VCE Vocational Major Numeracy EP Curriculum Map

The Six Numeracies

Content Descriptor	EP Lessons in 1. Personal numeracy
Personal numeracy relates to the mathematical requirements for personal organisational matters involving numbers, data, money, time and travel. Personal numeracy relates to understanding, using and interpreting numerical and mathematical information presented and embedded in different formats and media, to undertake personally relevant activities in familiar, routine and some less familiar situations. The understanding, use and interpretation of personal numeracy can be drawn from, but is not limited to, the following examples: • numerical information embedded in print and digital media, including monetary values • planning a family or cultural event, such as trips to sites of cultural significance, or a BBQ • personal and home/family day-to-day tasks such as cooking, gardening, sport, travel • planning a class excursion or event including costs and logistics • shopping and savings related activities such as comparing prices with different percentage discounts, or using and calculating unit prices.	• Timetables and Transport *1. Numerical information in the media* • Misleading Data and Graphs • Evaluating Statistical Reports and Claims: Data Reporting
Content Descriptor	**EP Lessons in 2. Civic numeracy**
Civic numeracy relates to participating in civic life through knowing how to stay informed, and understanding government, political and social data, information and processes. Civic numeracy includes understanding, interpreting and reviewing statistical and quantitative information presented by governments and in news and media reports, and other data-related sources to meet the demands and challenges of life at local, state, national and global levels. It can incorporate the understanding, use and interpretation of quantitative and statistical information. The understanding, use and interpretation of civic numeracy can be drawn from, but is not limited to, the following examples: • political or government-related information, including advertising, elections and voting • local environmental issues from multiple perspectives including First Nations peoples' perspectives, such as land management, fire management, waterways, wildlife • local community social and environmental issues such as climate change, human rights, animal rights, cultural sites • managing personal and social responsibilities and obligations • basic economic data including unemployment rates, underemployment, participation rates, inflation and official interest rates.	• Application: Town Planning • Applying Government Benefits: The Life of Matilda • Indigenous Australian Mathematics and Science • Map Projections: A Matter of Perspective

Content Descriptor	EP Lessons in 3. Financial numeracy	
Financial numeracy relates to understanding and undertaking financial transactions and making informed judgments and decisions regarding the use and management of money. Financial numeracy involves managing relevant personal, social or work-related financial costs, charges, income and expenditure. The understanding, use and interpretation of financial numeracy can be drawn from, but is not limited to, the following examples: • personal money management such as banking, monitoring debit and credit transactions, and keeping track of money • online financial services such as mobile banking, Medicare and MyGov services • occupational income and expenses, penalty rates, sales-based commissions • government financial systems such as taxation, GST, student loans, superannuation and Medicare • calculations for allowances, such as travel, uniform and vehicle use • utility and other relevant personal or family bills and charges, and comparing providers • personal loans such as car loans, payday loans, buy now pay later services and store credit, use of online interest calculators • making informed decisions about credit, including interest, minimum repayments, frequency of repayments, transacting safely online and via apps, and avoiding scams • short- and long-term costs of purchases on oneself, family or communities, and the planet, for example interpreting special deals, or buying new versus second-hand.	*1. Money* • Australian Money • International Money • Converting Between Dollars and Cents • Shopping • Count the Change • Calculating Change • Exchange Rates Applications of Mathematics • Cryptocurrency *2. Unit Pricing and Best Buys* • Cost per Item • Best Buys Using Unit Costs • When a Best Buy isn't the Best Option *3. Income* • Salaries and Wages • Commission • Piecework • Royalties • Timesheets • Overtime, Special Rates and Allowances • Government Benefits and Allowances • Alternative Sources of Income • Income in Retirement *4. Tax* • Goods and Services Tax • Income Tax • Value Added Tax	*5. Budgeting* • Introduction to Budgets • Making a Budget • Saving for Retirement • Review: Budgeting Skill Enrichment • Budgeting: Preparing a Personal Budget *6. Simple Interest* • Introduction to Interest • Calculating Simple Interest • Rearranging the Simple Interest Formula *7. Compound Interest* • Compound Interest Basic Formula • Rearranging the Compound Interest Formula • Compound Interest - Months and Weeks • Rearranging Compound Interest - Months and Weeks • Depreciation *8. Saving and Investing* • Term Deposits • Mortgages • Shares Skill Enrichment • Investing: Youtube Windfall **(list continues over the page)**

