This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners’ meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
### Abbreviations
- **cao** correct answer only
- **cso** correct solution only
- **dep** dependent
- **ft** follow through after error
- **isw** ignore subsequent working
- **oe** or equivalent
- **SC** Special Case
- **www** without wrong working
- **soi** seen or implied

<table>
<thead>
<tr>
<th>Qu.</th>
<th>Answers</th>
<th>Mark</th>
<th>Part Marks</th>
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</thead>
<tbody>
<tr>
<td>1 (a) (i)</td>
<td>$720.7 – $721.1</td>
<td>2</td>
<td>M1 for $25200 ÷ 72 (=350) or $306 \frac{0.06}{22} \text{ or } \frac{72}{2006}</td>
</tr>
<tr>
<td>(ii)</td>
<td>$1.45</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(b) (i)</td>
<td>$8272</td>
<td>2</td>
<td>M1 for $8000 \times \frac{34}{100} \text{ or better}</td>
</tr>
<tr>
<td>(ii)</td>
<td>8560 - 8562</td>
<td>1ft</td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td>Lydia by $1.52, final answer, cao</td>
<td>2</td>
<td>or C1 for Simone’s 8560 seen or C1 for Simone by $8.28 final answer</td>
</tr>
<tr>
<td>2 (a)</td>
<td>25, 21, 45</td>
<td>2</td>
<td>B1 for 2 correct</td>
</tr>
<tr>
<td>(b)</td>
<td>$n^2$</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>32</td>
<td>2</td>
<td>B1 for $(T =) 1024$ seen</td>
</tr>
<tr>
<td>(d)</td>
<td>$\frac{3}{2} n(n+1)$ oe</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>360</td>
<td>1ft</td>
<td></td>
</tr>
<tr>
<td>(f)</td>
<td>$\frac{1}{2} (n+1)(n+2)$ oe</td>
<td>2</td>
<td>or C1 for $\frac{1}{2}(n-1)(n-2)$ oe</td>
</tr>
<tr>
<td>3 (a)</td>
<td>$x = -4$ cao</td>
<td>2</td>
<td>M1 $2x$ or $±8$ =</td>
</tr>
<tr>
<td>(b) (i)</td>
<td>$y \leq 4.25$ oe final answer</td>
<td>2</td>
<td>C1 for 4.25 oe seen</td>
</tr>
<tr>
<td>(ii)</td>
<td>3, 4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>$x = 1.5, y = -3$</td>
<td>3</td>
<td>B2 for 1 correct value www Or B1 for pair of values satisfying either eqn</td>
</tr>
<tr>
<td>4 (a)</td>
<td>7</td>
<td>2</td>
<td>M1 for $(AF + 16) \times 6 = 138$ or equiv seen</td>
</tr>
<tr>
<td>(b) (i)</td>
<td>$EG = 5.75$</td>
<td>2</td>
<td>C1 for 11.5 seen or for 5.7 or 5.8 seen</td>
</tr>
<tr>
<td>(ii)</td>
<td>$23k : 41k$ where $k$ is an integer</td>
<td>2</td>
<td>B1 for $(their \ 5.75) : (16 – their \ 5.75)$ C1 for $41k : 23k$</td>
</tr>
</tbody>
</table>
5 (a) No and 799.5 cm (or 7.995 m)  
(b) (i) $27  
(ii) $1210 – 1211

2 M1 for 180.5 and 15.5 seen
2 M1 for 130% = 35.10 soi
3 M1 for 50.70×4 + 35.10×5 (378.30)
   M1 for their 378.30×2.2 (=832.26)
   Or their 202.80 × 2.2

6 (a) 35°  
(b) 286.7 to 287  
(c) (0) 31 to (0)31.2

1 M1 for sin their 35 = \(\frac{4}{500}\) or better
2 M1 for their \(\frac{335}{500}\) or \(\frac{500}{335}\)
   B1 for \(\overline{SPQ} = 33.8 – 34\)

7 (a) (i) Bar height 1.4 between 100 – 120  
(ii) \(p = 48\)  
     \(q = 42\)  
(iii) \(\frac{57}{200}\) or 0.285 or 28.5%  

1 M1 for \(\frac{34}{10} \times 30 + \frac{85}{50} \times 50 + \frac{24}{70} \times 70\) (= 7980)
   i.e. 340 + 1710 + 4250 + 1680
   M1 for dividing by 200 (indep)

7 (b) (i) 40 < \(y\) ≤ 60  
(ii) 39.9

1 M1 for \(\frac{34}{10} \times 30 + \frac{85}{50} \times 50 + \frac{24}{70} \times 70\) (= 7980)
   i.e. 340 + 1710 + 4250 + 1680
   M1 for dividing by 200 (indep)

