

Year 9 Mathematics Extension Program 2009 – St Stephen’s School, Carramar

Teachers: Wendy Brown, David Adeline

Text: Nelson Maths for WA 9 Supplement lessons with Mathletics. (www.mathletics.com.au)

St Stephen’s Maths Website: www.mathxyc.com

Note: In addition to these assessments, the students will do brief resource free skills tests on a weekly basis.

Term 1

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
Chapter 1: Whole numbers (Number)				
Weeks 1-4	1.1 Naming, writing and comparing numbers	- Investigation: Perfect numbers - Exercise 1.1	- Chapter 1 Progress check - Additional exercise 1.1	Hand out EPW1 week 1
	1.2 Powers and roots	- Investigation: Powers with 5s and 9s - Exercise 1.2	Additional exercise 1.2	Test on EPW1 Tues 10/02 Week 2
	1.3 Scientific notation	Exercise 1.3	- Interactive tutorial 1.3: Scientific notation - Alternative method: Scientific notation 1 - Alternative method: Scientific notation 2 - Additional exercise 1.3	Test 1 Ch 1 Tues 24/2 Week 4

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	1.4 Using whole numbers	Exercise 1.4	- Interactive tutorial 1.4a: Addition - Interactive tutorial 1.4b: Subtraction - Interactive tutorial 1.4c: Multiplication - Interactive tutorial 1.4d: Division - Alternative method: Division - TLF L82 The multiplier: Make your own multiplications - Additional exercise 1.4	
	1.5 Order of operations	Exercise 1.5	- Interactive tutorial 1.5: Order of operations - Additional exercise 1.5	
	1.6 Approximation methods	- Investigation: Fermi problems - Exercise 1.6	- Interactive tutorial 1.6: Leading digit calculation - Additional exercise 1.6	
	1.7 Operations with integers	Exercise 1.7	- Teacher notes: Addition and subtraction - Teacher notes: Multiplication and division - TLF L585 Integer cruncher: Add/sub - Additional exercise 1.7	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	Revision and consolidation	- Chapter 1 summary - Chapter 1 review - Project: Prime numbers		
Chapter 2: Rules and functions (Algebra)				
Weeks 4-7	2.1 Patterns and variables	Exercise 2.1	- TLF L1924 Bridge builder: Quadrilaterals - TLF L1926 Bridge builder: Complex pentagons - TLF L1936 Circus towers: Triang. towers - TLF L1939 Circus towers: Square pyramids - Additional exercise 2.1	Test 2 Ch 2 17/3 Week 7
	2.2 Expressions	Exercise 2.2	Additional exercise 2.2	
	2.3 Functions	- Investigation: What rule? - Exercise 2.3	- Interactive tutorial 2.3: Function – inputs and outputs - Additional exercise 2.3	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	2.4 Graphing linear functions	- Technology: Drawing graphs with Excel - Technology: Drawing graphs with Casio ClassPad 330 - Exercise 2.4	- Spreadsheet: Drawing graphs - Additional exercise 2.4	
	2.5 Gradient	Exercise 2.5	- Interactive tutorial 2.5: Gradient - Additional exercise 2.5	
	2.6 Non-linear functions	Exercise 2.6	- TLF L759 Filling glasses: Graphing and comparing - TLF L761 Filling glasses: Create the right glass - TLF 760 Filling glasses: Create the right graph - Additional exercise 2.6	
	Revision and consolidation	- Chapter 2 summary - Chapter 2 review - Project: Patterns		
Chapter 3: Geometry of shapes (Space)				
Weeks 7-10	3.1 Plane shapes	Exercise 3.1	Additional exercise 3.1	Test 3 Ch 3 07/04 Week 10

