

Year 11F Scheme of Work

Unit	Key Objectives
Probability	<p>Work out probabilities from two-way tables and frequency trees</p> <p>Work out probabilities from Venn diagrams to represent real-life situations and also 'abstract' sets of numbers/values</p> <p>Use union and intersection notation</p> <p>Find a missing probability from a list or table including algebraic terms</p> <p>Find the probability of an event happening using relative frequency</p> <p>Estimate the number of times an event will occur, given the probability and the number of trials – for both experimental and theoretical probabilities</p> <p>Compare experimental data and theoretical probabilities</p> <p>Compare relative frequencies from samples of different sizes</p> <p>Find the probability of successive events, such as several throws of a single dice</p> <p>Use tree diagrams to calculate the probability of two independent events</p> <p>Use tree diagrams to calculate the probability of two dependent events</p>
Ratio	<p>Solve a ratio problem in context, such as problems involving mixing, e.g. paint colours, cement and drawn conclusions</p> <p>Compare ratios</p> <p>Combine ratios</p> <p>Solve problems that involve ratio with percentages and fractions of amounts</p> <p>Write a ratio as a linear function</p> <p>Write lengths, areas and volumes of two shapes as ratios in simplest form</p>
Angles in Polygons	<p>Calculate and use the sums of the interior angles of polygons</p> <p>Calculate and use the angles of regular and irregular polygons</p> <p>Use the sum of the interior angles of an n-sided polygon</p> <p>Use the sum of the exterior angles of any polygon is 360°</p> <p>Use the sum of the interior angle and the exterior angle is 180°</p> <p>Explain why some polygons fit together and others do not</p>

Bearings and Scale	<p>Use and interpret maps and scale drawings</p> <p>Estimate lengths using a scale diagram</p> <p>Make an accurate scale drawing from a diagram</p> <p>Use a ratio to compare a scale model to a real-life object</p> <p>Mark on a diagram the position of point B given its bearing from point A</p> <p>Give a bearing between the points on a map or scaled plan</p> <p>Given the bearing of a point A from point B, work out the bearing of B from A</p> <p>Use accurate drawing to solve bearings problems</p>
Interpreting Data	<p>Can interpret and find a range of averages as follows</p> <p>median, mean and range from a (discrete) frequency table</p> <p>range, modal class, interval containing the median, and estimate of the mean from a grouped data frequency table</p> <p>mode and range from a bar chart</p> <p>median, mode and range from stem and leaf diagrams</p> <p>mean from a bar chart</p> <p>Understand that the expression 'estimate' will be used where appropriate, when finding the mean of grouped data using mid-interval values</p> <p>Compare the mean, median, mode and range (as appropriate) of two distributions using bar charts, dual bar charts, pictograms and back-to-back stem and leaf</p> <p>Recognise the advantages and disadvantages between measures of average</p>
Linear Inequalities	<p>Show inequalities on number lines</p> <p>Construct inequalities to represent a set shown on a number line</p> <p>Solve simple linear inequalities in one variable and represent the solution set on a number line</p> <p>Solve an inequality such as $-3 < 2x + 1 < 7$ and show the solution set on a number line</p> <p>Solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both</p>

Proportion 2	Use a variety of measures in ratio and proportion problems such as currency conversion, rates of pay, best value and recipes Draw an use straight line graphs for real-life situations, including ready reckoner graphs, conversion graphs, fuel bills graphs, fixed charge and cost per unit
Arcs and Sectors	Find radius or diameter, given area or perimeter of a circles Find the perimeters and areas of semicircles and quarter-circles Calculate perimeters and areas of composite shapes made from circles and parts of circles Calculate arc lengths, angles and areas of sectors of circles
Surface Area	Find the surface area of a prism Find the surface area of a cylinder Find the surface area of spheres, pyramids, cones and composite solids Estimate surface areas by rounding measurements to 1 significant figure
HCF and LCM	Use prime factorisation and a Venn diagram to find the HCF and LCM of a pair of integers Identify and solve worded problems which require the use of HCF and LCM
Volume	Find the volume of spheres, pyramids, cones and composite solids Estimate volumes etc by rounding measurements to 1 significant figure Convert between metric volume measures Convert between metric measures of volume and capacity e.g. $1\text{ml} = 1\text{cm}^3$ Solve problems that involve volume and surface area
Forming Expressions and Equations	Write an equation to solve a word problem Solve angle or perimeter problems using algebra

Real Life Graphs	<p>Draw distance–time graphs and velocity–time graphs</p> <p>Work out time intervals for graph scales</p> <p>Interpret distance–time graphs, and calculate: the speed of individual sections, total distance and total time</p> <p>Interpret information presented in a range of linear and non-linear graphs</p> <p>Find the gradient of a straight line from real-life graphs</p> <p>Interpret gradient as the rate of change in distance–time and speed–time graphs, graphs of containers filling and emptying, and unit price graphs</p> <p>Interpret graphs with negative values on axes</p>
Right Angled Triangles	<p>Given 3 sides of a triangle, justify if it is right-angled or not</p> <p>Apply Pythagoras’ Theorem with a triangle drawn on a coordinate grid</p> <p>Calculate the length of a line segment AB given pairs of points</p> <p>Solve problems requiring the use of Pythagoras’ Theorem, especially where the triangle is not immediately obvious</p> <p>Use the trigonometric ratios to solve 2D problems</p> <p>Find angles of elevation and depression</p> <p>Decide whether a problem requires the use of Pythagoras’ Theorem or trigonometry</p> <p>Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°; Know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°</p>
Cubic and Reciprocal Graphs	<p>Recognise, sketch and interpret graphs of simple cubic functions</p> <p>Recognise, sketch and interpret graphs of the reciprocal function $y = \frac{1}{x}$ with $x \neq 0$</p> <p>Recognise different types of graphs and match them to appropriate equations</p>

Constructions and Loci	<p>Use straight edge and a pair of compasses to do standard constructions</p> <p>understand, from the experience of constructing them, that triangles satisfying SSS, SAS, ASA and RHS are unique, but SSA triangles are not</p> <p>construct the perpendicular bisector of a given line</p> <p>construct the perpendicular from a point to a line</p> <p>construct the bisector of a given angle</p> <p>construct angles of 90°, 45°</p> <p>Draw and construct diagrams from given instructions, including the following</p> <p>a region bounded by a circle and an intersecting line</p> <p>a given distance from a point and a given distance from a line</p> <p>equal distances from two points or two line segments</p> <p>regions may be defined by 'nearer to' or 'greater than'</p> <p>Find and describe regions satisfying a combination of loci</p> <p>Use constructions to solve loci problems (2D only)</p> <p>Use and interpret maps and scale drawings</p>
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