 8.6, it is essential that pupils begin from wherever their understanding of solving linear equations ends, and rearranging should also be considered here. Most pupils should have a sufficient understanding at some level for forming and solving linear equations to form part of this unit. Not all solutions should be integers!		
5	**Arithmetic Sequences** This is an opportunity to revisit and consolidate knowledge on arithmetic sequences from 8.8. Other types of sequences will be covered in Spring 2 of Year 10. It may be a useful exercise to link nth terms with forming tables of values of linear functions, covered in the following module. Not all sequences should be natural numbers!		
6 7	**Linear Graphs** There will be some time for pupils to develop this unit in Autumn 2 of Year 10, but teachers should be looking for pupils to finish this unit understanding gradient and intercept, and applying them in context, and to be able to decribe and use the key features of linear graphs in the form $y = mx + c$ and what the equation means.		

Subject: Maths **Year:** 9
Unit: 9 to 12
Medium-term plan
Spring 1

Week	Module Overview	Cross Curricular	Planning Links
1	**Decimals review** As with module 8.9, Spring 1 in Year 9 begins with allowing teachers to spend time developing understanding of decimals, ready to apply this in the area and volume work to follow. Most classes at this stage should be relatively confident with most of the objectives here.	Cross-Curricular Activity on Loci in Sport	Curriculum Document Complete Maths platform Planning Proforma Department padlet Resources folder
2	**Area of 2D shapes** It is essential that pupils are confident with working with area formulas in order to complete work on volume and surface area successfully, so this should be reviewed in this module. Some revision may have been done in applied questions on solving equations, standard form etc.		
3	**Volume and surface area of 3D shapes** This extends units 8.11 and 8.12 into shapes other than prisms. Most pupils should be able to spend time here looking at pyramids and cones, and the highest attainers will consider sphere and frustrums. Note that some questions on pyramids and cones may only be accessible after Pythagoras has been considered.		
4			
5	**Pythagoras' theorem** This module allocates plenty of time to introduce pupils to Pythagoras' Theorem, which should include time to consider when to use Pythagoras, consider questions with this that involve other topics such as volume, surface area, solving equations, using decimals. Higher attaining pupils may also consider proofs of the theorem.		
6			

Subject: Maths **Year:** 9
Unit: 13 to 16
Medium-term plan
Spring 2

Week	Module Overview	Cross Curricular	Planning Links
1 2	**Bearings and angles** This unit gives pupils time to revise all their angles knowledge from 8.14 and 7.14, as well as introducing the concept of bearings. For higher attaining pupils teachers may wish to cover 9.14 and then return to more mixed questions, whilst for lower attainers more time may be needed for consolidation of prior learning.	Cross-Curricular Activity on Loci in Sport	Curriculum Document Complete Maths platform Planning Proforma Department padlet Resources folder
3	**Angles in polygons** In this unit pupils should be introduced to facts about angles in polygons, encouraged to find justifications for these to make them easier to remember, and explore different methods for solving questions on angles in polygons to judge efficiency of methods. Teachers may cover this unit alongside 9.13.		
4 5	**Congruence and similarity** Again another opportunity for pupils to practice different calculations presents itself here. It should be clear through the questions covered that scale factors can be decimals and fractions, and pupils should also be able to use ratios to explore this. Area and volume scales factors should be covered if possible/relevant.		
6	**Loci** If pupils are confident with ruler and compass constructions, then this unit can be completed by considering applications of such constructions to create shapes or find relevant loci. If pupils need to cover constructions first, then loci may be restricted to that requiring a single construction (e.g. closer to A than B => perp. bisector)		

Subject: Maths **Year:** 9
Unit: 17 to 20
Medium-term plan
Summer 1

Week	Module Overview	Cross Curricular	Planning Links
1	**Operations with fractions** This unit follows on from 8.19 and should be used primarily to ensure pupils are fluent and confident in operations with fractions. For some pupils this may necessitate reviewing support objectives from previous years, whilst for others it may allow time to begin to explore fraction arithmetic with simple algebraic terms.	Cross-Curricular Activity on Pie Charts in Science and Art	Curriculum Document Complete Maths platform Planning Proforma Department padlet Resources folder
2			
3	**Reverse percentages and reverse fractions** This follows on from work covered in unit 8.17, and similar to then, care should be taken to ensure pupils are comfortable finding fractions and percentages of amounts before looking at reverse problems, so that links can be made between the two, and pupils given opportunities to identify when each approach is needed.		
4			
5	**Multipliers and compound interest** This unit allows pupils to use calculator methods to explore more complicated percentage problems. For lower-attaining pupils this may prove more of an opportunity to review FDP conversions and finding simple percentages using a calculator - not all pupils will cover repeated percentage change here.		
6	**Percentage change and fractional change** In the final unit of the half-term pupils will finally explore fractional and percentage change. Fractional change should be covered first as this then extends to percentage change (thinking of making the fraction over 100). These should be covered before profit/loss to avoid pupils applying procedures without understanding.		

Subject: Maths **Year:** 9
Unit: 21 to 24
Medium-term plan
Summer 2

Week	Module Overview	Cross Curricular	Planning Links
1	**Ratio and proportion** This is an opportunity to remind pupils of the work done previously in units 8.21 and 8.22. As such, lower attaining pupils may spend more than the recommended time here. Teachers should ensure here that pupils are familiar and able to utilise both ratio tables and bar models.	Cross-Curricular Activity on Pie Charts in Science and Art	Curriculum Document Complete Maths platform Planning Proforma Department padlet Resources folder
2	**Averages** This unit follows unit 8.23, and as with that unit there will be a wide range of levels that pupils may finish this unit at. The support section is quite heavy as it is presumed most pupils will know this already, though this should not be assumed, and pupils should only progress to the higher objectives once confident in the others.		
3	**Statistical diagrams** This unit follows on from 8.24, and for some teachers it may be necessary to revisit objectives from that module for their pupils. For most pupils this will be a useful period of consolidation, and for the higher-attaining pupils they can begin to explore frequency polygons and stem-and-leaf diagrams.		
4			
5	**Comined events** In the final module of the year pupils build on the work from unit 8.20 by reviewing some of the objectives covered there on probability. Once pupils are confident on single-event probability they will have the opportunity to explore combined events through listing, sample spaces, and tree diagrams.		
6			