



The external assessment requirements of this subject are listed on page 23.

# Essential Mathematics

## 2017 Sample paper

### Question Booklet

- **Topic 2: Measurement** (Questions 1 to 3) 30 marks
- **Topic 4: Statistics** (Questions 4 to 6) 30 marks
- **Topic 5: Investments and Loans** (Questions 7 to 9) 30 marks
- Answer **all** questions
- Write your answers in this question booklet
- You may write on page 9 if you need more space
- Allow approximately 40 minutes for **each** topic

### Examination information

#### Materials

- one question booklet
- one SACE registration number label

#### Reading time

- 10 minutes
- You may make notes on scribbling paper

#### Writing time

- 2 hours
- Show all working in this question booklet
- Use black or blue pen
- You may use a sharp dark pencil for diagrams
- Approved calculators may be used — complete the box below

**Total marks 90**

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Attach your SACE registration number label here

#### Graphics calculator

1. Brand \_\_\_\_\_  
 Model \_\_\_\_\_  
 2. Brand \_\_\_\_\_  
 Model \_\_\_\_\_

#### For office use only

Supervisor check	Re-marked



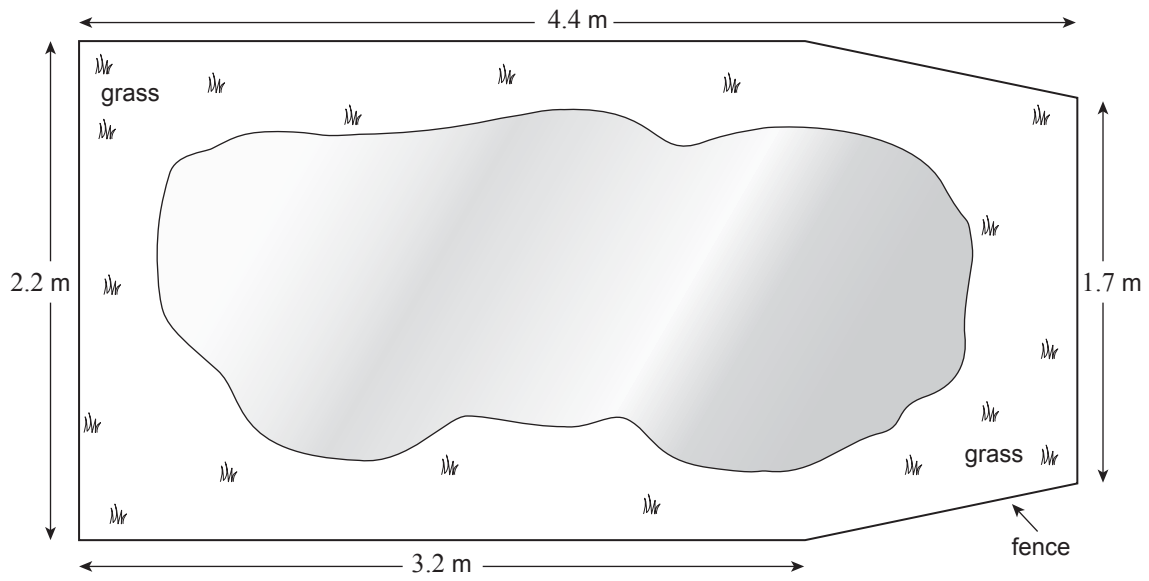








- (b) A fence has been placed around the outside of the pond as shown in the diagram below. The ground between the fence and the pond is covered with grass.

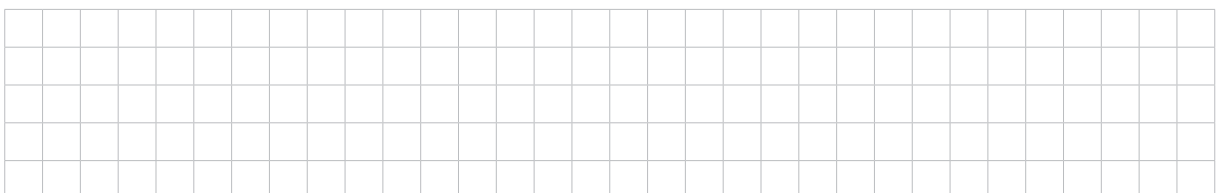


- (i) Determine the total area of the space enclosed by the fence.



