FUNCTIONAL SKILLS MARK SCHEME

MAY 2012

MATHEMATICS - LEVEL 2
0810/02
<table>
<thead>
<tr>
<th>2012 Summer Functional Mathematics Level 2</th>
<th>Mark</th>
<th>FINAL MARK SCHEME (16/05/12) Comments (Page 1)</th>
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<tbody>
<tr>
<td>1. Papers identified and labelled on one axis. Uniform scale starting at 0. All seven bars at correct height.</td>
<td>B1</td>
<td>Or indicated on the bars.</td>
</tr>
<tr>
<td>106</td>
<td>B1</td>
<td>B1 for at least four correct heights.</td>
</tr>
</tbody>
</table>
| \[
\begin{align*}
(1) &: 4 : 10 \\
\frac{56}{350} \times 100 &= 16(\%)
\end{align*}
\] | \[
\begin{align*}
114 \times (£)1 + 50 \times (£)1 + 56 \times (£)1 + 80 \times (£)1.50 + 32 \times (£)2.20 + 10 \times (£)2.20 + 8 \times (£)2.20 &= (£)450 \\
(£)450 \times 0.15 &= (£)67.5(0)
\end{align*}
\] | B1 |
| \[
\begin{align*}
\text{Allow M1 for } \frac{56}{350} \text{ ‘their total’ } \times 100.
\end{align*}
\] | \[
\begin{align*}
\text{Implied by sight of at least 5 correct values in a list of 7. (114, 50, 56, 120, 70.4(0), 22 and 17.6(0))}
\end{align*}
\] | A1 |
| \[
\begin{align*}
\text{F.T. ‘their £450’}.
\end{align*}
\] | \[
\begin{align*}
\text{Ignore incorrect cancelling} \\
\text{B1 for } \frac{50}{x}, x > 50 \text{ OR B1 for } y/350, y < 350. \\
\text{OR B1 for incorrect notation e.g. “50 out of 350”.} \\
\text{Do not penalise consistent incorrect total number of papers. e.g. if } (\frac{56}{320}) \times 100 \text{ used earlier, then allow B2 here for } \frac{50}{320.
\end{align*}
\] | B1 for each. |
| \[
\begin{align*}
\text{B2 for } \frac{50}{350} \text{ or equivalent.}
\end{align*}
\] | \[
\begin{align*}
\text{Once marks awarded ignore}
\end{align*}
\] | 2 |
| \[
\begin{align*}
\text{Two different, relative and valid comments.} \\
\text{Valid reasons suggested for both comments.}
\end{align*}
\] | \[
\begin{align*}
\text{E2 for each.}
\end{align*}
\] | 4 |
| \[
\begin{align*}
\text{Once marks awarded ignore}
\end{align*}
\] | \[
\begin{align*}
\text{Further comments.}
\end{align*}
\] | 18 |
2. \[ 800 \div 32 = 25 \]

(Attraction open for) 10 hours

(Complete rotations during the day) 20

(Possible number of passengers) 16000

(Actual number of passengers) 14400

\[
\begin{align*}
7200 \text{ (Adults)} & \quad 3600 \text{(under 15)} & \quad 3600 \text{(60+)} \\
7200 \times (£17.95) + 3600 \times (£19.50) + 3600 \times (£14.30) &= (£129240) + (£34200) + (£51480) \\
&= (£214920)
\end{align*}
\]

Use of \( C = \pi d \) OR \( C = 2\pi r \)

Substitution of two of \( C = 424, \, d = 135, \, \pi = 3.14... \)

3rd variable correctly calculated

A comparison stated.

\[
\begin{align*}
24 \times 60 \times 30 \\
\div 100 &= 432
\end{align*}
\]

A comparison stated.

\[ 135 \times 2/5 \text{ or equivalent.} \]

\[ = 54 \text{(metres)} \]

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<tr>
<td>2. [ 800 \div 32 = 25 ]</td>
<td>M1</td>
<td>F.T. ‘their number of hours’ × 2.</td>
</tr>
<tr>
<td>(Attraction open for) 10 hours</td>
<td>A1</td>
<td>F.T. ‘their number of rotations’ × 800.</td>
</tr>
<tr>
<td>(Complete rotations during the day) 20</td>
<td>B1</td>
<td>F.T. ‘their number of passengers’ × 0.9.</td>
</tr>
<tr>
<td>(Possible number of passengers) 16000</td>
<td>B1</td>
<td>Note that these B marks will imply previous B marks.</td>
</tr>
<tr>
<td>(Actual number of passengers) 14400</td>
<td>B1</td>
<td>E.g. 16000 alone will imply B1,B1,B1,B0.</td>
</tr>
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</table>

7200 \times (£17.95) + 3600 \times (£19.50) + 3600 \times (£14.30) = (£129240) + (£34200) + (£51480) = (£214920)

F.T. ‘their 14400’. All three must be correct.

