

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**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**

## **INSTRUCTIONS TO CANDIDATES**

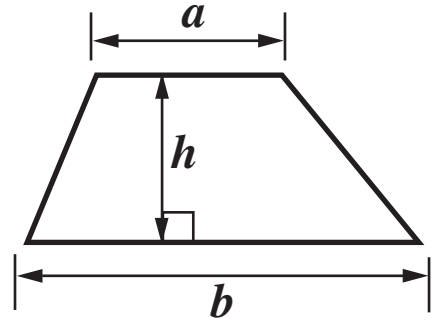
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**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

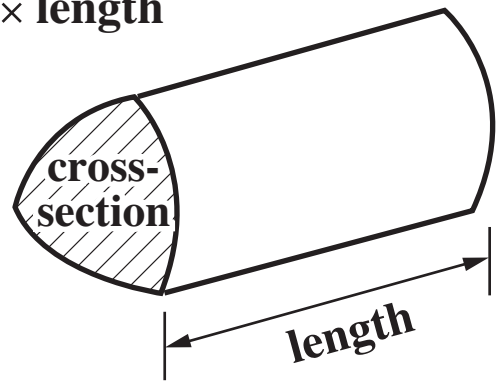
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 4.**
- **You are expected to use a calculator in Section B of this paper.**
- **The total number of marks for this Section is 25.**

# FORMULAE SHEET

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



**Volume of prism = (area of cross-section)  $\times$  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]

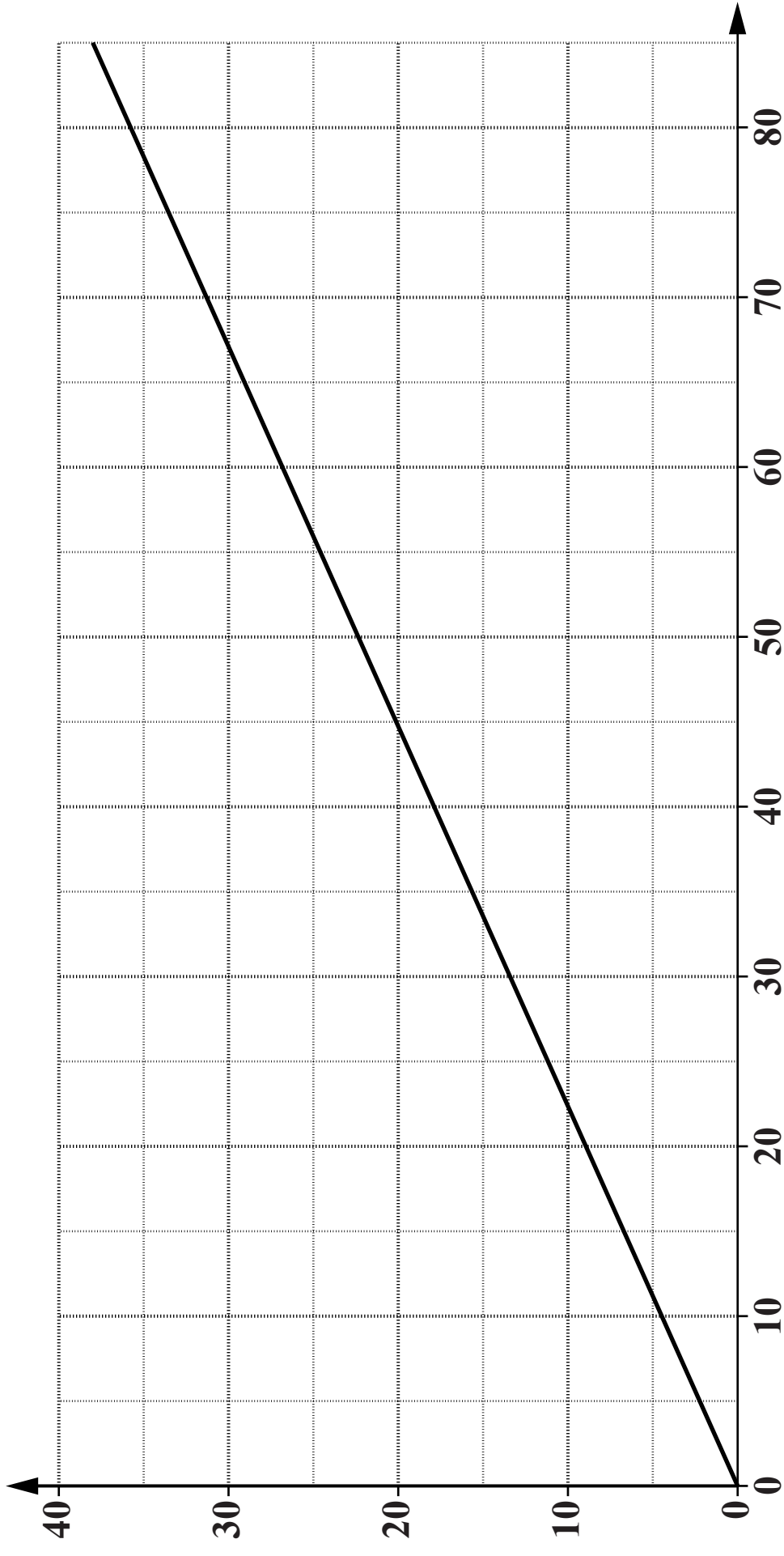
- (ii) Which speed is greater, 45 miles per hour or 25 metres per second?

