



Year 9 Mathematics

Year 9						
Christmas	Reasoning with algebra			Constructing in 2 & 3 Dimensions		
	Straight line graphs	Forming Equations	Testing Conjectures	3D Shapes	Constructions and Congruency	
Lent	Reasoning with number			Reasoning with geometry		
	Numbers	Using Percentages		Maths and Money	Deduction	Rotation and Translation
Pentecost	Reasoning with proportion			Representation		
	Pythagoras	Enlargement and similarity	Solving proportion problems	Rates	Probability	Algebraic Representation



Year 9 Mathematics – Christmas Term

Straight line graphs	Following on from the work done in year 8 on plotting and exploring straight line graphs in this unit we introduce the general equation of a straight-line $y=mx+c$. Students will learn to interpret values of m and c in both abstract and real-life graphs as well as investigating parallel and maybe perpendicular lines.
Forming Equations	Forming and solving linear equations has been studied in both year 7 and Year 8 however this year we develop this by looking at equations from different areas of maths and how to solve these. Students also learn how to rearrange formulae and understanding the key differences between equations, formulae, identities and expressions.
Testing Conjectures	Although reasoning is covered in all units this unit gives us a specific focus on this. We revisit a lot of previous learning including primes, factors and multiples as well as revisiting spotting patterns from unit 1 of Year 7.
3D Shapes	This is the first time that 3D shapes have been studied in key stage three and therefore we may need reminding of the basics here. As well as surface area and volume we will also look at plans and elevations and you could look into isometric drawing as well as a link to graphics and resistant materials.
Constructions and Congruency	This unit builds on the constructions units in both year 7 and 8 and move towards the formal definition of a locus. This is a great topic in which you could look at things in more of a real-life fashion for example something 2m away from a point is the same as something on a lead tied around a post.



Year 9 Mathematics – Lent Term

Numbers	In this unit, we will re visit factors, multiples, HCF and LCM from Year 7 and 8 as well as looking at real and rational numbers. We will have the first look at surds and how as well as practicing all number skills including with fractions and decimals both with and without calculators.
Using Percentages	Building on the work on fractions in unit 6, in this unit we build on the percentages taught in year 8. We will look at reverse percentage problems and repeated percentage change using multipliers which will also revise our work on indices. The use of multipliers is key here however non calculator methods will also be covered.
Maths and Money	Following the work on percentages this unit focuses on how we use maths in regards to money. We look at tax, wages and VAT as well as how compound and simple interest work and how they are used after school. Best value and unit pricing problems are also covered.
Deduction	This unit begins by revising angle rules learnt in Year 7 and Year 8 and moves quickly onto more complex problems. This unit looks at deduction in a geometrical context and within this students will re-visit the constructions that they learned in year 8 and develop understanding of why these work, not just how.
Rotation and Translation	Building on the work in KS2 and previous years on line symmetry students now look at rotational symmetry and rotation. We then look at translations described in vector form. Congruency is looked at within the comparisons of different transformations. Tracing paper should be available to all students throughout this unit.

Year 9 Mathematics – Pentecost Term

Pythagoras	Initially in this unit we revise square roots before moving on to investigate the relationships between sides of right-angled triangles. Students will be able to find all sides within missing triangles but also be able to test if triangles are right angled. We will explore using co-ordinate grids and some students will move onto 3D shapes when confident.
Enlargement and similarity	Following on from the previous terms work on transformations in this term we now add on enlargement and enlarging shapes. The mathematical definition of similar is introduced and students are asked to solve problems involving similar shapes including triangles which then develops within the trigonometry module in year 10.
Solving proportion problems	Students have studied proportion throughout KS3 and this unit builds on this with students making links between ratio problems and direct proportion. Inverse proportion is introduced for the first time and students may also look at graphs and algebraic problems involving proportion.
Rates	Using the knowledge of proportion from unit 13 we now develop this into working with speed and density. We will also explore flow problems and look at how long different objects will fill when water is running at different rates. Some students will also look at compound unit conversions.
Probability	In this unit we build on the learning in year 7 and 8 to review calculations of single and combined events. In year 9 we develop this by introducing the concept of independent events and the use of the multiplication rule. We also revisit tree diagrams both with and without replacement, Venn diagrams and two-way tables.
Algebraic Representation	This unit expands students' knowledge of graphs to look at interpretation and creation of different types of graphs. Quadratic graphs are plotted and explored to support students solving quadratic equations as well as looking at the general form of several non-straight line graphs.