Atherton State High School
On Eagles' Wings

Year 9 Mathematics
Learning and Assessment Overview 2021

Semester 1		Semester 2	
MAT 09.01 **Money and Financial Mathematics** **Real Numbers & Scientific Notation**	**MAT 09.02** **Similar Figures &** **Patterns and Algebra** **Pythagoras and Trigonometry**	**MAT 09.03** **Data Representation & Interpretation** **Real Numbers, Patterns and Algebra,** **Rate, Ratio and Proportion**	**MAT 09.04** **Linear and Non-linear Relationships,** **Chance,** **Area of Composite Shapes,** **Surface Area and Volume**
Money and Financial Mathematics [Number and Algebra] – use the simple interest formula, rearrange the simple interest formula, and solve problems using simple interest. **Real numbers [Number and Algebra]** – understand and use index notation, convert index notation to expanded notation and vice versa, investigate the index laws for multiplication, division, zero index, power of a power, power of a product, power of a quotient, the negative indices and simplify expressions using the index laws, convert numbers from scientific notation to standard decimal form and vice versa, use index laws to solve problems involving scientific notation. **Using units of measurement [Measurement and Geometry]** – investigate very large and very small time scales, express time scales using metric prefixes and scientific notation, convert units of time using the index laws	**Geometric Reasoning [Measurement and Geometry]** — describe the conditions of similarity, draw scaled enlargements, determine scale factors, interpret scale drawings, assess the similarity of triangles using tests, and investigate scale and area. **Patterns and Algebra [Number and Algebra]** — expand and factorise algebraic expressions, expand binomial expressions, sketch non-linear relations and find x- and y- intercepts of parabolic functions **Pythagoras and Trigonometry [Measurement and Geometry]** — apply Pythagoras' Theorem to check if a triangle is acute, right or obtuse, determine unknown side lengths of right-angled triangles, solve problems involving right-angled triangles, apply naming conventions for sides of right-angled triangles, use similarity to investigate the constancy of the sin, cos & tan ratios, investigate patterns in trigonometric ratios, calculate trigonometric ratios using known angle or side length values, calculate unknown side lengths in right-angled triangles, solve problems using trigonometry, & calculate unknown angles in right-angled triangles.	**Data Representation and Interpretation [Statistics and Probability]** – consolidate types of statistical variables, collect primary and secondary data to investigate statistical questions, calculate, interpret and describe statistics from both raw data and data representations using non-digital and digital resources, construct histograms and back-to-back stem-and-leaf plots and use statistical knowledge to draw conclusions. **Real Numbers [Number and Algebra]** — express numbers using scientific notation and perform operations using the index laws **Patterns and Algebra [Number and Algebra]** — review the distributive law, expand and simplify binomial expressions, apply the index laws to expansion and investigate pecial cases of binomial expansion (perfect squares, the difference of squares) **Real Numbers [Number and Algebra]** — solving rates problems, simplifying rates, identifying additive and multiplicative patterns in direct proportion, representing rates graphically and algebraically	**Linear and non-linear relationships [Number and Algebra]** — calculating gradient, calculating the distance between two points on a Cartesian plane using Pythagoras's theorem, and calculating the midpoint of a line segment, sketch non-linear relations and find x- and y- intercepts of parabolic functions, model relationships between variables and link algebraic, graphical and tabular representations of those relationships. **Chance [Statistics and Probability]** — determine outcomes of two-step chance determine outcomes of twostep chance experiments using tree diagrams and arrays, assign probabilities to outcomes, calculate relative frequencies, determine probabilities of events (including those involving 'and' and 'or' criteria), organise data and determine relative frequencies in Venn diagrams and two-way tables, investigate data used in media reports (estimate population means and medians and evaluate the validity of statistics used). **Using units of measurement [Measurement and Geometry]** — calculate the area of composite shapes, calculate the surface area and volume of right prisms and cylinders solve problems involving the surface area and volume of right prisms and cylinders, apply reasoning around volume to design a rainwater collection system for a school
Unit Duration	**Unit Duration**	**Unit Duration**	**Unit Duration**
Weeks 1 - 10 (10 weeks)	Weeks 11 - 20 (10 weeks)	Weeks 21 - 30 (10 weeks)	Weeks 31 - 39 (9 weeks)
Assessment Task/s	**Assessment Task/s**	**Assessment Task/s**	**Assessment Task/s**
MAT 09.01.01 **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins *Issued:* n/a *Due: T 1* Week 5	**MAT 09.01.02** **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins *Issued:* n/a *Due:* WT 1 eek 10	**MAT 09.02.01** **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins *Issued:* n/a *Due:* T 2 Week 6	**MAT 09.02.02** **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins *Issued:* n/a *Due:* T2 week 10	**MAT 09.03.01** **Assignment** *Technique:* Extended Response *Mode:* Written + Practical *Conditions:* 2 weeks classtime, 400-600 words *Issued:* Week 21 *Due: T 3* Week 6	**MAT 09.03.02** **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins *Issued:* n/a *Due: T 3* Week 10	**MAT 09.04.01** **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins *Issued:* n/a *Due: T 4* Week 8	