2014 Lifeskills Maths Paper 1

National 5

Finalised Marking Instructions

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General Marking Principles for National 5 Lifeskills Mathematics

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(a) Marks for each candidate response must always be assigned in line with these General Marking Principles and the Detailed Marking Instructions for this assessment.

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(g) Scored out or erased working which has not been replaced should be marked where still legible. However, if the scored out or erased working has been replaced, only the work which has not been scored out should be judged.

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   - Working subsequent to a correct answer
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   - Legitimate variations in solutions
   - Bad form
   - Repeated error within a question
# Detailed Marking Instructions for each question

<table>
<thead>
<tr>
<th>Question</th>
<th>Expected Answer(s)</th>
<th>Max Mark</th>
<th>Illustrations of evidence for awarding a mark at each •</th>
</tr>
</thead>
</table>
| 1.       | Ans: $\frac{1}{10}$ | 2        | •¹ Strategy: know how to calculate probability  
                   •² Process: correctly simplify  
                   •¹ $\frac{3}{30}$  
                   •² $\frac{1}{10}$ |
|          |                     |          | Notes:  
                   1. Accept 1:10, 1 in 10, 10% ...  
                   2. Special cases if $\frac{3}{17}$ Award 1 mark  
                       if $\frac{3}{7}$ Award 1 mark  
                   3. If tree diagram used evidence of $\frac{17}{30}$  
                       • $\frac{3}{17} = \frac{1}{10}$ |
| 2.       | Ans: no with reason | 3        | •¹ 37·7°C  
                   •² (36·4°C to) 37·2°C  
                   •³ Frances is not in good health as her temperature (37·7°C) is above the upper tolerance (37·2°C) of good health. |
|          |                     |          | Notes:  
                   3rd mark available for other suitable statement. Eg “not within range 36·4-37·2” |
<p>| 3.       | Ans: 5 (m)          | 1        | •¹ $AB = \sqrt{3^2 + 4^2} = 5$ |
|          |                     |          | Notes: |</p>
<table>
<thead>
<tr>
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<th>Illustrations of evidence for awarding a mark at each •</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b)</td>
<td>Ans: 21 m²</td>
<td>2</td>
<td>• ⁴ Evidence 1. Strategy: know to find areas of two triangles and add 2. Process/Communication: calculate areas and add, stating units</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 6 + 15 = 21</td>
</tr>
</tbody>
</table>

Notes:
1. If 6m² and 15m² are clearly shown, but not added, award 1/2

4. (a)  

<table>
<thead>
<tr>
<th>Ans: £259</th>
<th>1</th>
<th>¹ Process: calculate take home pay in £</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>¹ 296 - (28·43 + 8·57) = 259</td>
</tr>
</tbody>
</table>

Notes:

(b)  

| Ans: yes with reason | 3 | ¹ 259 - (76 + 41 + 45 + 30 + 23) = 44  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>² 520 and 572</td>
</tr>
<tr>
<td></td>
<td></td>
<td>³ Yes he can afford the holiday as he can save £52 more than he needs.</td>
</tr>
</tbody>
</table>

Notes:
1. Working must be shown to justify the answer  
2. ¹st mark is for holiday fund which is balance of income v total outgoings - and is available for follow through from (a) - and could be a deficit  
3. If holiday fund is <0 (or “deficit” mentioned) mark 2 is unavailable as subsequent working has been eased  
4. Mark 3 is available (after deficit) if justified.  
5. Alternative: 13 x 259 - 13 x 215
### Question 5

**Expected Answer(s)**  

Give one mark for each •

- **Ans:** 8200 metres (8·2 km)

<table>
<thead>
<tr>
<th>Max Mark</th>
<th>Illustrations of evidence for awarding a mark at each •</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>• 1 Strategy: Evidence of suitable conversion of units</td>
</tr>
<tr>
<td></td>
<td>• 2 Strategy: Know how to find distance</td>
</tr>
<tr>
<td></td>
<td>• 3 Process: calculate distance correctly</td>
</tr>
<tr>
<td></td>
<td>• 4 Communication: round answer correctly, using</td>
</tr>
<tr>
<td></td>
<td>appropriate units</td>
</tr>
</tbody>
</table>

