BOARD OF STUDIES
NEW SOUTH WALES

1998 SCHOOL CERTIFICATE EXTERNAL TEST

17 November

MATHEMATICS

SECTION 2

PART B QUESTION & ANSWER BOOKLET

CENTRE NUMBER

STUDENT NUMBER

Directions for Section 2 – Part B

1
- You have 90 minutes to answer ALL of Section 2
- You should allow about 60 minutes to answer Part A and 30 minutes to answer Part B

2 Section 2 has TWO Parts

Part A:	Questions 26–75	(50 marks)
Part B:	Questions 76–80	(25 marks)

3 Attempt ALL questions in Section 2

4 Calculators may be used in Section 2

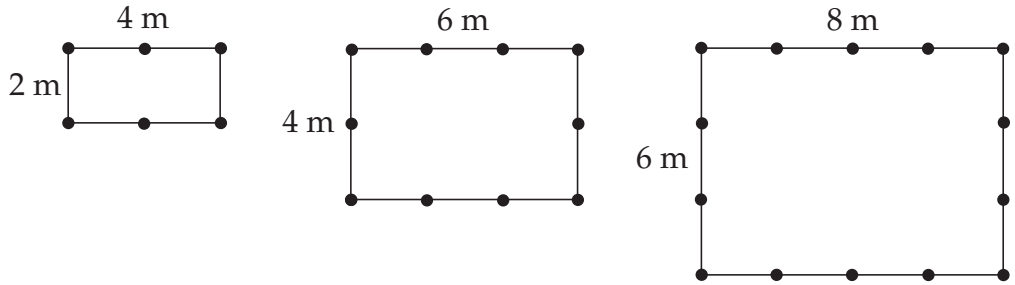
5 The Sample Questions & Formulae Booklet may be used in Section 2

6 Complete your answers to Section 2 Part B in this booklet

7 Do NOT write in pencil

8 Write your Centre Number and Student Number at the top of this page

QUESTION 76. (5 marks)



The diagrams show strips of land whose length and breadth each increase by 2 metres from the previous strip.
The dots represent posts placed 2 metres apart.
The numbers of posts needed to build fences around the strips of land form the pattern

6, 10, 14, . . .

(a) Draw the next strip of land to continue the pattern, clearly showing the posts.

(b) Complete this sentence to describe the pattern in words:

Beginning with the number 6, ...

.....

(c) How many posts are needed for a strip of land whose longer side measures 14 metres?

.....

(d) How many posts are needed for a strip of land whose longer side measures k metres (where k is an even number)?

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(e) A strip of land in this pattern needs a total of 58 posts.

Calculate its area.

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QUESTION 77. (5 marks)

Heights (cm)

15	□ 6 7 9
16	2 3 4 5 5 7 8 9
17	0 4 7 7 7
18	2 4 7 8

The stem-and-leaf plot shows the heights of 21 students in a class.

(a) One entry (represented by □) is missing.

What is the missing entry if the range is 35 centimetres?

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(b) What is the median height of these students?

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(c) Explain why the mode is 177 centimetres.

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(d) A student is chosen at random from this class.

What is the probability that the student's height is greater than 180 centimetres?

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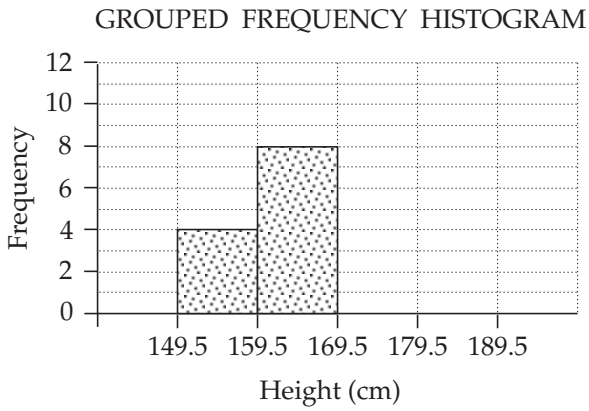
(e) Gilda started to draw a grouped frequency histogram to represent the information in the stem-and-leaf plot.

Complete her histogram.



QUESTION 78. (5 marks)

The travel graph represents cycling trips of Kathy and Gary.
They rode from their bike club to a waterfall and back.