(3 marks)

- (ii) Hence determine the area covered with grass.

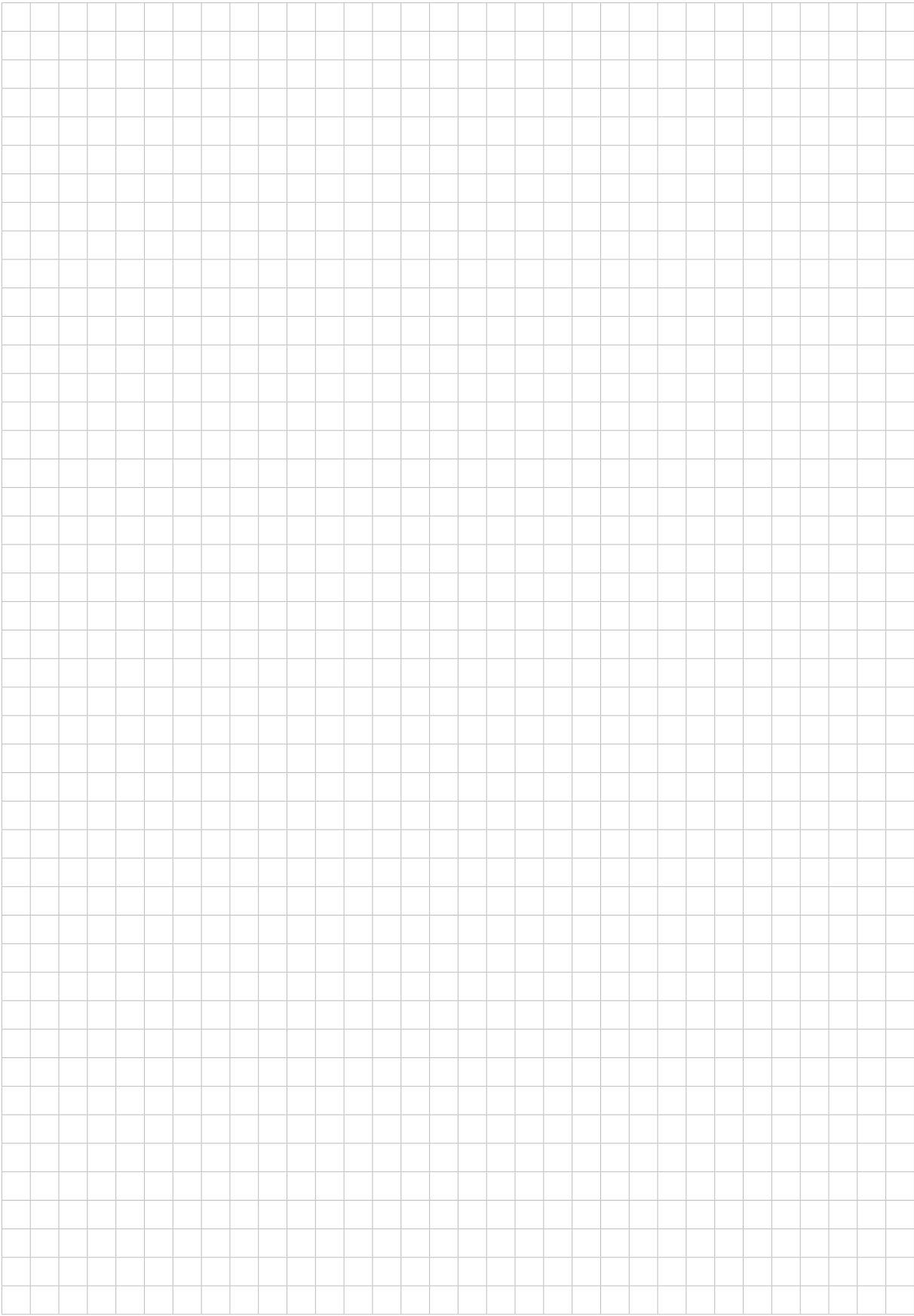


(1 mark)





You may write on this page if you need more space to finish your answer to any question. Make sure to label each answer carefully (e.g. 'Question 3(a)(i) continued').



