Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 1

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Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 2

Block 1

Topic	Curricular Area	Exercises	Maths workout
Numeracy (Rounding, Percentages and Fractions) **20 PERIODS**	**Experiences & Outcomes** **MNU 3-01a, 3-03a, 3-03b** MNU 4-07a MNU 4-01a **National 4 Outcomes** Numeracy : 1.1, 1.2	**3G Chapter 3 p27-40** Ex 1 What are decimals? Ex 2 Reading decimal scales Ex 3 Rounding to 1 or 2 dp Ex 4 + and – decimals Ex 5 X decimals by a single digit Ex 6 ÷ decimals by a single digit **Pupils need to be able to do long multiplication.** Ex 7 X by 10, 100, 1000 Ex 8 ÷ by 10, 100, 1000 **Rounding to significant figures** **[Example worksheets available in Nat 4 folder]** **3G Chapter 4 p41-49** Ex 1 Percentages as fractions and visa versa Ex 2a Using a calculator to find a percentage Ex 2b Finding percentage rise Ex 2c Finding percentage fall **3G Extension Booklet p13-17** Ex 3E A as % of B Ex 4E % profit / loss Ex 5E % increase / decrease **3G Chapter 11 P124-131** Ex 1 Simplifying fractions Ex 2 Fraction of a number with numerator ≥ 1 Ex 3 Reminder of fractions and % Ex 4 Some other common % and fractions	**MW – NUMBER** Topic 12 Target 3 (1,2,3 and 4 decimal places) Topic 12 Target 5 (+/-/ x/÷ decimals) Topic 1 Target 3 (Long multiplication) Topic 4 Target 4 (x/÷ by 10, 100, 100) Topic 12 Target 4 (Round to 1,2,3 sig fig) Topic 17 Target 1 task 7, 8 Topic 17 Target 4 (Calculator %) Topic 17 Target 2 (% rise/fall) Topic 17 Target 1 Topic 17 Target 3 (% Profit/Loss) Topic 17 Target 3 (% increase/decrease) Topic 16 Target 3 (Simplifying fractions) Topic 16 Target 5 (Fraction >1) (As above for %)

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 3

Charts and Graphs **5 PERIODS**	**Experiences & Outcomes** 3.20a 3.20b 3.21a 4.20a 4.21a **National 4 Outcomes** Numeracy : 2.1	**3G Chapter 1 p132-150** Ex 1 Interpreting graphs Ex 2 Scatter graphs and codes Ex 3 Stem-and-Leaf diagrams Ex 4 Drawing graphs and charts Ex 5 Averages, range, mean, median, mode **It is important that pupils do pie charts with percentages and degrees**	**MW – Statistics and Probablity** Topic 5 and Topic 6, Target 1, 1-2 Topic 8 Topic 3, Target 3(mean), Target 4(range) Topic 3, Target 3(median),Target 1 (mode) Topic 9 Topic 10, Target 1 and Target 2, 1 & 9-11
Integers And Coordinates **9 PERIODS**	**Experiences & Outcomes** 3.04a 3.03b 2.18a 4.18a 4.18b **National 4 Outcomes** Numeracy: 1.2	**4G Chapter 1 p16-24** Ex 1 Integers in the real world Ex 2 Studying Integers –Temperature and scale Ex 3 Adding and Subtracting Integers (No subtraction of a negative in this exercise) Ex 4 Simple Multiply & Divide – Integer by a whole number Ex 5 Number (first of second) Ex 6 Coordinates +ve and –ve Quadrants	**MW – Number – Topic 6** Targets 1,2&3 Target 4, 1-3 Target 4, 4-5 Target 4, 6-8 Target 5, 5&7 Target 5, 6&8 **MW – Algebra and Problem Solving** Topic 17, Target 1, 1-2 **MW – Geometry and Measures** Topic 20, Target 1, 1-2
Time/ Distance/ Speed 10 periods	**Experiences & Outcomes** 3-10a 4-10a **National 4 Outcomes** Numeracy 1.1 1.2	**3G Chapter 10 p 107-123** Ex 1 12 hour to 24 hour Ex 2 Time Intervals Ex 3 Calculating distance Ex 4 Calculating speed Ex 5 Calculating time Ex 6 Time/Distance or Speed? Ex 7 Time – Distance graphs **3G Extension Booklet Pg 41** Ex 6E Hours & Minutes to decimals Ex 7E Decimal time to hours & minutes	**MW – GEOMETRY AND MEASURE** Topic 16 Target 1 Task 4 - 12 Topic 16 Target 2 – 5