SECTION B

8 (a) 150 m  
(b) \(C\) due east of \(B\) (+2°) and \(C\) 12 cm (+2mm) from \(A\)  
(c) 994.9 to 995 m  
(d) \(\frac{1800}{x}\) or \(\frac{1500}{x+1}\)  
   \(\frac{1800}{x} - \frac{1500}{x+1} = 60\) oe
   Correct eqn with both denominators removed

1 B1 for due E of B, B1 for 12 cm from A
2 B1 for \(\frac{1800^2 - 1500^2}{1000} = 990000\)
   Or \(12^2 - 10^2 = 44\)

B1

B1

B1

3
### Mark Scheme

#### Syllabus Paper

<table>
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<tr>
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<th>Mark</th>
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<td><strong>© Cambridge International Examinations 2013</strong></td>
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#### (e)

\[ x = 7.83, -3.83 \]

- B2 for one correct answer
  - Or for 7.8 – 7.85 \textbf{AND} -3.8 – -3.85
  - OR B1 for \( \frac{4 \pm \sqrt{136}}{2} \) or better.
  - OR C1 for -7.83 AND 3.83

#### (f)

\[ 229 – 230 \text{ s} \]

- 1ft

### Question 9

#### (a)

(i)

\[ \begin{pmatrix} 5 \\ 2 \end{pmatrix} \]

- 1

(ii)

\[ \sqrt{45} \text{ or 6.7 to 6.71} \]

- B1 for \( \begin{pmatrix} -3 \\ 6 \end{pmatrix} \) \text{ or } \begin{pmatrix} 3 \\ -6 \end{pmatrix} \text{ seen. Must be in vector form.}

(iii)

(a) Enlargement Scale Factor 3 Centre B

(b)

\[ \begin{pmatrix} 7.5 \\ 3 \end{pmatrix} \]

- 2ft

- B1 for 7.5

- B1 for 3.

#### (b)

(i)

\[ f(-4) = -2 \]

- 1

(ii)

\[ g = 11 \]

- 2

M1 for \( \frac{3g + 2}{5} = 7 \)

(iii)

\[ f^{-1}(x) = \frac{5x - 2}{3} \]

- 2

C1 for \( \frac{5x + 2}{3} \) \text{ or } \frac{5y - 2}{3} \text{ oe}

### Question 10

#### (a)

(i)

\[ \frac{n}{24} \]

\[ \frac{24 - n}{24} \text{ oe} \]

- 2

- B1

(ii)

(a) \( \frac{n(25 - n)}{25 \times 24} \) oe final answer

- 1

(b)

\[ p = 4 \]

- 2

B1 for their (a) = \( \frac{1}{p} \)

(iii)

\[ n = 15 \text{ or } 10 \]

- 2

M1 for \( (n - 15)(n - 10) \) \text{ or } \( \frac{25 \pm \sqrt{25}}{2} \) seen

(iv)

\[ \frac{3}{20} \]

- 2

C1 for \( \frac{2}{20} \) oe
### Question (b) (i)

- **Marking Scheme:** 3 marks
- **Marking Details:**
  - 1 mark for 300
  - 1 mark for 
  - 1 mark for 25

### Question 11 (a) (i)

- **Marking Scheme:** 1 mark
- **Marking Details:**
  - 1 mark for $-8.5$

### Question 11 (a) (ii)

- **Marking Scheme:** 3 marks
- **Marking Details:**
  - 3 marks for 8 points correctly plotted and joined with a smooth curve on correct axes

### Question 11 (a) (iii)

- **Marking Scheme:** 2 marks
- **Marking Details:**
  - 2 marks for $2.5 - 6.5$ (dep on tangent soi)

### Question 11 (a) (iv)

- **Marking Scheme:** 2 marks
- **Marking Details:**
  - 2 marks for $-0.85$ to $-0.95$

### Question 11 (b) (i)

- **Marking Scheme:** 2 marks
- **Marking Details:**
  - 2 marks for $p = 1.2$
  - 2 marks for $q = 0.5$

### Question 11 (b) (ii)

- **Marking Scheme:** 2 marks
- **Marking Details:**
  - 2 marks for $\frac{4}{5}$ oe

### Question 12 (a)

- **Marking Scheme:** 3 marks
- **Marking Details:**
  - 3 marks for $r = 22$ cao

### Question 12 (b) (i)

- **Marking Scheme:** 2 marks
- **Marking Details:**
  - 2 marks for $18(0.0)$ to $18.03 \text{ cm}^2$

### Question 12 (b) (ii)

- **Marking Scheme:** 1 mark
- **Marking Details:**
  - 1 mark for $360$ to $360.6 \text{ cm}^3$

### Question 12 (b) (iii)

- **Marking Scheme:** 4 marks
- **Marking Details:**
  - 4 marks for $x = 13.69$ to $13.7$

### Question 12 (b) (iv)

- **Marking Scheme:** 2 marks
- **Marking Details:**
  - 2 marks for $609.8$ to $610.1 \text{ cm}^2$