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.
<table>
<thead>
<tr>
<th>Question</th>
<th>Answers</th>
<th>Mark</th>
<th>Part Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.37</td>
<td>2</td>
<td>B1 for 0.866… or $\frac{\sqrt{3}}{2}$ or 0.5 or $\frac{1}{2}$ or B1 for 1.366… as final answer</td>
</tr>
<tr>
<td>2</td>
<td>$\frac{18}{18}$</td>
<td>2</td>
<td>M1 for $\frac{2}{3} + \frac{36}{2}$ or better</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>2</td>
<td>M1 for $n - 8 = 22$ or $\frac{n}{2} = 15$</td>
</tr>
<tr>
<td>4 (a)</td>
<td>$\frac{5 \times 2}{20}$</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>0.5 or $\frac{1}{2}$ cao</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>$0.5^3 \ 0.5^2 \ 0.5 \ \sqrt{0.5}$</td>
<td>2</td>
<td>B1 for 0.25 , 0.125 and 0.793… seen or for three in correct order</td>
</tr>
<tr>
<td>6</td>
<td>1.6[0]</td>
<td>3</td>
<td>M1 for $800 \times 1.5$ and M1 for their $1200 \div 750$</td>
</tr>
<tr>
<td>7</td>
<td>$4 \pm \sqrt{y - 6}$</td>
<td>3</td>
<td>M1 for their 6 moved correctly M1 for their $\sqrt{\text{taken correctly}}$ M1 for their 4 moved correctly</td>
</tr>
<tr>
<td>8</td>
<td>$\frac{2}{x(x + 1)}$</td>
<td>3</td>
<td>B1 for common denominator $x(x + 1)$ seen M1 for $2(x + 1) - 2x$ oe or better</td>
</tr>
<tr>
<td>9 (a)</td>
<td>119</td>
<td>3</td>
<td>M2 for $18 \times 6 + 11$ oe or B1 for 18 or 11 or 108</td>
</tr>
<tr>
<td>(b)</td>
<td>[0] 1 [00] pm cao</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10 (a)</td>
<td>$(a + b)(x + y)$</td>
<td>2</td>
<td>B1 for $a(x + y) + b(x + y)$ or $x(a + b) + y(a + b)$</td>
</tr>
<tr>
<td>(b)</td>
<td>$(x - 1)(3x - 2)$</td>
<td>2</td>
<td>B1 for $(x - 1)(3(x - 1) + 1)$ If B0 then SC1 for $(x + a)(3x + b)$ where $3a + b = -5$ or $ab = 2$ or $3(x - 1)(x - \frac{1}{3})$</td>
</tr>
</tbody>
</table>

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### Question 11
11.3.9 to 114.0

**Mark Scheme**

- **M2** for \[ \cos(x) = \frac{8^2 + 2^2 - 9^2}{2 \times 8 \times 2} \]
- or **M1** for \( 9^2 = 8^2 + 2^2 - 2 \times 8 \times 2 \times \cos x \)

**A1** for \(-0.406\) or \(-0.4063\) to \(-0.4062\) or \(-0.405\)

**SC2** for \(54.3\) or \(11.7\) or \(11.71\) to \(11.72\)

**SC1** for \[\cos(\theta) = \frac{9^2 + 2^2 - 8^2}{2 \times 9 \times 2}\]

**M2** for \(\frac{9^2 + 2^2 - 2^2}{2 \times 9 \times 2}\)

### Question 12

- **(a)** \(2 \times 10^{10}\)
- **(b)** \(1.25 \times 10^{-1}\)

**Mark Scheme**

- **B1** for \(20 \times 10^7\) or \(20 000 000 000\)
- **B1** for \(0.125\) or \(0.125\) or \(0.125\)

### Question 13

- **(a)** \(32\)
- **(b)** \(35\)

**Mark Scheme**

- **B1** for \(AOC = 116\)
- **B1** for \(CDA = 122\)

### Question 14

\[ y = \frac{2}{3}x - 2 \]  

**Mark Scheme**

- **B1** for \((9, 4)\)
- **M2** for \(y = kx - 2 (k \neq 0)\) or \(y = \frac{2}{3}x + k (k \neq 0)\) or \(\frac{2}{3}x - 2\)
- or **M1** for \(y = \frac{2}{3}x\) or \(\frac{2}{3}x + k (k \neq 0)\)

### Question 15

- **[0], 1, 2, 3**

**Mark Scheme**

- **M1** for moving the 5 correctly
- **M1** for collecting their terms
- **A1** for a correct inequality for \(x\) eg \([0 \leq x < 4]\)

### Question 16

- **(a)** \(8\)
- **(b)** \(2^{\frac{3}{q^2}}\)

**Mark Scheme**

- **B1** for \(2^{12}\) or \(4096\)
- **B2** for \(kq^2\) as the answer
- or **B1** for \(2q^2\) and **B1** for \(\frac{1}{q^2}\) oe nfww

### Question 17

- **(a)** correct working
- **(b)** 6 nfww

**Mark Scheme**

- **M1** for \(1\) holiday = \(5\) or \(360 \div 72 = 5\)
- and **B1** for \(24 \times 5 = 120\)
- or **M2** for \(\frac{24}{72} \times 360 = 120\) oe
- **M1** for \(150 + 120 + x + 2x = 360\) oe
- **A1** for \(30\) identified as the required angle

### Question 18

- **(a)** correct working

**Mark Scheme**

- **B2** for \(\sqrt[3]{\frac{1}{8}} = \frac{1}{2} \) or \(\frac{1}{2}\) = \(2\) AND \(\frac{10}{2} = 5\) oe and \(\frac{4}{2} = 2\) oe
- or **B1** for \(\sqrt[3]{\frac{1}{8}}\) or \(\frac{\sqrt[3]{8}}{\sqrt[3]{2}}\) or \(8 = 2^3\) or \(\frac{1}{8} = \left(\frac{1}{2}\right)^3\)

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| (b) | 147 or 146.5 to 146.6… | 4 | M3 for $\frac{7}{8} \times \frac{1}{3} \times \pi \times 4^2 \times 10$

or

M1 for $\frac{1}{3} \times \pi \times 4^2 \times 10$

and

M1 for $\frac{1}{3} \times \pi \times 2^2 \times 5$

and

M1 for subtracting *their* volumes |
|---|---|---|---|
| 19 | 1.38 or 1.39 or 1.384 to 1.389 | 7 | M3 for [Area $\Delta =$] $\frac{1}{2} \times 8 \cos 60 \times 8 \sin 60$

or M1 for [AE $=$] $8 \cos 60$ and M1 for [ED] $= 8 \sin 60$

and

M1 for Area sector $\frac{30}{360} \times \pi \times 8^2$

and

M1 for Area rectangle $= 8 \times 8 \cos 60$ or $8 \times 4$

M1 for *their* $32 - (their\ 13.86 + their\ 16.76)$ or better |