Candidate Forename					Candidate Surname				

Centre Number					Candidate Number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B277A

MATHEMATICS C
(GRADUATED ASSESSMENT)

MODULE M7 – SECTION A

TUESDAY 1 MARCH 2011: Morning
DURATION: 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

<u>OCR SUPPLIED MATERIALS:</u>

None

<u>OTHER MATERIALS REQUIRED:</u>

Geometrical instruments
Tracing paper (optional)

<div style="border:1px solid black">

WARNING
No calculator can be used for
Section A of this paper.

</div>

<u>READ INSTRUCTIONS OVERLEAF</u>

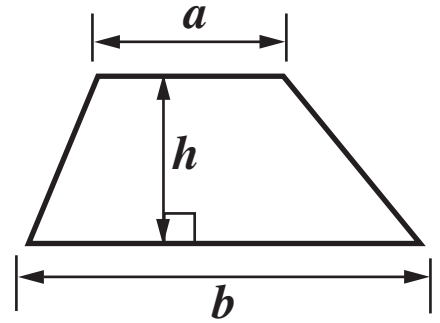## INSTRUCTIONS TO CANDIDATES

- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**

- **Use black ink. Pencil may be used for graphs and diagrams only.**

- **Read each question carefully. Make sure you know what you have to do before starting your answer.**

- **Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).**

- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**

- **Answer <u>ALL</u> the questions.**

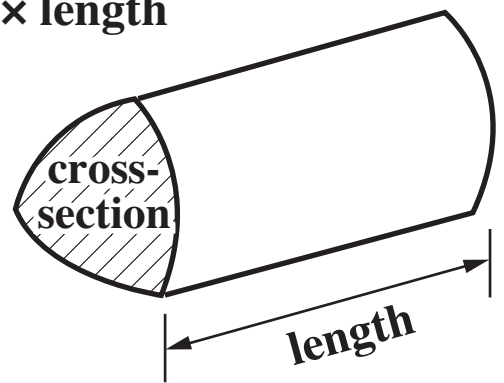## INFORMATION FOR CANDIDATES

- **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 <u>25</u>.**

Formulae Sheet

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

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

1   Jake and Liz are doing a number puzzle.
    Jake starts with a number, multiplies it by 5 and then adds 14.
    Liz starts with the same number, adds on 1 and then multiplies the result by 2.
    They get the same answer.

    (a) Complete this equation to represent the puzzle. [1 mark]

    $5x + 14 =$ _____

    (b) Solve the equation to find the number.   [3 marks]

    (b) _____

2 The answer to $\sqrt{(3^3 + 5^3)}$ lies between consecutive integers.

Work out the two integers. **[3 marks]**

_____ **and** _____

3   Ten members of a family take part in a marathon.
     This table shows their ages and the number of minutes they
     took to complete the marathon.

Age (years)	18	22	27	31	35	38	45	49	63	65
Time (minutes)	205	182	228	224	245	272	290	265	325	355

The information for the first six people is plotted on the scatter diagram below.

(a) Complete the scatter diagram for the last four people.
     [1 mark]

Time (minutes)