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	3.2 Similarity and scale drawings	Exercise 3.2	- Interactive tutorial 3.2: Similar triangles - TLF L2309 Measures: Similar shapes - TLF L2326 Trigonometry: Measuring with triangles - Additional exercise 3.2	
	3.3 Congruence	- Investigation: Congruent triangles - Exercise 3.3	Additional exercise 3.3	
	3.4 Circles and ellipses	- Investigation: Eccentricity - Investigation: In-circles and circumcircles - Exercise 3.4	- Spreadsheet: Eccentricity - Teacher notes: Constructions 1 - Additional exercise 3.4	
	3.5 Three-dimensional shapes and nets	- Investigation: Cross-sections - Exercise 3.5	- TLF L588 Shape maker: Stacker - TLF L1059 Shape maker: Replicator - Additional exercise 3.5	
	3.6 Transformations	Exercise 3.6	Additional exercise 3.6	
	3.7 Symmetry and tessellations	- Investigation: Creating tessellations - Exercise 3.7	- TLF L7798 Finding symmetry: 3 lines: garden - Additional exercise 3.7	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	Revision and consolidation	- Chapter 3 summary - Chapter 3 review		Mark Journals week 9/10

Term 2

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
Chapter 4: Fractions and decimals (Number)				
Weeks 1-3	4.1 Comparing fractions and decimals	- Investigation: Fraction estimations - Exercise 4.1	- Interactive tutorial 4.1a: Mixed fractions - Interactive tutorial 4.1b: Improper fractions - TLF L1082 Decimaster Collections: match-up 2 - TLF L2800 Fraction fiddle: Tool - TLF L135 Shape fractions - Additional exercise 4.1	Test 4 Ch 4 12/05 Week 3 Hand out EPW2 week 4 Test on EPW2 thurs 28/05 week 5
	4.2 Adding and subtracting fractions and decimals	Exercise 4.2	- Interactive tutorial 4.2a: Fraction addition - Interactive tutorial 4.2b: Fraction subtraction - Alternative method: Fraction subtraction - TLF L2806 Fraction fiddle: Reach the target - Additional exercise 4.2	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	4.3 Multiplying and dividing fractions and decimals	Exercise 4.3	- Interactive tutorial 4.3a: Decimal multiplication - Interactive tutorial 4.3b:Decimal division - Teacher notes: Multiplication of fractions - Interactive tutorial 4.3c:Fraction multiplication - Alternative method: Fraction multiplication - Teacher notes: Division of fractions - Interactive tutorial 4.3d: Fraction division - Alternative method: Fraction division - Additional exercise 4.3	
	4.4 Mixed operations and approximations	Exercise 4.4	Additional exercise 4.4	
	Revision and consolidation	- Chapter 4 summary - Chapter 4 review - Project: Fractominoes	Teacher notes: Fractominoes	
Chapter 5: Linear measurement (Measurement & Space)				
Weeks 3-7	5.1 Measuring length	Exercise 5.1	Additional exercise 5.1	Test 5 Ch 5 09/06 Week 7

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	5.2 Pythagoras's rule	- Investigation: Pythagoras's rule - Technology: Pythagoras's rule with Casio ClassPad 330 - Exercise 5.2	- Teacher notes: Proof of Pythagoras's theorem - Teacher notes: Pythagorean triples (triads) - Additional exercise 5.2	
	5.3 Perimeter	- Investigation: Variations of squares and rectangles - Exercise 5.3	- Interactive tutorial 5.3: Perimeter - Additional exercise 5.3	
	5.4 Circumference	- Investigation: Measuring circumference - Exercise 5.4	- Interactive tutorial 5.3: Perimeter of a sector - Additional exercise 5.4	
	5.5 Perimeters of combined shapes	Exercise 5.5	Additional exercise 5.5	
	5.6 Measuring mass	Exercise 5.6	- Interactive tutorial 5.6: Mass conversion - Additional exercise 5.6	
	5.7 Time intervals	- Investigation: Wait a minute - Exercise 5.7	- Interactive tutorial 5.7: Time intervals - TLF L1112 Journey planner: Quickest route 4 - TLF L347 Rainforest: Book a flight - Additional exercise 5.7	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	5.8 Time zones	Exercise 5.8	- TLF L696Earth rotation: Night and day - Additional exercise 5.8	
	Revision and consolidation	- Chapter 5 summary - Chapter 5 review - Project: Constructions and designs	- Teacher notes: Constructions 2 - Alternative method: Regular polygons	
Chapter 6: Algebraic expressions (Algebra & Space)				
Weeks 7-10	6.1 Index notation	- Investigation: Binary numbers - Exercise 6.1	Additional exercise 6.1	Test 6 Ch 6 30/06 Week 10
	6.2 Algebra skills—simplifying expressions	Exercise 6.2	- Teacher notes: Algebra skills - Interactive tutorial 6.2: Simplifying - Additional exercise 6.2	
	6.3 The distributive law	- Investigation: The distributive law - Exercise 6.3	- Interactive tutorial 6.3: The distributive law (expansion) - Additional exercise 6.3	
	6.4 Common factors	Exercise 6.4	- Interactive tutorial 6.4: Highest common factor - Additional exercise 6.4	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	6.5 Multiplying binomials	- Investigation: Binomial products - Exercise 6.5	Additional exercise 6.5	Mark Journals week 9/10
	Revision and consolidation	Chapter 6 review		

