Greenfaulds High

Mathematics Department

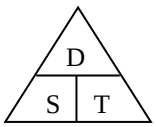
S2 Upper Scheme of Work

Year 1

Level 4 Bridging Unit

Topic	Curricular Area	Exercises
Number work and % calculations **9 PERIODS**	**Experiences & Outcomes** **MNU 3-01a, 3-03a, 3-03b** MNU 4-07a MNU 4-01a **National 5 Outcomes** Applications: 3.1 Exp & Form: 1.3	Ex 1 Mental % Ex 2 One number as % of another Ex 3 % profit / loss Ex 4 Compound Interest, book does not show 5% over 3 years can be calculated using 1.05^3 x £, but worth doing this Ex 5 Depreciation / Appreciation Ex 6 Working backwards Ex 7 Significant Figures-only do rounding to.. *** Tolerance worksheet**
Fractions **7 PERIODS**	**Experiences & Outcomes** **MTH 3-07b** **MTH 4-07a** MTH 4-07b **National 5 Outcomes** Applications: 3.3	Ex 1 Converting fractions to mixed nos. Ex 2 Adding and subtracting fractions including mixed nos. Ex 3 As above but changing the denominator, also difficult subtractions with mixed nos. **take time with this**. Ex 4 Multiplying fractions and mixed nos. Ex 5 Dividing fractions and mixed nos.

Pythagoras **7 PERIODS**	**Experiences & Outcomes** MNU 3-06a MNU 4-06a **National 5 Outcomes** Relationships: 3.1 & 3.2	Ex 1 $c^2 = a^2 + b^2$ Calculating hypotenuse. Ex2 Ex 3 Shorter side Ex 4 Mixed Examples Ex 5 Coordinates Ex 6 Converse of Pythagoras' Theorem. Ensure you emphasis that the proof cannot begin by stating the theorem and a statement must be given at the end along the lines of "Since $c^2 = a^2 + b^2$, then the triangle is right- angled by the Converse of Pythagoras' Theorem"

Speed, Distance & Time  **7 PERIODS**	**Experiences & Outcomes** MNU 3-10a MNU 4-10b	Ex 1 Distance Ex 2 Speed and time Ex 3 Problems Ex 4 Converting Hrs mins to decimal Ex 5 Converting decimal to hours mins Ex 6 Distance Speed graphs
Integers **5 PERIODS**	**Experiences & Outcomes** MNU 3-04a MNU 4-03a	Ex 1 + and - Ex 2 Double negative Ex 3 x and ÷
Scientific Notation **4 PERIODS**	**Experiences & Outcomes** MTH 4-06b	Ex 1 Large numbers (both ways) Ex 2 Small numbers (both ways) Ex 3 Using the EXP button
Money **5 PERIODS**	**Experiences & Outcomes** MNU 4-09 a,b & c (A project will also be completed to cover these outcomes)	Ex 1 Wages and Salaries (Emphasising Vocab) Ex 2 Pay and Deductions Ex 3 Income Tax Ex 4 VAT Ex 5 Hire Purchase } Could be combined Ex 6 Insurance Ex 7. Foreign Exchange
Statistics Graphs and charts **7 PERIODS**	**Experiences & Outcomes** **MTH 3-21a** **MNU 4-20a** **MNU 4-21a** **National 5 Outcomes** Applications 4.2	Much of Ex1&2 is revision and could be skimmed over Ex 1 Interpreting charts Ex 2 Pie charts Ex 3 Constructing pie charts Ex 4 Scatter graphs Ex 5 Scatter graphs Ex 6 stem and leaf Ex 7 Dot plots Frequency Tables Worksheets Probability Worksheets

Algebra 1 **10 PERIODS**	**Experiences & Outcomes** **MTH 3-14a** **MTH 3-15a** **MTH 4-14a** **MTH 4- 14b** **MTH 4-15a** **National 5 Outcomes** Exp & Form: 2.1 2.2 2.5	**Chapter 9 p 88-98** Ex 1 Collecting Like terms Ex 2 Breaking single brackets and simplifying Ex 5 Factorising - Common Factor **Chapter 12 p 136-143** Ex1 Equations, including those with brackets so take some time to do Ex 2 More equations with brackets Ex 3 Equations with fractions Ex 4 Harder equations with fractions Ex 5 Inequalities including dividing by negative (have a discussion with the class on where inequalities are used in real life situations)

Level 4 'Bridging Test'