This sample Essential Mathematics paper shows the format of the examination for 2017.



- (c) The number of students in each year level at New Field High School is displayed in the table below:

<i>Year level</i>	<i>Number of students</i>
8	290
9	290
10	210
11	360
12	310
Total	1460

- (i) What percentage of the students are Year 10 students? Give your answer correct to one decimal place.


(1 mark)

- (ii) Calculate how many Year 10 students should be surveyed if the Student Council chooses to use a stratified sampling method.

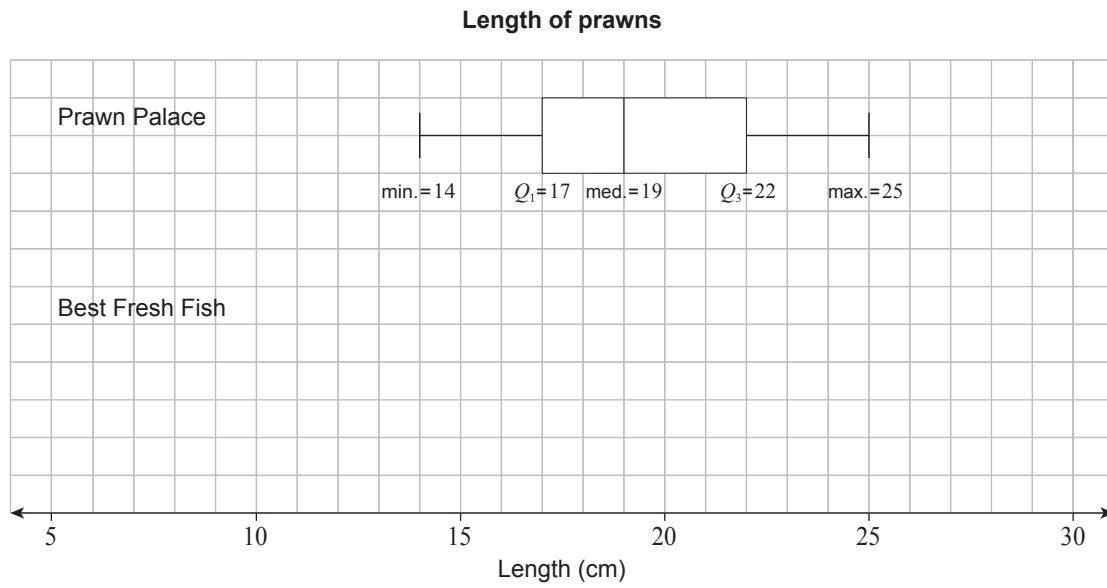

(2 marks)

- (d) Explain *one* sampling method — other than a stratified sampling method — that the Student Council could use for its survey.


(2 marks)



(c) Using the axis below, draw a box-and-whisker diagram for the data collected from Best Fresh Fish.



(3 marks)

(d) Using the box-and-whisker diagrams in part (c), complete the following sentences:

- (i) The shortest prawn measured by the inspector was \_\_\_\_\_ centimetres long. (1 mark)
- (ii) Half of the prawns at Prawn Palace were less than \_\_\_\_\_ centimetres long. (1 mark)
- (iii) \_\_\_\_\_% of the prawns at Prawn Palace were between 17 centimetres and 25 centimetres long. (1 mark)

(e) Which restaurant do you think uses the longest prawns? Justify your answer.