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 4

			Workbook will be uploaded online
Money 9 PERIODS	**Experiences & Outcomes** **MNU 3-09a** **National 4 Outcomes** Numeracy 1.1 1.2	**3G Chapter 8 p 91-99** Ex 1 Simple Interest, including important Vocab, % work again Ex 2 Bills and VAT Ex 3 Electricity bills, lots of explanation Needed **3G Chapter 15 p 180-195** Ex 2 Profit and Loss Ex 3 Hire Purchase Ex 4 Household Insurance Ex 5 Life Insurance Ex 6 Foreign Exchange **3G Extension Booklet Pg 79** Ex 2E % profit and loss	
Wages and Salaries 8 PERIODS	**Experiences & Outcomes** **4-09b** **National 4 Outcomes** Numeracy 1.1 1.2 1.4	**3G Chapter 6 p 64-84** Lots of discussion needs to take place here regarding vocabulary for this topic Ex 1 Calculations given the hourly rate Ex 1b Calculating hourly rate Ex 2a Calculating weekly and monthly pay Ex 2b Calculating annual pay Ex 3 Percentage pay rise Ex 4 Commission, more % work **3G Extension Booklet** **Ex 4E Harder commission examples** Ch6 cont/ Ex 5 Overtime, including double time and time and a half, reading data from wage slips Ex 6 Net pay, wage slips	Workbook will be uploaded online
Angles **3 PERIODS**	**Experiences & Outcomes** **MTH 4-16a** **National 4 Outcomes** Numeracy	**3G Chapter 2 p14-26** Most of this chapter *should* be revision for more able classes and lots of the lessons are practical Ex 1 Types of angle Ex 2 Naming angles Ex 3 Measuring angles Ex 4 Calculating angles round a point, supplementary vertically opposite	**MW – GEOMETRY AND MEASURE** Topic 8 Target 1 Task 1-6 Topic 8 Target 2 Task 1-3 Topic 8 Target 2 Task 4-7 Topic 8 Target 3 Task 7-9 Topic 8 Target 3 Task 1-6

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 5

	1.3 1.4	Ex 5 Drawing angles Ex 6 Angles in a ▽ **3G Extension Booklet p 1-6** Ex 7E Corresponding and Alternate angles Ex 8E Angles in Quadrilaterals	Topic 8 Target 4 Task 3,4 Topic 8 Target 4 Task 1-2
Ratio 4 PERIODS	**Experiences & Outcomes** **National 4 Outcomes** **Numeracy 1.2**	**4G Chapter 11 p124-131** Ex 1 Ratio of say length:breadth from diagram Ex 2 Simplifying a ratio eg 28 : 35 Ex 3 Ratio Calculations Using a given ratio a:b calculate b given a or vice versa **Ex 4 Sharing an amount into a given ratio This exercise features £800 in ratio 2:3 whereas Content Checklist is 3:1 , 1:5 etc (Simpler examples needed ?)**	**MW- NUMBER** Topic 21 Target 2 & 3 Topic 21 Target 1 Topic 21 Target 4 task 3 and 4 Topic 21 Target 3