	9. Inflation • Inflation and Purchasing Power Applications of Mathematics • Hyperinflation: The Ever-Expanding Topic *10. Business Finances* • Profit and Loss • Calculating Profit and Loss • Discounts • Calculating Discounts *11. Annuities* • Credit Cards • Annuities • Reducing Balance Loans • Effective Rate of Interest • Modelling Annuities & Loans Using Spreadsheets *12. Financial Literacy* • Achieving Different Types of Financial Goals • Activity: Creating a Budget • Activity: Planning for a Financial Goal • Advantages and Disadvantages of Payment Methods • Comparing Methods of Payment • Comparing Rates, Fees and Rewards • Customer Loyalty and Incentive Programs	• Determining the Best Option • Exchange Rates • Factors that Influence Financial Decisions • Factors that Influence Reaching Financial Goals • Finance Charges • Financial Situations and Decisions • Interest Rates and Fees • Meeting Long-term Financial Goals • Overall Cost • Planning for a Financial Goal • Researching Financial Information • Trading, Donating, Borrowing and Lending • Using Digital Tools

Content Descriptor	EP Lessons in **4. Health numeracy**
Health numeracy relates to accessing, understanding and using mathematical information to make decisions and act in the interests of personal and community health and well-being. Health numeracy involves being able to use mathematics to manage one's own health, safety and well-being, alongside being aware of such issues from a community or work-related perspective. The understanding, use and interpretation of health numeracy can be drawn from, but is not limited to, the following examples: • nutrition or fitness, including setting goals and understanding issues such as the relationships between lifestyle and disease • social health issues such as drinking, safe driving, obesity, drugs • health and safety at work such as accident types, rates and causes, audits of workplace chemicals and comparison with home-based chemicals • medical information within a hospital/doctor setting such as typical blood pressure, heart rate, respiration rate, body temperature • publicly available medical and health information and advice, for example in relation to maintaining a healthy and safe lifestyle including healthy eating/diet, exercise or diseases and pandemics • personal medical care, such as the use and dosages of medications, including scheduling • health and safety matters related to potential accidents and use of chemicals • health care costs, including Medicare rebates and surcharge, comparing and using private health insurance.	• GPS and Other Data in Sport • Matching Malaria with Mathematics • Unfortunate Events
Content Descriptor	**EP Lessons in 5. Vocational numeracy**
Vocational numeracy relates to effectively participating in the workplace and managing the demands of work and/or vocational training. Vocational or work-related numeracy includes the undertaking the required tasks and activities in a work-related context, such as using different workplace measurements, tools, applications and processes/systems, following and giving directions, participating in quality assurance processes and data collection, and reading workplace documents and information. The understanding, use and interpretation of vocational numeracy can be drawn from, but is not limited to, the following examples: • workforce comparisons from past practice (pre-digital) to current (digital), including time to complete tasks and effort involved • reading, following or creating instructions and documents related to workplace tasks such as phone numbers, proportions and rates to mix chemicals or for handling hazardous chemicals or substances, including interpreting Materials Safety Data Sheets (MSDS) • occupational health and safety or quality assurance requirements • workplace specific plans, diagrams, formulas, proportions and rates • different technological, digital or analogue measuring and processing devices, tools and applications • tolerances and levels of accuracy and the implications of incorrect applications or mixing of chemicals.	• Supply Chains

Content Descriptor	EP Lessons in **6. Recreational numeracy**
Recreational numeracy relates to the mathematical aspects of recreational activities including but not limited to arts, sport and social media. Recreational numeracy encompasses not only physical exercise and sport, but also aspects of personal time spent on non-work activities such as indoor and outdoor pursuits, arts, social media, and interests such as gaming. It also covers community, cultural or religious activities. The understanding, use and interpretation of recreational numeracy can be drawn from, but is not limited to, the following examples: ● the planning of an activity or event including costings, steps and processes ● comparison of planning and costs of different party venues and events, such as for a birthday party or cultural celebration ● traditional and modern games including games played by First Nations peoples and other cultural groups across different regions of Australia ● dimensions and specifications of playing or community recreation areas, such as the size of a netball court, chessboard, or multipurpose court ● dimensions and specifications of art and craft products being planned or created, such as photo sizes, dresses/costumes, furniture ● rules and game scoring systems and formulas, penalties, fines, timing ● use and overuse of recreational activities and associated dangers.	*Planning a Party* ● Planning a Party ● Planning a Party Student Worksheet ● Planning a Party Teacher Guide