Term 3

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
Chapter 7: Chance and data				
Weeks 1-4	7.1 Collecting and displaying data	- Technology: Scatter plot - Investigation: Favourite flavours - Exercise 7.1	- Interactive tutorial 7.1a: Circle graphs - Alternative method: Circle graphs - Interactive tutorial 7.1b: Stem and leaf plots - Teacher notes: Histograms and polygons - Spreadsheet: Scatter plot - TLF L3161 Healthy life survey: Lunchtime activities - TLF L3157 Leisure survey: Artistic activities - Additional exercise 7.1	Hand out EPW3 week 2 Test on EPW3 Tues 04/08 week 3 Test 7 Ch 7 Tues 18/08 Week 5
	7.2 Using data measures	Exercise 7.2	- Interactive tutorial 7.2a: Mean - Interactive tutorial 7.2b: Cumulative frequency - Additional exercise 7.2	
	7.3 Data variation and relationships	Exercise 7.3	- TLF L5858 Scatter plots: About scatter plots - TLF L5862 Scatter plots: Create your own data - Additional exercise 7.3	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	7.4 Experimental probability	- Investigation: Card hands - Exercise 7.4	- TLF L2382 Mystery spinner - TLF L3673 Dice duals: Find the bias - TLF L2635 Dice duals: Fair or unfair - Additional exercise 7.4	
	7.5 Theoretical probability	- Investigation: Comparing probabilities Technology: Casio ClassPad 330 simulation - Exercise 7.5	- Teacher notes: Theoretical probability - Interactive tutorial 7.5: Theoretical probability - TLF L2640 Dice duals: Airport subtraction - TLF L2637 Dice duals: Bike race - TLF L2639 Dice duals: Lucky 16 game - Additional exercise 7.5	
	7.6 Combined probabilities	Exercise 7.6	- Interactive tutorial 7.6: Probability tree diagrams - Additional exercise 7.6	
	Revision and consolidation	- Chapter 7 summary - Chapter 7 review - Project: Bean sprouts	Teacher notes: Wall chart	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
Chapter 8: Ratio and proportion (Number & Space)				
Weeks 4-7	8.1 Rates	Exercise 8.1	- Teacher notes: Triangle method - TLF L1933 School canteen: Two traders: Level 2 - TLF L1934 School canteen: Estimate and check: Level 2 - Additional exercise 8.1	Test 8 Ch 8 01/09 Week 7
	8.2 Ratios	- Technology: The zoom mode for maps - Investigation: Newspaper ratios - Exercise 8.2	- Interactive tutorial 8.2: Ratio - Additional exercise 8.2	
	8.3 Direct proportion	Exercise 8.3	- Interactive tutorial 8.3: Direct proportion - TLF L1996 Squirt: Three containers: Complex proportional relationships - Additional exercise 8.3	
	8.4 Inverse proportion	- Technology: Inverse proportion using a spreadsheet - Exercise 8.4	- Interactive tutorial 8.3: Inverse proportion - Spreadsheet: Inverse proportion - Additional exercise 8.4	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	Revision and consolidation	- Chapter 8 summary - Chapter 8 review - Project: Golden ratio		
Chapter 9: Areas and volumes (Measurement)				
Weeks 7-9	9.1 Area	- Investigation: Area conversion - Exercise 9.1	- Teacher notes: Area rules - Interactive tutorial 9.1: Area - TLF L153 Compound shapes - TLF L2310 Measures: Scaling up - TLF L145 Area of triangles - Additional exercise 9.1	Test 9 Ch 9 17/09 Week 9
	9.2 Surface area	- Technology: Casio ClassPad 330 and the surface area of a cylinder - Exercise 9.2	- Interactive tutorial 9.2: Surface area - TLF L2315 Measures: Scaling surface areas - Additional exercise 9.2	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	9.3 Volume and capacity	- Investigation: Capacities of common containers - Exercise 9.3	- Teacher notes: Volume formulas - Interactive tutorial 9.3: Volume - TLF L163 How big is a cubic metre - TLF L167 Working it out! - TLF L166 What's in a cube - TLF L2314 Measures: Scaling down solids - Additional exercise 9.3	Mark Journals week 9/10
	Revision and consolidation	- Chapter 9 summary - Chapter 9 review		