Explain how you decide.

\_\_\_\_\_ because \_\_\_\_\_

\_\_\_\_\_ [2]

**Speed in metres per second**



**Speed in miles per hour**

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

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

- (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.

$$m = 1.15k$$

$m$  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.**

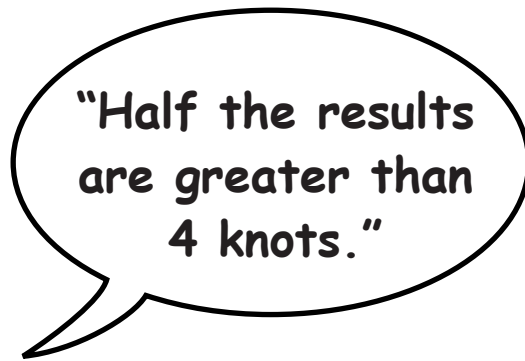
**(c)(i) \_\_\_\_\_ knots [3]**

**(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)  $\sqrt{12321}$**

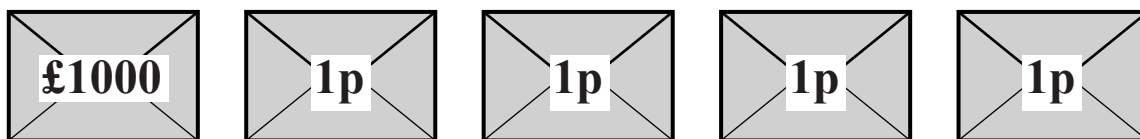
**(b) \_\_\_\_\_ [1]**

**(c) the square of 47**

**(c) \_\_\_\_\_ [1]**

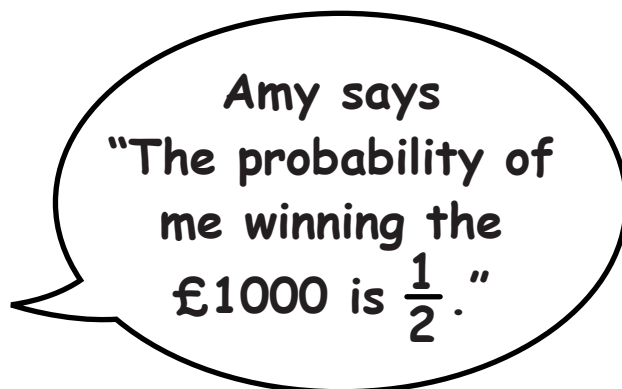
**TURN OVER FOR QUESTION 8**

- 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]

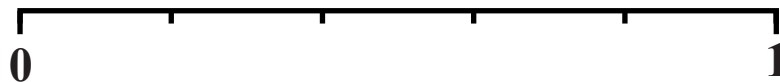
**(b) (i) On the scale below, draw an arrow showing the probability that Amy wins exactly 1p.**

**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]**



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