Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B279A

MATHEMATICS C

(GRADUATED ASSESSMENT)

MODULE M9 – SECTION A

THURSDAY 20 JANUARY 2011: Morning
DURATION: 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)

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

READ INSTRUCTIONS OVERLEAF

DC (CW/JG) 11MEP01200 40946/1

INSTRUCTIONS TO CANDIDATES

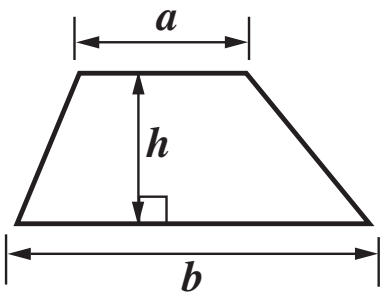
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **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).**
- **Answer ALL the questions.**

INFORMATION FOR CANDIDATES

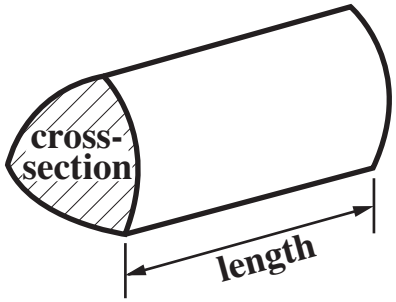
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



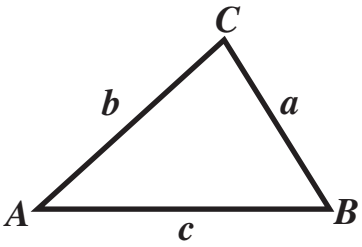
Volume of prism = (area of cross-section) × length



In any triangle ABC

Sine rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

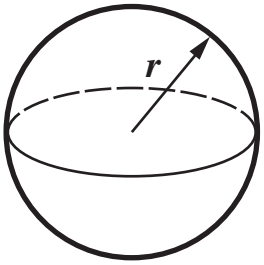
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$



Area of triangle $= \frac{1}{2}ab\sin C$

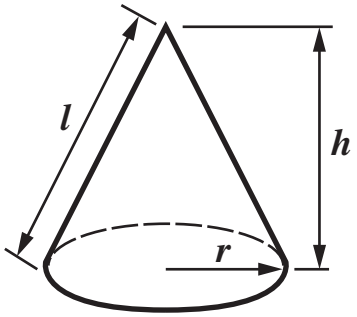
Volume of sphere $= \frac{4}{3}\pi r^3$

Surface area of sphere $= 4\pi r^2$



Volume of cone $= \frac{1}{3}\pi r^2 h$

Curved surface area of cone $= \pi rl$



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$ **where** $a \neq 0$**, are given by**

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

1 Evaluate.

(a) 25^0

(a) _____ **[1]**

(b) $25^{\frac{1}{2}}$

(b) _____ **[1]**

(c) $\left(\frac{2}{3}\right)^{-2}$

(c) _____ **[2]**

2 **A molecule of water has mass 3×10^{-23} g.**

Calculate the mass of 5 million molecules of water.
Give your answer in standard form.

_____ **g [3]**

3 (a) Expand and simplify.

$(3x - 5)(2x + 1)$

(a) _____ [2]

(b) Factorise.

$x^2 - 25$

(b) _____ [1]

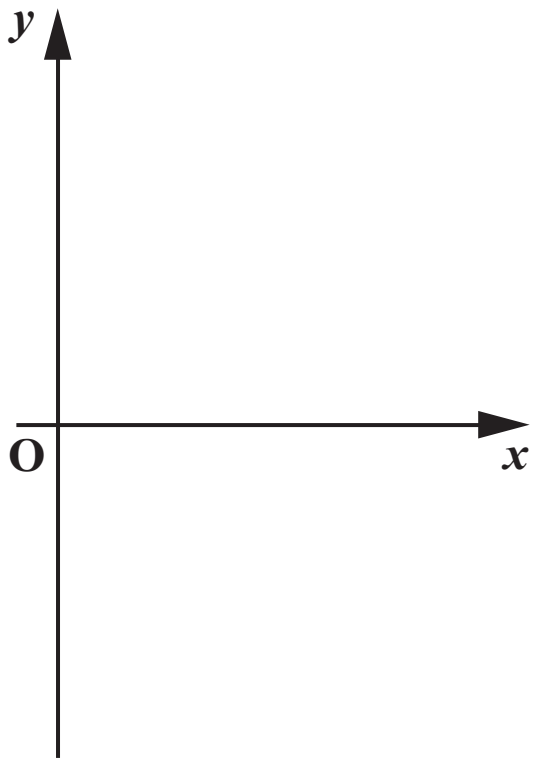
(c) Factorise and solve.

