

Year 9 – Mathematics Standard and Advanced Pathways 2024

TERM 1		
TIMING	UNIT OVERVIEW	ASSESSMENT
Weeks: 4	<p>Algebra</p> <p>Standard Pathway Students learn how to form algebraic expressions from words and how to substitute. Students learn to add, subtract, multiply, and divide algebraic terms and apply these skills to algebraic fractions. Students learn to expand and factorise expressions including expanding binomial products.</p> <p>Advanced Pathway Students learn to add, subtract, multiply, and divide algebraic terms and apply these skills to algebraic fractions. Students learn to expand expressions including expanding binomial products, perfect squares, the difference of two squares and a mixture of expansions. Students learn to factorise expressions including special binomial products, quadratic expressions both monic and non-monic and factorise algebraic fractions.</p>	<p>Task Number: 1</p> <p>Nature of Task: In class assessment task</p> <p>Percentage: 50% of semester 1</p> <p>Reported: Semester 1</p>
Weeks: 3	<p>Numeracy and Calculation</p> <p>Standard Pathway Students revise working with integers, decimals, fractions, and percentages and how to apply these to real-life situations such as profit, discounts, GST, and simple interest. Student revise working with rates and ratios and learn how to convert rates. They also learn about time differences.</p> <p>Advanced Pathway Students revise working with integers, decimals, fractions, and percentages and how to apply these to real-life situations such as profit, discounts, GST, and simple interest. Students review recurring decimals and learn how to convert these to fractions. Student revise working with rates and ratios and learn how to convert rates.</p>	
Weeks: 3	<p>Pythagoras' Theorem</p> <p>Standard Pathway Students learn about squares, square roots, and surds. Students investigate right-angled triangles and Pythagoras' theorem. They use this theorem to calculate the length of the hypotenuse, the length of a shorter side and apply this knowledge to solve problems. They complete tests to prove if a triangle is right-angled and learn about Pythagorean triads.</p> <p>Advanced Pathway Students use Pythagoras' theorem to calculate the length of the hypotenuse, the length of a shorter side and apply this knowledge to solve problems. They complete tests to prove if a triangle is right-angled and learn about Pythagorean triads. Students also learn how to work with surds. This includes simplifying, adding, subtracting, multiplying and dividing surds.</p>	

TERM 2

TIMING	UNIT OVERVIEW	ASSESSMENT
Weeks: 4	<p>Trigonometry</p> <p>Standard Pathway Students learn how to label the sides of a right-angled triangle to apply the trigonometric ratios to find the value of an unknown side or unknown angle. Students review similar right-angled triangles and develop confidence using the calculator to answer trigonometric problems.</p> <p>Advanced Pathway Students learn how to label the sides of a right-angled triangle to apply the trigonometric ratios to find the value of an unknown side or unknown angle. Students review similar right-angled triangles and develop confidence using the calculator to answer trigonometric problems. Students apply their knowledge to angles of elevation and depression as well as problems involving bearings.</p>	
Weeks: 3	<p>Indices</p> <p>Standard Pathway Students learn about indices. They learn how to multiply and divide terms with the same base, calculate the power of a power and the powers of products and quotients. They learn the special cases of the zero index and how to work with negative indices. Students also learn about significant figures and how to write numbers in scientific notation.</p> <p>Advanced Pathway Students learn about indices. They learn how to multiply and divide terms with the same base, calculate the power of a power and the powers of products and quotients. They learn the special cases of the zero index, how to work with negative indices and how to work with fractional indices. Students also learn about significant figures and how to write numbers in scientific notation.</p>	<p>Task Number: 2</p> <p>Nature of Task: In class assessment task</p> <p>Percentage: 50% of semester 1</p> <p>Reported: Semester 1</p>
Weeks: 3	<p>Geometry and Networks</p> <p>Standard Pathway Students revise different types of angles and the angle sum of a triangle and quadrilateral. Students extend this knowledge to be able to calculate the angle sum of a polygon. Students also learn about networks, focusing on key terminology and applying Euler’s formula to planar graphs.</p> <p>Advanced Pathway Students revise different types of angles and the angle sum of a triangle and quadrilateral. Students extend this knowledge to be able to calculate the angle sum of a polygon and the exterior angle sum of a convex polygon. Students also learn about networks, focusing on key terminology and applying Euler’s formula to planar graphs.</p>	