N5 Block 1

Volumes **6/7 PERIODS**	**Experiences & Outcomes** **MTH 2-16a** **MTH 3-11a** **MTH 3-11b** **MTH 4-11c** **National 5 Outcomes** Exp & Form: 3.3	The revision of areas is **not** revision for all pupils (especially trapezium) so take time to do it. Be sure to tell pupils which formulae they are **not** given in the exam and emphasise the need to memorise these. Ex 1 Areas of shapes and composite shapes Ex 2 Volumes of cube/cuboid and surface areas Ex 3 Volume of a prism Ex 4 The Cylinder and part cylinders Ex 6 Curved surface area of cylinder Ex 5 Volume of Cone Ex 7 Volume of Sphere
Right Angled Trig (Right angled Triangle RAT) **8/9 PERIODS**	**Experiences & Outcomes** **MTH 4-16a** **National 5 Outcomes** Relationships: **3.2**	**Chapter 11 p 121 – 134** Ex 1 Tan Ratio Ex.2 Using tan to calculate the opposite side Ex 3 Calculating an angle using tan Ex 4 Sin Ratio, Using sin to calculate the opposite side and calculating an angle using sin Ex 5 Cos Ratio, Using cos to calculate the opposite side and calculating an angle using cos Ex 6 A mixture of all three ratios **and** calculating side on denominator (use∇ opp to help) Ex 7 SOHCAHTOA – although I would introduce as soon as all three ratios are known

Algebra 2 **10 PERIODS**	**Experiences & Outcomes** MTH 3-14a MTH 3-15a MTH 4-14a MTH 4- 14b MTH 4-15a **National 5 Outcomes** **Exp & Form:** 2.1 2.2 2.5	**Chapter 9 p 88-98** Ex 3 Double brackets and FOIL, and brackets with 3 terms quick method for squaring brackets, take some time to do this properly Ex 4 Tidying up terms and cubing Ex 6 Difference of 2 squares & mix of the two Ex 7 Factorising trinomials, quite a nice method for sorting out the factors, x2 coefficient ≠ 1 Ex 8 Mixture **Chapter 19 Pg 87** Ex 1 Completing the square

Algebraic Fractions **8 PERIODS**	**National 5 Outcomes** Relationships: 1.4 Exp & Form: 2.5	**Chapter 2 p 16-25** Ex 1 Simplifying Ex 2 Factorising Ex 3 Adding and Subtracting Ex 4 Multiplying and Dividing Ex 5 & 6 Changing the subject

Quadratic Function **14 PERIODS**	**National 5 Outcomes** Relationships: 2.1, 2.2, 2.3 & 2.4 Exp & Form: 2.3	**Chapter 4 p 39-46 or Chapter 12 Pg117** Ex 1 f(x) Ex 2 Quadratic Function **Chapter 6 p 59-67 or Chapter 14 Pg 132** Ex 1 Sketching parabolas Ex 2 Finding roots graphically Ex 3 Revision of factorisation Ex 4 Solving quadratics equations Ex 5 Sketching parabolas by factorising and symmetry Ex 6 Intersection of lines and parabolas (Only with good classes) **Chapter 19 Pg 87** Ex 1 Completing the square Ex 2 Graphs of completed square Ex 3 Completed square form 2 Ex 4 Quadratics of the form $y=kx^2$ Ex 5 Quadratic formula Ex 6 The discriminant

Block 1 Assessment

N5 Block 2

Arcs, Sectors and Angles in Circles **12 PERIODS**	**Experiences & Outcomes** **MTH 4-16b** **MTH 4-17a** **National 5 Outcomes** **Exp & Form:** **3.2** **Relationships:** **3.2**	**Chapter 10 p 101-112** There is no TRIG in this chapter so can supplement with old MIA text Ex 1 Arc length Ex 2 Area of sector Ex 3 Problem solving – mixed exercise I would introduce the three ratios $\frac{\text{Arc}}{\text{Circ}} = \frac{\text{sector}}{\text{area}} = \frac{\text{angle}}{360^0}$ with the top classes. Ex 4 Angle at centre given arc Ex 5 Angle at centre given sector area Ex 6 Angles and chords, perpendicular bisectors Ex 7 Angles in a semi-circle Ex 8 Tangent to a circle, including problems Ex 9 Tangent Kite **NON CLAC EX p99**
Vectors **6 PERIODS**	**National 5 Outcomes** **Applications:** **2.1, 2.2 & 2.3**	**Chapter 13 - Booklet** Ex 13.1 Multiplying and Adding Vectors Ex 13.2 Ex 13.3 Position Vectors Ex 13.4 The Magnitude of a Vector Ex 13.5 Ex 13.6 Alternative Vector Journeys Ex 13.7 Vectors in 3D