π may be used on calculator. If π taken as 3 then mark accordingly and penalise −1.

Alternate methods

\[
\begin{align*}
424 \div 30 \div 60 & \quad M1 \\
\times 100 & \quad M1 \\
= 23.5(5..) & \quad A1 \\
A \text{ comparison stated} & \quad A1
\end{align*}
\]

Or

\[
\begin{align*}
424/24 & \quad M1 \\
\times 100 & \quad M1 \\
=1766(6..sec) \text{ or } 29(-4..min) & \quad A1 \\
A \text{ comparison stated} & \quad A1
\end{align*}
\]

Accept indication ratio between 2\% : 1 and 2\% : 1

2 marks for answers between 49 and 60 inclusive.
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<tr>
<td><strong>3.</strong></td>
<td><strong>M1</strong></td>
</tr>
<tr>
<td>24000/8 OR 24000/10 3000(litres) AND 2400(litres)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>3000 × (£)1.339 OR 2400 × (£)1.409 (£)4017 AND (£)3381.6(0) (Saving of) (£)635.4(0)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>24000 × (\frac{8}{5}) OR 35000 × (\frac{5}{8}) OR equivalent.</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>(\frac{38400}{8}) OR (21875) (miles)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>(Distance =) (3 \times 40)</td>
<td><strong>M1</strong></td>
</tr>
<tr>
<td>= 120 (miles)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>(Time =) (120 \div 30)</td>
<td><strong>M1</strong></td>
</tr>
<tr>
<td>= 4 (hrs)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>(average speed =) (\frac{120 + 120}{3 + 4})</td>
<td><strong>M1</strong></td>
</tr>
<tr>
<td>= (34(\cdot28\ldots)) (mph)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td>‘NO’ (she was not correct)</td>
<td><strong>A1</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(3)</strong></td>
</tr>
</tbody>
</table>

| **4.** | **M1** |
| (Volume cylinder =) \(\pi \times 7^2 \times 13.6\) | **A1** |
| = 2093(\cdot5\ldots)\(\text{cm}^3\) | **A1** |
| (Volume hemis. =) \(\frac{2}{3} \times \pi \times 10^3\) | **M1** |
| = 2094(\cdot3\ldots)\(\text{cm}^3\) | **A1** |
| (S. Area cylinder =) \(2 \times \pi \times 7 \times 13.6 + \pi \times 7^2\) | **M1** |
| = 752(\cdot0\ldots)\(\text{cm}^2\) | **A1** |
| (S. Area hemis. =) \(2 \times \pi \times 10^2\) | **M1** |
| = 628(\cdot3\ldots)\(\text{cm}^2\) | **A1** |
| Capacity / Volume : e.g. ‘not much difference’, ‘hemisphere has greater volume’. | **B1** |
| Material / Area : e.g. ‘cheaper to make hemisphere’, ‘area cylinder more’. | **B1** |
| Packaging : A clear decision stated. | **B1** |
| Stability : ‘Cylinder more stable’. | **B1** |
| | **(7)** |

**Accept consistent working in pence for next part.**

**F.T.** ‘their litres’. Allow use of £1.34 and £1.41.

Accept (£)4020 and (£)3384.

**F.T.** ‘their two values’.

| **F.T.** ‘their calculated values’. | **M1** |
| OR \(7 \times 35\) | **A1** |
| or 240 / 35 | **M1** |
| = 245 (miles) | **A1** |
| = 6(\cdot8\ldots)(hrs) | **A1** |

Accept 2092 to 2095 inclusive.  
*If these answers are seen but the candidate proceeds to make incorrect use of units, penalise -1 once only.*

Accept 2093 to 2096 inclusive.

Accept 751 to 753 inclusive.

Accept 628 to 629 inclusive.

Accept valid comments, but there has to have been a calculation made in order to **F.T.** when comparing capacity and area.

Simply re-stating their values is **B0**.