

Year 10 Mathematics

Achievement Standard

By the end of Year 10, students recognise the effect of approximations of real numbers in repeated calculations. They use mathematical modelling to solve problems involving growth and decay in financial and other applied situations, applying linear, quadratic and exponential functions as appropriate, and solve related equations, numerically and graphically. Students make and test conjectures involving functions and relations using digital tools. They solve problems involving simultaneous linear equations and linear inequalities in 2 variables graphically and justify solutions.

Students interpret and use logarithmic scales representing small or large quantities or change in applied contexts. They solve measurement problems involving surface area and volume of composite objects. Students apply Pythagoras' theorem and trigonometry to solve practical problems involving right-angled triangles. They identify the impact of measurement errors on the accuracy of results. Students use mathematical modelling to solve practical problems involving proportion and scaling, evaluating and modifying models, and reporting assumptions, methods and findings. They use deductive reasoning, theorems and algorithms to solve spatial problems. Students interpret networks used to represent practical situations and describe connectedness. They plan and conduct statistical investigations involving bivariate data. Students represent the distribution of data involving 2 variables, using tables and scatter plots, and comment on possible association. They analyse inferences and conclusions in the media, noting potential sources of bias. Students compare the distribution of continuous numerical data, using various displays, and discuss distributions in terms of centre, spread, shape and outliers. They apply conditional probability to solve problems involving compound events. Students design and conduct simulations involving conditional probability, using digital tools.

Assessment Criteria

Using the GTMJ provided, an overall level of achievement in this subject is determined by the teacher's judgment of the evidence presented in students' summative assessment. All assessment unless noted on task sheet completed by Maths students assess the following criteria:

- Understanding and fluency
- Problem-solving and reasoning

Delivery (mode, time requirements, lessons)

Students have access to live sessions each week. Lessons are delivered via Collaborate Ultra. Students are also expected to undertake independent study to complete tasks and assessment in accordance with the Work Rate Calendar. Course materials can be accessed in the learning management system.

Student Requirements

Computer, access to internet, email, printer, scanner, telephone or headset with microphone, audio visual software/devices, scientific calculator, exercise book, stationery.

Year 10 Mathematics (Semester 1)

Units and Learning Experiences, Summative Assessment, Criteria Assessed, Approximate timing/due date of Summative Assessment		
Semester 1	Term 1	<p>Unit 1 Pythagoras, Trigonometry and Number Use Pythagoras' theorem and trigonometry to solve contextualised problems in two and three dimensions, including problems involving direction and angles of elevation and depression. Recognise the effect of approximations in repeated calculations.</p> <p>Probability Describe the results of two and three-step chance experiments, assign and determine probabilities including conditional probability. Design and conduct probability simulations, using digital tools.</p>
	<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Exam (Week 9) Pythagoras, Trigonometry, Number and Probability 	
Semester 1	Term 2	<p>Unit 2 Measurement- Surface area, volume and Measurement errors Solve measurement problems concerning surface area and volume, focusing on composite objects. Understand how measurement errors influence the precision and reliability of results.</p> <p>Algebra – Modelling Linear Function Expand, factorise and simplify expressions and solve equations algebraically, applying exponent laws involving products, quotients and powers of variables, and the distributive property. Apply linear functions to develop models and solve problems involving growth and decay. Solve associated equations numerically and graphically. Solve problems involving simultaneous linear equations and linear inequalities in 2 variables graphically and justify solutions.</p>
	<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Short answer questions (Week 9) Surface Area, Volume, Measurement Errors, Linear Functions 	

Year 10 Mathematics (Semester 2)

Units and Learning Experiences, Summative Assessment, Criteria Assessed, Approximate timing/due date of Summative Assessment	
Semester 2	Term 3
	<p>Unit 3 Statistics</p> <p>Compare data distributions for continuous numerical variables using appropriate data displays including boxplots; discuss the shapes of these distributions in terms of centre, spread, shape and outliers in the context of the data.</p> <p>Construct scatterplots and comment on the association between the 2 numerical variables in terms of strength, direction and linearity.</p> <p>Plan and conduct statistical investigations of situations that involve bivariate data; evaluate and report findings with consideration of limitations of any inferences.</p> <p>Analyse claims, inferences and conclusions of statistical reports in the media, including ethical considerations and identification of potential sources of bias.</p> <p>Measurement and Space</p> <p>Use mathematical modelling to solve practical problems involving proportion and scaling of objects; formulate problems and interpret solutions in terms of the situation; evaluate and modify models as necessary, and report assumptions, methods and findings.</p> <p>Apply deductive reasoning to proofs involving shapes in the plane and use theorems to solve spatial problems.</p> <p>Design, test and refine solutions to spatial problems using algorithms and digital tools; communicate and justify solutions.</p> <p>Interpret networks and network diagrams used to represent relationships in practical situations and describe connectedness.</p>
<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Assignment (Week 4) Statistics • Short answer questions (Week 9) 	
Term 4	<p>Unit 4 Algebra- Modelling Quadratic and Exponential functions.</p> <p>Use mathematical modelling to solve problems involving growth and decay in financial and other applied situations, applying linear, quadratic and exponential functions as appropriate, and solve related equations, numerically and graphically.</p> <p>Experiment with functions and relations using digital tools, making and testing conjectures and generalising emerging patterns.</p> <p>Recognise the connection between algebraic and graphical representations of exponential relations and solve related exponential equations, using digital tools where appropriate.</p> <p>Interpret and use logarithmic scales in applied contexts involving small and large quantities and change.</p>
<p>Summative Assessment, due date:</p> <ul style="list-style-type: none"> • Short answer questions (Week 8) 	

Disclaimer All of the above information is accurate at the time of development.