Unit Test 1

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 6

Block 2

			MW – Algebra and Problem Solving
Algebra 18/20 PERIODS	**Experiences & Outcomes** **MTH 3-14a** **MTH 3-15a** **MTH 4-14a** **MTH 4- 14b** **MTH 4-15a** **National 4 Outcomes** Expressions & Formulae Algebraic Skills: 1.1, 1.2, 1.3, 1.4 Relationships Algebraic Skills 1.2	**3G Chapter 7 Pg 85** Ex 1 Collecting Like terms Ex 2 Simplifying terms Ex 3 Breaking single brackets and simplifying Ex 4 Solving simple equations Ex 5 Harder equations Ex 6 Equations with brackets Ex 7 Equations with variables on both sides **4G Chapter 15 Pg 172** Ex 2 Factors Ex 3 Factorising	Topic 3 Topic 4 Topic 4 Topic 6 Topic 8, Target 1, 3-5 and Targets 2&3 Topic 9, Targets 2-4 Topic 16, Target 1, 1-2 Topic 16, Target 3, 1-4 Topic 25, Target 3, 1-4 www.math-drills.com
Areas 8/9 PERIODS	**Experiences & Outcomes** 2.11a 2.11b 2.11c 2.16a **National 4 Outcomes** Expressions and Formulae: Geometric Skills 2.2	**3G Chapter 14 p 163- 179** **Converting units of length** [Example Worksheet available in Nat. 4 folder] Ex 1 Area – miss out this exercise except with the least able Ex 2 Area of a rectangle, use this exercise to promote layout and use of formula Ex 3 Area of a RAT Ex 4 Area of any triangle Ex 5 Combined Areas **3G Extension Booklet p 71-78** Ex 2E(a) Area of a parallelogram Ex 2E(b) Area of kite and rhombus Ex 6E Area of a trapezium	**MW – Geometry and Measures** Topic 10, Target 1 (Perimeter) Topic 11, Target 1, Tgt 2, 1-2, Tgt3, 1-4 (Area) Topic 11, Target 5, 5-6 Topic 11, Target 5, 1-2 Topic 11, Target 5, 2-4 Topic 11, Target 5, 7-8 Topic 11, Target 2, 3-7 and Target 3, 5-6 Topic 2, Targets 1-3

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 7

			Topic 12, Target 1, 1-5
Circles **8 PERIODS**	**Experiences & Outcomes** 4-16b **National 4 Outcomes** Expressions and Formulae: Geometric Skills 2.1	**3G Chapter 9 Pg 100** Ex 1 The parts of a circle Ex 2 The circumference of a circle Ex 3 The circumference of a circle continued **3G Extension Booklet p 29** Ex 3E Harder circumference Ex 4E Finding the diameter given the circumference Ex 5E Area of circle Ex 6E Area of part circles	**MW – Geometry and Measures** Topic 25, Target 1 and Target 2, 1-2 Topic 25, Target 1, 3-4 Topic 25, Target 2, 3-4
Symmetry **3 PERIODS**	**Experiences & Outcomes** 3-19a **National 4 Outcomes** Expressions and Formulae: Geometric Skills 2.6	**4G Chapter 3 p 33-40** Ex 1 Lines of Symmetry Ex 2 Intro to Turn Symmetry (what type) Ex 3 Completing half turn diagram Quarter turn Symmetry **[Example Worksheet available in Nat. 4 folder]**	**MW – Geometry and Measures** Topic 3, Targets 4-5 Topic 4, Targets 1-2 Topic 4, Target 3 Topic 19, Target 3
3D Shapes **10 PERIODS**	**Experiences & Outcomes** 2.11a 2.11b 2.11c 2.16a 3.11a 3.11b **National 4 Outcomes** Expressions and Formulae: Geometric Skills 2.2, 2.3	**4G Chapter 7 p 80-86** Ex 1 Surface Area of cuboids Ex 2 Nets of Solids (Perhaps before Ex 1) Doing Ex 2 first could allow a sketch of a net to be used when calculating Surface Area **4G Extension Booklet** Ex 2E Surface Area of a Triangular Prism Ex 3E Surface Area of a Cylinder **4G Chapter 8 p89-97** Ex 1 Volumes by Counting Ex 2 Volume of a Cuboid Ex 3 Liquid volume Use 1000 cm ^{3} = 1 L, 1 l = 1000 ml **4G Extension Booklet**	**MW – Geometry and Measures** Topic 7, Target 2 Topic 12, Targets 3-5 Topic 13 target 1 and 2

