



Gosford High School
Year 10 5.3 Mathematics
Assessment Task Notification 2024

Task	Task 2 – Topic Test
Topic	Financial Mathematics, Quadratic Methods 1, Trigonometry, Working Mathematically
Weighting	30%
Due Date	Tuesday 30th July 2024. - Period 3.
Outcomes to be Assessed	MA5.1-4NA, MA5.2-4NA, MA5.3-7NA, MA5.3-15MG, MA5.3-2WM

Task description

The task is a 50 minute topic test assessing student knowledge, skills and understanding in the following topics,

FINANCIAL MATHEMATICS

- calculate weekly, fortnightly, monthly and yearly earnings.
- calculate leave loading as 17.5% of normal pay for up to four weeks.
- calculate earnings from wages for various time periods, given an hourly rate of pay, including penalty rates for overtime and special rates for Sundays and public holidays.
- calculate earnings from non-wage sources, including commission and piecework.

QUADRATIC METHODS 1

- solve a range of linear equations, including equations that involve two or more fractions.
- solve equations of the form $ax^2 + bx + c = 0$ by factorisation and by 'completing the square'.
- use the quadratic formula to solve quadratic equations.
- use the discriminant to identify whether a given quadratic equation has real solutions, and if there are real solutions, whether they are or are not equal.
- solve quadratic equations resulting from substitution into formulas.
- create quadratic equations to solve a variety of problems and check solutions.
- substitute a pronumeral to simplify higher-order equations so that they can be seen to belong to general categories and then solve the equations, eg substitute u for x^2 to solve $x^4 - 13x^2 + 36 = 0$ for x .
- rearrange literal equations.
- solve simultaneous equations, where one equation is non-linear, using algebraic and graphical techniques.

TRIGONOMETRY

- apply Pythagoras' theorem and trigonometry to solve three-dimensional problems in right-angled triangles.
- solve problems involving the lengths of the edges and diagonals of rectangular prisms and other three-dimensional objects .
- use a given diagram to solve problems involving right-angled triangles in three dimensions.
- draw diagrams and use them to solve word problems involving right-angled triangles in three dimensions, including using bearings and angles of elevation or depression.
- investigate graphs of the sine, cosine and tangent functions for angles of any magnitude, including negative angles.
- determine the angle of inclination, θ , of a line on the Cartesian plane.
- determine and use the exact sine, cosine and tangent ratios for angles of 30° , 45° and 60° .
- prove and use the relationships between the sine and cosine ratios of complementary angles in right-angled triangles.
- determine the possible acute and/or obtuse angle(s), given a trigonometric ratio.
- use the sine rule to find unknown sides and angles of a triangle.
- use the cosine rule to find unknown sides and angles of a triangle.

- use the area rule to find the area of a triangle.
- solve a variety of practical problems that involve non-right-angled triangles.
- use appropriate trigonometric ratios and formulas to solve two-dimensional problems that require the use of more than one triangle, where the diagram is provided and where a verbal description is given.

WORKING MATHEMATICALLY

- develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly.

Additional Information

- Students are required to bring an approved scientific calculator, a ruler, a blue or black pen, a lead pencil and an eraser.
- You will be provided with an examination paper.

Students are expected to utilize the following resources when undertaking their preparation for this task:

- Syllabus, available from <https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/mathematics/mathematics-k-10>.
- Past papers and topic resources available from STURDY.

Task Criteria

You will be assessed on the following processes

- **exploring and connecting mathematical concepts (understanding/fluency).**
- **choosing and applying efficient techniques to solve problems (fluency/problem solving).**
- **communicating their thinking and reasoning coherently and clearly (communicating/reasoning).**

Feedback

- Worked solutions including specific marking criteria for each question.
- Written general advice as comments and annotations from teachers.
- Verbal feedback from the class teacher.

Student Acknowledgement of Academic Integrity

By submitting the task for marking, I acknowledge the following:

1. The work submitted is my own work and appropriately acknowledges of all sources has been made.
2. I have not used generative AI in the construction of the task.
3. If there is an allegation of malpractice, I will be required to show my drafts/ planning to prove the task is all my own work.
4. I am aware that the work may be submitted to plagiarism detection processes.
5. Where the work of others is used and not acknowledged, a finding of plagiarism will be made and a mark of zero awarded and I will have to resubmit the task.

Marking Guidelines

Extensive marking guidelines will be provided on return of the task along with the written feedback.