**Notes:**

- 120 min x 60 (change to secs)  
- 6.8 m/s x 60 (m per min)  
- $D = S \times t = 6.8 \times 20 \times 60$  
- $D = 8160$ metres  
- $D = 8200$ metres or 8·2 kilometres

### Question 6 (a)

**Expected Answer(s)**  

- **Ans:** task letters and times inserted in chart

<table>
<thead>
<tr>
<th>Max Mark</th>
<th>Illustrations of evidence for awarding a mark at each •</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>• 1 Strategy: start to allocate tasks</td>
</tr>
<tr>
<td></td>
<td>• 2 Strategy: complete allocation of tasks</td>
</tr>
</tbody>
</table>

**Notes:**

- 1 Any 5 boxes correct  
- 2 Remaining 3 boxes correct

**Diagram:**

```
A 3
B 5
C 2
D 8
E 6
F 5
G 3
H 3
I 4
```
<table>
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<tbody>
<tr>
<td>(b)</td>
<td>Ans: no with reason</td>
<td>2</td>
<td>• 1 Stratgey: select critical path&lt;br&gt;• 2 Communication: state conclusion with reason&lt;br&gt;• 1 5+8+(5+3)+4&lt;br&gt;• 2 no, because it will take 25 hours</td>
</tr>
</tbody>
</table>

**Notes:**
1. H/I interchanged is acceptable
2. (b) marks can be awarded for incorrect critical path with valid comparison to 22 hours
   
   Eg if $\frac{C \ D \ E \ I}{2 \ 8 \ 6 \ 4} = 20$ hours
   
   YES as 20<22 would gain mark

7. **(a)**

   Ans: boys with valid reason

   1

   **Notes:**

7. **(b)**

   Ans: 26, 18, 30

   • 1 Process: state the median<br>• 2 Process: state the quartiles<br>• 1 26<br>• 2 18, 30

   **Notes:**

(c)       | Ans: 26, 18, 30 | 2        | • 1 end points at 10 and 42<br>• 2 box showing Q₁, Q₂, Q₃ |

   **Notes:**
   1. Incorrect answers in part (b) must be followed through to give the possibility of awarding 2/2
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>8. (a)</td>
<td>Ans: NOK 6000</td>
<td>1</td>
<td>• 750 × 8 = 6000</td>
</tr>
<tr>
<td></td>
<td>• 1 Process: converts from £ to NOK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>Ans: £87.50</td>
<td>5</td>
<td>• 6000 − 5×520 = 3400</td>
</tr>
<tr>
<td></td>
<td>• 1 Process: calculates remaining NOK</td>
<td></td>
<td>• Knows to ÷ by 8 and then × by 1·2</td>
</tr>
<tr>
<td></td>
<td>• 2 Strategy: knows how to convert to euros</td>
<td></td>
<td>• €510</td>
</tr>
<tr>
<td></td>
<td>• 3 Process: converts correctly</td>
<td></td>
<td>• €510 - 3 × €135 = €105</td>
</tr>
<tr>
<td></td>
<td>• 4 Process: calculates remaining euros</td>
<td></td>
<td>• 105 ÷ 1·20 = £87·50</td>
</tr>
<tr>
<td></td>
<td>• 5 Process: converts to sterling correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Ans: Proof</td>
<td>4</td>
<td>• evidence</td>
</tr>
<tr>
<td></td>
<td>• 1 Strategy: know to add volumes of cone and cylinder</td>
<td></td>
<td>• $\pi \times 6^2 \times 10$</td>
</tr>
<tr>
<td></td>
<td>• 2 Strategy: correct substitution into cylinder formula</td>
<td></td>
<td>• $\frac{1}{3} \times \pi \times 6^2 \times 4$</td>
</tr>
<tr>
<td></td>
<td>• 3 Strategy: correct substitution into cone formula</td>
<td></td>
<td>• $360\pi + 48\pi = 408\pi$</td>
</tr>
<tr>
<td></td>
<td>• 4 Process: simplify expressions and add to obtain $408\pi$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes:</td>
<td></td>
<td></td>
<td></td>
</tr>
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[END OF MARKING INSTRUCTIONS]
2014 Lifeskills Mathematics Paper 2

