



YEAR 10A MATHEMATICS

WORK PROGRAM

Year 10A Level Description

In Year 10A, students apply a variety of mathematical concepts in real-life, life-like and purely mathematical situations.

The proficiency strands *Understanding, Fluency, Problem Solving and Reasoning* are an integral part of mathematics content across the three content strands:

Number and Algebra, Measurement and Geometry, and Statistics and Probability

The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics.

At the 10A year level:

Understanding includes applying the four operations to algebraic fractions, finding unknowns in formulas after substitution, making the connection between equations of relations and their graphs, comparing simple and compound interest in financial contexts and determining probabilities of two and three step experiments.

Fluency includes factorising and expanding algebraic expressions, using a range of strategies to solve equations and using calculations to investigate the shape of data sets.

Problem Solving includes calculating the surface area and volume of a diverse range of prisms to solve practical problems, finding unknown lengths and angles using applications of trigonometry, using algebraic and graphical techniques to find solutions to simultaneous equations and inequalities, and investigating independence of events.

Reasoning includes formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets.

ICT Statement

Throughout Year 10A, students will require ready access to ICTs at a whole-class, small group and individual level. Such ICTs include spreadsheet software, graphing software, graphic calculators or mobile device apps.

Note: A mobile device is a portable computing device, typically having a display screen with touch input or a miniature keyboard.

Ensure that the use of ICT in the classroom, including mobile devices, complies with DET policy requirements – SCM-PR-003:

Appropriate use of mobile telephones and other electronic equipment by students (<http://ppr.det.qld.gov.au/education/learning/Pages/Appropriate-Use-of-Mobile-Telephones-and-other-Electronic-Equipment-by-Students.aspx>).

Year 10A Achievement Standard

By the end of Year 10A:

Students recognise the connection between simple and compound interest.
They solve problems involving linear equations and inequalities.
They make the connections between algebraic and graphical representations of relations.
Students solve surface area and volume problems relating to composite solids.
They recognise the relationships between parallel and perpendicular lines.
Students apply deductive reasoning to proofs and numerical exercises involving plane shapes.
They compare data sets by referring to the shapes of the various data displays.
They describe bivariate data where the independent variable is time.
Students describe statistical relationships between two continuous variables.
They evaluate statistical reports.
Students expand binomial expressions and factorise monic quadratic expressions.
They find unknown values after substitution into formulas.
They perform the four operations with simple algebraic fractions.
Students solve simple quadratic equations and pairs of simultaneous equations.
They use triangle and angle properties to prove congruence and similarity.
Students use trigonometry to calculate unknown angles in right-angled triangles.
Students list outcomes for multi-step chance experiments and assign probabilities for these experiments.
They calculate quartiles and inter-quartile ranges.

General Capabilities and Cross-curriculum Priorities



Mathematics provides opportunities for students to strengthen their appreciation and understanding of Aboriginal peoples and Torres Strait Islander peoples and their living cultures. Specific content and skills within relevant sections of the curriculum can be drawn upon to encourage engagement with:

- Aboriginal and Torres Strait Islander frameworks of knowing and ways of learning
- Social, historical and cultural contexts associated with different uses of mathematical concepts in Australian Indigenous societies
- Aboriginal peoples' and Torres Strait Islander peoples' contributions to Australian society and cultures.

Mathematics provides opportunities to explore aspects of Australian Indigenous knowing in connection to, and with guidance from, the communities who own them. Using a respectful inquiry approach, students have the opportunity to explore mathematical concepts in Aboriginal and Torres Strait Islander lifestyles including knowledge of number, space, measurement and time. Through these experiences, students have opportunities to learn that

Aboriginal peoples and Torres Strait Islander peoples have sophisticated applications of mathematical concepts which may be applied in other peoples' ways of knowing.

Aboriginal and Torres Strait Islander histories and cultures

<https://8ways.wikispaces.com/8way+maths>

- Have a yarn-up about times when you've used maths to solve real problems in your life. Highlight the importance of yarning as a way of creating and passing on knowledge in Aboriginal culture.
- Use pictorial graphs to make learning maps showing student progress and desired outcomes. Explain that visualising plans and pathways is an important part of Aboriginal culture.
- Do hands-on problem-solving activities and allow time for reflection. Explore unspoken values and ethical issues in content. Explain that learning without words by using your hands, thinking deeply and finding unspoken meanings are all central to Aboriginal culture.
- Use visuals and create symbols to help students understand and remember content. Promote this as an Aboriginal form of communication.
- If you have to measure something, why not measure natural objects from the local landscape? Highlight Aboriginal connection to Country.
- Apply mathematical knowledge to unrelated/unexpected domains and contexts. Set problems with multiple creative solutions. Celebrate this kind of creative and adaptive thinking as the reason for Aboriginal culture being the longest surviving culture on the planet.
- Model every activity for students, promoting an Aboriginal protocol of "Watch first, then do".
- Relate problems and maths applications back to community life wherever possible. Where a community equivalent does not exist for content you are teaching, discuss ways in which the new knowledge could be applied for community benefit. Create outlets and projects for students to teach/apply important mathematical knowledge to the community.

