National
Qualifications
2014

2014 Lifeskills Maths Paper 1

National 5

Finalised Marking Instructions

General Marking Principles for National 5 Lifeskills Mathematics

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the detailed marking instructions, which identify the key features required in candidate responses.

(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.

(b) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

(c) Credit must be assigned in accordance with the specific assessment guidelines.

(d) Candidates may use any mathematically correct method to answer questions except in cases where a particular method is specified or excluded.

(e) Working subsequent to an error must be followed through, with possible credit for the subsequent working, provided that the level of difficulty involved is approximately similar. Where, subsequent to an error, the working is easier, candidates lose the opportunity to gain credit.

(f) Where transcription errors occur, candidates would normally lose the opportunity to gain a processing mark.

(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.

(h) Unless specifically mentioned in the specific assessment guidelines, do not penalise:
- Working subsequent to a correct answer
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- Legitimate variations in solutions
- Bad form
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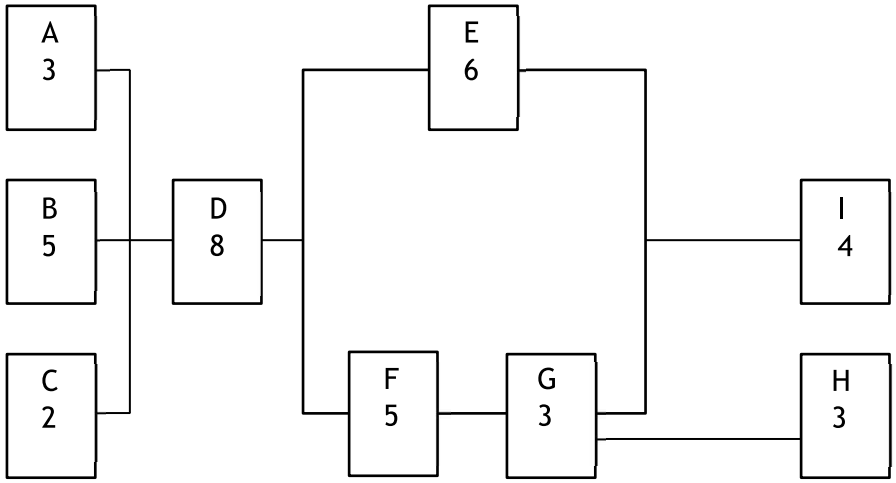
Detailed Marking Instructions for each question

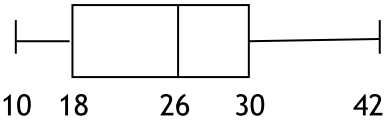
Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
1.			**Ans:** $\frac{1}{10}$ •[1] Strategy: know how to calculate probability •[2] Process: correctly simplify	**2**	•[1] $\frac{3}{30}$ •[2] $\frac{1}{10}$
Notes: 1. Accept 1:10, 1 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 • $\frac{17}{30}$ • $\times\frac{3}{17}=\frac{1}{10}$					
2.			**Ans: no with reason** •[1] Strategy: find temperature from scale •[2] Strategy: determine upper limit of tolerance •[3] Communication: state conclusion	**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"					
3.	(a)		**Ans: 5 (m)** •[1] Strategy: Use Pythagoras to find AB.	**1**	•[1] AB = $\sqrt{3^2+4^2}$ = 5
Notes:					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
	(b)		**Ans: 21 m^2** • [1] Strategy: know to find areas of two triangles and add • [2] Process/Communication: calculate areas and add, stating units	**2**	• [1] Evidence • [2] 6 + 15 = 21
Notes: 1. If $6m^2$ and $15m^2$ are clearly shown, but not added, award 1/2					
4.	(a)		**Ans: £259** • [1] Process: calculate take home pay **in £**	**1**	• [1] 296 – (28·43 + 8·57) = 259
Notes:					
	(b)		**Ans: yes with reason** • [1] Strategy/Process: calculate holiday fund • [2] Process: find total cost of holiday and total holiday fund 13 × 44 • [3] Communication: state conclusion with reason	**3**	• [1] 259 – (76 + 41 + 45 + 30 + 23) = 44 • [2] 520 and 572 • [3] Yes he can afford the holiday as he can save £52 more than he needs.
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			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
5.			**Ans: 8200 metres (8·2 km)** • [1] Strategy: Evidence of suitable conversion of units • [2] Strategy: Know how to find distance • [3] Process: calculate distance correctly • [4] Communication: round answer correctly, using appropriate units	**4**	• [1] 20 min x 60 (change to secs) 6.8 m/s x 60 (m per min) • [2] $D = S \times t = 6{\cdot}8 \times 20 \times 60$ • [3] D = 8160 metres • [4] D = 8200 metres or 8·2 kilometres
Notes:					
6.	(a)		**Ans: task letters and times inserted in chart** • [1] Strategy: start to allocate tasks • [2] Strategy: complete allocation of tasks	**2**	• [1] Any 5 boxes correct • [2] Remaining 3 boxes correct