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TERM 3		
TIMING	UNIT OVERVIEW	ASSESSMENT
Weeks: 4	<p>Equations</p> <p>Standard Pathway Students learn how to solve simple and two-step equations by using inverse operations. They also solve equations with pronumerals on both sides and equations with brackets. Students solve equations with algebraic fractions and simple quadratic equations. They also solve real-world problems using equations and formulas.</p> <p>Advanced Pathway Students learn how to solve equations with pronumerals on both sides and equations with brackets. Students solve equations with algebraic fractions and simple quadratic and cubic equations. They also solve real-world problems using equations and formulas and learn to change the subject of a formula.</p>	<p>Task Number: 3</p> <p>Nature of Task: In class assessment task</p> <p>Percentage: 50% of semester 2</p> <p>Reported: Semester 2</p>
Weeks: 4	<p>Coordinate Geometry and Graphs</p> <p>Standard Pathway Students learn how to calculate the length and midpoint of intervals and the gradient of a line. They learn how to graph linear equations and use the gradient-intercept equation to write the equation of a line. Students solve linear equations graphically and learn about direct proportion relationships. Students also learn how to graph quadratic equations.</p> <p>Advanced Pathway Students learn how to calculate the length and midpoint of intervals and the gradient of a line. They learn how to graph linear equations use the gradient-intercept equation to write the equation of a line. Students solve linear equations graphically and learn about direct proportion relationships. Students also learn how to graph quadratic equations and circles.</p>	
Weeks: 2	<p>Earning Money</p> <p>Standard Pathway Students learn how to calculate wages and salaries, overtime pay, commission, piecework and leave loading. They learn about income tax and learn to calculate PAYG tax and net pay.</p> <p>Advanced Pathway Students learn how to calculate wages and salaries, overtime pay, commission, piecework and leave loading. They learn about income tax and learn to calculate PAYG tax and net pay.</p>	

TIMING	TERM 4	ASSESSMENT
Weeks: 4	<p>Surface Area and Volume</p> <p>Standard Pathway Students revise metric units and the limits of accuracy of measurement instruments. They calculate the perimeters and areas of simple and composite shapes including circular shapes. Students calculate the surface areas and volumes of prisms and cylinders.</p> <p>Advanced Pathway Students revise metric units and the limits of accuracy of measurement instruments. They calculate the perimeters and areas of simple and composite shapes including circular shapes. Students calculate the surface areas and volumes of prisms, cylinders, pyramids, and cones.</p>	
Weeks: 2	<p>Analysing Data</p> <p>Standard/Advanced Pathway Students learn how to calculate the mean, median, mode and range for data sets. They learn to read, interpret, and draw histograms and stem-and-leaf plots, describe the shape of the distributions, and compare two data sets. They also learn different types of sampling and types of data. Students also learn about bias and questionnaires.</p>	Task Number: 4
Weeks: 2	<p>Probability</p> <p>Standard/Advanced Pathway Students revise probability terminology and calculate the probability of an event. They learn how to calculate relative frequency and use Venn Diagrams, Two-Way Tables and Tree diagrams to solve probability problems.</p>	Nature of Task: In class assessment task
Weeks: 2	<p>Congruent and Similar Figures</p> <p>Standard Pathway Students learn about similar figures, their properties and the tests required to prove triangles are similar. They apply this knowledge to scale diagrams to calculate the length of unknown sides in similar figures.</p> <p>Advanced Pathway Students learn about congruent figures and the tests and proofs required for triangles to be classified as congruent. They use congruence to prove geometrical properties. Students learn about similar figures, their properties and the tests and proofs required to prove triangles are similar. They apply this knowledge to working with scale diagrams and calculating the length and areas of similar figures.</p>	Percentage: 50% of semester 2 Reported: Semester 2