Asia and Australia's engagement with Asia

- Use Australia's business with Asia as a basis for work with finance and percentage.
- Investigate time zones in Asia when doing time units.
- Find distances on maps including Asia or Asian cities when studying scale factor.
- For units on data, use data on Asia as a secondary source for creating graphs and compiling statistics.

Sustainability

- For units on measurement: find perimeters and areas of sustainable garden plots, fish farming areas; find surface area and volume of mulch bins, rainwater storage tanks;
- For units on data, use data on sustainability as a secondary source for creating graphs and compiling statistics.

ASOT (DIMENSIONS)

<p>Curriculum intent What do my students need to learn? Curriculum is the planned learning that a school offers and enacts. Curriculum intent is what we want students to learn from the mandated curriculum. Teachers decide how best to plan and deliver the curriculum to ensure all students have opportunities to engage in meaningful learning.</p>	<p style="text-align: center;">Content descriptions</p> <p>This work program provides opportunities for students to engage in the Australian Curriculum Content descriptions.</p> <p style="text-align: center;">General capabilities</p> <p>This work program provides opportunities for students to engage in the following General capabilities:</p> <p>Literacy Numeracy ICT Students will have opportunities to demonstrate the Australian Curriculum <i>ICT learning continuum</i> in: -Investigating with ICT -Managing and operating with ICT</p> <p>Critical and creative thinking -Analysing, synthesising and evaluating reasoning and procedures.</p> <p>Personal and social capability -Social awareness</p> <p style="text-align: center;">Relevant prior curriculum</p> <p>Students require prior experience with pre-requisite topics for each unit.</p>
<p>Feedback What do my students already know? What do my students need to learn? How do I teach it? Feedback is information and advice provided by a teacher, peer, parent or self about aspects of someone's performance. The aim of feedback is to improve learning and is used to plan what to teach next and how to teach it. Teachers and students use feedback to close the gap between where students are and where they aim to be. Teachers use self-feedback to guide and improve their teaching practice.</p>	<p style="text-align: center;">Supportive learning environment</p> <p>Differentiation What do your students already know and what do your students need to learn? Consider the individual needs of your students - including ESL, gifted and talented and students requiring additional support. Start where students are at and differentiate teaching and learning to support the learning needs of all students. Plan and document how you will cater for individual learning needs. The learning experiences within this unit can be differentiated by increasing: -the frequency of exposure for some students; -the intensity of teaching by adjusting the group size; -the duration needed to complete tasks and assessment. For guided and/or independent practice tasks: -student groupings will offer tasks with a range of complexities to cater for individual learning needs; -rotational groupings allow for more or less scaffolding of student learning.</p> <p>Feedback to students Establish active feedback partnerships between students, teachers and parents to find out: • what each student already knows and can do; • how each student is going; • where each student needs to go next. Ensure feedback is timely, ongoing, instructive and purposeful. Use feedback to inform future teaching and learning.</p>