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</table>
| 1.       | Ans: (£)30, (£)9·30 | 4        | •¹ Process: calculate mean  
•² Process: calculate \((x - \bar{x})^2\)  
•³ Process: substitute into formula  
•⁴ Process: calculate standard deviation |
|          |                    |          | •¹ \((32 + 23...) ÷ 8 = 30\)  
•² 4, 49, 169, 100, 9, 25, 225, 25  
•³ \(\sqrt{606/7}\)  
•⁴ 9·30 |

### Notes:
1. For use of alternative formula; award marks as follows:  
   Mark 2 Process: calculate \(\Sigma x\) and \(\Sigma x^2\) 240 and 7806  
   Mark 3 Process: substitute into formula  
   Mark 4 Process: calculate standard deviation

| 2. (a)   | Ans: Monthly Deal 1 is cheaper | 3        | •¹ \((279 + 18 + 45 + 9) \times 0·85 = 298·35\)  
•² \((18 + 45 + 9) \times 0·35 + 279 = 304·20\)  
•³ Monthly Deal 1 is cheaper |
|          |                                  |          | •¹ Monthly Deal 1 is cheaper |

### Notes:
1. For “Monthly Deal 1” with no working award 0 marks  
2. Accept £298/299 for deal 1 and £304/305 for deal 2  
3. Alternative is by comparing savings.  
   .1 Deal 1 saves £56·25  
   .2 Deal 2 saves £46·80  
   .3 Deal 1 greater saving
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</tr>
</thead>
</table>
| (b) | Ans: £42·19 | 3 | $\cdot 1$ Process: find price for The Red Polka Dot Cycle Shop  
$\cdot 2$ Process: find the difference between the price for The Red Polka Dot Cycle Shop and The Yellow Jersey Cycle Shop  
$\cdot 3$ Process: calculate total refund  
$\cdot 1 (310 +20 +50 + 10) ÷ 3 × 2 = 260$  
$\cdot 2 298·35 - 260 = 38·35$  
$\cdot 3 38·35 × 1·1 = 42·19$ |
| Notes: | Award third mark for £42·18  
The actual cost from deal 1 part a must be used (not a rounded answer) |
| 3. (a) | Ans: Mark position | 2 | $\cdot 1$ Process: correct bearing  
$\cdot 2$ Process: correct length of line  
$\cdot 1 065 ± 2°$  
$\cdot 2 7·6cm ±0·2cm$ |
| Notes: | |
| (b) (i) | Ans: Mark position | 3 | $\cdot 1$ Correct bearing of 125° ± 2°  
$\cdot 2$ Correct bearing of 250°± 2°  
$\cdot 3$ Correctly marks position |
| (ii) | Ans: 340km, 200° | 2 | $\cdot 1$ Correct distance of 340±10  
$\cdot 2$ Correct bearing of 200°± 2° |
<p>| Notes: | |</p>
<table>
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<td>4. (a)</td>
<td>Ans: £135 000</td>
<td>5</td>
<td>• ¹ Strategy: know how to increase by 5% • ² Strategy: increase for 2 years • ³ Strategy: know how to decrease by 2% • ⁴ Process: calculate value after 5 years • ⁵ Communication: round to nearest thousand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• ¹ multiplier of 1·05 • ² 130 000 ×1·05² = (143325) • ³ multiplier of 0·98 • ⁴ 134 896·34 • ⁵ 135 000</td>
</tr>
<tr>
<td>Notes:</td>
<td>1. £135 000 without working award 0/5 Do not accept £135 000·00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>2</td>
<td>• ¹ Process: calculate value after 4.5% rise • ² Communication: compare values</td>
</tr>
<tr>
<td></td>
<td>Ans: no value of Saraish’s house is about £1000 lower</td>
<td></td>
<td>• ¹ 135 850 • ² no value of Saraish’s house is lower</td>
</tr>
<tr>
<td>Notes:</td>
<td>1. Alternative solution is to compare rises • ¹ 4·5% rise = £5850 • ² Saraish’s rise is less • ³ Saraish’s rise is 3·8% (&lt; 4·5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Expected Answer(s)</td>
<td>Max Mark</td>
<td>Illustrations of evidence for awarding a mark at each</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------</td>
<td>----------</td>
<td>------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 5. (a) | Ans: 9·8 metres | 3 | $\bullet^1 5 \times 2·8 = 14$
| | • $^1$ Strategy/Process: find the hypotenuse | | $\bullet^2 14^2 - 10^2$
| | • $^2$ Strategy: know to use correct form of Pythagoras | | $\bullet^3 9·8$
| | • $^3$ Process: calculate the length of the wall | | |
| (b) | Ans: £254·15 | 6 | $\bullet^1$ Rectangle - quarter circle - triangle
| | • $^1$ Strategy: know to calculate area | | $\bullet^2 49$
| | • $^2$ Process: area of triangle | | $\bullet^3 19·6$
| | • $^3$ Process: area of quarter circle | | $\bullet^4 150 - 49 - 19·6 = 81·4$
| | • $^4$ Process: area for turf | | $\bullet^5 17$
| | • $^5$ Strategy: know how to calculate the number of rolls | | $\bullet^6 17 \times 14·95 = 254·15$
| | • $^6$ Process: calculate cost | | |

