Year 7 Mathematics

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	Algebraic Thinking			**Place Value and Proportion**	
Christmas	Sequences	Algebraic Notation	Equality and Equivalence	Place Value, Ordering Integers and Decimals	Fraction, Decimal and Percantage Equivalence
	Applications of Number			**Directied Number**	**Fractional Thinking**
Lent	Solving Problems with addition and subtractions	Solving problems with multiplication and division	Fractions and Percentages of amounts.	Operations and Equations with directed number	Addition and subtraction of Fractions
	Lines and Angles			**Reasoning with Number**	
Pentecost	Constructing, measuring & using geometric notation	Developing Geometric reasoning with angles		Sets and Probability	Prime Numbers & Proof

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Year 7 Mathematics – Christmas Term

Sequences	We know that the beauty of mathematics comes from the ability to spot patterns, so this is where we start in year 7. In this unit students purposefully do not move to finding the nth term of a sequence and instead we explore the features of both linear and nonlinear sequences. Calculators are used in this unit. Fibonacci is included in this unit to explore the beauty of maths within the real world.
Algebraic Notation	Algebra is one of the most fundamental aspects of maths and one that is sometimes looked at negatively, so we have put this early in the year and focused on a deep level of knowledge of the basic algebraic forms and not moving to more complex algebra. Function machines are used alongside bar models to understand why algebra simplifies the way it does, to focus on the understanding of inverse operations and support students towards the abstract nature of algebra. At the end of this unit students should be comfortable understanding how to move freely between key algebraic notation.
Equality and Equivalence	With a basic understanding of algebraic notation, we now use the work that we did on function machines and inverse operations from the previous unit and move on to solving equations. The focus in this unit is to ensure that students are not just spotting answers and that they are understanding how to solve equations so a lot of questions will require the use of a calculator. This unit also looks at the concept of equivalence and introduces notation for "always equal to" when collecting like terms.
Place Value, Ordering Integers and Decimals	Although students have studied place value in KS1 and 2 we will extend this knowledge in this unit to bigger numbers and for some learners, standard form. The understanding and use of number lines is explored in depth both with integers and non-integer numbers (but all positive) and the use of ordering of numbers is developed with calculating the median and range. Rounding of non-decimal numbers is introduced here alongside rounding to dignificant figures. Work on algebra from previous units of work is interleaved into this unit with students finding the answer to equations and then ordering them or rounding them.
Fraction, Decimal and Percantage Equivalence	The focus of this unit of work is to use the knowledge of equivalence from unit 3 alongside the understanding of decimals from unit 4 to build students' understanding of fractions, decimals and percentages. Initially - students will focus on multiples of 1/10 and 1/4 before extending students' knowledge to more complex conversions. Pie charts are introduced in this unit using fraction, decimal and conversions to find out the proportion of certain sectors. The focus of this unit is for students to be confident in the common FDP conversions rather than being able to convert all numbers - this will be revisited later in the year.

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Year 7 Mathematics – Lent Term

Solving Problems with addition and subtractions	This unit is focussed on building on from the formal methods of addition and subtraction from KS2. All students will look at the use of this skill within problems, however the amount of problem solving may differ between students depending on their confidence. Problems will be taken from different areas of maths which invole adding and subtracting - for example frequency trees, perimeter, money skills as well as bar charts and data tables. Calculators can be used here to support and check calculations however the focus is students completing all arithmetic independently. Significant figures and equations using addition and subtraction are interleaved within this topic.
Solving problems with multiplication and division	After confidence is built on addition and subtraction, students start to work with problems involving multiplication and division. Students work here with multiplication facts, times tables as well as multiples and factors followed by multiplication and division including decimals. The use of multiplication is then a focus, looking at area, linear equations using multiplication and division as well as an itroduction to order of operations which will be covered fully in unit 9 on directed number.
Fractions and Percentages of amounts.	This is a short unit focused on finding the fractions and percentages of quantities as well as the links between the two. This is extended in year 8 however it is important that students realise that both fractions and percentages call also be operators and the knowledge that "of" means "to multiply"
Operations and Equations with directed number	This unit is focused on building a true understanding of directed number without using any tricks or shortcuts. It is vital that students understand the number line both above and below zero and can work with this fluently. This block rvises many previous topics including collecting like terms, substitution, and solving equations. They will also look at the order of operations in more depth as well as seeing two step equations for the first time.
Addition and subtraction of Fractions	Following on from the work in unit 5 on key fractions this unit looks at addition of fractions. Bar models are used extensively within the unit to ensure students understand the concepts of adding fractions. Fractions greater than one will be explored as well as adding and subtracting fractions which has different denominators. With subtraction - negative fractions may also be explored with some students.

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Year 7 Mathematics – Pentecost Term

Constructing, measuring & using geometric notation	In this unit students will build on their KS2 knowledge of using measuring equipment such as protractors, rulers and compasses. The correct geometric notation will also be introduced to ensure that when students approach more complex geometric problems in the future, they are familiar with the labelling, and notation involved. Pie charts will be covered here also to support students with more practice of measuring and drawing angles.
Developing Geometric reasoning with angles	Building on the ability to label geometric diagrams correctly students will now use this within their angle facts. This unit will revise some angle facts taught in KS2 and extend these in new problems. As well as this, students will learn new information about 2D shapes and angles and use these to develop chains of reasoning. The focus of this unit is to develop student's ability to explain why they know something and use correct terminology. We recall the ability to solve equations by focusing on this within teaching and practice when finding missing angles. Some students will also begin to investigate the properties of angles in parallel lines.
Sets and Probability	FDP equivalence (unit 5) is revisited explicitly in this unit. Students will learn about set notation with an introduction to formal proabability notation. They will also learn about listing strategies. Venn diagrams, tables and grids are all used to ensure that students can solve probability problems across a variety of representations. They may also use freuqency trees, developing from their use in unit 4.
Prime Numbers & Proof	Factors and multiples will be revisited in this unit (seen in unit 7 initially) as well as HCF and LCM being explicitly taught. Students will come across a variety of special mathematical numbers/ sequences such as triangle and square numbers and also be introduces to powers and roots. Some students will start to work towards the understanding of mathematical proof.

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