$2x^2 - 7x + 6 = 0$

(c) _____ [3]

4 **You are given that $y \propto \frac{1}{x}$ and that $y = 6$ when $x = 5$.**

(a) Sketch the shape of the graph representing this relationship, for positive values of x.



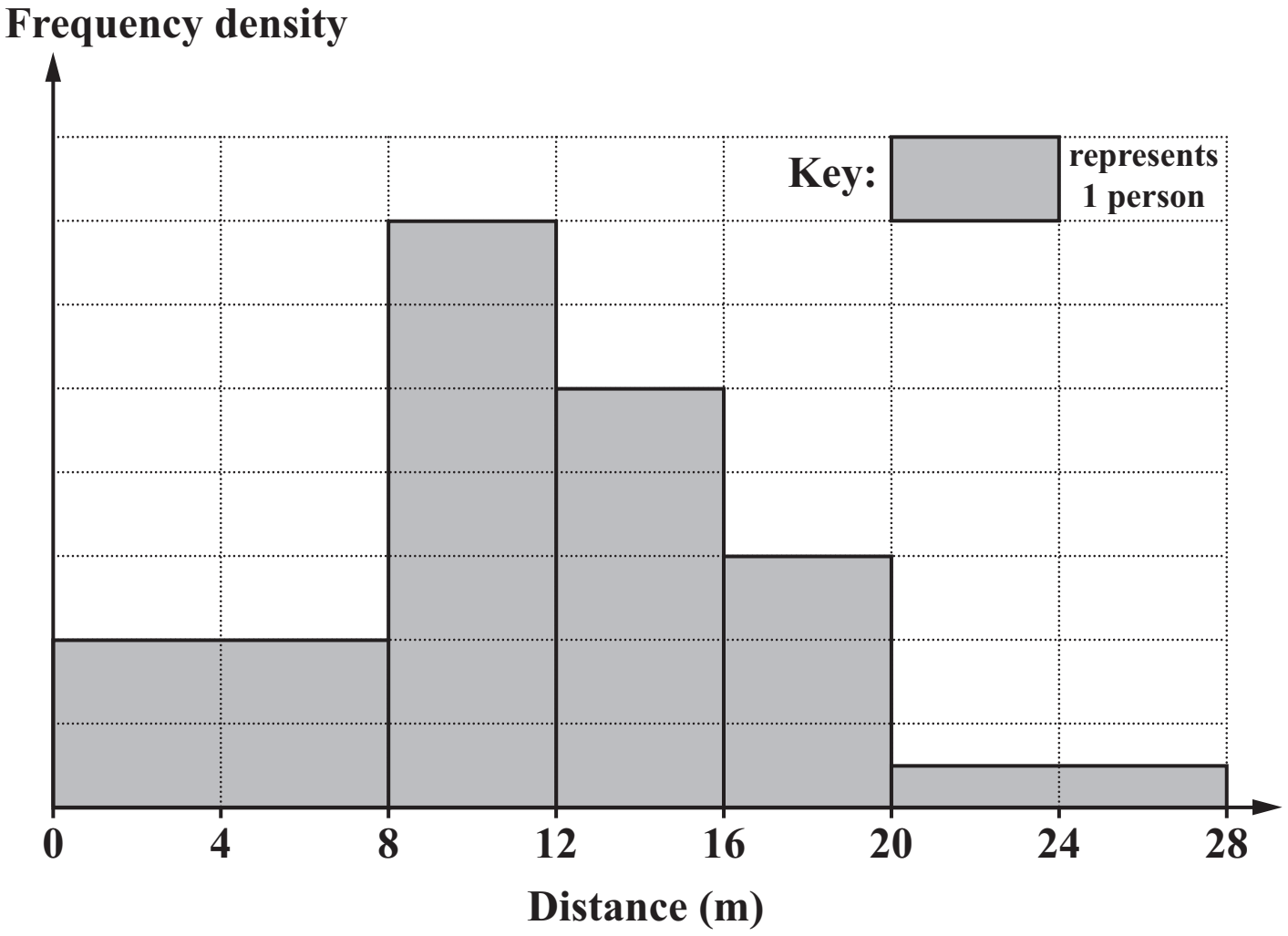
[1]

(b) Find the equation connecting y and x.

(b) _____ [3]

5 At a charity event, there was a welly-throwing competition.

(a) This histogram summarises the distances thrown by the girls.



