

PICTON HIGH SCHOOL

Creating Opportunities Achieving Success



YEAR 12 Mathematics Standard 1

Assessment Task 2 2020: Business Plan

Student Name: Name of Business:

Due Date: Friday 3 rd July 2020 (Week 10)	Assessment Name: Business Plan
Mark: /50	Weighting: 30 %
SYLLABUS OUTCOMES TO BE ASSESSED:	
MS1-12-1	uses detailed algebraic and graphical techniques to evaluate and construct arguments in a range of familiar and unfamiliar contexts
MS1-12-2	analyses representations of data in order to make predictions and draw conclusions
MS1-12-3	interprets the results of measurements and calculations and makes judgements about their reasonableness
MS1-12-4	analyses simple two-dimensional and three-dimensional models to solve practical problems
MS1-12-6	solves problems by representing the relationships between changing quantities in algebraic and graphical forms
MS1-12-7	solves problems requiring statistical processes
MS1-12-9	chooses and uses appropriate technology effectively and recognizes appropriate times for such use
MS1-12-10	uses mathematical argument and reasoning to evaluate conclusions, communicating a position clearly to others
DIRECTIVES TO BE ASSESSED:	
Analyse:	Examine (something) methodically and in detail, typically in order to explain and interpret it.
Choose:	To select items or answer from a collection of values
Construct:	To build
Evaluate:	Form an idea of the amount, number, or value of; assess.
Interpret:	Explain the meaning of
Solve:	Find an answer to, explanation for, or means of effectively dealing with
Use:	Apply, utilise, employ in a particular situation
TASK DESCRIPTION:	
You have decided to start your own <i>health-oriented business</i> when you finish school. You will complete 3 parts of a business plan. You may use digital technologies or paper, as you prefer. Refer to attached marking criteria for more details on how to address each question. Please attach task to these pages.	
PART A – Market Research (23 marks)	
1. Describe your business and identify your target market. (2 marks)	
2. Create 4 survey questions on the topic of your new business to investigate your options. (4 marks)	
3. Display data from 3 of the questions, in 3 different appropriate graph. (9 marks)	
4. Analyse data with your choice of 4 suitable measures of location and/or spread.. (4 marks)	
5. Report – summarise findings and how the data may influence the direction of your business. (4 marks)	
PART B – Profit / Loss Modelling (12 marks)	
1. Create a model to explain your finances by creating linear relationships for running costs and income. (4 marks)	
2. Graph costs and income on one pair of axes for projected sales over one fortnight. (4 marks)	
3. Feasibility report: break-even point, predicted profit, required sales for feasible production. (4 marks)	
PART C – Design Your Business Logo (15 marks)	
1. Design a business logo that includes a right-angle triangle (5 marks)	
2. Utilise Pythagoras’ Theorem to show triangle is indeed right-angled (2 marks)	
3. Utilise trigonometric ratios to find the size of the two non-right angles to the nearest minute (4 marks)	
4. Utilise trigonometric ratios to double-check two side lengths using the angles already calculated (4 marks)	
The topics assessed are:	
• S3.1: Statistical Investigation Process – Ch 13	
• A3.1: Simultaneous Linear Equations – Ch 3	
• M3: Right-Angle Triangles – Ch 9, 11	

Recommended Equipment:

- ❖ NESAs approved scientific calculator
- ❖ Internet connected device eg computer, for graphing, data collection and displays
- ❖ Graph paper – 2mm or 5mm, as an alternative to electronic graphs and diagrams
- ❖ Pens, ruler, pencils

ASSESSMENT CRITERIA – STUDENT CHECKLIST:

Have you:

- Read the instructions carefully?
- Referred to the above chapters for definitions, examples and completed relevant exercises?
- Referred to the Marking Criteria below?
- Asked your teacher for clarification of any questions?
- Completed and attached all sections to these pages, labelled with your name and question number?