(a) Calculate Kathy's average speed for the first 2 hours.

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(b) Describe Kathy's journey back from the waterfall.

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.....

(c) How far from the waterfall do Kathy and Gary meet?

.....

.....

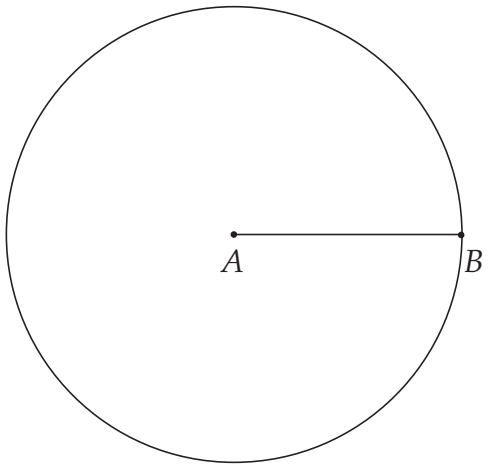
(d) A time period when Kathy and Gary are travelling at the same speed is

from ..... to .....

(e) Shane is a champion cyclist. He leaves the bike club at 2 pm on a training run to the waterfall and back. He completes the journey in 2 hours, without stopping.

Show the graph of Shane's trip on the above diagram.

QUESTION 79. (5 marks)



The diagram shows a circle with centre A and radius AB.

(a) Construct an angle BAC of 130° where C lies on the circle.

(b) Mark D on the circle so that CD is a diameter.

(c) Triangle ABD is isosceles.

State which sides are equal and give a reason for your answer.

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(d) Find the size of angle ABD.

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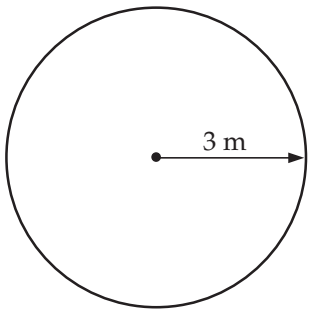
(e) On the above diagram, draw the circle with centre B so that CD is a tangent to this circle.

QUESTION 80. (5 marks)

(a)



The base of a swimming pool is a circle of radius 3 metres.

Find its area correct to two decimal places.

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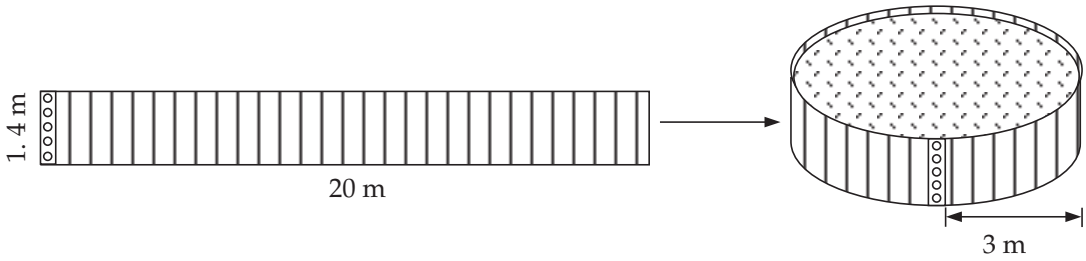
The flexible metal sheet drawn below is used to form the wall of the pool.



(b) Find the volume of the pool, correct to the nearest cubic metre.

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(c) Before a party, the pool is filled with water.
After the party, the depth has dropped to 98 centimetres.

What percentage of the water is left in the pool?

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(d) When the circular wall was formed there was an overlap of the metal sheet. Calculate the length of overlap, correct to the nearest centimetre.

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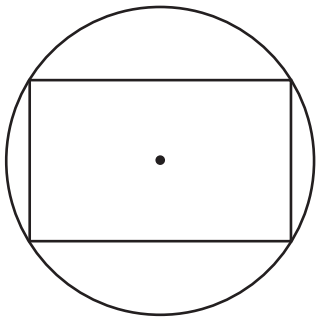
QUESTION 80. (Continued)

(e) A rectangular frame is placed so that each corner touches the circumference of the pool.

Give a possible pair of values for the length and breadth of the frame.



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End of test

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