Unit 1

Area of Study 1: Number

Content Descriptor	EP Lessons in Area of Study 1: Number	
Key knowledge • whole numbers and decimals up to two places • place value and reading numbers expressed in digits or words • multiplication facts and knowledge of factors and multiples • rounding whole numbers and decimals up to two places • order of operations • common fractions and percentages, and their equivalence such as ¼ = 0.25 = 25% • simple proportions. ***Key skills*** • demonstrate an understanding of reading numbers, place value and decimal place value, including rounding to two decimal places • use the order of operations to solve a range of practical calculations with whole numbers and common decimals and fractions • solve problems involving common fractions and decimals, for example half, quarter, third, fifth and equivalent decimals • calculate common percentages of numbers, and increase and decrease numbers by common percentages • use simple proportions and divide quantities by a simple ratio such as 1 to 2.	**1. Whole number operations** • Addition • Subtraction • Applying Addition and Subtraction • Column Multiplication • Multiplication Using Rounding and Compensation • Short Division - Without Remainders • Short Division - With Whole Number Remainders • Short Division - With Decimal Remainders • Applying Multiplication and Division **2. Decimals** • How Decimals Work • Adding Decimals • Subtracting Decimals • Multiplying Decimals • Dividing Decimals *Online Worksheets* • Mixed Practice: Decimals • Practice: Adding Decimals • Practice: Dividing Decimals • Practice: Multiplying Decimals • Practice: Rounding Decimals • Practice: Subtracting Decimals **3. Place value and reading numbers** • Place Values • Numbers in Written Form	**4. Factors and Multiples** • Multiples • Applications of Multiples • Division in Parts • Factors • Identifying Factors • Multiplication Using Place Value • Multiplying Big Numbers **5. Rounding** • Rounding Decimals • Rounding to Decimal Places • Rounding Negative Numbers • Rounding Based on Given Values • Rounding Sensibly **6. Order of Operations** • The Order of Operations • Preserving the Order of Operations • 30 Order of Operations Questions **7. Percentages** • Introduction to Percentages • Using Percentages • Discounts • Calculating Percentage Discounts • Percentages and Populations • Percentages and Money **(list continues over the page)**

	Online Worksheets • Mixed Practice: Percentages • Practice: Calculating Percentage Discounts • Practice: Discounts • Practice: Percentages and Money • Practice: Percentages and Populations	**8. Fractions, decimals and percentages** • Percentages, Decimals and Fractions • Converting Between Percentages and Fractions • Converting Percentages to Fractions • Percentages and Decimals **9. Ratios** • Ratios

Area of Study 2: Shape

Content Descriptor	EP Lessons in Area of Study 2: Shape	
Key knowledge • properties and names of two-dimensional shapes and everyday familiar three-dimensional objects such as regular prisms, for example boxes and cylinders • simple reflection, rotation and symmetry in relation to everyday familiar shapes • patterns in, and between, everyday and familiar shapes • appropriate technologies that create and manipulate simple two-dimensional shapes • simple scaling in relation to enlargement and reduction such as in plans, diagrams and photographs. ***Key skills*** • describe and classify common and familiar two- and three-dimensional shapes, including the use of appropriate technology • demonstrate an understanding of reflection, rotation and symmetry of simple familiar shapes • create common and familiar two- and three-dimensional shapes and describe the relationship between these, including through the use of technology • determine and name patterns of common and familiar shapes such as those found in engineering, architecture and design, for example bridges, buildings, sculptures.	**1. Two dimensional shapes** • 2D Shapes • Identifying Polygons • Irregular Polygons • Composite Shapes **2. Three dimensional shapes** • Introduction to Solids • Prisms • 3D Solids • Nets of Prisms • Drawing Prisms • Pyramids • Nets of Pyramids • Drawing Pyramids • Curved Solids **3. Reflection, rotation and symmetry** • Rotation Introduction • Line Symmetry • Rotational Symmetry • Rotation on Cartesian Planes • Reflection • Reflection on Cartesian Planes	• Translation • Translation on Cartesian Planes *Online Worksheets* • Mixed Practice: Transformations • Practice: Reflection • Practice: Rotation • Practice: Symmetry • Practice: Translation • Reflections Practice • Rotation Practice • Translation Practice **4. Scaling** • Introduction to Scaling and Enlargement • Scale Factors • Scale Models • Introduction to Scale Drawings • Maps and Scales • Applying Scale Factors to Objects • Plan and Elevation Views • Construction Plans