Term 4

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
Chapter 10: Equations (Algebra)				
Weeks 1-3	10.1 Equations and solutions	Exercise 10.1	Additional exercise 10.1	Hand out EPW4 week 1
	10.2 Graphing	- Technology: Solving equations - Technology: Graphing with Casio ClassPad 330 - Exercise 10.2	- Spreadsheet: Solving equations - Additional exercise 10.2	Test on EPW4 Tues 20/10 week 2
	10.3 Backtracking and inverse operations	Exercise 10.3	- Interactive tutorial 10.3: Solving equations by using inverse operations - Additional exercise 10.3	Test 10 Ch 10 Thurs 29/10 Week 3
	10.4 Solving more complex equations	Exercise 10.4	- Interactive tutorial 10.4: Solving equations that involve fractions - Additional exercise 10.4	
	10.5 Solving word equations	Exercise 10.5	- Teacher notes: Modelling and problem solving - Interactive tutorial 10.5: Solving equations that involve worded problems - Additional exercise 10.5	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	Revision and consolidation	- Chapter 10 summary - Chapter 10 review - Project: Areas on dot paper	Teacher notes: Dot paper	
Chapter 11: Money and percentage (Number)				
Weeks 3-6	11.1 Personal accounts	- Investigation: Mobile phone costs - Exercise 11.1	- Interactive tutorial 11.1: Electricity bills - Additional exercise 11.1	Test 11 Ch 11 17/11 Week 6
	11.2 Percentages	Exercise 11.2	- Alternative method: Percentage used - Alternative method: Percentage of - Interactive tutorial 11.2: Percentage of - Alternative method: Percentage application 1 - Alternative method: Percentage application 2 - Alternative method: Percentage application 3 - TLF L133 Playground percentages - Additional exercise 11.2	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	11.3 Business percentages	Exercise 11.3	- Interactive tutorial 11.3: Percentage profit - Alternative method: Business applications 1 - Alternative method: Business applications 2 - Additional exercise 11.3	
	11.4 Interest and loans	- Exercise 11.4 - Technology: Flat-rate loans	- Teacher notes: Interest - Interactive tutorial 11.4:Loan repayments - Spreadsheet: Flat-rate loans - Additional exercise 11.4	
	Revision and consolidation	- Chapter 11 summary - Chapter 11 review - Project: Flat budget		
Chapter 12: Geometry of angles and sides (Space)				
Weeks 6-8	Assessment of prior learning		Chapter 12 Progress check	
	12.1 Measuring, classifying and drawing angles	Exercise 12.1	- Teacher notes: Geometric constructions - Additional exercise 12.1	

Weeks	Contents	Text Resources	CD-ROM Resources	Assessments
	12.2 Angles at a point and on lines	Exercise 12.2	Additional exercise 12.2	
	12.3 Angles in triangles and quadrilaterals	Exercise 12.3	- Interactive tutorial 12.3: Finding angles with reasoning - Additional exercise 12.3	
	12.4 Angles on parallel lines	Exercise 12.4	Additional exercise 12.4	
	12.5 The tangent ratio	Exercise 12.5	- Interactive tutorial 12.3: Using tan to solve sides of a triangle - TLF L2331 Trigonometry: Using tangent - Additional exercise 12.5	
	Revision and consolidation	- Chapter 12 summary - Chapter 12 review		