

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
ADVANCED SUBSIDIARY GCE
F732
GENERAL STUDIES
The Scientific Domain

THURSDAY 14 MAY 2009: Afternoon
DURATION: 1 hour

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Answer Booklet

OCR SUPPLIED MATERIALS:

8 page Answer Booklet

OTHER MATERIALS REQUIRED:

An approved calculator

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name in clearly capital letters, your Centre Number and Candidate Number in the spaces provided on the Answer Booklet.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- If you use additional sheets of paper, fasten the sheets to the Answer Booklet.
- Answer ALL questions in Section A and ONE question in Section B.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 60.
- You are advised to divide your time equally between Sections A and B.
- WHERE AN ANSWER REQUIRES A PIECE OF EXTENDED WRITING, THE QUALITY OF YOUR WRITTEN COMMUNICATION WILL BE ASSESSED, INCLUDING CLARITY OF EXPRESSION, STRUCTURE OF ARGUMENTS, PRESENTATION OF IDEAS, GRAMMAR, PUNCTUATION AND SPELLING.

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SECTION A

Answer ALL the questions in this section.

- 1 Two ice cream sellers who are in competition arrive at a crowded beach.**

Fig. 1 opposite shows where the two ice cream sellers set up their stalls on the beach.

FIG. 1

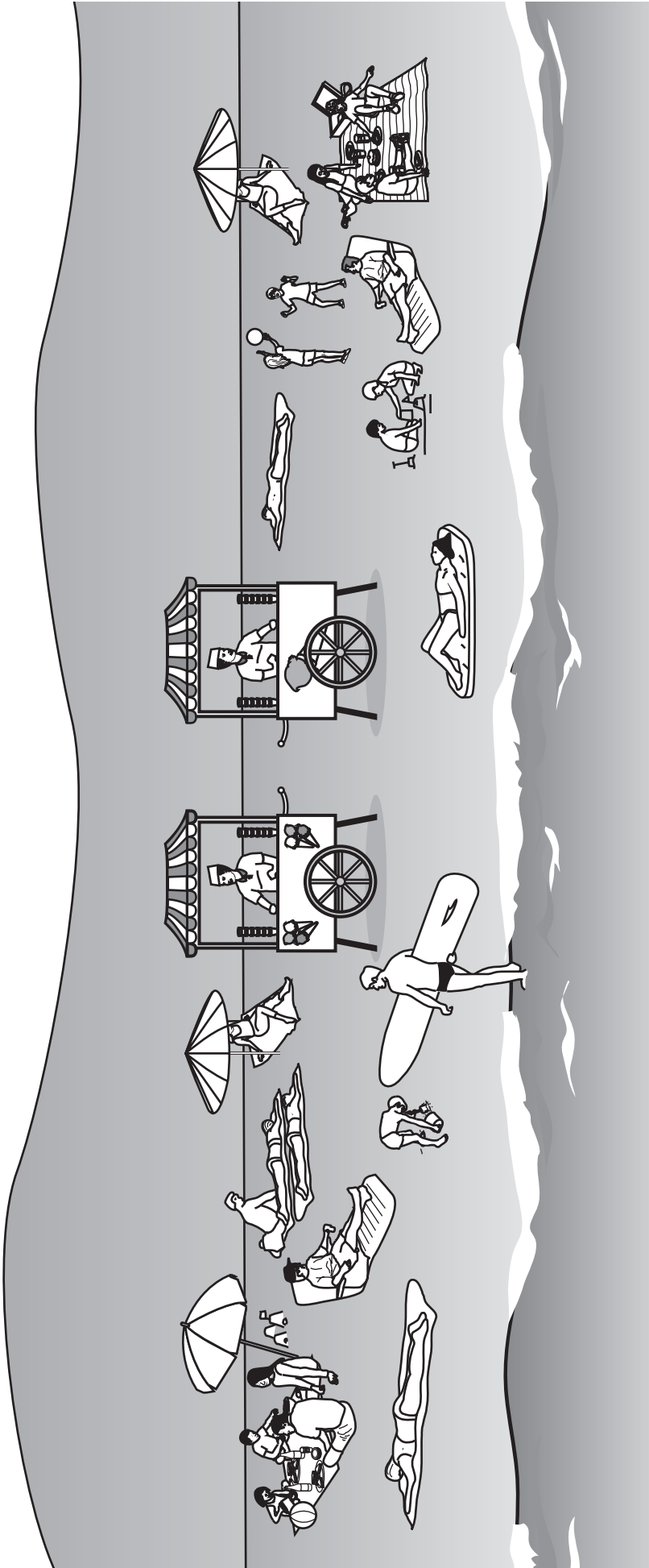
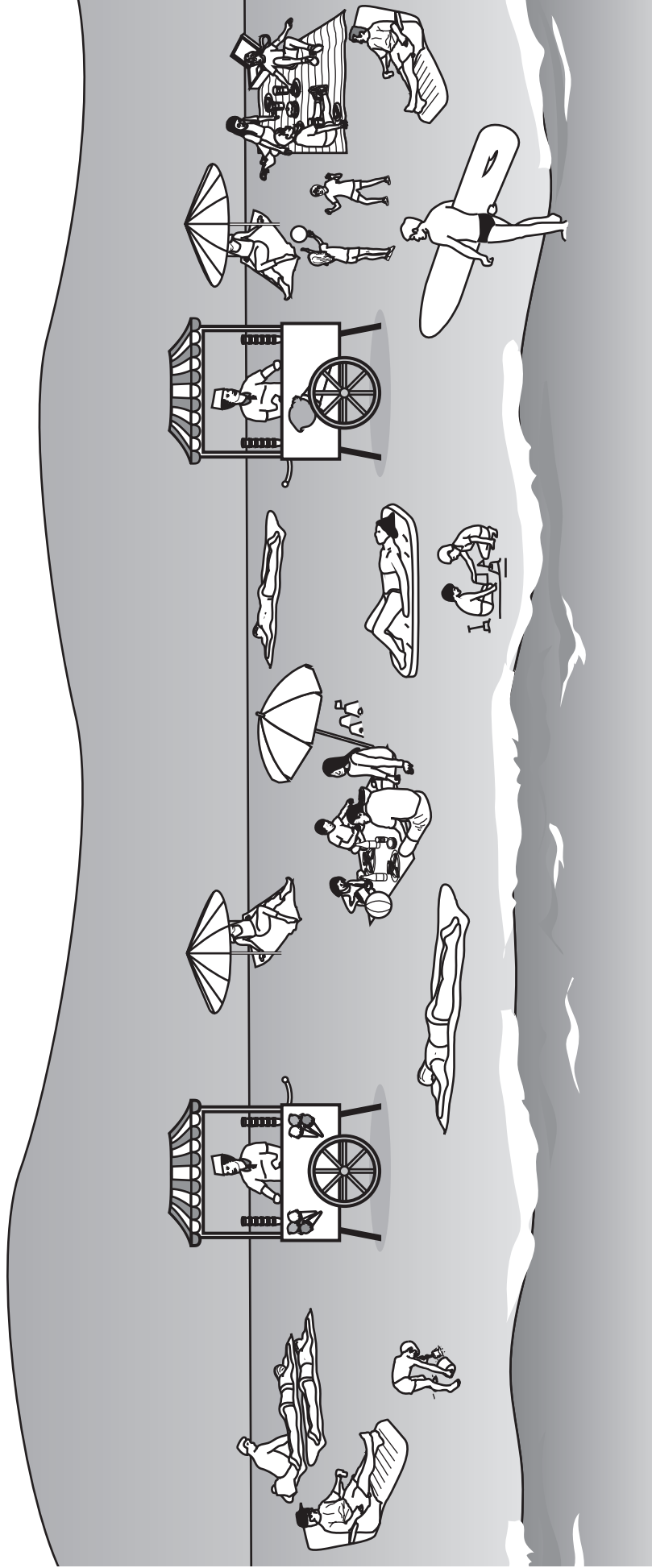


