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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates’ scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2007 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
1. (a) \( \frac{9}{40} \) cao
(b) 0.018 or equiv.

2. (a) \( \frac{8}{9} \) cao
(b) \( \frac{1}{6} \) cao

3. (a) 4.32(0)
(b) \((-1)^1, 3^{-1}, 3^0, 3^1\)

4. (a) 56°
(b) 2 cm

5. (a) 375
(b) 27

6. (a) 6
(b) 3 – 2x

7. rectangle from 4-5 height 20
rectangle from 5-8 height 5

8. (a) \( y > 1, \quad y < 2x \) or equiv.
(b) 3

9. (a) \( B \cap C \cap A' \)
(b) (i) 31
(ii) 9 or f.t. 40 – their (b)(i)

10. (a) \[
\begin{pmatrix}
8 & -3 \\
9 & -4
\end{pmatrix}
\]
(b) \[
\begin{pmatrix}
3 & 0 \\
0 & 3
\end{pmatrix}
\]
(c) \[
\begin{pmatrix}
0 & \frac{1}{3} \\
-1 & 1\frac{1}{3}
\end{pmatrix}
\]

11. (a) 5.35 5.45
(b) 82.5 87.5

12. (a) 120 newtons
(b) 8

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13 (a) 4 minutes
(b) st. line from (0,0) to (their (a), 2h)
st. line from (their (a), 2h) to (12, 3h)

14 (a) \( x = 28 \)
(b) \( y = \frac{2}{3} \) (accept 0.66... or better)

15 Any 3 correct columns in their table.
Most possible values are given here:

<table>
<thead>
<tr>
<th>W</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>33</td>
<td>31</td>
<td>29</td>
<td>27</td>
<td>25</td>
<td>23</td>
<td>21</td>
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<td>15</td>
<td>13</td>
<td>11</td>
<td>9</td>
<td>7</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>A</td>
<td>99</td>
<td>124</td>
<td>145</td>
<td>162</td>
<td>175</td>
<td>184</td>
<td>189</td>
<td>190</td>
<td>187</td>
<td>180</td>
<td>169</td>
<td>154</td>
<td>135</td>
<td>112</td>
<td>85</td>
<td>54</td>
</tr>
</tbody>
</table>

Length = 19 m
Area = 190 m²

16 \( x = 7 \) \( y = -2 \) both 3 or B2 for either or B1 for a pair of values that fits either equation

17 (a) (i) \( 5 \times 10^{-2} \)
(ii) \( 2 \times 10^2 \)
(b) (i) \( 2 \times 3^2 \times 5^3 \) (or \( 2 \times 3^2 \times 5^3 \))
(ii) \( n = 12 \)

Accept 3x3 etc.

18 (a) \( \frac{360}{150 - 165} \) or \( 180(n - 2) = 165n \) or equiv M1
24 A1 2 *
(b) 45 2 *

or B1 for 30 or 150 seen

19 (a) 40 2 *
or sc1 for 48 or 50, or for an answer that rounds to 40 or B1 for both 16 and 30, or 480, or \( \sqrt{150} \approx 12 \) seen

(b) their100m or 500 x 60 M1
30 km/h A1 2 *

Accept 29.8 to 30.31

20 (a) \( 3a^2 (5 + 4a) \)
(b) \( (1 - 4b)(1 + 4b) \)
(c) \( (3c - d)(2x - y) \) 2 *
or B1 for correct, partial factorisation of any two terms
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>21</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>( h = \frac{1}{4} ) or 0.25</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>(i) ( \frac{3}{10} ) or 0.3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) 0 cao</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(iii) ( \frac{1}{10} ) or 0.1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>22</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>clear ( 30 + (300 - \frac{1}{2} \times 30 \times &quot;12&quot;) \div &quot;12&quot; ) M1</td>
<td>2 *</td>
<td>or sc1 for a final answer of 10 or B1 for 180 or 120 seen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 s A1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>tangent drawn at ( t = 55 ) T1</td>
<td>2 *</td>
<td>no “daylight”, nor freehand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.12 to 0.24 ( + or -) B1</td>
<td></td>
<td>dep. on using an acceptable tangent</td>
<td></td>
</tr>
<tr>
<td><strong>23</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>20°C</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>(i) 4°C</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) 2400 m</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(iii) ( 16 - \frac{x}{150} )</td>
<td>2</td>
<td>or sc1 for their (a) ( \times x )</td>
<td></td>
</tr>
<tr>
<td><strong>24</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>(4) 8, 16, 12</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>( x = 2n )</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( y = n^2 )</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>( z = n^2 - n ) or equiv</td>
<td>2</td>
<td>or sc1 for a correct expression in terms of ( x ) and/or ( y ) (and possibly also including the variable ( n ) )</td>
<td></td>
</tr>
<tr>
<td><strong>25</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>293° to 295°</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>completed ( \triangle ACD ) with two arcs at ( D )</td>
<td>1</td>
<td>within 2 mm of correct pt</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>(i) perp. bisector of ( AC )</td>
<td>1</td>
<td>within 2 mm, 2°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) line parallel to ( AB ), 5 cm above ( AB )</td>
<td>1</td>
<td>within 2 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(d) ( CP = 6.3 ) to 6.7</td>
<td>1</td>
<td>Accept dashed lines.</td>
<td>dep. on the correct loci and the label ( P ) at their intersection</td>
</tr>
</tbody>
</table>