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 8

		Ex 3E Volume of a Cylinder Ex 4E Volume of a Triangular Prism	
Statistics Charts and Graphs **6 PERIODS**	**Experiences & Outcomes** 3.20a 3.20b 3.21a 4.20a 4.20b 4.21a **National 4 Outcomes** Expressions and Formulae: Statistical Skills 3.1, 3.2, 3.3, 3.4, 3.5 Relationships: Statistical Outcome 4.1, 4.2	**3E Extension Booklet p53-67** Ex 2E Line of best fit Ex 5E Frequency Tables Ex 6E Range mode and median from a frequency table Ex 7E Mean from a frequency table **3E Chapter 18 p 214-217** Introductory oral exercise on likelihood Ex 1 Calculating probability	**Statistics & Probability** 6 – Scatter graphs. Target 3 12 – Frequency Tables. Target 1 12 – Frequency Tables. Target 1,2 12 – Frequency Tables. Target 3 16 – Probability. Target 1
Patterns **4 PERIODS**	**Experiences & Outcomes** **3-13a** **National 4 Outcomes** Expressions and Formulae: Algebraic Skills **1.5** **1.6**	**3G Chapter 17 p203-213** Ex 1 Simple linear patterns y=ax Ex 2 y=ax + b **3G Extension Booklet p95-97** Ex 3E Square Numbers Ex 4E Triangular Numbers **Also talk to pupils about well know patterns**	**Algebra & Problem Solving** *Nothing specific to Nat 4 level but there is 12 – Sequences 1* **Number** 10 – Powers. Square Numbers 1,2
Gradient **2 PERIODS**	**Experiences & Outcomes** **MTH 4-13 a, b, c & d** **National 4 Outcomes** Algebraic Skills 1.1	**4G Chapter 6 p 63-77** Ex 1 Gradient (in a right angle triangle) **It is important that you stress the importance of a positive and negative gradient and also that parallel lines have equal gradients.** **4G Extension Booklet** Ex 4E Gradient of lines from Coordinate	**Algebra & Problem Solving** *Nothing specific to Nat 4 level* 13 – Straight Lines 1. Target 4. *more nat 5 level than nat 4*

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 9

		Diagram. Count boxes	
Substitution 3 PERIODS	**Experiences & Outcomes** **3-15b** **National 4 Outcomes** Algebraic Skills 1.3	**4G Chapter 14 p** Ex 1 Working with expressions eg (p + q + r)² give p, q, r Ex 2 Evaluate a formula given in words Ex 3 Formulae with symbols eg P=k²r given k and r	**Algebra & Problem Solving** 8 – Formulae. Target 2,3 8 – Formulae. Target 4,5

