AKO PANUKU
Inspiring Learning

2024 EXAM COUNTDOWN LEVEL 2 PĀNGARAU

Before you start your exam preparation read through the following documents:

How to study for a maths exam

Assessment Specifications – Mathematics and Statistics 2024

This Countdown provides a programme of revision for the following three NCEA Level 2 Maths/Pāngarau Achievement Standards:

AS 91261: 2.6 Apply Algebraic Methods in Solving Problems

AS 91262: 2.7 Apply Calculus Methods in Solving Problems

AS 91267: 2.12 Apply Probability Methods in Solving Problems

For each of these Achievement Standards, the Countdown outlines a 3-week programme of revision.

EXAMINATION DATE: NCEA LEVEL 2 MATHEMATICS AND STATISTICS, 5 November 2024

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2.6 APPLY ALGEBRAIC METHODS IN SOLVING PROBLEMS (AS91261)

Achievement criteria

Ensure you and your students are familiar with the descriptions of:
Achievement, Merit and Excellence

Key Tips

- Watch this NCEA study advice video – Algebra Level 2 Maths Strategy Video.

- Revise basic algebra skills used in Level 1 and L1 equations.
- Learn to solve equations by setting out logical steps rather than using guess and check.
- Be careful to copy terms correctly from step to step.
- Practise basic algebra skills thoroughly.
- Show all working as credit can sometimes be given when the error is minor, or a term has been incorrectly transferred.
- Answer all questions as answers can be used as evidence for awarding Achievement.
- Practise choosing variables and writing equations to solve word problems.
- Be certain that you can use and apply the quadratic formula correctly.
- When solving a quadratic equation to answer a question in context, check that you have selected or used the correct solution. Both answers may not be relevant in the context given.
- The Achievement with Excellence question could be set in a mathematical context.
- You should know how to model a situation using an equation.
- Any equations you form must be stated in solving a problem.

Resources

NCEA L2 Year 12 Mathematics Workbook Rory Barrett 2010

NCEA L2 Mathematics Revision guide 2006

Year 12 Mathematics Workbook NCEA 2 Robert Lakeland & Carl Nugent

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	3 WEEK REVISION SCHEDULE	
WEEK 1	Expanding in algebra Expanding 3 bracket Factorising algebra expressions Fractional Negative Indices	**Algebra** • Expanding in algebra p1 NCEA L2 Mathematics • Questions p3 NCEA L2 Mathematics • Expanding example • Factorising algebra expressions p1 NCEA L2 Mathematics • Questions p3 NCEA L2 Mathematics • Factorising example • Fractional Negative Indices p17 Mathematics L2 • Fractional negative indices example
WEEK 2	Changing the subject Of the formula Properties of logarithms Simplifying rational expressions Forming and solving linear equations inequations	**Changing the subject-Logs-Linear equations inequations** • Changing the subject p12 NCEA 2 Lakeland and Nugent • Changing the subject example • Logarithms p16 NCEA 2 Lakeland and Nugent • Logarithm example • Simplifying rational expressions p23 NCEA L2 Lakeland and Nugent • Simplifying rational expressions example • Solving linear equations and inequations p6 NCEA Mathematics L2 • Solving linear equations example • Solving linear inequalities example
WEEK 3	Quadratic equations Quadratic Formula Solving Polynomial Logarithmic Exponential equations	**Quadratic Equations - formula -Polynomial-Log-Exponential Equations-Quadratic theory** • Quadratics equations p11 NCEA Mathematics L2 • Quadratic formula p11 NCEA Mathematics L2 • Quadratic equations - formula example Solving Polynomial -Logarithmic-Exponential equations p20 NCEA Mathematics L2 • Solving polynomial equations example • Logarithmic exponential equations example

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Practice Exam Papers

2023	2021
Examination paper 2023 Formulae resource 2023 Pepa whakamātautau 2023 Hanga rauemi 2023	Examination paper 2021 Formulae resource 2021 Pepa whakamātautau 2021 Hanga rauemi 2021
Exemplars - answer scripts 2018	

