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|---------------------|--|--|--|--|------------------|--|--|--|--|
| Surname | | | | | Other Names | | | | |
| Centre Number | | | | | Candidate Number | | | | |
| Candidate Signature | | | | | | | | | |

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General Certificate of Secondary Education
June 2005

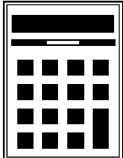


MATHEMATICS (MODULAR) (SPECIFICATION B)
Module 1 Higher Tier Section A

33001/HA

Friday 17 June 2005 1.30 pm to 1.55 pm

H

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|---|---|
| <p>In addition to this paper you will require:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments • a treasury tag. |  |
|---|---|

| For Examiner's Use | | | |
|---------------------|------|-----------|------|
| Section A | | Section B | |
| Number | Mark | Number | Mark |
| 1 | | 5 | |
| 2 | | 6 | |
| 3 | | 7 | |
| 4 | | 8 | |
| Total Section A | | | |
| Total Section B | | | |
| TOTAL | | | |
| Examiner's Initials | | | |

Time allowed for Section A: 25 minutes

Instructions

- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this booklet.
- This paper is divided into **two** sections: Section A and Section B.
- After the 25 minutes allowed for Section A, you must put your calculator on the floor under your seat. You will then be given Section B.
- When you have answered Section B you may work again on Section A but you may **not** use your calculator. It must remain on the floor under your seat.
- At the end of the examination tag Section A and Section B together with Section A on top.

Information

- The maximum mark for Section A is 20.
- Mark allocations are shown in brackets.
- Additional answer paper and graph paper will be issued on request and must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

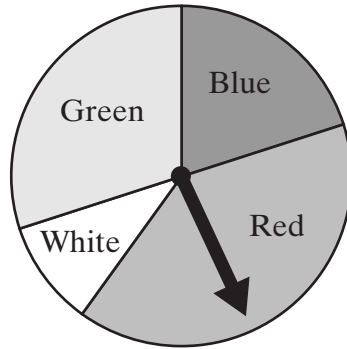
Advice

- In all calculations, show clearly how you work out your answer.

NO QUESTIONS APPEAR ON THIS PAGE

Answer **all** questions in the spaces provided.

1 A game is played with a coloured spinner.



The arrow is spun once.

The table shows some of the probabilities of the arrow landing on a colour.

| Colour | Probability |
|--------|-------------|
| Red | 0.4 |
| Blue | 0.2 |
| Green | 0.3 |
| White | |

(a) Calculate the probability that the arrow lands on red or blue.

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Answer (2 marks)

(b) Calculate the probability that the arrow lands on green or white.

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Answer (2 marks)

(c) The arrow is spun 250 times.

Calculate the number of times you would expect the arrow to land on red or green.

.....

.....

Answer (3 marks)

Turn over ▶



- 2 The table shows the amount of water, in m^3 , used every six months by a family over a period of three years.

| Date | April 2002 | Oct 2002 | April 2003 | Oct 2003 | April 2004 | Oct 2004 |
|--------------------------------|---------------|-------------|---------------|-------------|---------------|-------------|
| Water used (m^3) | 36 | 58 | 38 | 60 | 42 | 64 |
| Two-point moving average | 47 | | | | | |

- (a) The first two-point moving average is 47 m^3 .

Calculate the other two-point moving averages.

