Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B273B

MATHEMATICS C (GRADUATED ASSESSMENT)

MODULE M3 (SECTION B)

TUESDAY 21 JUNE 2011: Afternoon
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)
Electronic calculator

READ INSTRUCTIONS OVERLEAF

DC (CW/JG) 11MEP06262 47427

INSTRUCTIONS TO CANDIDATES

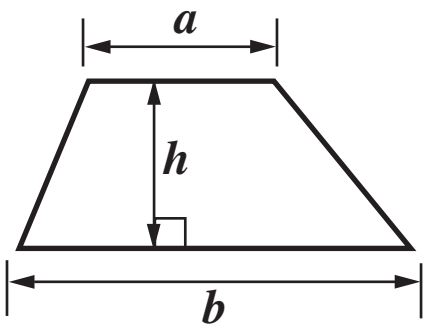
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **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 ALL the questions.**

INFORMATION FOR CANDIDATES

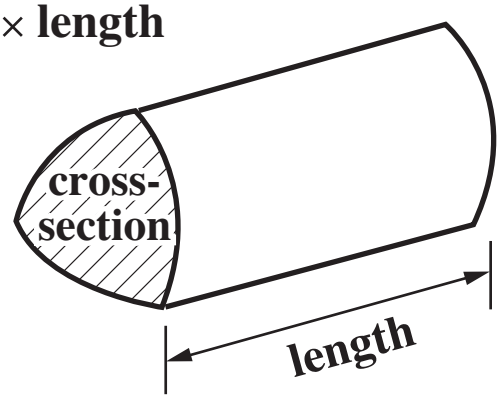
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 4.**
- **You are expected to use a calculator in Section B of this paper.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



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



4 (a) The graph opposite converts between speed in metres per second and speed in miles per hour.

Use the graph to answer these questions.

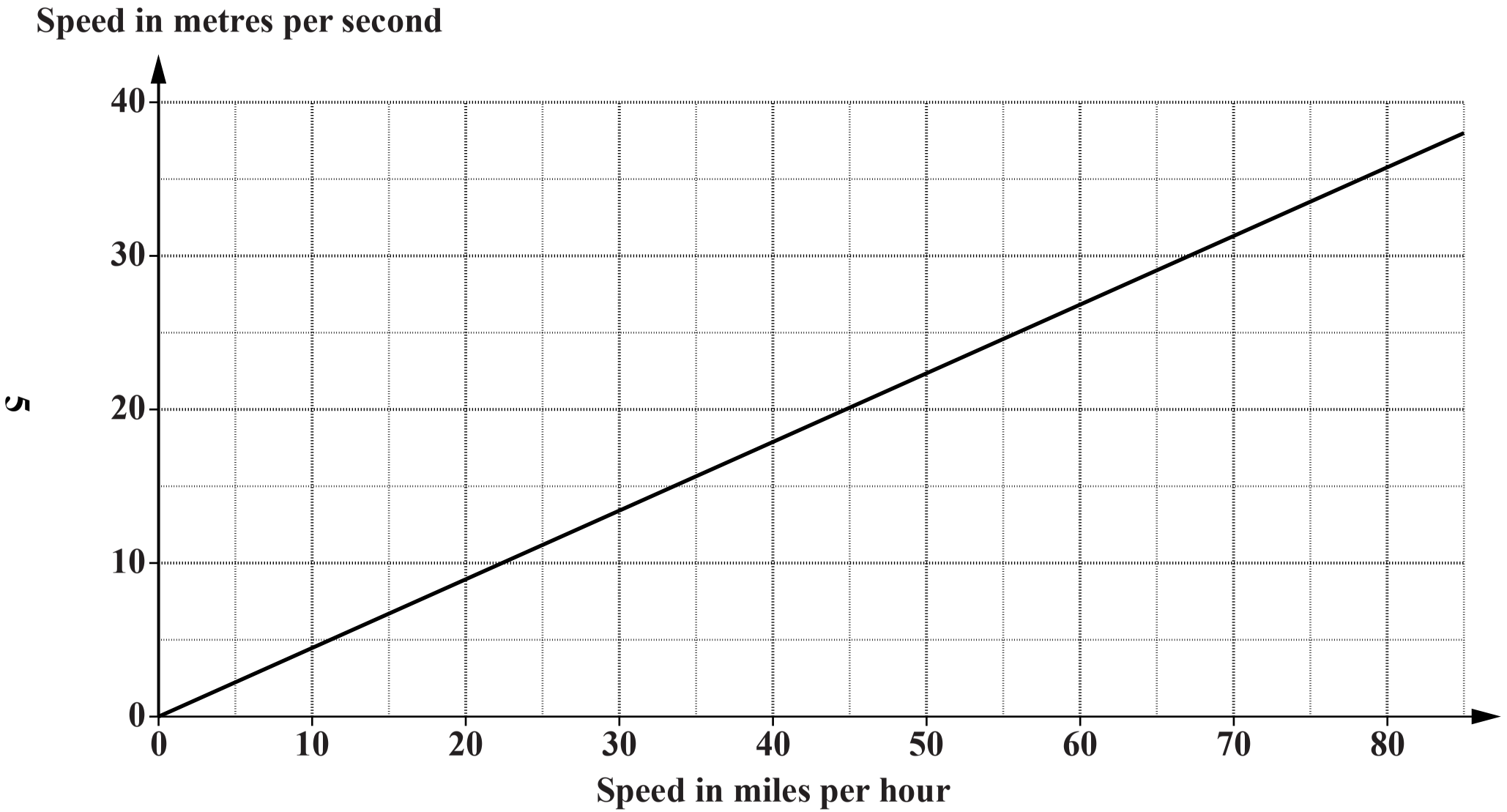
(i) What is 80 miles per hour in metres per second?

