Armfield Academy – Mathematics Department

Year 10 HIGHER Curriculum Overview

Maths home Learning is completed using Century Learning.

RECALL STARTERS – Use WRM Flashback 4 (in shared drive) for lesson starters to recap prior learning

Use Pre requisite Quiz's to recap prior learning before starting a Unit

HALF TERM 1	
Week	Curriculum Overview
1	**Probability (carry over from year 9) plus GAP FILL FROM YR 9 QLA DOCUMENT**
2	Relative Frequency
3	Expected number of outcomes Independent Events Tree diagrams
4	**Congruency and Enlargement**
5	Enlarge a shape by a positive integer scale factor (R) Enlarge a shape by a fractional scale factor (R) Identify similar shapes Enlarge a shape by a negative scale factor Work out missing sides and angles in a pair given similar shapes (R) Use parallel line rules to work out missing angles Establish a pair of triangles are similar Explore area of similar shapes Explore volume of similar shapes Solve mixed problems involving similar shapes Understand the difference between congruency and similarity Understand and use conditions for congruent triangles Prove a pair of triangles are congruent
6	**Trigonometry**
7	Explore ratio in similar right angled triangles Work fluently with the hypotenuse, opposite and adjacent sides Use the tangent ratio to find missing side lengths Use the sine and cosine ratios to find missing side lengths Use sine, cosine and tangent to find missing side lengths Use sine, cosine and tangent to find missing angles Calculate sides in right-angled triangles using Pythagoras' Theorem (R)
HALF TERM 2	
Week	Curriculum Overview
8	**Trigonometry** Select the appropriate method to solve right angled triangles problems Work with key angles in right angled triangles Use trigonometry in 3D shapes Use the formula 1/2absinC to find the area of a triangle Understand and use the sine rule to find missing lengths Understand and use the sine rule to find missing angles Understand and use the cosine rule to find missing lengths

	Understand and use the cosine rule to find missing angles Choosing and using sine and cosine rules
9	**Representing Solutions of Equations and Inequalities**
10	Understand the meaning of a solution Form and solve one-step and two-step equations (R)
11	Form and solve one-step and two-step inequalities (R) Show solutions to inequalities on a number line Interpret representations on number line as inequalities Represent solutions to inequalities using set notation Draw straight line graphs (R) Find solutions to equations using straight line graphs Represent solutions to single inequalities on a graph Represent solutions to multiple inequalities on a graph Form and solve equations with unknowns on both sides (R) Form and solve inequalities with unknown on both sides Form and solve more complex equations and inequalities Solve quadratic equations by factorisation Solve quadratic inequalities in one variable
12	**Revision week and assessment**
13	**Simultaneous Equations**
14	Understand that equations can have more than one solution Determine whether a given coordinate is a solution to a pair of linear equations Solve a pair of simultaneous linear equations by substituting a known variable Solve a pair of simultaneous linear equations by substituting an expression Solve a pair of linear simultaneous equations using graphs Solve a pair of linear simultaneous equations by subtracting equations
HALF TERM 2	
Week	Curriculum Overview
15	**Simultaneous Equations** Solve a pair of linear simultaneous equations by adding equations Use a given equation to derive related facts (R) Solve a pair of linear simultaneous equations by adjusting one equation Solve a pair of linear simultaneous equations by adjusting both equations Form a pair of linear simultaneous equations from given information Form and solve a pair of linear simultaneous equations from given information Determine whether a given (x,y) is a solution to both a linear and quadratic equation Solve a pair of simultaneous equations (one linear, one quadratic) using graphs Solve a pair of simultaneous equations (one linear, one quadratic) algebraically Solve a pair of simultaneous equations involving a third unknown
16	**Angles and Bearings**
17	Draw and interpret scale diagrams (R) Understand and represent bearings Measure and read bearings Make scale drawings using bearings Calculate bearings using angle rules Solve bearings problems using Pythagoras and trigonometry