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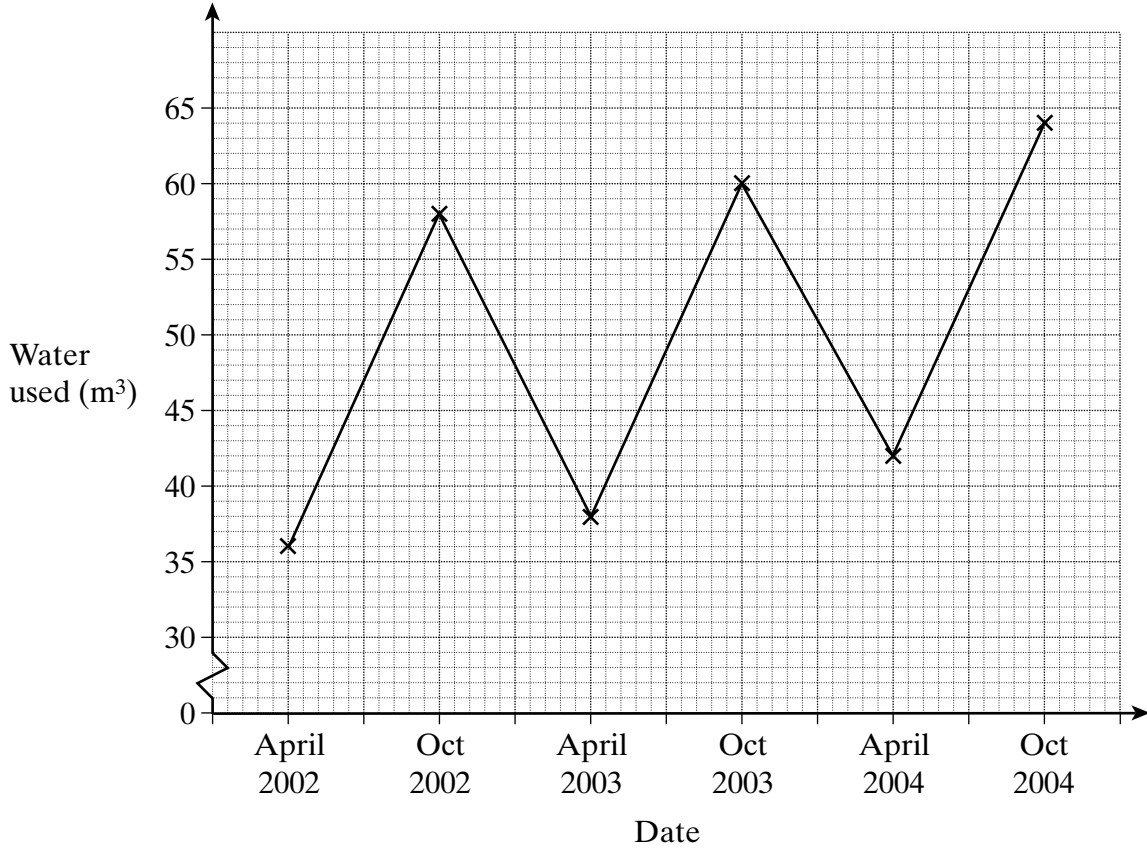
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(2 marks)

(b) The time series graph shows the original data.

Plot all the moving averages.



(2 marks)

(c) Describe the trend shown by the moving averages.

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(1 mark)

5

Turn over ►

- 3 A sixth form has 500 students.
The table shows the number of each type of student in the sixth form.

| Vocational | Sciences | Languages | Arts |
|------------|----------|-----------|------|
| 100 | 160 | 65 | 175 |

Calculate the number of each type of student that should be chosen for a stratified sample of size 30.

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Answer Vocational

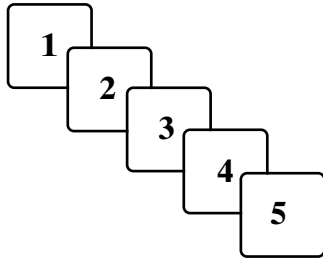
Sciences

Languages

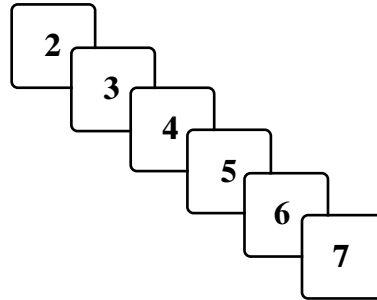
Arts (3 marks)

3

4 Two different packs of cards are shown below.



First pack



Second pack

A card is picked at random from the first pack and placed into the second pack.
A card is then picked at random from the second pack.

Calculate the probability that

- (a) the card picked from the first pack is numbered 5 and the card picked from the second pack is also numbered 5.

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Answer (2 marks)

- (b) the card picked from the first pack and the card picked from the second pack have the same number.

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Answer (3 marks)

END OF SECTION A

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE