Programme of study for Year 11 Foundation Maths 24-2025

Autumn (1st term)	Autumn (2nd term)	Spring (1st term)	Spring (2nd Term)	Summer (1st term)	Summer (2nd term)
Topic / Big Question: -**Fractions, decimals & percentages: add & subtract with decimals, multiply & divide with decimals, convert between FDP, percentage of an amount, percentage change** -**Similarity and congruence in 2D: solve problems to find missing lengths in similar shapes, use basic congruence criteria for triangles (SSS, SAS, ASA, RHS), use congruence and similarity to find missing angles.** -**Algebra recap: Index notation (Review all laws of indices), simplify expressions, expand single and double brackets, factorising expressions,**	Topic / Big Question: -**Data: tally and pictograms, frequency tables & frequency trees, drawing & interpreting frequency polygons, drawing & interpreting bar charts, drawing pie chart, interpreting pie charts, drawing & interpreting scatter graphs** -**Vectors: use column notation in relation to vectors and be able to represent information graphically given column vectors, add and subtract vectors, show graphically, scalar multiples of vectors, parallel vectors, exam questions**	Topic / Big Question: **Revision will focus on topics in which students have generally underperformed in their mock exams.**	Topic / Big Question: **Revision will focus on topics in which students have generally underperformed in their mock exams.**	Topic / Big Question: **Revision will be focused around topics the class have generally underperformed in their final mocks**	Topic / Big Question: Examination period: Yr 11 are on study leave

factorising & solving quadratics, drawing quadratics (with table of values)	.				
Skills (students should be able to do): A01: Use, recall and apply standard techniques AO2: From given mathematical information: Reason, interpret & communicate mathematically A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	Skills (students should be able to do): A01: Use, recall and apply standard techniques AO2: From given mathematical information: Reason, interpret & communicate mathematically A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	Skills (students should be able to do): A01: Use, recall and apply standard techniques AO2: From given mathematical information: Reason, interpret & communicate mathematically A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	Skills (students should be able to do): A01: Use, recall and apply standard techniques AO2: From given mathematical information: Reason, interpret & communicate mathematically A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	Skills (students should be able to do): A01: Use, recall and apply standard techniques AO2: From given mathematical information: Reason, interpret & communicate mathematically A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts	Skills (students should be able to do): A01: Use, recall and apply standard techniques AO2: From given mathematical information: Reason, interpret & communicate mathematically A03: Solve problems or evaluate methods and solutions within mathematics and in other contexts
Key Learning Outcomes (students should know): Perform operations (addition, subtraction, multiplication, and division) with decimals Understand the relationship between fractions, decimals, and percentages and	Key Learning Outcomes (Students should know): Use tally charts, pictograms, and frequency tables to record, organize, and summarize data accurately. Interpret pictograms, bar charts, pie charts,	Key Learning Outcomes (Students should know):	Key Learning Outcomes (Students should know):	Key Learning Outcomes (Students should know):	Key Learning Outcomes (Students should know):

convert between fractions, decimals, and percentages Calculate percentages of given amounts Calculate percentage change Use the basic congruence criteria for triangles (SSS, SAS, ASA and RHS) Solve angle problems involving congruency. Identify shapes that are similar, including all circles or all regular polygons with equal number of sides. Understand similarity of triangles and of other plane shapes, use this to make geometrical inferences and solve angle problems using similarity. Identify the scale factor of an enlargement of a shape as a ratio of 2 corresponding sides.	and frequency tables/trees to compare categories, identify trends, and answer data-related questions. Plot and interpret frequency polygons to analyze data trends and differentiate them from histograms. Construct and interpret both vertical and horizontal bar charts to represent categorical data. Draw and interpret pie charts by calculating sector angles and comparing proportions. Plot scatter graphs to explore relationships between two variables, using lines of best fit to identify trends and make predictions. Understand and use column notation in relation to vectors.				

Understand the effect of enlargement on perimeter of shapes. Solve problems to find missing lengths in similar shapes. Know the scale diagrams, including bearings and maps are 'similar' to real life examples. Use index laws to simplify and calculate the value of numerical expressions involving multiplication and division of integer powers, fractions and powers of a power; Use letters to represent unknown in algebraic expressions and simplify linear algebraic expressions by collecting like terms; Multiply single and double brackets and collect like terms; Factorise algebraic expressions, and use the	Be able to present information graphically given column vectors. Identify 2 column vectors which are parallel. Calculate using column vectors, and represent graphically the sum of 2 vectors. Calculate using column vectors, and represent graphically the difference of 2 vectors.				

identity symbol and the not equal symbol Find the roots of the quadratic equation, which are the values of x where the quadratic expression equals zero and the turning point (or vertex) of the quadratic function; Use a table of values to draw quadratic graphs					
Autumn Term – centrally planned, standardised and teacher marked piece(s) of work Progress check as per assessment calendar Mock series 1		Spring Term – centrally planned, standardised and teacher marked piece(s) of work Progress check as per assessment calendar Mock series 2		Summer Term – centrally planned, standardised and teacher marked piece(s) of work **Exam practice past papers** Progress check as per assessment calendar	
Building understanding: Rationale / breakdown for your sequence of lessons: Working with fractions, decimals, and percentages sharpens mental math, which is helpful for estimating costs, measuring accurately, or quickly calculating probabilities in daily life. In KS3 students are taught to recognise	**Building understanding: Rationale / breakdown for your sequence of lessons:** Understanding data presentation techniques allows students to read and interpret graphs and charts they encounter in everyday life—news articles, reports, business documents, and scientific studies.	**Building understanding: Rationale / breakdown for your sequence of lessons:**	**Building understanding: Rationale / breakdown for your sequence of lessons:**	**Building understanding: Rationale / breakdown for your sequence of lessons:**	**Building understanding: Rationale / breakdown for your sequence of lessons:**

