2019

YEAR 11 ASSESSMENT TASK 2

Mathematics Standard

Due Date: 8:50 am AEST, Before roll call, Thursday 27th June 2019
Date of Progress Check: Tuesday 18th June 2019

Weighting of Task: 30%

Full Name: _____

Circle Teacher: Mrs Smith Mrs South Mr Colquhoun Mrs Pidhirny

Q1	Q2	Q3	Q4	Q5	Format	Evidence	Total	%
/9	/4	/5	/6	/4	/5	/5	/38	

NOTE: A copy of this cover sheet must be stapled to the front of your submission

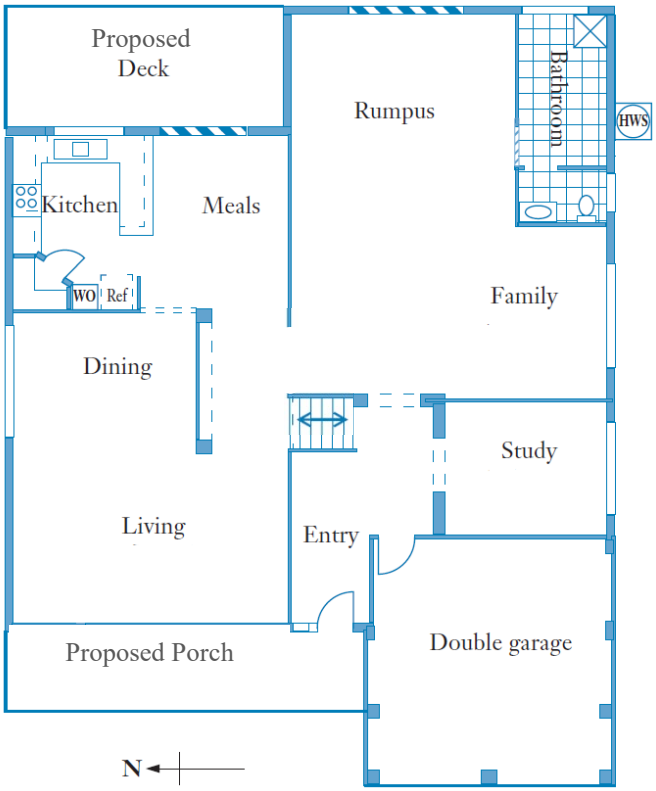
1. Must be submitted on **your A4 paper, stapled, without plastic cover by the due time and date**.
2. If you cannot submit your paper assignment on time, you will need to apply for misadventure. Contact your class teacher and Ms Viravong if this is the case.
3. This assignment is an individual assignment not a group activity.
4. Correct units must be shown in each question
5. When submitting calculations, clearly indicate what you are working out.
   For example: I am buying carpet. I looked on website www.hardlynormal.com.au
   The carpet cost $89/square metre, it was an orange wool Berber.
   Therefore the cost to carpet my room is …..
6. Marks are allocated for clarity of working-out, quality of supporting documentation, and correctness of calculations. See the attached Marking Rubric for details.
7. Prices must be current for the Illawarra region. You may use the internet, sales brochures or newspapers.
8. A Formula Sheet is attached.

Syllabus References: M1.1, M1.2, M1.3, F1.1, F1.3

Y11 Standard Mathematics			
Rubric - Assessment Task 2			
Qu	**Section**	**Marks**	**Description**
1	a	1	some progress
		2	correct solution including units
	b	1	some progress
		2	correct solution including units
	c (i)	1	one correct detail
		2	two correct details
		3	three correct details
	c (ii)	1	some progress
		2	correct solution including units and 2 significant figures
2	a	1	some progress
		2	correct solution including units
	b	1	some progress
		2	correct solution including units
3	a	1	correct deposit OR correct balance OR correct duration
		2	correct 2 of the above
		3	correct deposit AND balance AND duration
	b	1	some progress
		2	correct solution including units
4	a	1	some progress
		2	correct solution including units
	b	1	some researched details of a specific fridge OR some progress in calculation
		2	price, brand, model, provider AND correct calculation
	c	1	some progress
		2	correct solution including units
5	a	1	some progress
		2	correct solution including units
	b	1	identifies supplier and cost OR progress in calculation
		2	identifies supplier, cost AND correctly calculates annual cost.
Formatting		**1**	**contains well-presented elements**
		3	**mostly clear, well-spaced, and readable**
		5	**complete, and of publishable quality**
Resources		**1**	**includes some researched information directly (photocopy, scan, print from website, etc.)**
		3	**most questions supported with appropriate resources**
		5	**all relevant questions clearly supported with well-presented resources**

Question 1

This is a plan of a house with an L-shaped Rumpus/Family room.



Scale 1:200

(a) Calculate the area of the Rumpus/Family room combined in square metres.

