Year 8 Mathematics

Year 8						
Christmas	**Proportional Reasoning**			**Representations**		
	Ratio and Scale	Multiplicative Change	Multiplying and dividing fractions	Working in the cartesian plane	Representing Data	Tables and Probability
Lent	**Algebraic Techniques**			**Developing Number**		
	Brackets, equations and inequalities	Sequences	Indices	Fractions and Percentages	Standard Index form	Number Sense
Pentecost	**Developing Geometry**			**Reasoning with Data**		
	Angles in parallel lines and polygons	Area of trapezia and circles		The data handling cycle	Measures of Location	

Year 8 Mathematics – Christmas Term

Ratio and Scale	The use of ratio is everywhere in the world. Whenever you make a glass of squash or using a recipe you are using ratio even if you do not realise it! We will be using bar models which should be familiar from Year 7 as well as looking at the links between fractions and looking at how π is actually a ratio and not just a button on our calculator! Within this we will use ratio linked to equations, area and fractions which were covered in year 7.
Multiplicative Change	After looking at ratio we now look at the link between ratio and scaling. In this unit we look a direct proportion both numerically and in graphs as well as looking at currency conversions. Conversion graphs are looked at in this unit ready for the graph unit later in the term. Links are also made with maps, scales and similar shapes.
Multiplying and dividing fractions	Following on from meeting multiplying a dividing fractions in Year 6 we now look at different representations to fully understand what happens when fractions are multiplied or divided. Multiplication and division by both integers, fractions and most students will also multiply and divide by mixed numbers. Students will learn what the reciprocal is as well as when and how it is used. We will also revisit the links between fractions and decimals from year 7.
Working in the cartesian plane	Building on knowledge of co-ordinates from Year 4,5 and 6 students will now look at the algebraic representations of straight-line graphs. Starting with vertical and horizontal lines and them moving to lines with gradient. Students will experiment with gradient and y-intercept in this year however we do not move on to the general form of a straight line to build the understanding of what these values mean.
Representing Data	In this unit we start by looking at bivariate data and correlation as well as how to use linear lines of best fit. We revise graphs that were seen in Year 5 and 6 making sure that we can draw all of these graphs from discrete, continuous and grouped data.
Tables and Probability	Building from the work done in year 7 we re-visit probability with a focus on both drawing and solving problems using sample space diagrams as well as working with more complex two-way tables and Venn diagrams. We will also look at the number of outcomes and using the product rule.

"Together towards our Lord, through learning, love and faith"

Year 8 Mathematics – Lent Term

Brackets, equations and inequalities	Building on students' understanding of equivalence in year 7 students will now continue their learning on algebraic manipulation. Starting with expanding over a single bracket and factorising expressions and moving up to expanding binomials. Students will then develop further knowledge of solving equations, interleaving this with what they have just learned about brackets and the work that they did in year 7. Inequalities will be introduced both using a number line, integer solutions and solving inequalities algebraically.
Sequences	Linking sequences with unit 4 on straight line graphs we look here on how to generalise a linear sequence by finding the nth term, as well as how to use the nth term to find speficic terms of a given sequence.
Indices	In this unit we look at even more algebraic manipulation. Starting by multiplying algebra and exploring how this affects the powers of a number or unknown followed by learning the addition and subtraction laws of indices. This is a prerequisite to standard form which will be studied next half term.
Fractions and Percentages	Following from previious learning on the links between fractions and decimals this unit looks at how fractions link to percentages. In this unit a focus is on multipliers and how these are used to represent percentage increase and decrease as well as expressing numbers as fractions and percentages of other numbers. In this unit we also look at financial maths such as profit, loss and bank accounts.
Standard Index form	Building on the work students have completed on indices we now look at standard form. Starting by exploring powers of 10 and building in how numbers written in standard form. Some students will also have a brief introduction to negative and fractional indices within this unit.
Number Sense	This unit revises some basic number skills as well as extending these within topics that we have done recently. We will look at conversions of metric units and how this links to standard form, as well as using error notation. In this unit we also look at calculations regarding time and calendars.

"Together towards our Lord, through learning, love and faith"

Year 8 Mathematics – Pentecost Term

Angles in parallel lines and polygons	Building on the work done in Year 5 and 6 as well as Year 7 students now develop their understanding of angles to find missing angles in parallel lines. This means that they can now solve more complex problems with angles. We also now look at angles in polygons and how we could find missing angles in shapes with more than 4 sides. Constructions and the use of compasses is introduced where most students will use a compass for the first time.
Area of trapezia and circles	Some students will already know how to find the area of a trapezium however for most students this will be the first time that they have come across this. We introduce the topic of area with some revision before moving on to finding the area of trapezia and circles. Students were introduced to the concept of pi as a ratio as well as parts of circles in unit 1 and so this should be revision with an explicit focus on area. A main part of this unit is for students to know which formula to use to find the area of different shapes as well as to be able to find the area of compound shapes.
The data handling cycle	Although a lot of the charts that we look at in this unit have been seen before in previous years this unit is focused not only on the drawing and reading of the graphs but comparing them. We look at real life misleading graphs and how and why people may use misleading graphs in the media.
Measures of Location	Median and mean have both been seen by students in year 7 however these are now brought together so students can see why they may use a specific average and in which situations each average is best. Averages from both ungrouped and grouped data tables is also introduced as well as the concept of outliers.

"Together towards our Lord, through learning, love and faith"