Unit Test 2

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 10

Block 3

Pythagoras 10 PERIODS	**Experiences & Outcomes** MNU 3-06a MNU 4-06a **National 4 Outcomes** Relationships: Geometric Skills 2.1	**3G Chapter 13 p 151-162** Ex 1 Squares Ex 2 Square roots Ex 3 Proving Pythagoras (orally) Ex 4 Finding the hypotenuse Ex 5 Problems using Pythagoras Ex 6 Finding the shorter side 3G Extension Booklet p64-68 Ex 6E Problems involving the shorter side Ex 7E Distance between coordinate points Ex 8E Mixed problems	**Number** 10 – Powers. Square Numbers 1,2 10 – Powers. Square roots. **Geometry & Measure** 19 – Pythagoras. Hypotenuse 1,2 19 – Pythagoras. Shorter Side 1,2 19 – Pythagoras. Load Pythagoras Target 4
Trig 7 PERIODS	**Experiences & Outcomes** **MTH 4-16a** **National 4 Outcomes** Relationships Trigonometric Outcome: 3.1, 3.2	**3G Chapter 16 p 196-204** Ex 1 Introduction to trig Ex 2 Naming the sides and TAN Ex 3 Calculating the opposite **3G Extension Booklet p 83-89** Ex 4E SIN to find the opposite Ex 6E COS to calculate the adjacent Q1-5 **4E Chapter 13 p 157-159** Ex 4 Opposite or Adjacent. SOH CAH TOA to find angle	**Geometry & Measure** 20 – Trigonometry. Trig 1 Target 1 Target 2 Task 7,8,9 Target 3 Task 7,8,9 Target 3 Task 1,2,3 Target 3 Task 4,5,6 Target 3 Task 9,10,11 Target 2 Task 9,10,11
Properties of a Circle 6 PERIODS	**Experiences & Outcomes** **MTH 4-16b** **MTH 4-17a** **National 4 Outcomes** Relationships: Geometric Skills 2.3	**4G Chapter 12 p 134-143** Ex 2 Angle in a Semi Circle Ex 3 Applying Pythagoras to triangle in a semicircle Ex 4 Applying Trig to triangle in a semicircle 4G Ext Chapter 12 Ex 3E Ex 4E	**Geometry & Measure** 21 – Circle Geometry. Target 4 Task 1,2 *Nothing specific to Nat 4 level*

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 11

Graphical Relationships 5 PERIODS	**Experiences & Outcomes** MTH4-13a MTH4-13b MTH4-13c MTH4-13d **National 4 Outcomes** Relationships: Geometric Skills 2.1	**4G Chapter 6 p 63-77** Ex 2 Find equation y=mx from coordinates of a straight line Formula exercise Ex 4 Draw line of form y=mx from a table of values Ex 5 Draw a line of form y=mx+c from table of values	**Algebra & Problem Solving** 13 – Straight Lines 1. Target 3
Scientific Notation **6 PERIODS**	**Experiences & Outcomes** **National 4 Outcomes**	**4G Chapter 4 p43-50** Ex 1 Index notation (to the power) eg 5^3 Ex 2 Convert a large number to Scientific Ex 3 Notation (Intro) Ex 4 How to convert large numbers to **4G Extension Booklet p** Ex 4E Convert small number to Scientific Notation. And vice versa **Chapter 4 again** Ex 5 Scientific Notation (in 3.5 million) Ex 6 Changing from Scientific Notation to Number Form	**Number** 22 – Standard Form (load standard form) Target 1 Task 1 Target 1 Tasks 2-6 Target 2 Tasks 1-6 Target 1 Tasks 7-11 Target 3 Tasks 1-4

Greenfaulds High School Mathematics Dept.   Level 3, 4 and National 4

Page 12

	Experiences & Outcomes		
Scale and Enlargement 8 PERIODS	3.08a 4.08a **National 4 Outcomes** **Relationships:** **Geometric Skills** **2.2** **Numeracy:** **1.3**	**3G Chapter 5 p50-63** **Ensure pupils can read and understand unmarked scales on a measuring device.** **Pupils should be given the opportunity to measure and make their own scale models. This could be for their room or the classroom.** Ex 1 Drawing enlargements and reductions Ex 2 Using basic scales/ drawings to calculate actual sizes Ex 3 Making simple scale drawings Ex 4 Scale drawings including angles Ex 5 Using compass points 3G Extension Booklet p19-21 Ex 5E Scale factors Ex 6E Reductions too **Basic Maths books p110-111** Scale Drawing Questions involving 3 figure bearings	**Geometry & Measure** 14 – Scale Drawings. Target 2 Task 1,2 14 – Scale Drawings. Target 5 Task 5-6
Change of Subject 3 PERIODS	**Experiences & Outcomes** **3-15b** **National 4 Outcomes** Relationships: Algebraic Skills 1.3	Changing the subject worksheet [Worksheet available in Nat. 4 folder]	**Algebra & Problem Solving** 15 – Changing the subject. Target 1.

Unit Test 3

Added Value Test

Pupils will progress onto the National 5 course upon the successful completion of each of the unit tests and added value test.