Y8 ROADMAP - MATHEMATICS

Subject Aim: The aim of our Year 8 curriculum is to allow students to become fluent in all aspects of Maths, Algebra, Geometry, Number, Statistics and Proportion. Students in year 8 will be encouraged to be more independent and to apply reasoning in order to justify their solutions.

TERM 1

What is the ratio of land to sea across the world?

This unit focuses initially on the meaning of ratio and the various models that can be used to represent ratio. Based on this understanding, it moves on to sharing into a ratio given the whole or one of the parts. We also explore the links between ratio and fractions and understand and use π as the ratio of the circumference of a circle to its diameter. We explore the link between ratio and scaling, including the idea of direct proportion, linking various forms including graphs and using context such as conversion of currencies which provide rich opportunities for problem solving.

TERM 2

What is a reciprocal?

Students will have had a little experience of multiplying and dividing fractions in year 6; here we seek to deepen understanding by looking at multiple representations to see what underpins the (often confusing) algorithms. Links between fractions and decimals are also revisited. Building on their knowledge of coordinates from KS2, students will then look formally at algebraic rules for straight lines. They explore the notions of gradients and intercepts, and the similarities and differences between sequences, lists of coordinates and lines

TERM 3

How do political parties use graphs in an election campaign?

Students are introduced formally to bivariate data and the idea of linear correlation. They extend their knowledge of graphs and charts from KS2 to deal with both discrete and continuous data. By the end of this unit students will have learned to draw and interpret scatter graphs. Understand correlation. Draw and use lines of best fit. Understand grouped and ungrouped, discrete, and continuous data and how to design and use one- and two-way tables

TERM 4

Which is the most likely number to roll in a game of monopoly?

Students study the ideas of probability, in particular looking at sample spaces and the use of tables to represent these. We then further develop the algebra skills they learned in year 7. Students explore expanding over a single bracket and factorising by taking out common factors. We revisit and extend their knowledge of solving equations to now include those with brackets. Students will also learn to solve formal inequalities for the first time, learning the meaning of a solution set and exploring the similarities and differences compared to solving equations.

TERM 5

How can I describe a sequence using algebra?

This unit block reinforces students' learning from year 7, extending this to look at sequences with more complex algebraic rules now that students are more familiar with a wider range of notation. We then move on to explore the ideas behind the addition and subtraction laws of indices (which will be revisited when standard form is studied next term), the groundwork is laid by making sure students are comfortable with expressions involving powers e.g., $3x^2 y \times 5xy^3$. Higher attaining students will also look at finding powers of powers.

TERM 6

How do I know what my percentage profit is?

This unit focuses on the relationships between fractions and percentages, including decimal equivalents, and using these to work out percentage increase and decrease. Financial maths is developed thorough the contexts of, for example, profit, loss, and interest. Building on the earlier work on indices last term, students are now introduced to standard index form. The use of context is important to help students make sense of the need for notation and its uses. Higher attaining students will also be introduced to negative and fractional indices.

ASSESSMENT

- Most lessons will test knowledge using a variety of activities including exit tickets, diagnostic questions and find and fix.
- Each and every lesson will be punctuated by various hinge questions, statements and discussion opportunities.
- For each unit, students will be given a short Mini-Assessment assessing their understanding of the key vocabulary, knowledge and concepts.
- Students will be assessed more formally at various point in the year including a formal end of year assessment.

INDEPENDENT LEARNING

- Knowledge Organisers are expected to be used weekly to support the learning and recap of key vocabulary as the course progresses.
- There will be various independent learning challenges set each half-term which will allow students to develop subject specialist skills as well as knowledge and understanding.
- There will be opportunities to practice crucial retrieval and revision skills with various resources and templates provided.
- Sparx Maths will be used as an online resource to aid independent learning.

ENRICHMENT

- Maths challenge activities.
- Maths' relays allowing opportunity for problem solving.
- Real life Maths trip Term 2

What Next? This year has built on the basic steps for Mathematics and will allow students to begin their GCSE in Mathematics after term 2 of Year 9. Students will continue to study all aspects of Mathematics within Year 9 from Number through to Statistics.

North Kesteven Academy

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