Notes:
1. For mark 6 cost must be stated to 2 decimal places (eg do not accept £342·8 or similar)
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>6. (a)</td>
<td>Ans: 0·9s</td>
<td>1</td>
<td>•¹ Process: find time difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>•¹ 1:50·6 - 1:49·7</td>
</tr>
</tbody>
</table>

**Notes:**

| 6. (b)   | Ans: 179 (km/hr) | 5        | •¹ S = 5·543/01:51·7                                 |
|          |                  |          | •² 111·7                                             |
|          |                  |          | •³ 5·543/111·7 = 0·0496...                            |
|          |                  |          | •⁴ × 3600                                            |
|          |                  |          | •⁵ 179                                               |

**Notes:**
1. If converted to minutes the evidence would be
   •² 1·862
   •³ 5·543/1·962 = 2·977
   •⁴ x60
   •⁵ 179

| 6. (c)   | Ans: 1 hour 47 minutes 8·8 seconds | 4        | •¹ 114·8 × 56 (=6428·8 secs)                         |
|          |                                  |          | •² ÷ 60 (107·146...mins)                              |
|          |                                  |          | •³ 0·146...mins into seconds (8·8)                   |
|          |                                  |          | •⁴ 1 hour 47 minutes 8·8 seconds                     |

Notes:
Question | Expected Answer(s) Give one mark for each • | Max Mark | Illustrations of evidence for awarding a mark at each •
--- | --- | --- | ---
7. (a) | Ans: £968.40, £357.48, £741.82 | 9 | • 1 Process: calculate area of drive in square feet
• 2 Process: calculate price for tarmac
• 3 Process: calculate how much gravel is needed
• 4 Strategy: find best way to buy the gravel
• 5 Process: find total cost of using gravel
• 6 Strategy: know to calculate minimum number of slabs
• 7 Process: calculate number of slabs
• 8 Process: calculate amount of hardcore needed
• 9 Process: calculate price of slabbred drive

Notes:

(b) | Ans: Choice of surface plus reason | 3 | • 1 Strategy: know to find cost per year for each
• 2 Process: calculate the ‘cost per year’ for each surface type
• 3 Communication: state conclusion with valid reason

Notes:

[END OF MARKING INSTRUCTIONS]