



Year 9 Maths Learning Map



TERM 1

Sequences and Straight-line Graphs

This half term develops pupils awareness of linear sequences and explores the connection to straight-line graphs through securing knowledge of term-to-term and position-to-term rules – this is extended to solving numerically, graphically and also algebraically. Students manipulate, rearrange and solve linear equations in the form $y=mx+c$ and, through substitution, explore the rate of change and gradient (positive and negative) of the line. Students will recognise arithmetic and geometric sequences and be able to find the n^{th} term

Rounding and Compound Measure

Students will round and write upper and lower bounds to varying accuracy. Students will use significant figures and place value to round numbers as well as read and write large and small numbers in standard form. Students will be able to calculate compound measures such as speed, density, rates of pay etc and use ratio and proportion to convert between units. Pupils will represent the relationships graphically



LINKS TO PRIOR LEARNING

This term relies heavily on developing KS2 knowledge of number and place value in order to understand significant values. The work from Yr 7 where students explored arithmetic laws and relationships such as ratio and proportion underpins linear relationships



TERM 2

Expressions and Simultaneous Equations

Here students will draw on and develop prior knowledge of arithmetic laws such as the distributive law to expand and factorise brackets, form and manipulate expressions and equations including rearranging the subject of a formula. Students will solve two linear simultaneous equations graphically and through substitution and elimination

Circles and Constructions

Again students will develop and apply their prior knowledge of properties of 2D to construct perpendicular and angle bisectors. Students will calculate area and perimeter of circles and then apply fractional, ratio and proportion knowledge to solve for sectors and compound shapes. Developing Y8 work on prisms students will apply knowledge of circles to find surface area and volumes of prisms



LINKS TO PRIOR LEARNING

Students develop and apply knowledge of arithmetic laws from KS3 and extending this to use negative values, and algebra. Maintaining equality underpins students ability to solve and rearrange equations and expressions. Knowledge of perimeter and area link with ratio and proportion to solve problems with circles and constructions



TERM 3

Transformations

Students will revisit content exploring the Cartesian plane. Recognise rotational and reflectional symmetry in shapes and use to calculate missing angles. Recognise and perform transformations; understand the minimum information required to describe a reflection, rotation, translation and enlargement. Appreciate what changes and what is invariant. Recognise that similar shapes have sides in proportion to each other but angle sizes are preserved; recognise that for congruent shapes both side lengths and angle sizes are preserved. Use and apply knowledge of similarity to find missing sides

Right-angled Triangles

Extending knowledge of triangles, students will be aware that there is a relationship between the lengths of the sides and the angles of a right-angled triangle. Use and apply Pythagoras' theorem to solve problems in a range of contexts. Applying trigonometric ratios in right-angled triangles to find missing sides and angles.



LINKS TO PRIOR LEARNING

Students will have knowledge of location developed through KS2 and 3 – they will become more precise and describe the transformations mathematically. Students will recognize ratio and proportional relationships within triangles to develop an understanding of Pythagoras' Theorem

