OCR
RECOGNISING ACHIEVEMENT

# M7

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**

## MATHEMATICS C (GRADUATED ASSESSMENT) B277A

MODULE M7 – SECTION A

*OCE/19553*

Candidates answer on the Question Paper

**OCR Supplied Materials:**
None

**Other Materials Required:**
- Geometrical instruments
- Tracing paper (optional)

**Monday 8 March 2010**
**Morning**

**Duration:** 30 minutes

*B277A*

| Candidate Forename | | Candidate Surname | |
|---|---|---|---|

| Centre Number | | | | | | Candidate Number | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

**INSTRUCTIONS TO CANDIDATES**

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

**INFORMATION FOR CANDIDATES**

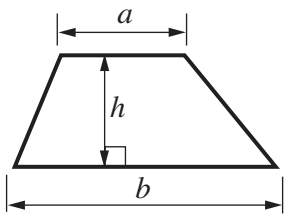
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

**WARNING**

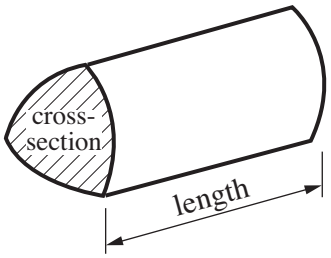
**No calculator can be used for Section A of this paper**

## Formulae Sheet

**Area of trapezium** = $\frac{1}{2}(a + b)h$




**Volume of prism** = (area of cross-section) × length




**PLEASE DO NOT WRITE ON THIS PAGE**

**1** **(a)** In Pen-y-Fford Tennis Club there are 18 Junior members.
The ratio of boys to girls is 2 : 1.

How many of the Junior members are boys?

**(a)** ..... **[2]**

**(b)** For Hawarden Tennis Club members, the ratio of
Men : Women : Juniors is 2 : 3 : 1.
There are 24 Women members.

How many of the members are Men?

**(b)** ..... **[2]**

**2** **(a)** Express as a single power of 6.

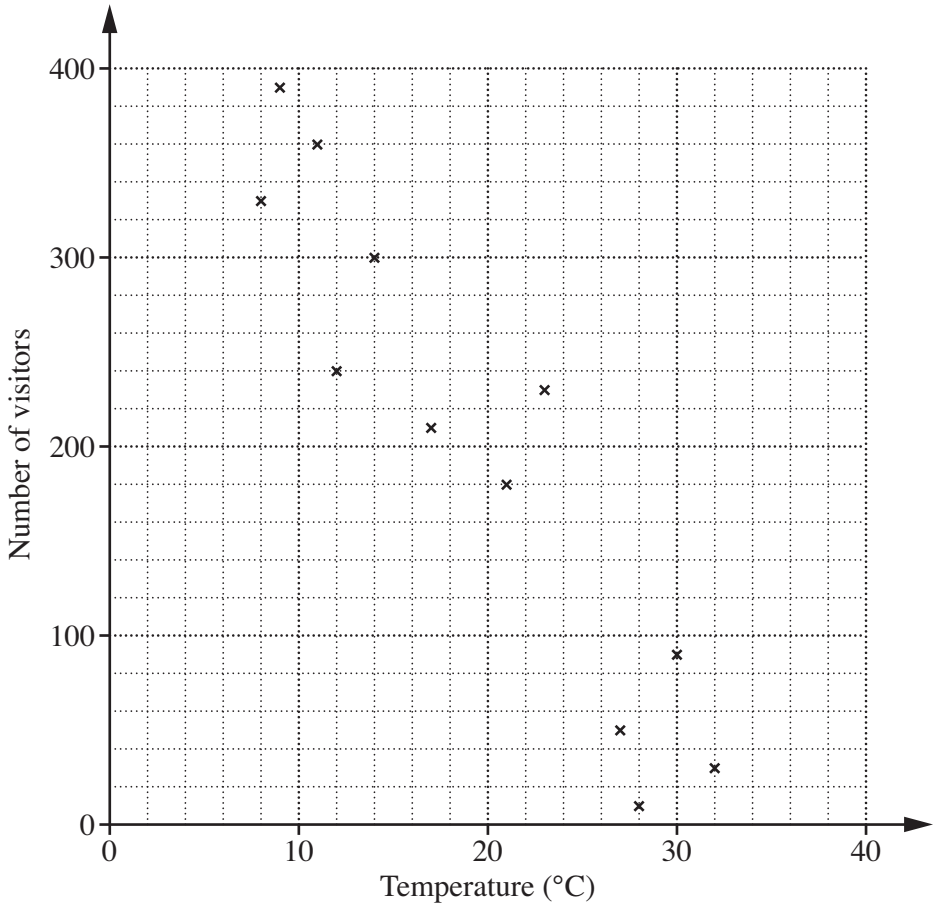
$$\frac{6^3 \times 6^6}{6^7}$$

**(a)** ..... **[1]**

**(b)** Express 420 as the product of its prime factors.

**(b)** ..... **[2]**

**3** This graph shows the daily visitor numbers at a tourist attraction and the outside midday temperatures for 12 days during one year.