similar 2D shapes. They are also taught to find the scale factor between them. Students are also taught many other properties of 2D shapes such angles facts. In KS4 students will be linking prior knowledge of angle facts to show to shapes are congruent and give mathematical reasons for their arguments. The understanding of why 2D shapes are similar requires understanding of ratio and proportion. Students are required to learn them and can use them in problem solving questions and in many other concepts such as vectors, volume and other geometric problems. Congruency is link with other contexts such as geometric proofs and understanding it is important skills for students to learn. Knowing indices helps in calculating compound	As students have learnt in KS3 that coordinates represent the position, in KS4 students are required to know that vector represent displacement. They are required to know how moving from one place to another always refers to displacement between two points. Calculating with vectors also link with trigonometry and Pythagoras. Students can find the magnitude of displacement and the angle of displacement using Pythagoras and trigonometric ratios respectively. Vectors appears in many other subjects such physics and as well as in many real-life contexts such as navigation and aviation.				

interest, population growth, and exponential decay in contexts like medicine, economics, and environmental science.					
Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.
Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions
Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.

Enrichment / opportunities to develop cultural capital (including careers, WRL and SMSC):

During the lesson a discussion will take place on the real-life scenarios the topic at hand students have come across or will face later in life when making decisions. These regular discussions allow teachers into an insight into the knowledge students have about life and how we can inform them further.

Fractions, decimals & percentages:

When managing a household or social organization's finances, people use fractions, decimals, and percentages to allocate budgets, manage income, and track expenses (e.g., 50% of the budget for groceries).

Fractions and percentages help manage time for social activities, work, and personal life. For example, dividing your day into different parts: ⅓ for work, ⅓ for personal tasks, and ⅓ for social activities.

Many religious practices involve donating a percentage of one's income (e.g., 10% tithe in Christianity or zakat in Islam, which is 2.5%).

Decimals or percentages are used to calculate the amount of time devoted to spiritual practices relative to the entire day or week (e.g., spending 10% of your day in meditation).
In certain spiritual practices, the fraction of the day spent fasting (e.g., during Ramadan or Lent) is calculated to help people manage their health and spiritual commitments.
Percentages are often used to analyse participation rates in cultural events or festivals (e.g., 75% of the population celebrates a national holiday).
Fractions and percentages show how different cultural groups are represented in media, art, and literature (e.g., 25% of films produced feature indigenous stories).
Percentages are used to track personal progress, such as achieving 80% of your fitness goal or 50% of a career development plan.
Grading systems often use percentages to reflect personal academic progress (e.g., getting 90% on an exam).
Fractions and percentages help in tracking performance improvement (e.g., running 10% faster) and time spent in training (e.g., spending 50% of your training time on strength and 50% on cardio). Decimals and percentages are used to measure caloric intake and balance

Similarity and congruence:

Similar and congruent shapes often serve as symbols or representations.
In social contexts, these symbols can convey shared meanings, fostering communication and understanding among individuals or groups. In various spiritual and religious traditions, specific shapes and geometric patterns hold symbolic or spiritual significance. The congruence and similarity of these shapes may be seen as representations of divine order or cosmic harmony. Architectural designs often incorporate congruent and similar shapes, reflecting cultural values and beliefs. Buildings and structures may use specific shapes to convey cultural identity and historical significance.

Quadratics:

Social: Medicine and Biology: Quadratic equations can be applied in pharmacokinetics to model the concentration of drugs in the body over time or to analyse the growth patterns of populations or organisms.
Moral: Optimization Problems: Quadratic equations often arise in optimization problems, where one seeks to maximize or minimize a certain quantity, such as cost, profit, or efficiency.
Spiritual: Psychology and Sociology: Quadratic equations can be utilized in statistical analysis to model relationships between variables or to study phenomena like learning curves or population dynamics.
Cultural: Art and Music: Quadratic equations can be used in art to create visually appealing shapes and patterns or in music to model sound waves and frequencies.
Personal Development: While not directly applicable in everyday life, understanding quadratic equations and problem-solving skills related to them can contribute to personal development by enhancing critical thinking and analytical abilities

Charts and Graphs:

Charts and graphs can depict population growth, demographic distributions, and migration patterns, aiding policymakers in understanding societal trends. Educational charts can illustrate literacy rates, school enrolment statistics, and educational attainment levels, helping to identify areas needing improvement in education systems. Graphical representations can show the distribution of religious affiliations across regions or countries, aiding in understanding cultural and spiritual diversity. Charts can depict changes in belief systems over time, such as shifts in religious adherence or the rise of new spiritual practices. Charts can visually represent time allocation for various activities, aiding in personal time management and productivity enhancement. Athletes and coaches can use charts to analyse performance metrics like speed, endurance, and skill proficiency, identifying areas for improvement.

Vectors:

Vectors are used to represent transportation networks, flow of traffic, and movement patterns in urban areas. City planners utilize vector analysis to optimize infrastructure and improve transportation systems. Vectors are used in biomechanics to analyse movement patterns, forces, and trajectories in sports activities. Coaches and athletes utilize vector analysis to optimize performance and prevent injuries. Vectors represent forces, velocities, and directions in structural analysis and design. Engineers use vector calculus to ensure the stability and efficiency of buildings, bridges, and other infrastructure projects.