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2.7 APPLY CALCULUS METHODS IN SOLVING PROBLEMS (AS91262)

Achievement criteria

Ensure you and your students are familiar with the descriptions of:
Achievement, Merit and Excellence

Key Tips

- Watch this for NCEA study advice – Calculus Level 2 Maths Strategy Video.
- Practise using $\frac{dy}{dx}$, $f'(x)$ and $\int dx$ notations.
- Practise differentiation and integration of terms.
- Check that you answer the question that is asked and relate your answer to the context of the problem.
- You must choose the appropriate process, show clear evidence of correct differentiation or integration, and use this function to answer the question.
- When using graphical calculators, you must show the derived and integrated solutions and any equation that you needed to form.
- Remember when you are finding an area below the x-axis, the integral will be negative. The area is positive. The negative sign just tells you that the area is below the axis.
- When finding area under a graph you need to sketch a graph first if one is not given. If the x-axis divides the area into separate sections above and below the axis, you will find the integrals of each part separately. Make the value of each area positive and add them together.
- For Achievement, you may be required to show the relationship between the derivative and the gradient function by sketching the gradient function given the graph of a quadratic or cubic function.
- For Achievement with Merit and Achievement with Excellence, you may be expected to interpret your solutions in context.
- For Achievement with Merit, where a question required the calculation of composite areas in solving a problem, give calculations for each component as this can provide evidence for Achievement.

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Resources

NCEA Level 2 Year 12 Mathematics Workbook Rory Barrett
Year 12 Mathematics Workbook NCEA 2 Robert Lakeland and Carl Nugent

3 WEEK REVISION SCHEDULE		
WEEK 1	Sketching Gradient Function Graphs Gradients at a point	• Gradient Function P45 NCEA Mathematics L2 p125 NCEA 2 Lakeland and Nugent • Gradients at a point example
WEEK 2	Differentiation Tangents Turning Points	• Differentiation –Tangents–Turning Points p45 NCEA Mathematics L2 • Differential example • Tangents example • Turning Points example
WEEK 3	Rates of Change Anti-differentiation Function from Derived Function	• Rates of change P50 NCEA Mathematics L2 p150 NCEA 2 Lakeland and Nugent • Rates of change example • Anti-differentiation p54 NCEA Mathematics L2 p157 NCEA 2 Lakeland and Nugent • Antiderivative example

Practice Exam Papers

2023	**2022**
Examination paper 2023 Pepa whakamātautau 2023	Examination paper 2022 Pepa whakamātautau 2022
2021	**Exemplars**
Examination paper 2021 Pepa whakamātautau 2021	Exemplars 2018 Exemplars 2017

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2.12 APPLY PROBABILITY METHODS IN SOLVING PROBLEMS (AS91267)

Achievement criteria

Ensure you and your students are familiar with the descriptions of:
Achievement, Merit and Excellence

Key Tips

- Watch this NCEA study advice video – Probability Level 2 Strategy Video.

You need to be familiar with methods related to:

- risk and relative risk
- risk and relative risk
- the normal distribution
- the normal distribution
- relative frequencies
- proportion
- two-way tables
- experimental-distribution

- Be able to use normal probability tables and/or your graphics calculator to find probabilities.
- Be able to calculate expected values.

Resource

NCEA Level 2 Year 12 Mathematics Workbook

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3 WEEK REVISION SCHEDULE		
WEEK 1	Risk and relative risk Relative Frequencies	• Risk and relative risk • Relative frequencies
WEEK 2	Two-way tables Probability Trees	• Probability P85 NCEA Mathematics L2 • Two-way tables • Probability Trees
WEEK 3	Normal Distribution CensusAtSchool	• Normal Distribution P88 NCEA Mathematics L2 • Normal Distribution example • CensusAtSchool

Practice Exam Papers

2023	**2022**
Examination paper 2023 Pepa whakamātautau 2023	Examination paper 2022 Pepa whakamātautau 2022
2021	**Exemplars**
Examination paper 2021 Pepa whakamātautau 2021	Exemplars 2017 Exemplars 2016

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