**(a)** Describe the strength and type of correlation shown.

**(a)** ..... **[1]**

**(b)** Draw a line of best fit on the diagram. **[1]**

**(c)** Use your line of best fit to predict the number of visitors the attraction might expect on a day when the outside temperature is 18°C at midday.

**(c)** ..... **[1]**

**4** **(a)** Solve.

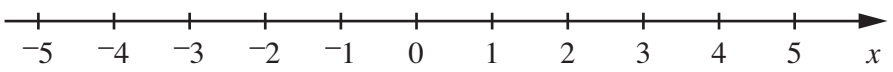
$2(x + 7) = 6x$

**(a)** ..... **[3]**

**(b)** Solve this inequality.

$2x + 6 \leqslant 0$

Represent your solution on the number line.




**[3]**

**5** **(a)** Write down the decimal equivalent of $\frac{2}{3}$.

**(a)** ..... **[1]**

**(b)** Express $0{\cdot}128$ as a fraction in its lowest terms.

**(b)** ..... **[2]**

**6** **(a)** Here are the first 3 patterns in a triangular dot sequence.

The number of dots in the $n$th pattern of the sequence is $\frac{n(n+1)}{2}$.

How many dots are there in the 20th pattern?

**(a)** ..... **[2]**

**(b)** Here are the first 4 terms in another sequence.

1 3 5 7

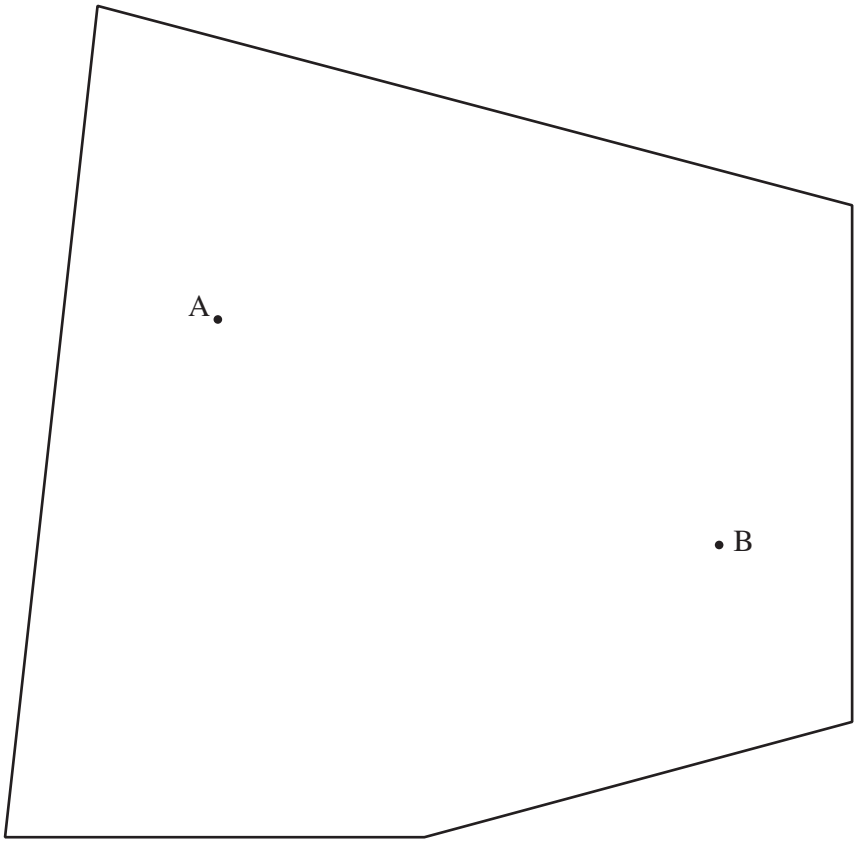
Find an expression for the $n$th term.

**(b)** ..... **[2]**

**TURN OVER FOR QUESTION 7**

**7** This scale drawing shows a field, with two trees A and B.
A path crosses the field, keeping an equal distance from the two trees.

Use ruler and compasses to construct the locus of the path.
Leave in all your construction lines.




**[2]**