Area of Study 3: Quantity and measures

Content Descriptor	EP Lessons in Area of Study 3: Quantity and measures	
Key knowledge • common and familiar measures of distance, perimeter, area, volume and capacity (for simple rectangular based shapes only) • common and familiar metric units of measurement and conversion between metric units • common units of time and temperature • common measurement estimation strategies • common measurement tools • appropriate accuracy in measurements. ***Key skills*** • estimate and measure familiar objects and distances by using measurement tools • undertake common calculations to determine measurements of distance, perimeter, area, volume and capacity, related to common two-dimensional shapes and three-dimensional objects, using common units of measurement • convert with one-step calculations between common units of metric measurement such as millimetres, centimetres, metres, kilometres, grams, kilograms, millilitres, litres, and degrees Celsius • read and interpret units of analogue and digital time and temperature • perform simple calculations using units of time, including calendar months, weeks, days, hours, minutes, and seconds.	**1. Units of measurement** • Units of Measurement • Unit Prefixes • Units of Length • Units of Area • Units of Volume • Units of Capacity **2. Conversion between metric units** • Method for Converting Units of Length • Comparing Units of Length • Converting Units of Length • Converting Units of Capacity **3. Estimation** • Estimating Measurements **4. Perimeter** • Perimeter • Calculating the Perimeter of a Shape with an Unknown Side • Perimeter of Composite Shapes • Perimeter, Composite Shapes and Unknown Sides *Online Worksheets* • Mixed Practice: Length • Practice: Perimeter • Practice: Perimeter of Composite Shapes **5. Area** • Area of Triangles • Area of Rectangles & Squares • Area of Composite Shapes	*Online Worksheets* • Mixed Practice: Area • Practice: Area of Composite Shapes • Practice: Area of Rectangles & Squares • Practice: Area of Triangles **6. Volume** • Rectangular Prisms • Volume of Composite Shapes *Online Worksheets* • Mixed Practice: Volume • Practice: Volume of Composite Shapes • Practice: Volume of Rectangular Prisms **7. Time** • Duration • Using Multiple Timetables • Timelines • Time Zones • Recording Time • Introduction to Analog Clocks • Reading Analog Clocks • 12-Hour Time • 24-Hour Time • Converting 12- and 24-Hour Time • Personal Timetables • Reading Timetables

Area of Study 4: Relationships

Content Descriptor	EP Lessons in Area of Study 4: Relationships	
Key knowledge common and familiar relationships such as rates of change, $/m, km/hr simple, common and familiar algebraic formulae, relationships and algebraic expressions such as for the area and perimeter of a rectangle, and cost per hour standard conventions used in the development, use and writing of simple, everyday algebraic relationships representation and visualisation of change such as tables, simple charts or graphs. ***Key skills*** recognise and represent relationships with simple mathematical expressions, or simple pictorial or graphical representations demonstrate simple algebraic substitution with simple formulae to find solutions to everyday problems use and apply rates in familiar situations such as $/m, km/hr apply simple formulae to find solutions to everyday problems such as area, amounts or costings.	**1. Rates of change** • Rates • Rates of Change • Analysing Rates of Change • Ratios • Applying Ratios and Rates *Online Worksheets* • Mixed Practice: Ratios and Rates • Practice: Applying Rates and Ratios • Practice: Rates • Practice: Rates of Change • Practice: Ratios **2. Formulas and substitution** • Finding Formulas • Using Formulas • Substitution in Algebraic Expressions • Evaluating Algebraic Expressions • Translating Between Situations and Algebraic Expressions **3. Rates in familiar situations** • Salaries and Wages • Speed • Plotting and Reading Travel Graphs • Analysing Travel Graphs	

Unit 2

Area of Study 5: Dimension and direction

Content Descriptor	EP Lessons in Area of Study 5: Dimension and direction
Key knowledge • location and direction in relation to everyday, familiar objects and landmarks • location and direction in relation to everyday, familiar maps and technologies • everyday, familiar oral and written instructions for moving to specified locations • everyday angles such as 45, 90, 180 and 360 degrees. ***Key skills*** • find and locate places of interest on maps and describe location in relation to other objects and landmarks using appropriate maps or technology • determine and give or follow everyday straightforward instructions to move between familiar locations • identify everyday compass directions such as N, S, W, E, NE, SE • identify and demonstrate an understanding of everyday angles such as 45, 90, 180 and 360 degrees • understand where an object is in space using one-, two- and three-dimensions and everyday familiar language such as up, down, left, right, in front, behind to describe position and location in space.	**1. Locations** • Locations • Describing Routes Using Landmarks • Scales and Locations on Maps **2. Giving and following directions** • Directional Language • Following Directions • Giving and Following Directions **3. Compass directions** • Compass Points • Navigating by Compass • Using Compasses and Scales • Describing Routes **4. Angles** • Common Angles • Types of Angles • Measuring Angles

