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 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
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<tr>
<th>Question</th>
<th>Answers</th>
<th>Mark</th>
<th>Part marks</th>
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</thead>
<tbody>
<tr>
<td>1 (a)</td>
<td>$\frac{8-x}{(x-4)^2}$</td>
<td>2</td>
<td>M1 for $\frac{x-2(x-4)}{(x-4)^2}$ or better</td>
</tr>
<tr>
<td>(b)</td>
<td>$x = 2.5$ o.e., $y = -3$</td>
<td>3</td>
<td>B2 for one correct with supporting working Or B1 for pair of values satisfying one equation</td>
</tr>
<tr>
<td>(c)</td>
<td>$x = 6$ or $-1$</td>
<td>3</td>
<td>M1 for $x^2 - 5x - 6 = 0$ M1 for $(x - 6)(x + 1) = 0$ Or M2 for $\frac{5 \pm \sqrt{49}}{2}$ Or M1 for 5 and 2 correct or $\sqrt{49}$</td>
</tr>
<tr>
<td>(d)</td>
<td>$\frac{y + 3}{2y + 5}$ final answer</td>
<td>3</td>
<td>M1 for $(y + 3)(y - 3)$ seen M1 for $(2y + 5)(y - 3)$ seen</td>
</tr>
<tr>
<td>2 (a) (i)</td>
<td>0 or none</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td>7, 8, 11, 13, 14</td>
<td>1</td>
<td>All correct</td>
</tr>
<tr>
<td>(iii)</td>
<td>$\frac{3}{11}$ or 0.27 or better</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(iv)</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(b) (i)</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(ii)</td>
<td>11</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td>18</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mark Scheme</td>
<td>Syllabus</td>
<td>Paper</td>
</tr>
<tr>
<td>---</td>
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<td>-------</td>
</tr>
</tbody>
</table>
| 3 (a) (i) | 37.5[%] | 2 | M1 for 5.5 ÷ (240 ÷ 60) soi by 1.375
Or B1 for either 150 seen and 90 seen |
| (ii) | 73.5[0] | 2 | M1 for 45 × 5.5 + (60 – 45) × 5.5 × 0.8 oe
Or B1 for 247.5 seen or for 66 seen |
| (iii) | 208.7[0] | 2 | M1 for 240 ÷ 1.15 oe |
| (iv) | 2837.5[0] | 2 | M1 for 2500 × 0.045 × 3 oe soi by 337.5 |
| (b) (i) | 160 | 1 |
| (ii) | 1.21875 to 1.22 | 2 | M1 for 0.78 ÷ 0.64 |
| 4 (a) (i) | 24° | 1 |
| (ii) | 18° | 1 |
| (iii) | 42° | 1 |
| (iv) | 108° | 1 |
| (b) (i) | 14.56 to 14.6 | 2 | M1 for \( \cos 72 = \frac{4.5}{AD} \) |
| (ii) | 13.3 to 13.304… | 2 | M1 for \( \frac{DE}{\sin 66} = \frac{4.5}{\sin 18} \) 
Or for 'their (b)(i) × cos('their (a)(i)')' |
| 5 (a) (i) | \( n + 6, n + 7 \) | 1 |
| (ii) | \( (n + 1)(n + 6) - n(n + 7) \) = \( n^2 + 7n + 6 - n^2 - 7n = 6 \) | 2 | M1 for \( (n + 1)(n + 6) - n(n + 7) \) or reversed
Or B1 for \( n^2 + 7n + 6 \) |
| (b) (i) | 5n + 50 or 5(n + 10) | 2 | M1 for \([n], n + 9, n + 10, n + 11, n + 20 seen\) |
| (ii) | 56, 65, 66, 67, 76 completed in cross | 2 | M1 for \( n = 56 \)
Or for 66 in centre of cross |
<table>
<thead>
<tr>
<th></th>
<th>(a) (i)</th>
<th>(ii)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>60.28 to 60.35</td>
<td>2</td>
<td>M1 for $\pi \times 1.6^2 \times 7.5$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>length 9.6, width 6.4</td>
<td>1</td>
<td>Condone reversed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>98.7 to 99.2</td>
<td>2</td>
<td>M1 for ‘their 9.6 $\times 6.4$’ $\times 7.5$ $-$ 6 $\times$ ‘their 60.3’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) (i) 224.5[375]</td>
<td>2</td>
<td>M1 for 17.75 and 12.65 seen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No, frame could measure 17.5 cm by 12.5 cm</td>
<td>1</td>
<td>Accept statement involving lower bound of either length or width</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>$-3.5, 5.5$</td>
<td>2</td>
<td>B1 for each</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 correct plots joined with smooth curve</td>
<td>2</td>
<td>P1 for at least 5 correct plots</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$x = -2.7$ to $-2.6, 0.3$ to $0.4, 2.2$ to $2.3$</td>
<td>2</td>
<td>FT their curve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tangent drawn at $x = -2$ 2 to 3</td>
<td>M1</td>
<td>A1</td>
<td>On their curve</td>
</tr>
<tr>
<td></td>
<td>(e) (i) $y = 5 - 4x$ oe</td>
<td>2</td>
<td>M1 for $y = -4x + k$ or $y = mx + 5$ or $-4x + 5$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) $C = 1, D = -4$</td>
<td>2</td>
<td>M1 for $\frac{x^3}{2} - 3x + 1 = 5 - 4x$ FT</td>
<td></td>
</tr>
</tbody>
</table>
### 8 (a) 32.25 or 32.75