	<p>Reflection on the unit plan Identify what worked well during and at the end of the unit for future planning. Reflection may include:</p> <ul style="list-style-type: none"> • activities that worked well and why; • activities that could be improved and how; • monitoring and assessment that worked well and why; • monitoring and assessment that could be improved and how; • common student misconceptions that need, or needed, to be clarified • differentiation and future student learning needs.
<p>Sequencing teaching and learning What do my students already know and can do? What do my students need to learn? How do I teach it?</p>	<p style="text-align: center;">Teaching strategies and learning experiences</p> <p>A suggested learning sequence is outlined for each unit. See the Unit Plans and C2Cs (Teaching Sequence and attached Lesson Plans). The relationship between what is taught and how it is taught is critical in maximising student learning. Start with what your students already know and set goals for the next steps for learning. Decide how to provide multiple opportunities for all students to explore and consolidate ideas, skills and concepts by considering how students learn best and by using a variety of teaching strategies.</p>
<p>Assessment What do my students understand and can do? How well do they know and do it? Assessment is the purposeful, systematic and ongoing collection of information as evidence for use in making judgments about student learning. Principals, teachers and students use assessment information to support improving student learning. Feedback from evaluation of assessment data helps to determine strengths and weaknesses in students' understanding.</p>	<p style="text-align: center;">Monitoring student learning</p> <p>Student learning should be monitored throughout the teaching and learning process to determine student progress and learning needs. Each lesson provides opportunities to gather evidence about how students are progressing and what they need to learn next. Specific monitoring opportunities in this unit may include:</p> <p>Observation Collect information about students' ability.</p> <p>Consultation Consult with students about their ability level.</p> <p style="text-align: center;">Assessing student learning</p> <p>A variety of assessment should be implemented, reflecting Achievement Standards.</p> <p style="text-align: center;">Moderating Assessment</p> <p>Before the task, teachers discuss task-specific descriptors of the quality of student performance. Teachers individually mark all student responses, applying the shared understanding achieved through this calibration process. Teachers moderate samples to ensure consistency of judgments.</p>
<p>Making judgments How do I know how well my students have learned? Teachers and students use standards to judge the quality of learning based on the available evidence. The process of judging and evaluating the quality of performance and depth of learning is important to promoting learning. Teachers identify the task-specific assessable</p>	<p style="text-align: center;">Judging student learning</p> <p>The Achievement Standards should be reflected in the Guide to Making Judgements. The proficiency strands “Understanding and Fluency” and “Problem Solving and Reasoning” are evident in the Guides to Making Judgments.</p>

elements to make judgments against specified standards on evidence.

YEAR 10A COURSE SCOPE AND SEQUENCE

TERM	WEEKS	UNIT	OVERVIEW	ASSESSMENT
1	1	Pythagoras C2C Unit 1	<p>ACARA Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264) Substitute values into formulas to determine an unknown (ACMNA234) Pythagoras' theorem and trigonometry to solve problems including three-dimensional problems in right-angled triangles (ACMMG276) LEARNING GOALS Find the hypotenuse of a right triangle using Pythagoras Find the leg of a right triangle using Pythagoras</p>	
	1 - 4	Trigonometry C2C Unit 1	<p>ACARA Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264) Substitute values into formulas to determine an unknown (ACMNA234) Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245) Establish the sine, cosine and area rules for any triangle and solve related problems (ACMMG273) Pythagoras' theorem and trigonometry to solve problems including three-dimensional problems in right-angled triangles (ACMMG276) LEARNING GOALS Find a missing side using trigonometry Find a missing angle using trigonometry Solve problems involving angles of elevation and depression Solve problems involving bearings Use the sine rule to find angles and sides Use the cosine rule to find sides and angles Applications of sine and cosine rule Solve mixed 2D problems Solve 3D problems Use the area of a triangle rule</p>	
	5	Trigonometry C2C Unit 1	Review and Test	Test in class

6 - 8	Chance C2C Unit 2	<p>ACARA</p> <p>Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence (ACMSP246)</p> <p>Use the language of 'if ...then, 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)</p> <p>Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)</p> <p>Investigate reports of studies in digital media and elsewhere for information on their planning and implementation (ACMSP277)</p> <p>LEARNING GOALS</p> <p>Review basic probability</p> <p>Tree diagrams and two way tables</p> <p>Find probabilities of mutually exclusive events & the addition principle</p> <p>Find probabilities of dependent and independent events</p> <p>The multiplication principle</p> <p>Find probabilities of conditional statements</p> <p>Find probabilities using Venn diagrams</p> <p>Find probabilities using tree diagrams</p>		
9	Trigonometry C2C Unit 1	<p>ACARA</p> <p>Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies (ACMMG274)</p> <p>Solve simple trigonometric equations (ACMMG275)</p> <p>LEARNING GOALS</p> <p>Graph trigonometric functions</p> <p>Use the unit circle</p> <p>Solve trigonometric equations</p>		
10	Trigonometry C2C Unit 1 Chance C2C Unit 2	Review and Test		Test in class