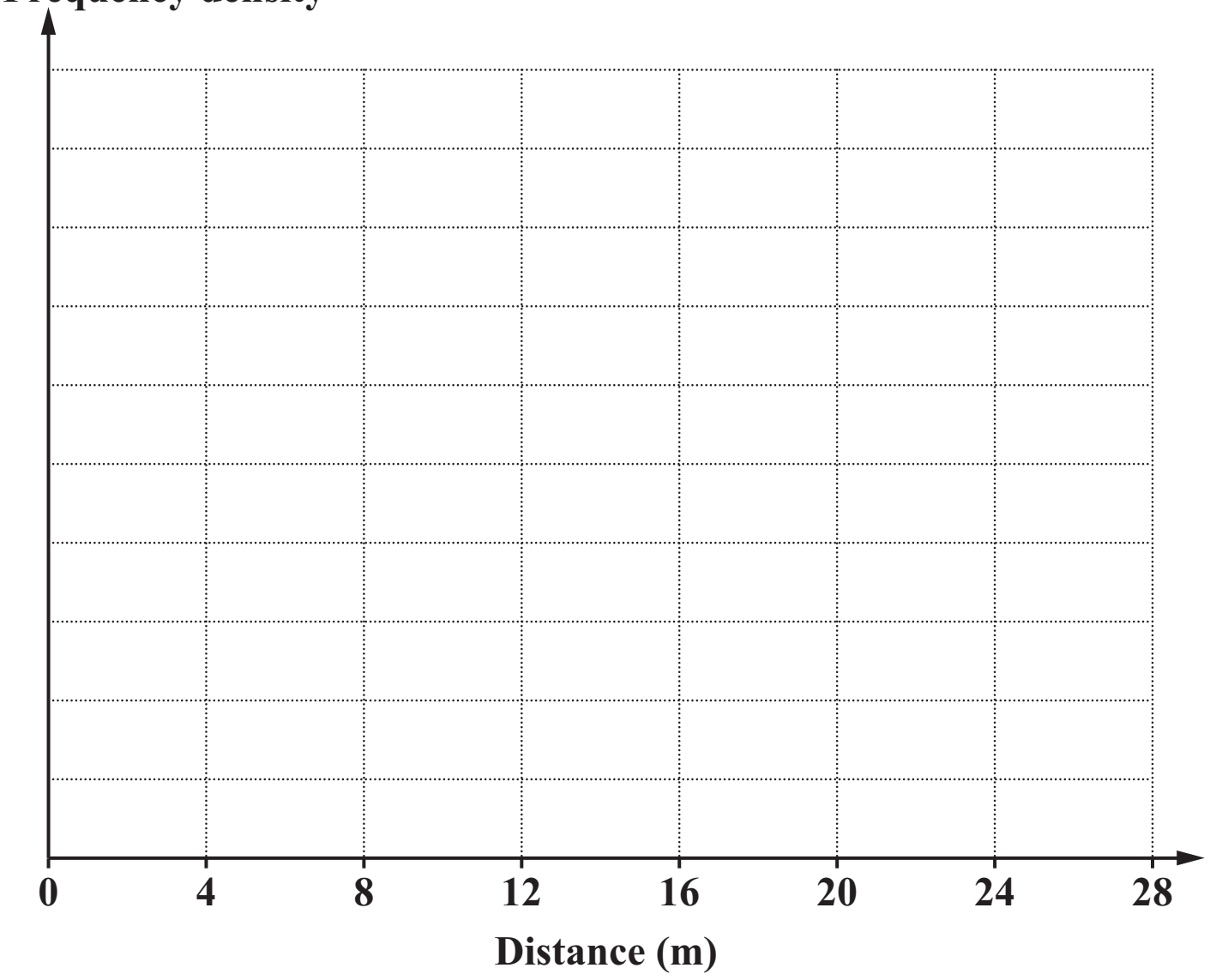
How many girls threw the welly more than 16 metres?

(a) _____ [1]

(b) This table summarises the distances thrown by the boys in the welly-throwing competition.

Distance (d m)	Frequency
$0 < d \leqslant 8$	2
$8 < d \leqslant 12$	6
$12 < d \leqslant 16$	9
$16 < d \leqslant 20$	4
$20 < d \leqslant 28$	3

On the grid below, construct a histogram to represent this information.
Use the same scale as the histogram in part (a).



[2]

6 A line has equation $y = 5x + 3$.

(a) Write down the equation of the line which is parallel to $y = 5x + 3$ and which passes through the point $(0, {}^{-}4)$.

(a) _____ [2]

(b) Find the equation of the line which is perpendicular to $y = 5x + 3$ and which passes through the point (10, 4).

(b) _____ [3]

BLANK PAGE

BLANK PAGE