Age (years)
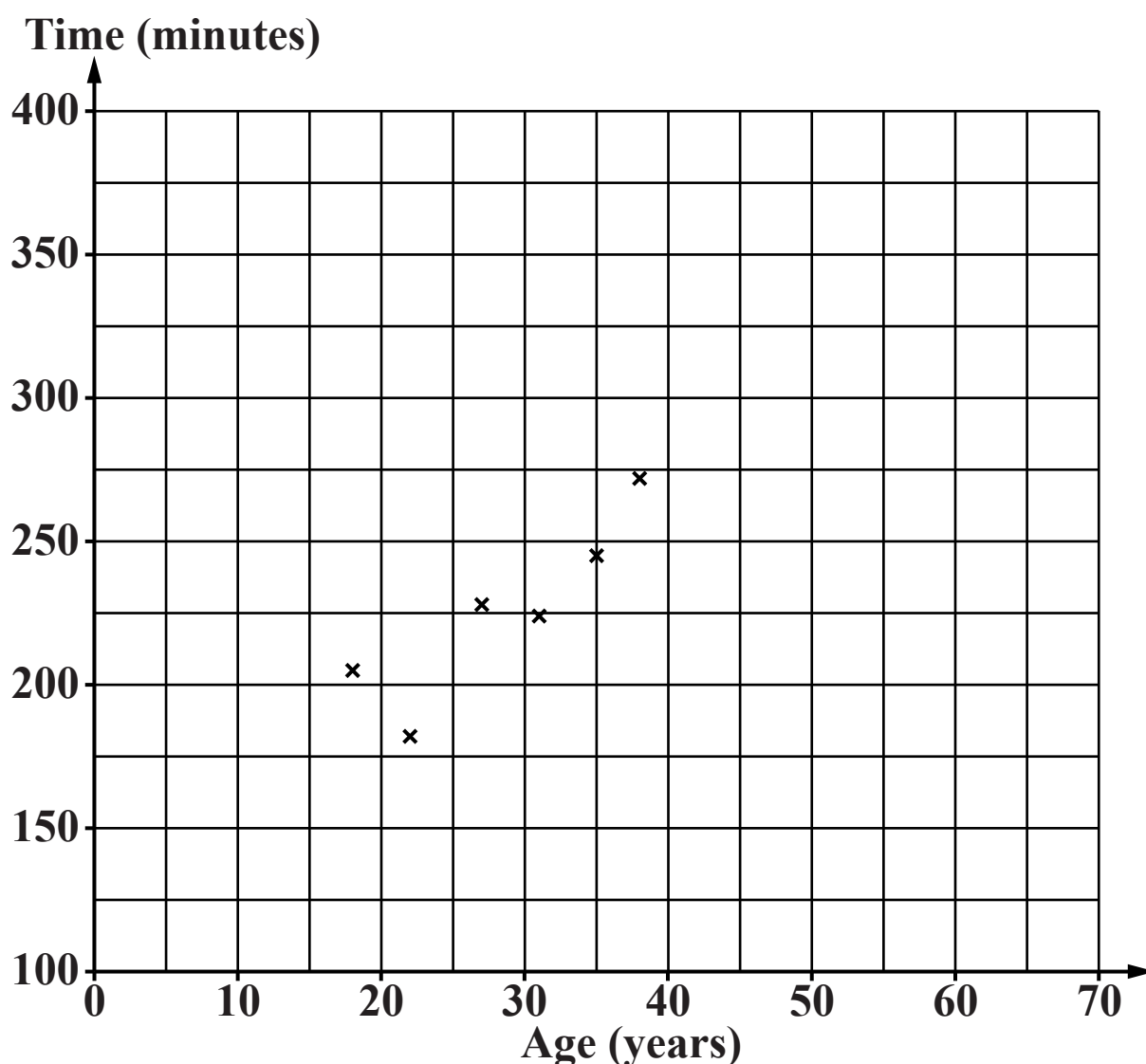
(b) Describe the correlation.   [1 mark]

_____

(c) (i) Draw a line of best fit on your diagram.   [1 mark]

(ii) Chris missed the marathon. Chris is 52 years old. Use your line to estimate how long Chris would have taken to complete the marathon.   [1 mark]

(c)(ii) _____ minutes

4   The *n*th term of a sequence is 5*n* – 2.

   (a) Work out the first three terms of this sequence.
       [2 marks]

                                        (a) _____ _____ _____

   (b) Which term of the sequence is 58?   [1 mark]

                                        (b) _____

   (c) Explain why 99 is not a term in this sequence.   [1 mark]

       _____

       _____

8

5 **Mia has completed these three calculations.**

    A   31·4 × 0·44 = 45·216

    B   21·4 ÷ 0·68 = 14·552

    C   23·43 ÷ 1·42 = 16·5

Only one answer is correct.

