

Coonabarabran High School



Year 9 Mathematics Assessment Task

Term 3 2022

Take home Assessment Task

9M1, 9M2

Weighting: 10% of Yearly Mark

Due Date: Friday 26/08/2022

Hand out date: Thursday 11/08/2022

Instructions:

- Time allowed: 2 weeks
- Attempt all questions
- Show all necessary working – marks may be deducted if working is not shown.
- Write neatly – untidy/messy work will not be marked
- Hand in all paperwork (add pages if you need to). You will need to hand in either a word or excel document for one question.
- Make sure you complete ALL YOUR OWN WORK.
- Late assignments – will attract a penalty.

3 Parts:

- 1- Financial Mathematics (25 marks)
- 2- Investigating data and statistics (15 marks)
- 3- Coordinate Geometry (12 marks)

Part 1: Financial Mathematics

Q1: Complete the following table (5 marks)

List 5 jobs and the type of mathematical skills they require eg adding, measuring, perimeter, area, volume, trigonometry, statistics,...	

Q2: Best Buys (3 marks)

John needs to buy some concrete for a project he is working on at home. He can buy a 25kg bag of DryMix Quick to Set concrete from Mitre 10 for \$10.98, or he can purchase a 20kg bag of Australian Builders Quick Set Concrete for \$8.10. By showing your calculations, show which option is the best buy. (HINT: The best buy is the option which costs less per-kilogram)



25kg for \$10.98



20kg for \$8.10

Q3: Pay Rise (5 marks)

Which would be better, and by what percentage: a wage rise of 20% or two successive wage rises of 10%? Justify your answer by showing all your working out.

(Hint: Choose any amount for your wage, then follow the instructions below).

- i. Wage =
- ii. Calculate 20% of your wage =
- iii. New wage (for an increase of 20%) =
- iv. Wage (same as in (i)) =
- v. Calculate 10% of your wage =
- vi. Find the new wage (first 10% pay rise) =
- vii. Calculate 10% of the new wage (including the first 10% pay rise)
- viii. Find the next new wage (second 10% pay rise).

Decide which option you would go with. How much more would you earn with your option?

Q4) Taxation (6 marks)

- i) Molly earned \$65158 in 2021-2022 in her main job, \$3584 in her weekend job and made \$1800 in profit selling homemade earrings on the internet. Find Molly's gross income for 2021-2022.

- ii) Molly will claim a deduction for \$850 worth of work supplies and \$592 worth of fuel travelling to work events. Using your answer to (i), find Molly's taxable income

- iii) Using the table below, calculate the tax payable on her taxable income (from (ii))

Australian income tax rates for 2018/2019 and 2019/2020 (residents)

Income thresholds	Rate	Tax payable on this income
\$0 – \$18,200	0%	Nil
\$18,201 – \$37,000	19%	19c for each \$1 over \$18,200
\$37,001 – \$90,000	32.5%	\$3,572 plus 32.5% of amounts over \$37,000
\$90,001 – \$180,000	37%	\$20,797 plus 37% of amounts over \$90,000
\$180,000 and over	45%	\$54,096 plus 45% of amounts over \$180,000

- iv) Molly's employer has paid \$6400 in PAYG tax in 2021-2022. Calculate below whether Molly will owe additional tax or receive a refund, and calculate how much it will be

Q5) Interest rates (6 marks)

Write a minimum 3 sentence paragraph describing the difference between simple and compound interest. Give an example yourself to show the difference over a 5 year period by following the steps below.

- i) Choose a 'principle' amount to be accumulating interest- called 'P' in the formulas below_____
- ii) Choose an interest rate to be applying- called 'I' in the formulas below_____ (Remember that an interest rate is a decimal or fraction over 100)
- iii) Choose the time period of 5 years- called 'N' in the formulas below

Simple interest:

$$P \times I \times N$$

Compound interest:

$$P \times (1 + I)^N - P$$

Write your paragraph here:

Part 2 – Investigating data and statistics.

Q1) Minute to win it – data analysis

a) Data collection – note you need to choose one activity to complete only. You must complete the activity that you choose **10 times**. You will need to record the data. Read through all the instructions for this section BEFORE you start.

Activity 1. Coin Stacking

Stack as many coins as you can using one hand within a minute. You must repeat this 10 times and record your results.

OR

Activity 2. Bottle toss

Fill an empty bottle with a set amount of water. It is important that the bottle and water level is the same each time. Students are to flip the bottle and try to make it stand upright when it lands. Students are to count how many successful flips that can produce in a minute.

b) Record your results in a table similar to the one featured below. (The second row is an example only). (2 marks for the table)

Activity	Trials (unordered)	Trials (ordered)
Eg. Coin toss	30, 30, 29, 15, 26, 5, 18, 34, 46, 17	5, 15, 17, 18, 26, 29, 30, 30, 34, 46

c) Read the following information.

Mode – The score that occurs the most

Median – The middle score in an ordered set of scores

Mean – Sum of the scores divided by the number of scores

Range – The highest score minus the lowest score

For your set of data, calculate or find the:

- | | | |
|------|--|---|
| i) | Mode | 1 |
| ii) | Median (you will need to find the average of the two middle scores). | 2 |
| iii) | Mean | 2 |
| iv) | Range | 1 |
- d) Draw a dot plot representing your data for the Activity you chose. Make sure you draw a scale and use a ruler. 2

- e) Put your data into an ordered stem and leaf plot. (Note – you may need to add some rows below – use a ruler to draw them in neatly.) 2

Stem	Leaf

- f) You have been asked to summarize your results either by providing the mean, mode or median for your dataset above. Explain which one you selected and why in a short, 3 sentence paragraph below: 3

Part 3- Coordinate Geometry

Q1) Draw a cartesian plane below, ranging from -10 to +10 on the X and Y axis, and plot the points $(-3, 1)$ and $(1, 9)$. Make sure to use a ruler, and to label each axis. Draw a line between the two points. (5 Marks)

Q2) Find the gradient of the line between $(-3, 1)$ and $(1, 9)$ (2 marks)

Q3) Using the formula $y = mx + b$, where m is the gradient, find the equation for the line between $(-3, 1)$ and $(1, 9)$ and check that it is correct. (3 marks)

Q4) Using the formula from question 3, identify what the y value of the formula is when $x = (-1)$. Verify your result by checking the line you drew in Q1. (2 marks)