Area of Study 6: Data

Content Descriptor	EP Lessons in Area of Study 6: Data	
Key knowledge • simple data collection tools and processes • display of data with commonly used tables and graphs, including use of axes and simple scales • simple measures of spread, such as range and mean • interpretation and description of familiar and simple data sets and their displays. ***Key skills*** • collect, collate and organise familiar and simple data sets, and display these choosing and using the most appropriate format, including axes and simple scales • choose and find simple common measures of spread for contextual data sets, for example mean, and range of data • identify key facts from tables and graphs • read and interpret results from familiar and simple data presented in both graph and table form, including describing general patterns and trends.	**1. Simple data collection** • Introduction to Types of Data • Analysing Numerical Data • Collecting Data: Primary and Secondary • Surveys **2. Displaying Data** • Displaying Data • Dot Plots and Column (Bar) Graphs • Line Graphs • Introduction to Stem and Leaf Plots • Pie Charts and Divided Bar Graphs • Histograms • Finding Measures of Centre and Spread in Data Displays • Outliers • Pick Your Display Method **3. Mean, Median and Range** • Mean • The Median • Mode • Comparing Measures of Centre • The Range • Calculating Measures of Centre and Spread **4. Analysing Data** • Frequency Tables and the Mean • Frequency Tables, Median and Mode • Frequency Tables with Grouped Data • Clusters and Outliers • Samples and Populations	**5. Comparing Data** • Comparing Data Sets • Back-to-Back Stem and Leaf Plots • Comparing Dot Plots • Comparing Histograms *Online Worksheets* • Mixed Practice: Comparing Data • Practice: Back-to-Back Stem and Leaf Plots • Practice: Comparing Data Sets • Practice: Comparing Dot Plots • Practice: Comparing Histograms

Area of Study 7: Uncertainty

Content Descriptor	EP Lessons in Area of Study 7: Uncertainty
Key knowledge • likelihood of common and familiar events or occurrences happening • common and familiar language of chance and its relationship to common numerical values associated with chance, such as 'even chance' = 0.5 or 50% • simple and familiar unconditional probability events with randomness and chance • simple inferencing from likelihood estimates to inform decision making in relation to common and familiar events such as rolling dice, or spinners. ***Key skills*** • estimate and identify likelihood of common and familiar events occurring using simple fractions, decimals or percentages such as 1⁄2, 1⁄3, 1⁄5, 0.5, 50% • identify sample spaces or options for common and familiar events or occurrences • recognise that the likelihood of events occurring can differ, and develop an understanding of how to reduce or increase the likelihood of an event occurring.	• Introduction to Likelihood • Calculating Probability • Experimental Probability • The Likelihood Scale • Likelihood of Events • Introduction to Probability • Comparing Probabilities • Probability Terminology • Probability as a Fraction • Probability as a Decimal and a Percentage • Types of Probability

Unit 3

Area of Study 1: Number

Content Descriptor	EP Lessons in Area of Study 1: Number	
Key knowledge • whole numbers, fractions, decimals up to three places, and reading numbers expressed in digits or words • multiplication facts and knowledge of factors and multiples • rounding whole numbers and decimals up to three decimal places • positive and negative numbers • powers up to an index of three and square roots • equivalence of decimals, fractions and percentages • simple proportions and ratios. ***Key skills*** • fluently read very large and very small numbers • solve a range of practical calculations including positive and negative numbers, including rounding whole numbers and decimals up to three places • solve problems involving fractions, decimals and percentages, including calculating percentage increase and decrease • solve problems involving powers and square roots • solve simple problems with ratio and proportions.	**1. Whole number operations** • Addition • Subtraction • Applying Addition and Subtraction • Column Multiplication • Multiplication Using Rounding and Compensation • Short Division - Without Remainders • Short Division - With Whole Number Remainders • Short Division - With Decimal Remainders • Applying Multiplication and Division **2. Place value and reading numbers** • Numbers in Written Form • Place Values **3. Fractions** *1. Introduction to Fractions* • Fraction Basics • Equivalent Fractions • Mixed Numbers • Fraction Walls • Fractions and Number Lines *2. Adding Fractions* • Adding Fractions with the Same Denominator • Adding Mixed Fractions with the Same Denominator • Adding Fractions with a Different Denominator	*3. Subtracting Fractions* • Subtracting Fractions with the Same Denominator • Subtracting Fractions with a Different Denominator • Subtracting Mixed Fractions with the Same Denominator • Subtracting Mixed Fractions with a Different Denominator *4. Multiplying and Dividing Fractions* • Multiplying Fractions Numerically • Multiplying Fractions Using Models • Dividing Fractions • Dividing Fractions by Simplifying *5. Comparing and Using Fractions* • Comparing Fractions • Comparing Fractions with the Same Denominator • Using Fractions - Food • Using Fractions - Money • Using Fractions - Space *Online Worksheets* • Adding Fractions with the Same Denominator • Mixed Fractions • Mixed Skills • Practice: Adding Fractions with a Different Denominator **(list continues over the page)**

- Practice: Comparing Fractions as Decimals
- Practice: Comparing Fractions with the Same Denominator
- Practice: Dividing Fractions
- Practice: Fractions and Food
- Practice: Fractions and Shopping
- Practice: Fractions and the Cosmos
- Practice: Introduction to Fractions
- Practice: Multiplying Fractions
- Practice: Subtracting Fractions with a Different Denominator
- Practice: Subtracting Fractions with the Same Denominator
- Practice: Subtracting Mixed Numbers with a Different Denominator