	Solve bearings problems using the sine and cosine rules
18 19	**Working with Circles** Recognise and label parts of a circle (R) Calculate the fractional parts of a circle Calculate the length of an arc Calculate the area of a sector Circle theorem: Angles at centre and circumference Circle theorem: Angles in a semi-circle Circle theorem: Angles in the same segment Circle theorem: Angles in a cyclic quadrilateral Understand and use the volume of a cylinder and cone Understand and use the volume of a sphere Understand and use the surface area of a sphere Understand and use the surface area of a cylinder and cone
20	**Vectors** Understand and represent vectors Use and read vector notation Draw and understand vectors multiplied by a scalar Draw and understand addition and subtraction of vectors Explore vector journeys in shapes Explore quadrilaterals using vectors Understand parallel vectors Explore co-linear points using vectors Use vectors to construct geometric arguments and proofs
HALF TERM 4	
21	Curriculum Overview
22	**Vectors** **As above…**
23 24	**Ratio and Fractions** Compare quantities using a ratio (R) Link ratios and fractions (R) Share in a ratio (given total or one part) (R) Use ratios and fractions to make comparisons Link ratios and graphs Solve problems with currency conversion Link ratios and scales (R) Use and interpret ratios of the form 1:n and n:1 Solve best buy problems Combine a set of ratios Link ratio and algebra Ratio in area problems Ratio in volume problems Mixed ratio problems
25 26	**Percentages and Interest** Convert and compare fractions, decimals and percentages (R) Work out percentages of amounts (with and without a calculator) (R)

	Increase and decrease by a given percentage (R) Express one number as a percentage of another (R) Calculate simple and compound interest Repeated percentage change Find the original value after a percentage change (R) Solve problems involving growth and decay Understand iterative processes Solve problems involving percentages, ratios and fractions
27	**Probability** Know how to add, subtract and multiply fractions (R) Find probabilities using equally likely outcomes (R) Use the property that probabilities sum to 1 (R) Using experimental data to estimate probabilities Find probabilities from tables, Venn diagrams and frequency trees
HALF TERM 5	
Week	Curriculum Overview
28	**Probability** Construct and interpret sample spaces for more than one event (R) Calculate probabilities with independent events Use tree diagrams for independent events Use free diagrams for dependent events Construct and interpret conditional probabilities (tree diagrams) Construct and interpret conditional probabilities (venn digrams & two way tables)
29	**Collecting and Representing Data** Understand populations and samples Construct a stratified sample Primary and secondary data Construct and interpret frequency tables and frequency polygons
30	Construct and interpret two-way tables (R) Construct and interpret line and bar charts (including composite bar charts) Construct and interpret pie charts (R) Criticise charts and graphs Construct & interpret histograms Find and interpret averages from a list (R)
31	Find and interpret averages from a table (R) Construct and interpret time series graphs (R) Construct and interpret stem and leaf diagrams Construct and interpret cumulative frequency diagrams Use cumulative frequency diagrams to find measures Construct and interpret box plots Compare distributions using charts and measures Compare distributions using complex charts and measures Construct and interpret scatter graphs (R) Draw and use a line of best fit (R) Understand extrapolation

32	**Non Calculator Methods**
33	Mental/written methods of integer/decimal addition and subtraction (R) Mental/written methods of integer/decimal multiplication and division The four rules of fraction arithmetic (R) Exact answers Rational and irrational numbers Understand and use surds Calculate with surds Rounding to decimal places and significant figures (R) Estimating answers to calculations (R) Understand and use limits of accuracy Upper and lower bounds Use number sense Solve financial maths problems Break down and solve multi-step problems

HALF TERM 6	
Week	Curriculum Overview
34	**Types of Number and Sequences**
35	Understand the difference between factors and multiples (R) Understand primes and express a number as a product of its prime factors (R) Find the HCF and LCM of a set of numbers (R) Describe and continue arithmetic and geometric sequences Explore other sequences Describe and continue sequences involving surds Find the rule for the nth term of a linear sequence (R) Find the rule for the nth term of a quadratic sequence
36	**REVSION WEEK AND ASSESSMENT**
37	**Indices and Roots**
38	Square and cube numbers (R) Calculate higher powers and roots Powers of ten and standard form (R) The addition and subtraction rules for indices (R) Understand and use the power zero and negative indices Work with powers of powers Understand and use fractional indices Calculate with numbers in standard form (R)
39	**Multiplicative Reasoning**
40	Use identities Form and solve equations and identities with fractions Represent Numbers algebraically Add and subtract simple algebraic fractions Add and subtract complex algebraic fractions Multiply and divide simple algebraic fractions Multiply and divide complex algebraic fractions Solve equations with algebraic fractions Algebraic arguments and proof Simplify algebraic expressions