- **M1** for \((4 \times 5 + 12 \times 15 + 16 \times 25 + 23 \times 35 + 20 \times 45 + 5 \times 55) = 2580\)
- **M1** for ÷ 80

### 8 (b) (i) [4], 16, 32, 55, 75, 80

- **1**

### 8 (b) (ii) 6 correct plots joined with smooth curve using correct axes

- **3** **B2** for 6 correct plots
- **B1** for 4 correct plots

### 8 (b) (iii) (a) 33 to 35

- **1**

### 8 (b) (iii) (b) 18 to 20

- **2** **B1** for 41 to 43 or 21.5 to 23.5

### 8 (c) \(\frac{1}{30}\)

- **2** **M1** for \(\frac{5}{25} \times \frac{4}{24}\)

### 9 (a) 248.6 to 249

- **3** **M1** for 
  \[130^2 + 164^2 + or - [2] \times 130 \times 164 \times \cos 115\]
  And **M1** for 
  \[AC^2 = 130^2 + 164^2 - 2 \times 130 \times 164 \times \cos 115\]

### 9 (b) 9660 or 9661.2(…)

- **2** **M1** for \(\frac{1}{2} \times 130 \times 164 \times \sin 115\)

### 9 (c) 7

- **2** **M1** for \(\frac{9660 \times 3.25}{5000}\) or 6.2 or 6.3

### 9 (d) 43.49 to 43.5

- **2** **M1** for 130 tan 18.5

### 9 (e) 148.6 to 149

- **3** **B1** for 65° or 25° seen
- **M1** for 164 × sin ‘65’ or 164 × cos ‘25’ soi
### Question 10

**(a) (i)**

3.16 to 3.163 or \(\sqrt{10}\)  

**Mark:** 1  

**(ii)**

Vector \(\begin{pmatrix} 3 \\ -3 \end{pmatrix}\) drawn  

**Mark:** 2  

B1 for two correct movement without arrow  
Or one correct movement with arrow

**(iii)**

\(a = 2, \ b = 3\)  

**Mark:** 2  

B1 for each  
Or SC1 \(a = -2\) and \(b = -3\)

**(b) (i)**

**Enlargement**

Scale factor \(-2\)  
Centre \((3, 1)\)  

**Mark:** B1  

B1 for question if second transformation mentioned

**(ii)**

(a) \((5, 4), (7, 4), (5, 6)\)  

**Mark:** 2  

B1 for 2 correct

(b) **Stretch**

Factor 2 x-axis invariant  

**Mark:** B1  

### Question 11

**(a)**

\(\frac{100}{x}\)  

**Mark:** 1  

**(b)**

\(x^2 - 77x + 200 = 0\) derived www  

**Mark:** 4  

B1 for \(\frac{80}{x - 5}\) seen  
M1 for \(\frac{100}{x} + \frac{80}{x - 5} = 2.5\) oe  
M1 for \(100(x - 5) + 80x = 2.5x(x - 5)\)

**(c)**

74.31 and 2.69 final answer  

**Mark:** 4  

B3 for one correct root seen  
or for 74 to 74.31 and 2.69 to 2.7

If in the form \(p \pm (or + or-)\sqrt{q}\)  

B1 for \(p = 77\) and \(r = 2\)  
And B1 for \(q = 5129\) or \(\sqrt{q} = 71.6...\)

**(d)**

74.31, because 2.69 would give negative speed for second part  

**Mark:** 1

**(e)**

11  

**Mark:** 2  

M1 for \(\frac{100}{74.31} - \frac{80}{74.31 - 5}\) or 0.191 [hours]