4. Decimals

- How Decimals Work
- Adding Decimals
- Subtracting Decimals
- Multiplying Decimals
- Dividing Decimals

Online Worksheets

- Mixed Practice: Decimals
- Practice: Adding Decimals
- Practice: Dividing Decimals
- Practice: Multiplying Decimals
- Practice: Rounding Decimals
- Practice: Subtracting Decimals

5. Factors and Multiples

- Multiples
- Applications of Multiples
- Division in Parts
- Factors
- Identifying Factors
- Multiplication Using Place Value
- Multiplying Big Numbers

6. Rounding

- Rounding Negative Numbers
- Rounding Decimal Numbers
- Rounding Decimals
- Rounding Sensibly
- Rounding Based on Given Values

7. Positive and negative numbers

- Positive Integers
- Negative Integers
- Comparing & Ordering Integers
- Adding Negative Numbers
- Subtracting Negative Numbers
- Adding & Subtracting Integers
- Negative Integer Addition and Subtraction
- Negative Integer Multiplication and Division

Online Worksheets

- 4 Operations (+/-/x/÷) Integers 1
- 4 Operations (+/-/x/÷) Integers 10
- 4 Operations (+/-/x/÷) Integers 2
- 4 Operations (+/-/x/÷) Integers 3
- 4 Operations (+/-/x/÷) Integers 4
- 4 Operations (+/-/x/÷) Integers 5
- 4 Operations (+/-/x/÷) Integers 6
- 4 Operations (+/-/x/÷) Integers 7
- 4 Operations (+/-/x/÷) Integers 8
- 4 Operations (+/-/x/÷) Integers 9

(list continues over the page)

	• Adding & Subtracting Integers Practice • Comparing & Ordering Integers Practice • Integers Practice • Mixed Practice: Integers • Order of Operations 1 • Order of Operations 2 • Order of Operations 3 • Scientific Notation **8. Powers and square roots** • Perfect Squares • Square Roots • Square Roots of Non-Perfect Squares • Squares and Cubes • Calculating Powers • *Online Worksheets* • Mixed Practice: Squares and Square Roots • Practice: Index Notation • Practice: Perfect Squares • Practice: Square Roots • Practice: Square Roots of Non-Perfect Squares **9. Percentages** • Introduction to Percentages • Using Percentages • Discounts • Calculating Percentage Discounts • Increase and Decrease by a Percentage • Percentages and Populations • Percentages and Money	*Online Worksheets* • Mixed Practice: Percentages • Practice: Calculating Percentage Discounts • Practice: Discounts • Practice: Percentages and Money • Practice: Percentages and Populations **10. Equivalence of decimals, fractions and percentages** • Percentages and Decimals • Converting Percentages to Fractions • Converting Between Percentages and Fractions • Percentages, Decimals and Fractions **11. Ratios** • Ratios • Ratio and Proportion Word Problems

Area of Study 2: Shape

Content Descriptor	EP Lessons in Area of Study 2: Shape	
Key knowledge • properties and names of a range of two-dimensional shapes and three-dimensional objects such as cones and pyramids • reflectional and rotational symmetry and similarity of a range of shapes and objects • key angle properties of shapes including degrees in triangles/quadrilaterals • patterns in, and between, a range of different shapes • appropriate technologies that create and manipulate a range of two-dimensional shapes and three-dimensional objects • scaling in relation to enlargement and reduction in size. ***Key skills*** • describe and classify a range of different two-dimensional shapes and three-dimensional objects • determine reflectional and rotational symmetry, and use these to manipulate shapes • understand common angle properties in relation to two-dimensional shapes • use ideas of congruence and self-similarity • create compound two-dimensional shapes and three-dimensional objects and describe the relationship between these, including through the use of technology • determine, name and describe patterns according to different properties of shapes such as those found in engineering, architecture and design, for example bridges, buildings, sculptures.	**1. Two dimensional shapes** • 2D Shapes • Identifying Polygons • Irregular Polygons • Composite Shapes **2. Three dimensional shapes** • Introduction to Solids • 3D Solids • Prisms • Nets of Prisms • Drawing Prisms • Pyramids • Nets of Pyramids • Drawing Pyramids • Curved Solids **3. Reflection, rotation and symmetry** • Line Symmetry • Rotational Symmetry • Rotation Introduction • Rotation on Cartesian Planes • Reflection • Reflection on Cartesian Planes • Translation • Translation on Cartesian Planes *Online Worksheets* • Mixed Practice: Transformations • Practice: Reflection • Practice: Rotation • Practice: Symmetry • Practice: Translation	• Reflections Practice • Rotation Practice • Translation Practice **4. Angle properties of shapes** *1. Triangles* • Types of Triangles • Angles in a Triangle *2. Quadrilaterals* • Classifying Quadrilaterals • Angles in Quadrilaterals • Applying Rules to Quadrilaterals *Online Worksheets* • Mixed Practice: Triangles • Practice: Angles in a Triangle • Practice: Types of Triangles • Mixed Practice: Quadrilaterals • Practice: Angles in a Quadrilateral • Practice: Types of Quadrilaterals **5. Scaling** • Introduction to Scaling and Enlargement • Scale Factors • Scale Models • Introduction to Scale Drawings • Maps and Scales • Applying Scale Factors to Objects • Plan and Elevation Views • Construction Plans