TERM	WEEKS	UNIT	OVERVIEW	ASSESSMENT
2	1 – 4	Linear and non –linear relationships C2C Unit 3	<p>ACARA</p> <p>Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology (ACMNA237)</p> <p>Solve problems involving linear equations, including those derived from formulas (ACMNA235)</p> <p>Solve problems involving parallel and perpendicular lines (ACMNA238)</p> <p>Simplify algebraic products and quotients using index laws (ACMNA231)</p> <p>Substitute values into formulas to determine an unknown (ACMNA234)</p> <p>LEARNING GOALS</p> <p>Find linear gradient and y-intercept graphically and algebraically</p> <p>Find the equations of straight lines using graphs and algebra</p> <p>Find the gradients of parallel and perpendicular lines</p> <p>Solve linear word problems</p> <p>Solve simultaneous equations graphically</p> <p>Solve simultaneous equations by substitution Solve simultaneous equations by elimination</p> <p>Solve simultaneous equation word problems</p> <p>Use index laws to simplify products and quotients</p>	
	4 - 8	Patterns and algebra C2C Unit 4	<p>ACARA</p> <p>Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)</p> <p>Solve linear equations involving simple algebraic fractions (ACMNA240)</p> <p>Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232)</p> <p>Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)</p> <p>Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)</p> <p>Solve simple quadratic equations using a range of strategies (ACMNA241)</p> <p>Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations (ACMNA267)</p> <p>Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation (ACMNA268)</p> <p>Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts (ACMNA269)</p> <p>Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264)</p> <p>LEARNING GOALS</p> <p>Expand and factorise algebraic products and expressions</p> <p>Simplify algebraic expression involving algebraic fractions</p> <p>Solve equations and word problems</p> <p>Expand perfect squares and recognise and use the difference of two squares</p> <p>Factorise and solve quadratic equations (including completing the square)</p> <p>Solve quadratic equations using the formula</p> <p>Solve word problems involving quadratic equations</p> <p>Solve complex word problems involving quadratic equations</p> <p>Use the general form of the parabola to graph and solve quadratic equations</p> <p>Use the circle centre/radius to develop and expand the circle</p> <p>Identify and operate on irrational numbers including surds</p>	

	9	Patterns and algebra/Linear and non-linear relationships C2C Units 3 & 4	Review & Test	Test in class
	10		Assignment: linear and non-linear relationships	Assignment

TERM	WEEKS	UNIT	OVERVIEW	ASSESSMENT
3	1 -4	Data representation and interpretation C2C Unit 5	<p>ACARA Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250) Construct and interpret box plots and use them to compare data sets (ACMSP249) Determine quartiles and interquartile range (ACMSP248) Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253) Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252) Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251) Calculate and interpret the mean and standard deviation of data and use these to compare data sets (ACMSP278) Use information technologies to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation (ACMSP279)</p> <p>LEARNING GOALS Calculate mean, median, mode, Q1, Q3, IQR, max, min and range of data sets Construct box plots identify measures of spread and outliers to compare data sets Compare box plots, histograms and dot plots Construct scatter plots and identify trends between two numerical variables Identify relationships between two continuous variables Construct a line of best fit and extract the equation to use for predictions Construct and interpret data displays using time as the independent variable Calculate standard deviation and use it to describe the spread data and calculate outliers Compare data sets using mean and standard deviation Use statistics to evaluate statements made in media and other reports</p>	
	5 - 6	Using units of measurement C2C Unit 6	<p>ACARA Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242) Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids (ACMMG271)</p> <p>LEARNING GOALS 2D object revision (perimeter and area) Calculate the volume and surface are of 3D objects (cubes, rectangular prisms, spheres) Solve problems involving the calculation of the surface area of prisms and pyramids Calculate the surface area and volume of composite solids Revision of geometry (angle theorems, triangles, quadrilaterals)</p>	

	7 - 8	Geometric reasoning C2C Unit 6	<p>ACARA</p> <p>Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244)</p> <p>Formulate proofs involving congruent triangles and angle properties (ACMMG243)</p> <p>Prove and apply angle and chord properties of circles (ACMMG272)</p> <p>LEARNING GOALS</p> <p>Develop formal geometric proofs (angle theorems)</p> <p>Develop formal proofs for congruency</p> <p>Develop formal proofs for similarity</p> <p>Use circle properties to quantify unknowns in a circle</p> <p>Apply an understanding of congruency, similarity and proof to real-life situations</p>	
	9	Data representation C2C Unit 5 Using units of measurement Geometric reasoning C2C Unit 6	Revise & Test	Test in class
	10		Work experience	