Patterns 4 PERIODS	**Experiences & Outcomes** **MTH 3- 13a** **MTH 4-13 a-d** **National 5 Outcomes** **Applications:** **4.2** **Exp & Form:** **2.6**	**Chapter 1 p10-14** Ex 1 y=mx Ex 2 y=mx+c Ex 3 non-linear patterns
Straight Line **10/12 PERIODS**	**Experiences & Outcomes** **MTH 4-13** **a, b, c & d** **National 5 Outcomes** Exp & Form: 3.1 Relationships 1.1 & 1.2 1.1 & 1.2	**Chapter 6 p 55-68** Ex 1 Gradient = V/H Ex 2 From coordinates, could do $(y_2-y_1) / (x_2-x_1)$, +ve, -ve and parallel gradients Ex 3 Equation of Straight Line Ex 4 Equation of Straight Line – formalised, finding the y-intercept: ***Use y - b = m(x - a) formula*** Ex5 Rearranging Ax+By+C= 0 to find m and c Ex 6 Real Life Linear equations Ex 7 Finding the equation given 2 points
Statistics **7 PERIODS**	**Experiences & Outcomes** **MTH 4-20b** **MTH 4- 22a** **National 5 Outcomes** Applications: 4.1	**Chapter 11 p 104** ***It is important that pupils are given the opportunity to take part in a discussion about how information and types of averages can be misleading.** Ex 4 Quartiles Ex 5 S.I.R (Mention quartile rage also) Ex 6 Box plots Ex 7 Standard Deviation **Chapter 18** Ex 1 Scattergraphs Ex 2 Scattergraphs and correlation

Surds and Indices **6/8 PERIODS**	**National 5 Outcomes** Exp & Form: 1.1 & 1.2	**Chapter 8 p84 - 91** Ex 1 What is a surd? Ex 2 Simplifying surds Ex 3 Indices Ex 4 Rules of Indices Ex 5 Fractional indices and surds

Block 2 Assessment

N5 Block 3

Simultaneous Equations **8 PERIODS**	**Experiences & Outcomes** MTH 4-15a **National 5 Outcomes** Relationships: 1.3	**Chapter 15 p 162-170** Ex1 Sketching straight lines by making x = 0 & y = 0. Ex2 Solving simultaneous equations graphically. Ex3 Solving by elimination, fractions again! Ex4 Solving by elimination – involves multiplying one and two equation(s) through Ex5 Solving problems using simultaneous equations, lots of examples

Trig in Triangles **12 PERIODS**	**Experiences & Outcomes** MNU 3-01a **National 5 Outcomes** Applications: 1.1, 1.2 & 1.3	**Chapter 14 p 158-160** Most of this is revision so depending on section you may wish to do most of this orally Ex 1 Basic angle properties Ex 2 Angles and parallel lines Ex 3 Angles in quadrilaterals **Chapter 18 p200-216** Ex1 Area of a triangle $A = \frac{1}{2}ab\sin C$, lots of practice and problem solving including obtuse angles. Ex2 Sine Rule to find a side Ex3 Sine Rule to find an angle Ex4 Cosine Rule to find a side Ex5 Cosine Rule to find an angle Ex6 Sine, Cosine Rules and SOHCAHTOA, problem solving Ex7 Which formula? Lots of problem solving Bearings Worksheet. Pegasys Worksheet on Trig and Bearings – spend a bit of time on this.

Similar Figures 4 PERIODS	**Experiences & Outcomes** **MTH 3 – 17c** **MTH 4-17b** **National 5 Outcomes** Relationships 3.3	**Chapter 5 p7p 47-58** Ex 1 Similar figures Ex 2 Triangles Ex 3 Triangles and parallel lines Ex 4 Similar areas Ex 5 Similar volumes

Trig Graphs **6 PERIODS**	**National 5 Outcomes** Relationships: 4.1	**Chapter 7 p 70-82** Ex 1 Basic Sine graphs Ex 2 Basic Cosine graphs Ex 3 Basic Tangent graphs Ex 4 y=asinx, y=acosx Ex 5 y=sin ax, y=cos ax Ex 6 y = a sin bx + c etc
Trig Equations **6 PERIODS**	**National 5 Outcomes** Relationships: 4.2	**Chapter 11 p114-117** Ex 1 Solve trig equations, TAKE TIME HERE Ex 2 Cos rule with negatives Ex 3 Trig identities

Block 3 Assessment then full prelim