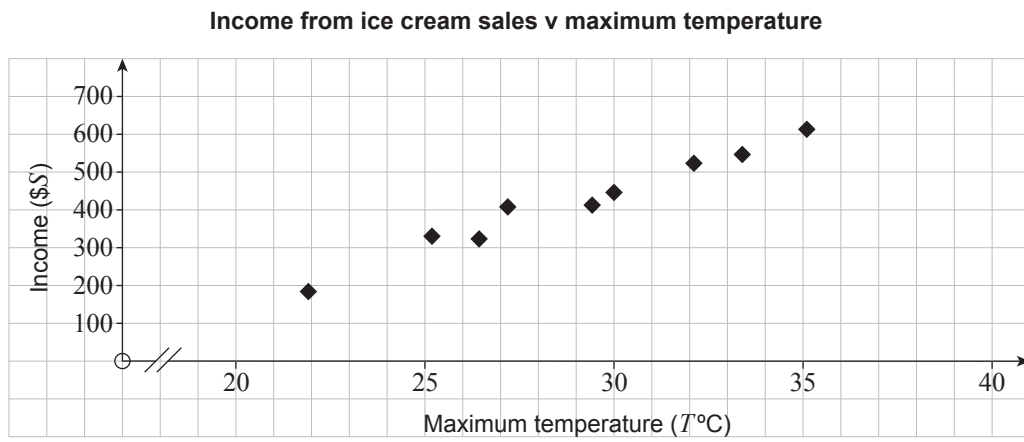
(2 marks)

### Question 6

A school canteen records its income from ice cream sales and the maximum temperature each day. The data for the past 10 days are shown in the following table.

Day	1	2	3	4	5	6	7	8	9	10
Maximum temperature ( $T^{\circ}\text{C}$ )	24.2	26.4	21.9	25.2	32.1	29.4	35.1	33.4	30	27.2
Income (\$)	215	325	185	332	522	412	614	544	445	408

A scatter plot of the data for Day 2 to Day 10 is given below.

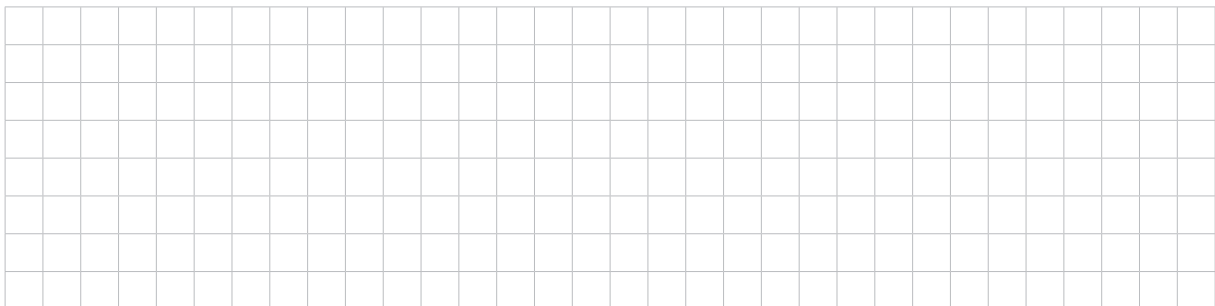


(a) Plot the data for Day 1 on the scatter plot above. (1 mark)

(b) Complete the following statement:  
As the maximum temperature increases, the income from ice cream sales \_\_\_\_\_.

(1 mark)

(c) Calculate the coefficient of determination ( $r^2$ ), and comment on the strength of the relationship between the variables.



(2 marks)



















## **2017 SAMPLE ESSENTIAL MATHEMATICS PAPER**

The purpose of this sample paper is to show the structure of the Essential Mathematics examination and the style of questions that may be used. The following extract is from the 2017 subject outline for Essential Mathematics:

### **EXTERNAL ASSESSMENT**

#### **Assessment Type 3: Examination (30%)**

Students undertake a 2-hour external examination in which they answer questions on the following three topics:

- Topic 2: Measurement
- Topic 4: Statistics
- Topic 5: Investments and Loans.

The examination is based on the key questions and key concepts in topics 2, 4, and 5. The considerations for developing teaching and learning strategies are provided as a guide only, although applications described under this heading may provide contexts for examination questions.

The examination consists of a range of problems, some focusing on knowledge, routine skills, and applications, and others focusing on analysis and interpretation. Students provide explanations and arguments, and use correct mathematical notation, terminology, and representation throughout the examination.

Students may take one unfolded A4 sheet (two sides) of handwritten notes into the examination room.

Students may use approved electronic technology during the external examination. However, students need to be discerning in their use of electronic technology to find solutions to questions/problems in examinations.

All specific features of the assessment design criteria for this subject may be assessed in the external examination.

*Source: Essential Mathematics 2017 Subject Outline Stage 2, p 39, on the SACE website, [www.sace.sa.edu.au](http://www.sace.sa.edu.au)*