(a)(i) _____ metres per second [1]

(ii) Which speed is greater, 45 miles per hour or 25 metres per second?
Explain how you decide.

_____ because _____

_____ [2]


Speed in metres per second
40
30
20
10
0
0
10
20
30
40
50
60
70
80
Speed in miles per hour

5

(b) Wind speeds are measured in knots.
The Beaufort scale of wind force is also used.

Beaufort Scale	Knots	Description
1	1 to 3	Light air
2	4 to 6	Light breeze
3	7 to 10	Gentle breeze
4	11 to 16	Moderate breeze
5	17 to 21	Fresh breeze
6	22 to 27	Strong breeze
7	28 to 33	Near gale
8	34 to 40	Gale
9	41 to 47	Severe gale
10	48 to 55	Storm
11	56 to 63	Violent storm
12	64 to 71	Hurricane

(i) A wind speed is measured at 50 knots.

What number is this on the Beaufort scale?

(b)(i) _____ [1]

(ii) This formula converts speed in knots into speed in miles per hour.

$m = 1{\cdot}15k$

m **is the speed in miles per hour**
and ***k*** **is the speed in knots.**

What is the GREATEST wind speed, in MILES PER HOUR, for a gentle breeze?

(ii) _____ miles per hour [3]

(c) These figures show the wind speed, in knots, taken every 10 minutes in London during one hour.

2·4	6·2	3·4	7·2	4·8	2·4

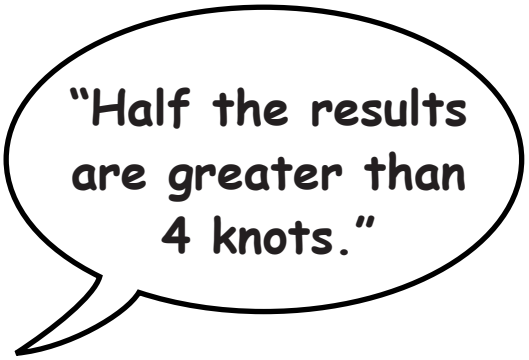
(i) Calculate the mean of these wind speeds.

(c)(i) _____ knots [3]

(ii) What is the range of these wind speeds?

(ii) _____ knots [1]

(iii) Looking at the six wind speeds Jessica says



Is Jessica right?
Give a reason for your answer.

_____ because _____

_____ [1]

5 Cherrapunjee in India is one of the wettest places on earth. Each year, on average, the rainfall is 1112 cm.

(a) A quarter of the rain falls in June.

Calculate the rainfall in June.

(a) _____ cm [1]

(b) This formula gives the volume of rain.

Multiply the rainfall in centimetres by 2·2. **The answer is the number of gallons falling on each square metre.**

In a year in Cherrapunjee, how many gallons of rain fall on an area of 12 square metres?

(b) _____ gallons [2]

6 Solve.

(a) $2a = 12$

(a) _____ [1]

(b) $b + 5 = 13$

(b) _____ [1]

(c) $c \div 2 = 5$

(c) _____ [1]

7 Work out.

(a) $4 \times (15 + 5)$

(a) _____ [2]

(b) $\sqrt{12\,321}$

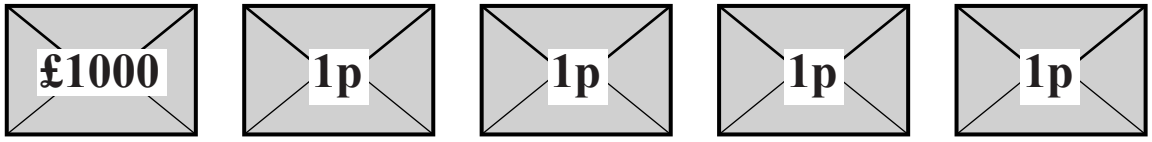
(b) _____ [1]

(c) the square of 47

(c) _____ [1]

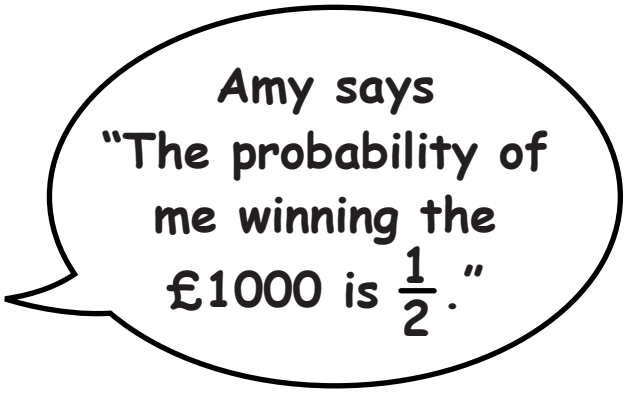
TURN OVER FOR QUESTION 8

8 **Amy has to pick one of these five envelopes to win a prize. She wins the amount of money shown on the envelope.**



Amy picks one of the envelopes without looking.

(a)



Is Amy right or wrong?
Give a reason for your answer.

_____ because _____

_____ [1]

(b) (i) On the scale below, draw an arrow showing the probability that Amy wins exactly 1p.
Label your arrow A. **[1]**

(ii) On the scale below, draw an arrow showing the probability that Amy wins exactly £5.
Label your arrow B.

[1]