Fig. 2 shows another possible pair of locations for the sellers on the beach.

FIG. 2



- (a) What reason might both ice cream sellers give for selecting their location shown in Fig. 1? [3]**
- (b) Why would the locations shown in Fig. 2 be better than those in Fig. 1 for customers on the beach? [3]**
- (c) How might the thinking behind the location of the two ice cream sellers in Fig. 1 and Fig. 2 be applied more generally to the location of shops? [6]**

- 2 (a) Examine Fig. 3 which shows a number square.

FIG. 3

8	1	6
3	5	7
4	9	2

What do you notice about the pattern of numbers in the square? [3]

- (b) A mathematician named Mersenne devised some numbers that are given by the formula $2^n - 1$. For example if $n = 2$ the Mersenne number would be 3.
- (i) Calculate the value of the Mersenne numbers for values of n from 3 to 6. [4]
 - (ii) What pattern do you discover for the Mersenne numbers for values of n from 2 to 6? [5]
 - (iii) Prime numbers are those numbers greater than 1 that cannot be divided by any number except themselves and one.

Show that when $n=4$ and $n=6$ the Mersenne numbers generated are not prime numbers. [6]

Section A Total [30]

SECTION B

**Answer ONE question from this section.
Answers must be in continuous prose.**

3 Surgeons regularly perform successful organ transplants but the extent of their work is restricted by a lack of available organs from volunteer donors. Describe TWO arguments for and TWO against the compulsory donation of organs to hospitals. [30]

4 Scientists are able to forecast with some accuracy certain events. Describe ONE type of event where forecasts have proved helpfully accurate and ONE where they have been less accurate. Suggest TWO reasons for the difference in the accuracy of forecasts. [30]

5 ‘People say that hindsight is 20:20.’

Describe an environmental problem with which you are familiar. Explain how people have attempted to manage the issue. How might hindsight suggest an alternative plan? [30]

Section B Total [30]

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