

Semester Two Examination, 2021

Question/Answer booklet

**MATHEMATICS
METHODS
UNITS 3&4**

**Section One:
Calculator-free**

If required by your examination administrator, please place your student identification label in this box

WA student number: In figures

--	--	--	--	--	--	--	--	--	--

In words

Your name

Time allowed for this section

Reading time before commencing work: five minutes
Working time: fifty minutes

Number of additional
answer booklets used
(if applicable):

Materials required/recommended for this section

To be provided by the supervisor

This Question/Answer booklet
Formula sheet

To be provided by the candidate

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener,
correction fluid/tape, eraser, ruler, highlighters

Special items: nil

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised material. If you have any unauthorised material with you, hand it to the supervisor before commencing any further.

SAMPLE QUESTION AND ANSWER BOOKLET

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Working time (minutes)	Marks available	Percentage of examination
Section One: Calculator-free	8	8	50	52	35
Section Two: Calculator-assumed	13	13	100	98	65
Total					100

Instructions to candidates

- The rules for the conduct of examinations are detailed in the school handbook. Sitting this examination implies that you agree to abide by these rules.
- Write your answers in this Question/Answer booklet preferably using a blue/black pen. Do not use erasable or gel pens.
- You must be careful to confine your answers to the specific question asked and to follow any instructions that are specific to a particular question.
- Show all your working clearly. Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than two marks, valid working or justification is required to receive full marks. If you do not attempt any question, ensure that you cancel the answer you do not wish to have marked.
- It is recommended that you do not use pencil, except in diagrams.
- Supplementary pages for planning/continuing your answers to questions are provided at the end of the Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.
- Formula sheet is not to be handed in with your Question/Answer booklet.

Section One: Calculator-free

35% (52 Marks)

This section has **eight** questions. Answer **all** questions. Write your answers in the spaces provided.

Working time: 50 minutes.

Question 1

(5 marks)

A summary of the lengths of a large sample of nails from a production line is shown below.

Length, L mm	Relative frequency
$147 < L \leq 148$	0.17
$148 < L \leq 149$	0.13
$149 < L \leq 150$	0.21
$150 < L \leq 151$	0.19
$151 < L \leq 152$	0.16
$152 < L \leq 153$	0.14

(a) What proportion of nails are longer than 149 mm? (1 mark)

(b) Determine the probability that a randomly selected nail from the production line is longer than 150 mm given that it is no longer than 152 mm. (2 marks)

(c) State, with reasons, whether the data suggests that the nail lengths are normally distributed. (2 marks)

SAMPLE QUESTION AND ANSWER BOOKLET

Question 2

(5 marks)

(a) Determine $\int \frac{2x + 2}{x^2 + 2x - 3} dx, x > 1.$

(2 marks)

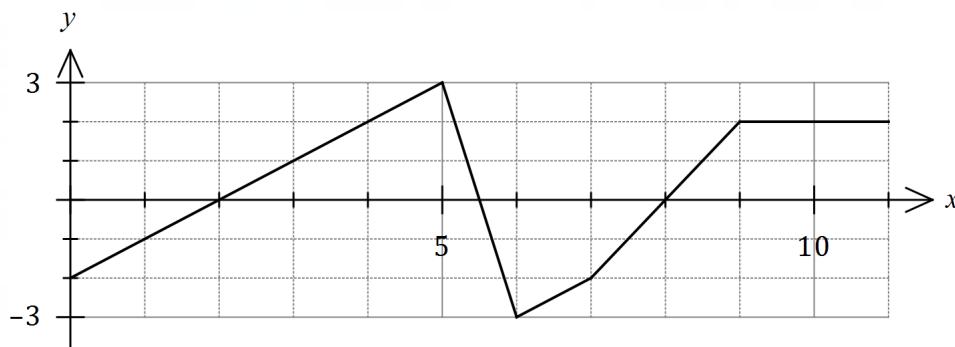
- (b) The line $y = 10 - 2x$ intersects the curve $y = \frac{8}{x}$ at $(1, 8)$ and $(4, 2)$. Determine the area trapped between line and the curve. (3 marks)

**SAMPLE QUESTION AND
ANSWER BOOKLET**

Question 3

(7 marks)

The graph of $y = f(x)$ consists of line segments, as shown below.



Evaluate each of the following:

(a) $\int_3^5 f(x) dx.$

(1 mark)

(b) $\int_0^5 f(x) dx.$

(2 marks)

(c) $\int_2^7 2f(x) dx$

(2 marks)

(d) $\int_0^7 (f(x) + 1) dx.$

(2 marks)

SAMPLE QUESTION BOOKLET