Area of Study 3: Quantity and measures

Content Descriptor	EP Lessons in Area of Study 3: Quantity and measures	
Key knowledge • a range of measures of distance, perimeter, area, volume and capacity including the use and application of common and routine measurement formulas • a range of metric and relevant non-metric units of measurement and conversion between units • a range of units of time and temperature • a range of measurement estimation strategies • a range of measurement tools • understanding of accuracy and tolerances in measurements. ***Key skills*** • estimate and measure objects and distances by using measurement tools with appropriate accuracy and tolerance • undertake calculations and determine measurements of distance, perimeter, area, volume and capacity for routine, more complex two-dimensional shapes and three-dimensional objects including compound shapes, for example the use of pi in circular measurements • convert between both metric and non-metric units where relevant such as cm/inch, Celsius/Fahrenheit, and grams/pounds • read and interpret units of analogue and digital time including 24-hour time and time zones • read, interpret and calculate temperature measurements • perform calculations using multiple units of time, including time zones, and calculate time durations, including the use of calendar months, weeks, days, as well as hours, minutes, and seconds.	**1. Units of measurement** • Units of Measurement • Unit Prefixes • Units of Length • Units of Area • Units of Volume • Units of Capacity • Units of Mass **2. Conversion between units of measurement** • Method for Converting Units of Length • Comparing Units of Length • Converting Units of Length • Converting Units of Capacity • Converting between Capacity and Volume • Converting Units of Temperature • Converting Further Units of Length • Converting Further Units of Capacity and Applications • Converting Further Units of Mass and Applications **3. Estimation** • Estimating Measurements **4. Perimeter** • Perimeter • Calculating the Perimeter of a Shape with an Unknown Side • Perimeter of Composite Shapes	• Perimeter, Composite Shapes and Unknown Sides • Circumference of Circles • Using the Circumference of Circles *Online Worksheets* • Mixed Practice: Length • Practice: Circumference of Circles • Practice: Perimeter • Practice: Perimeter of Composite Shapes • Practice: Using the Circumference of Circles **5. Area** • Area of Rectangles & Squares • Area of Triangles • Area of Composite Shapes I • Area of Composite Shapes II • Calculating the Area of Circles • Using the Area of Circles *Online Worksheets* • Mixed Practice: Area • Practice: Area of Composite Shapes • Practice: Area of Rectangles & Squares • Practice: Area of Triangles • Practice: Calculating the Area of Circles • Practice: Using the Area of Circles **(list continues over the page)**

	6. Volume • Rectangular Prisms • Volume of Composite Shapes • Calculating Volume of Triangular Prisms • Calculating Volume of Other Regular and Irregular Prisms *Online Worksheets* • Mixed Practice: Volume • Practice: Volume of Composite Shapes • Practice: Volume of Rectangular Prisms **7. Capacity** • Calculating Volume and Capacity **8. Time** • Duration • Timetables and Transport • Time Zones • Using Multiple Timetables • Timelines • Recording Time • Introduction to Analog Clocks • Reading Analog Clocks • 12-Hour Time • 24-Hour Time • Converting 12- and 24-Hour Time • Personal Timetables • Reading Timetables	

Area of Study 4: Relationships

Content Descriptor	EP Lessons in Area of Study 4: Relationships
Key knowledge • a range of rates of change such as RPM, m/s • relevant and straightforward ratios and proportions • common, relevant and real-life algebraic formulas, relationships and algebraic expressions and thinking • representation and visualisation of change such as algebraic expressions and formulas, conversion charts or graphs • standard conventions used in the development, use and writing of a range of algebraic expressions. ***Key skills*** • describe relationships between variables and explain their significance in relationship to the applied context • develop and represent relationships with mathematical expressions, or graphical or tabular representations • use and apply formulas to solve real-life problems • use and apply rates to solve problems such as $/m3, L/hr, wages/hr • use and apply relevant ratios and proportions to solve problems such as scales on maps and plans, in the mixing of chemicals or ingredients, or calculating magnification factors.	**1. Rates of change** • Ratios • Rates • Applying Ratios and Rates • Rates of Change • Analysing Rates of Change *Online Worksheets* • Mixed Practice: Ratios and Rates • Practice: Applying Rates and Ratios • Practice: Rates • Practice: Rates of Change • Practice: Ratios **2. Formulas and expressions** • Using Formulas • Finding Formulas • Writing and Evaluating Algebraic Expressions • Translating Between Situations and Algebraic Expressions **3. Rates in familiar situations** • Salaries and Wages • Speed • Plotting and Reading Travel Graphs • Analysing Travel Graphs