(b) Draw a new L-shaped Rumpus/Family room with different measurements so that it has an area between 25 and 55 square metres.

(c) Research a floor covering for the room you have designed.

(i) What type of flooring? Where will you buy it? What is the price per square metre? [Hint: If you can't find a price per square metre try another shop]

(ii) What is the cost of covering your Rumpus/Family room floor? Write your answer in dollars rounded to 2 significant figures.

Question 2

The room you designed in Question 1(b) has three doorways that are each 1.6 metres wide.

(a) Find the perimeter of the room you have designed, in millimetres.

(b) Find the length of skirting boards required for the room.

Question 3

To finish decorating the room, you have a budget of between $20 000 and $50 000.

(a) Choose how much you want to spend. You pay a deposit of 10% and take out a loan for the rest. Calculate the deposit and the size of the loan to be repaid. Assume you can save $350 a month, calculate the time it will take to save the deposit.

(b) The loan has a flat interest rate of 7.9% per annum. How much interest will you pay in 55 months?

Question 4

(a) A kettle uses 2200 Watts of electricity and takes 2 minutes to boil water. Water is boiled 5 times per day, every day for a year. The price of electricity with Origin Energy is 23.11 cents/kWh. How much will it cost to run this kettle for a year?

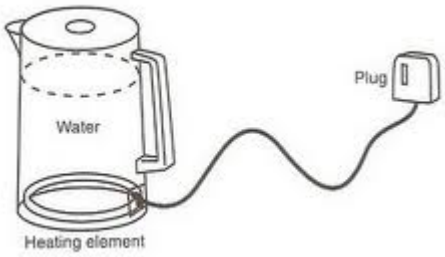
(b) Choose a refrigerator that has an annual energy consumption which does not exceed 1000 kWh/year. The refrigerator must be priced between $500 and $1500. State the brand, type of fridge, price, where you can buy it and how much will it cost per day (correct to the nearest cent) to run.

(c) A fridge will depreciate by $60 per year. After how many years and months will your fridge drop below 50% of its original price?

Question 5

(a) Using the kettle in Question four, 750 millilitres of water is boiled 5 times a day. How much water is used in a year?

(b) Research the price of water. Give all the information (source, price, etc). Find the cost of the water used in the kettle for one year.



NSW Education Standards Authority

2019 **HIGHER SCHOOL CERTIFICATE EXAMINATION**

Mathematics Standard 1
Mathematics Standard 2

REFERENCE SHEET

Measurement

Limits of accuracy

Absolute error = $\frac{1}{2} \times$ precision

Upper bound = measurement + absolute error

Lower bound = measurement – absolute error

Length

$$l = \frac{\theta}{360} \times 2\pi r$$

Area

$$A = \frac{\theta}{360} \times \pi r^2$$

$$A = \frac{h}{2}\left(a + b\right)$$

$$A \approx \frac{h}{2}\left(d_f + d_l\right)$$

Surface area

$$A = 2\pi r^2 + 2\pi rh$$

$$A = 4\pi r^2$$

Volume

$$V = \frac{1}{3}Ah$$

$$V = \frac{4}{3}\pi r^3$$

Trigonometry

$$\sin A = \frac{\text{opp}}{\text{hyp}}, \quad \cos A = \frac{\text{adj}}{\text{hyp}}, \quad \tan A = \frac{\text{opp}}{\text{adj}}$$

$$A = \frac{1}{2}ab\sin C$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$c^2 = a^2 + b^2 - 2ab\cos C$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

Financial Mathematics

$$FV = PV\left(1 + r\right)^n$$

Straight-line method of depreciation

$$S = V_0 - Dn$$

Declining-balance method of depreciation

$$S = V_0\left(1 - r\right)^n$$

Statistical Analysis

An outlier is a score

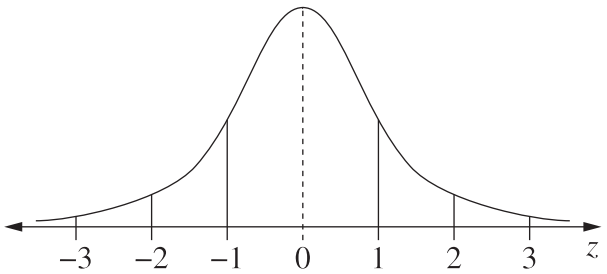
less than $Q_1 - 1.5 \times IQR$

or

more than $Q_3 + 1.5 \times IQR$

$$z = \frac{x - \overline{x}}{s}$$

Normal distribution



- approximately 68% of scores have z-scores between –1 and 1
- approximately 95% of scores have z-scores between –2 and 2
- approximately 99.7% of scores have z-scores between –3 and 3

BLANK PAGE