(a) **Which answer is correct?** **[1 mark]**

                                    (a) _____

(b) **Explain why the other two answers are wrong.**
    Do NOT do the full calculations.

        _____ **is wrong because** _____

    _____ **[1 mark]**

        _____ **is wrong because** _____

    _____ **[1 mark]**

6 **(a)** Write these fractions in order of size, smallest first.
[1 mark]

$$\frac{3}{5} \qquad \frac{4}{15} \qquad \frac{9}{20}$$

_____ _____ _____
smallest

(b) Express $\frac{1}{6}$ as a recurring decimal. [2 marks]

(b) _____

10

7   Use ruler, compasses and pencil only to answer this question.
    Leave in all your construction lines.

    ABCD is a quadrilateral.
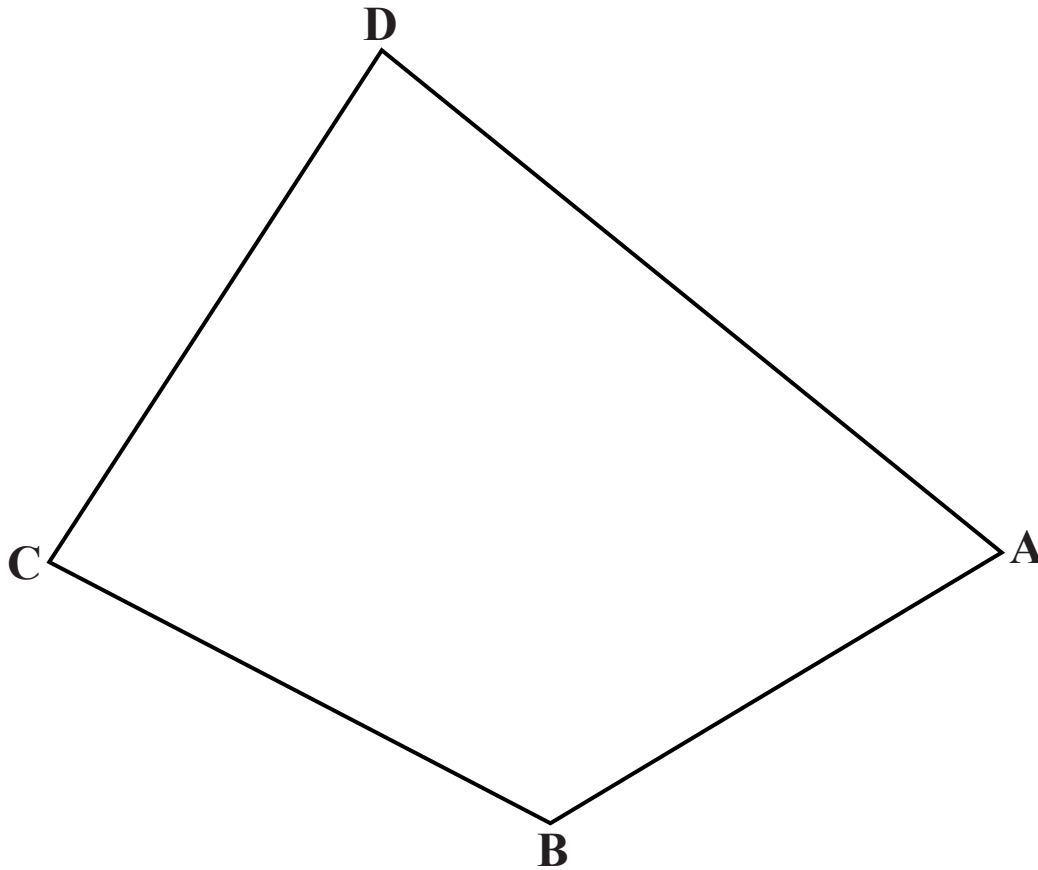
    (a) Construct the bisector of angle B.   [2 marks]

    (b) Identify clearly the locus of points closer to AB than to
        BC AND more than 5 cm from A.   [2 marks]