Unit 4

Area of Study 5: Dimension and direction

Content Descriptor	EP Lessons in Area of Study 5: Dimension and direction
Key knowledge • location and direction in relation to objects and landmarks • location and direction in relation to maps and technologies • oral and written instructions for moving to specified locations • a range of angle measures and representations. ***Key skills*** • give direction and location instructions between multiple destinations, including unfamiliar locations using appropriate maps or technology • understand and use compass directions and use appropriate language such as NE, SSW, N15W • demonstrate an understanding of angles using degrees • understand where an object is in space using one-, two- and three- dimensions and using the appropriate language to describe an object's position and movement in space.	**1. Locations** • Locations • Describing Routes Using Landmarks • Scales and Locations on Maps **2. Giving and following directions** • Directional Language • Following Directions • Giving and Following Directions **3. Compass directions** • Compass Points • Using Compasses and Scales • Describing Routes • Navigating by Compass • Following Compass Directions • Compass Points and Navigation • Introduction to Bearings **4. Angles** • Common Angles • Types of Angles • Measuring Angles

Area of Study 6: Data

Content Descriptor	EP Lessons in Area of Study 6: Data	
Key knowledge • data collection tools, categorisation, processes and production • display of data with commonly used tables and graphs including axes and scales • simple measures of central tendency and spread of data, including outliers • straightforward analysis of data sets and their displays. ***Key skills*** • collect, collate and organise data sets and display these in the most appropriate format, including axes and scales • choose and find the most appropriate common measures of centre and spread for data sets, such as mean, median and range of data • discriminate between the different measures of centre and spread and understand how they can change conclusions from data, and identify outliers and their implications for the data • read and interpret results from data presented in multiple forms of tables, graphs and summary statistics, including to describe patterns, variations and trends in the data • draw conclusions from the data analysis.	**1. Data collection** • Introduction to Types of Data • Collecting Data: Primary and Secondary • Surveys • Analysing Numerical Data **2. Displaying Data** • Displaying Data • Dot Plots and Column (Bar) Graphs • Line Graphs • Introduction to Stem and Leaf Plots • Pie Charts and Divided Bar Graphs • Histograms • Finding Measures of Centre and Spread in Data Displays • Outliers • Choosing an Appropriate Data Display **3. Mean, Median and Range** • Mean • Median • Mode • Comparing Measures of Centre • The Range • Calculating Measures of Centre and Spread **4. Analysing Data** • Frequency Tables and the Mean • Frequency Tables, Median and Mode • Frequency Tables with Grouped Data • Clusters and Outliers • Samples and Populations	**5. Comparing Data** • Comparing Data Sets • Back-to-Back Stem and Leaf Plots • Comparing Dot Plots • Comparing Histograms *Online Worksheets* • Mixed Practice: Comparing Data • Practice: Back-to-Back Stem and Leaf Plots • Practice: Comparing Data Sets • Practice: Comparing Dot Plots • Practice: Comparing Histograms

Area of Study 7: Uncertainty

Content Descriptor	EP Lessons in Area of Study 7: Uncertainty
Key knowledge • likelihood of events or occurrences happening and how to represent them • simple unconditional probability events with randomness and chance • relevant language of chance and their relationship to numerical values associated with chance and probability • randomness and chance of unconditional probability events • inferencing from likelihood estimates to inform decision making in relation to real-life events, including risk. ***Key skills*** • identify possible outcomes of an event and create visual representations of sample spaces or options • estimate, predict and calculate the likelihood of events occurring using decimals, ratios and percentages • compare different real-life events or probabilities • make decisions based on inferences about sets of accessible, relevant and appropriate data and information • evaluate risk in relation to relevant and appropriate problems with reference to likelihood of events occurring.	• Introduction to Likelihood • Calculating Probability • Dividends and Yields and Risk • Long-term Trends and Risk • The Likelihood Scale • Likelihood of Events • Introduction to Probability • Comparing Probabilities • Probability Terminology • Probability as a Fraction • Probability as a Decimal and a Percentage • Experimental Probability • Types of Probability