Marking Criteria: PART A – Market Research (S3.1)

Question	Marks	Description
1	2	Business name and target market clearly identified.
	1	Business name or target market clearly identified.
	0	Neither clearly identified.
2a	1	Data collected will be <i>discrete numerical</i>
	0	Data collected will NOT be discrete numerical
2b	1	Data collected will be <i>continuous numerical</i>
	0	Data collected will NOT be continuous numerical
2c	1	Data collected will be <i>ordinal categorical</i>
	0	Data collected will NOT be ordinal categorical
2d	1	Data collected will be <i>nominal categorical</i>
	0	Data collected will NOT be nominal categorical
3a	3	Graph suitable, correct and clearly labelled.
	2	2 of suitable, correct and labelled.
	1	Correct, or suitable or labelled.
	0	Not correct, nor suitable nor labelled
3b	3	Graph different suitable kind, correct and clearly labelled.
	2	2 of different, suitable, correct and labelled.
	1	Correct, different, suitable or labelled.
	0	Not correct, nor suitable nor labelled
3c	3	Graph different suitable kind, correct and clearly labelled.
	2	2 of different, suitable, correct and labelled.
	1	Correct, different, suitable or labelled.
	0	Not correct, nor suitable nor labelled
4	4	4 appropriate measures correctly used from: mean, median, mode, range, IQR.
	3	3 appropriate measures correctly used from: mean, median, mode, range, IQR.
	2	2 appropriate measures correctly used from: mean, median, mode, range, IQR.
	1	1 appropriate measures correctly used from: mean, median, mode, range, IQR.
	0	0 appropriate measures correctly used from: mean, median, mode, range, IQR.
5	4	Correct paragraph structure with 3 observations or plans based on data.
	3	3 observations or plans based on data.
	2	2 observations or plans based on data.
	1	1 observation or plans based on data.
	0	No observations of data or how your plans are influenced by it.

Part A (S3.1) mark: /23

Marking Criteria: PART B – Profit / Loss Modelling (A3.1)

Question	Marks	Description
1a	2	Equation for costs is correct and explained
	1	Equation for costs is reasonable OR explained but not written as an equation
	0	No equation or explanation of costs is given
1b	2	Equation for income is correct and explained
	1	Equation for income is reasonable OR explained but not written as an equation
	0	No equation or explanation of income is given
2	4	Both graphs correct and labelled, scale appropriate and axes labelled.
	3	One listed element missing or incorrect.
	2	Two listed elements missing or incorrect.
	1	Three listed elements missing or incorrect.
	0	Entirely incorrect and unlabeled.
3	4	Paragraph format, break-even point explained, profit predicted and feasibility assessed.
	3	Break-even point explained, profit predicted and feasibility assessed.
	2	2 of the required elements are correctly commented on.
	1	1 of the required elements is correctly commented on.
	0	None of the required elements are correctly commented on.

Part B (A3.1) mark: /12

Marking Criteria: PART C – Design Your Business Logo (M3)

Question	Marks	Description
1	5	To scale, using a ruler or technology, all lengths and angles labelled, right-triangle evident.
	4	1 required element missing.
	3	2 required elements missing.
	2	3 required elements missing.
	1	4 required elements missing.
	0	Logo does not include any of the required elements.
2	2	Substitution of side lengths into Pythagoras' Theorem and simplified answers.
	1	Substitution only or incorrect simplification.
	0	No attempt or entirely incorrect.
3	4	Use sin, cos or tan to find both angles, to nearest minute.
	3	1 required element missing.
	2	2 required elements missing.
	1	Substitution into ratio correctly but incorrect angle calculation.
	0	No attempt or entirely incorrect.
4	4	Substitute a side and an angle to calculate the other side, showing working, for two sides.
	3	Substitute a side and an angle to calculate the other side, showing working for only 1 side.
	2	Substitute a side and an angle to calculate the other side, for 1 side only.
	1	Correct substitution for one side only, but incorrect solution.
	0	No attempt or entirely incorrect.

Part C (M3) mark: /15

Teacher Comment:

Student Reflection: