

OVERVIEW	<p>The Maths department at the Lowry Academy aims to provide students with a secure understanding of mathematical knowledge, categorised according to the following areas: number, algebra, geometry, ratio and proportion, probability, and statistics, meeting the needs of the National Curriculum at KS3 and KS4. The focus of the curriculum is to develop procedural knowledge of the fundamental elements of mathematics in order for students to access further problem solving elements and reason mathematically, whilst fostering a love of maths. In Year 10 students begin following either the Higher or Foundation syllabus, however we monitor students attainment closely throughout the year to ensure students are following the most appropriate scheme of learning. By the end of year 10, students will have developed their mathematical skills within the different areas of Maths (number, algebra, ratio and proportion, geometry, probability and statistics)</p>		
AUTUMN	<p>Rearranging simple and complex formulae (changing the subject) Plotting straight line graphs from equations Plotting real-life graphs Identifying gradients and intercepts from graphs and equations Calculating an equation of a straight line from graphs and coordinates Calculating equations of parallel lines Calculating Speed, Distance and Time, including converting units of speed and distance time graphs Calculating density, mass and volume & force, pressure and area Plotting quadratic equations Finding roots and turning points of quadratic graphs Expanding triple brackets (HIGHER ONLY) Factorising quadratics with a coefficient of x^2 greater than 1 (HIGHER ONLY) Completing the square (HIGHER ONLY) Solving linear simultaneous equations by elimination, substitution and graphically Working with cubic, reciprocal, and exponential graphs</p>	<p style="text-align: center;">Assessment</p> <p>Within the autumn term, year 10 students will be assessed through:</p> <p>KPI tests (after each topic), feedback sheets (twice per half term) and fluency Friday (fortnightly)</p>	<p style="text-align: center;">Personal Development</p> <p>Spiritual: Many mathematical problems involve finding answers through logic and reasoning. The whole purpose is to demonstrate the power of deductive logic and problem solving through use of rigorous, proven techniques. This should encourage pupils to question "why" more often, to interrogate motives and to avoid assumption when analysing any given problem. These skills should transfer to the less abstract situations facing our students daily. This is pertinent in topics covered in year 10 such as completing the square, probability tree diagrams, compound interest and analysing data.</p> <p>Social: Verbalising and discussing mathematical problems is one of the most powerful tools we have in arriving at their solutions. Many topics have a direct and deep sociological impact or effect. We teach co-ordinate geometry, bearings and vectors which are the bedrock of so many "real life" applications of mathematics that have had and still have profound consequences to human development (eg wireless communications, GPS, flight, electronics). This is relevant when covering topics in year 10 which as commonly used in daily life such as percentage interest, systematic listing strategies and compound measures.</p> <p>Cultural: All mathematics has a rich history and a cultural context in which it was first discovered or used. The most ancient of our knowledge we owe to the Babylonians, Egyptians, Greeks and Arab and Vedic mathematicians. Mathematics also has deep links to cultural subjects such as art, music and sport. Factors and multiples build rhythm and design percussion, ratios mathematically explain pitch and tuning and trigonometric functions describe and of sound waves. An understanding of scale, similarity and surds help to explain numbers associated with focal length in photography and packaging design in technology. The world of professional sport has been revolutionised by statistics and their analysis. This underpins all of mathematics but is more obvious in topics covered in year 10 such as representing data, trigonometry and standard form.</p>
SPRING	<p>The probability scale Systematic listing Relative frequency Sample space diagrams Venn diagrams Probability tree diagrams Conditional probability (HIGHER ONLY) Converting between standard form and ordinary numbers Calculating with standard form Interest and percentage increase and decrease Simple and compound interest Exponential growth and decay (HIGHER ONLY) Sharing in a ratio and manipulating ratio Working with and converting recurring decimals (HIGHER ONLY)</p>	<p style="text-align: center;">Assessment</p> <p>Within the autumn term, year 10 students will be assessed through:</p> <p>KPI tests (after each topic), feedback sheets (twice per half term) and fluency Friday (fortnightly)</p>	
SUMMER	<p>Manipulating surds (HIGHER ONLY) Plans and Elevations Constructions of triangles and perpendicular bisectors Loci Bounds and error intervals Types of data Constructing and interpreting pie charts, scatter graphs and frequency polygons Working with averages and the range including finding averages from discrete and continuous data and estimating the mean Right angle trigonometry (HIGHER ONLY) Finding the nth term of Quadratic Sequences Similar shapes Working with scale factors of area and volume for similar shapes</p>	<p style="text-align: center;">Assessment</p> <p>Within the autumn term, year 10 students will be assessed through:</p> <p>KPI tests (after each topic), feedback sheets (twice per half term) and fluency Friday (fortnightly)</p>	
<p style="text-align: center;">Useful resources for supporting your child at home</p> <ul style="list-style-type: none"> • Corbett Maths • BBC bitesize • Maths Genie • SPARX 		<p style="text-align: center;">Homework</p> <p>Students will complete weekly homework on SPARX (online platform) Homework is set every Saturday and is due in every Friday. SPARX club is available on the Maths corridor during every lunch time and also after school on a Tuesday (L5)</p>	