TERM	WEEKS	UNIT	OVERVIEW	ASSESSMENT
4	1 - 3	Money and financial maths C2C Unit 7	<p>ACARA</p> <p>Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)</p> <p>Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)</p> <p>Substitute values into formulas to determine an unknown (ACMNA234)</p> <p>A-Solve simple exponential equations (ACMNA270)</p> <p>LEARNING GOALS</p> <p>Use the simple interest formula to solve problems</p> <p>Understand compound interest as repeated simple interest and compound formula</p> <p>Recall and use the compound interest formula to solve problems</p> <p>Solve word problems involving compound interest</p> <p>Understand compound interest as exponential growth</p>	
	3 - 4	Real numbers C2C Unit 7	<p>ACARA</p> <p>Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)</p> <ul style="list-style-type: none"> • Substitute values into formulas to determine an unknown (ACMNA234) <p>A-Solve simple exponential equations (ACMNA270)</p> <p>A-Use the definition of a logarithm to establish and apply the laws of logarithms (ACMNA265)</p> <p>LEARNING GOALS</p> <p>Solve problems in exponential growth and decay</p> <p>Review index laws and define logarithms</p> <p>Solve simple exponential equations by converting to/from logarithm form</p> <p>Develop and apply logarithm laws</p> <p>Use logarithms to simplify and solve equations</p> <p>Solve growth/decay word problems using logarithms</p>	

	5 - 7	Linear and non-linear relationships C2C Unit 8	<p>ACARA</p> <p>Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)</p> <p>Solve linear inequalities and graph their solutions on a number line (ACMNA236)</p> <p>Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology (ACMNA237)</p> <p>Solve problems involving linear equations, including those derived from formulas (ACMNA235)</p> <p>Substitute values into formulas to determine an unknown (ACMNA234)</p> <p>A-Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems (ACMNA266)</p> <p>A-Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation (ACMNA268)</p> <p>LEARNING GOALS</p> <p>Find the equation of a straight line (two point and y-intercept/gradient)</p> <p>Recognise and use relational signs in linear relationships and to solve inequalities</p> <p>Represent inequalities on the Cartesian plane</p> <p>Determine inequalities from graphical representations and solve a system of inequalities</p> <p>Apply the operations of addition, subtraction and multiplication to polynomials</p> <p>Apply the division algorithm to the division to polynomials</p> <p>Develop and apply the remainder and factor theorems</p> <p>Factorise and solve polynomials</p> <p>Sketch polynomials and families of polynomials</p>	
	8	Money and Financial Maths Linear and non-linear relationships C2C Unit 7 & 8	Revise & Test	Test in class

ACARA CONTENT DESCRIPTION 10 & 10A	TERM 1	TERM 2	TERM 3	TERM 4
A-Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264)				
A-Use the definition of a logarithm to establish and apply the laws of logarithms (ACMNA265)				
Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology (ACMNA237)				
Solve problems involving linear equations, including those derived from formulas (ACMNA235)				
Solve problems involving parallel and perpendicular lines (ACMNA238)				
Simplify algebraic products and quotients using index laws (ACMNA231)				
Substitute values into formulas to determine an unknown (ACMNA234)				
A-Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems (ACMNA266)				
A-Solve simple exponential equations (ACMNA270)				
Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)				
Solve linear equations involving simple algebraic fractions (ACMNA240)				
Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232)				
Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)				
Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)				
Solve simple quadratic equations using a range of strategies (ACMNA241)				
A-Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations (ACMNA267)				
Solve linear inequalities and graph their solutions on a number line (ACMNA236)				
Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)				
A-Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation (ACMNA268)				
A-Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts (ACMNA269)				
Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244)				
Formulate proofs involving congruent triangles and angle properties (ACMMG243)				
Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)				
A-Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids (ACMMG271)				
A-Prove and apply angle and chord properties of circles (ACMMG272)				
Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)				
Substitute values into formulas to determine an unknown (ACMNA234)				
A-Establish the sine, cosine and area rules for any triangle and solve related problems (ACMMG273)				
A-Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies (ACMMG274)				
A-Solve simple trigonometric equations (ACMMG275)				
A-Pythagoras' theorem and trigonometry to solve problems including three-dimensional problems in right-angled triangles (ACMMG276)				
Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence (ACMSP246)				
Use the language of 'ifthen', 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)				

Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)				
A-Investigate reports of studies in digital media and elsewhere for information on their planning and implementation (ACMSP277)				
Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250)				
Construct and interpret box plots and use them to compare data sets (ACMSP249)				
Determine quartiles and interquartile range (ACMSP248)				
Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)				
Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251)				
Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252)				
A-Calculate and interpret the mean and standard deviation of data and use these to compare data sets (ACMSP278)				
A-Use information technologies to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation (ACMSP279)				