## Assessment Schedule – 2010

**Mathematics: Use geometric reasoning to solve problems (90153)**

### Evidence Statement

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Achievement</th>
<th>Achievement with Merit</th>
<th>Achievement with Excellence</th>
<th>Scoring rubic</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE (a)</td>
<td>Use geometric reasoning to solve problems.</td>
<td>Use and state geometric reasoning in solving problems.</td>
<td>Solve an extended geometrical problem.</td>
<td>N0</td>
</tr>
</tbody>
</table>
|                 | $\angle AED = 69^\circ$  
$\angle ADE = 180^\circ - 80^\circ - 69^\circ$  
$= 31^\circ$ | $\angle AED = 69^\circ$ (vert opp $\angle$s =)  
$\angle ADE = 180^\circ - 80^\circ - 69^\circ$ (\angle sum $\triangle$)  
$= 31^\circ$ |  | N1 One angle correctly calculated |
| (b)             | $\angle FJK = 62^\circ$  
$\angle EFK = 180^\circ - 2 \times 62^\circ$  
$= 56^\circ$ | $\angle FJK = 62^\circ$ (\angle$s$ on a line)  
$\angle EFK = 180^\circ - 2 \times 62^\circ$  
(coint $\angle$s, // lines)  
$= 56^\circ$  
$\angle FJK = 62^\circ$ (base $\angle s = isos \triangle$)  
OR equivalent. |  | N2 One question part correctly calculated |
| (c)             | Two steps towards proof correct. | Two steps towards proof with correct reasons. |  | A3 One question part correctly answered with reasons |

### Scoring Rubric

- **N0**: One angle correctly calculated
- **N1**: One question part correctly calculated
- **A3**: One question part correctly answered with reasons
- **A4**: Two question parts of correctly answered (without reasons)
- **M5**: Two question parts correctly calculated, one with reasons given
- **M6**: Two question parts correctly calculated and reasons given, with minor error ignored
- **E7**: One incorrect step in either the reason or calculation in question 1c otherwise correct
- **E8**: Question 1c correctly solved
### TWO

**(a)**

<table>
<thead>
<tr>
<th>( \angle TUR = 78^\circ )</th>
<th>( \angle URT = 75^\circ )</th>
</tr>
</thead>
</table>
| \( \angle TUR = 78^\circ \) Corresponding angles parallel lines  
\( \angle URT = 75^\circ \) angle sum of triangle is 180° |

**(b)**

<table>
<thead>
<tr>
<th>( \frac{x}{100} = \frac{18}{30} )</th>
<th>( x = 60 \text{ cm} )</th>
</tr>
</thead>
</table>
| In \( \triangle TRU \) and \( TPW \)  
\( \angle T \) is common  
\( \angle U = \angle W \) and \( \angle R = \angle P \) (corr \( \angle s, // \) lines)  
(minimum of two angles the same)  
\( \rightarrow \) they are similar \( \triangle s \)  
\( \rightarrow \frac{x}{100} = \frac{18}{30} \rightarrow x = 60 \text{ cm} \)  
accept an alternative method |

**(c)**

<table>
<thead>
<tr>
<th>Two steps of calculation correct.</th>
<th>Two calculations with correct reasons.</th>
</tr>
</thead>
</table>
| \( \angle ATF = (90 - 72^\circ) \) (rad \( \bot \) tan)  
\( = 18^\circ \)  
\( \angle ACT = 144^\circ \) (\( \angle \)sum \( \Delta \), isos \( \Delta \))  
\( \angle ABT = 72^\circ \) (\( \angle s \) at circ = \( \frac{1}{2} \angle \) at centre)  
\( \angle BFT = (180 - 72)/2^\circ \) (\( \angle \)sum isos \( \Delta \))  
\( = 54^\circ \) |
| Or equivalent  
Steps are linked with reasoning and able to be followed.  
If the candidate has not considered point B to be on the circle then award E7 for the calculation and correct reasoning of  
\( \angle ACF = 36^\circ \), or equivalent |

### N0

No angle correctly calculated

### N1

One angle correctly calculated or problem solved based on incorrect assumption

### A3

One question part correctly answered (without reasons)

### A4

Two question parts correctly answered

### M5

One question part correctly calculated, one with reasons given

### M6

Two question parts correctly calculated and reasons given, with minor error ignored

### E7

One incorrect step in either the reason or calculation in question 2c otherwise correct

### E8

Question 2c correctly solved
Judgement Statement

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>0 – 4</td>
</tr>
<tr>
<td>A</td>
<td>5 – 8</td>
</tr>
<tr>
<td>M</td>
<td>9 – 13</td>
</tr>
<tr>
<td>E</td>
<td>14 – 16</td>
</tr>
</tbody>
</table>

Lower case a, m, e may be used throughout the paper to indicate contributing evidence for overall grades for questions. The upper case A, M and E grades shown at the end of each full question are used to make the final judgement.

The following Mathematics-specific marking conventions may also have been used when marking this paper:

- Errors are circled.
- Omissions are indicated by a caret (\(^{\wedge}\)).
- NS may have been used when there was not sufficient evidence to award a grade.
- CON may have been used to indicate ‘consistency’ where an answer is obtained using a prior, but incorrect answer and NC if the answer is not consistent with wrong working.
- CAO is used when the ‘correct answer only’ is given and the assessment schedule indicates that more evidence was required.
- # may have been used when a correct answer is obtained but then further (unnecessary) working results in an incorrect final answer being offered.
- RAWW indicates right answer, wrong working.
- R for ‘rounding error’ and PR for ‘premature rounding’ resulting in a significant round-off error in the answer (if the question required evidence for rounding).
- U for incorrect or omitted units (if the question required evidence for units).
- MEI may have been used to indicate where a minor error has been made and ignored.
- IMS for incorrect mathematical statement.
- PJ for professional judgement.