Notes:



Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
	(b)		**Ans: no with reason** • [1] Stratgey: select critical path • [2] Communication: state conclusion with reason	**2**	• [1] 5+8+(5+3)+4 • [2] no, because it will take 25 hours
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 $\frac{C}{2}\frac{D}{8}\frac{E}{6}\frac{I}{4}=20$ hours YES as 20<22 would gain mark					
7.	(a)		**Ans: boys with valid reason**	**1**	
Notes:					
	(b)		**Ans: 26, 18, 30** • [1] Process: state the median • [2] Process: state the quartiles	**2**	• [1] 26 • [2] 18, 30
Notes:					
	(c)		**Ans:**  • [1] Strategy: correct end points • [2] Strategy: correct box	**2**	• [1] end points at 10 and 42 • [2] box showing Q_1, Q_2, Q_3
Notes: 1. Incorrect answers in part (b) must be followed through to give the possibility of awarding 2/2					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
8.	(a)		**Ans: NOK 6000** • [1] Process: converts from £ to NOK	**1**	• [1] $750 \times 8 = 6000$
Notes:					
	(b)		**Ans: £87·50** • [1] Process: calculates remaining NOK • [2] Strategy: knows how to convert to euros • [3] Process: converts correctly • [4] Process: calculates remaining euros • [5] Process: converts to sterling correctly	**5**	• [1] $6000 - 5 \times 520 = 3400$ • [2] Knows to ÷ by 8 and then × by 1·2 • [3] €510 • [4] €510 - 3 × €135 = €105 • [5] 105 ÷ 1·20 = £87·50
Notes:					
9.			**Ans: Proof** • [1] Strategy: know to add volumes of cone and cylinder • [2] Strategy: correct substitution into cylinder formula • [3] Strategy: correct substitution into cone formula • [4] Process: simplify expressions and add to obtain 408 π	**4**	• [1] evidence • [2] $\pi \times 6^2 \times 10$ • [3] $\frac{1}{3}\pi \times 6^2 \times 4$ • [4] $360\pi + 48\pi = 408\pi$
Notes:					

[END OF MARKING INSTRUCTIONS]

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2014 Lifeskills Mathematics Paper 2

National 5

Finalised Marking Instructions

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Detailed Marking Instructions for each question

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1.			**Ans: (£)30, (£)9·30** •[1] Process: calculate mean •[2] Process: calculate $(x-\bar{x})^2$ •[3] Process: substitute into formula •[4] Process: calculate standard deviation	**4**	•[1] (32 + 23…) ÷ 8 = 30 •[2] 4, 49, 169, 100, 9, 25, 225, 25 •[3] $\sqrt{\frac{606}{7}}$ •[4] 9·30
Notes: 1. For use of alternative formula; award marks as follows: Mark 2 Process: calculate ∑x and ∑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** •[1] Process: find price with Monthly Deal 1 •[2] Process: find price with Monthly Deal 2 •[3] Communication: state best Deal	**3**	•[1] (279 + 18 + 45 + 9) × 0·85 = 298·35 •[2] (18 + 45 + 9) × 0·35 + 279 = 304·20 •[3] Monthly Deal 1 is cheaper
Notes: 1. For "Monthly Deal 1" with no working award 0 marks 2. Accept £298/299 for deal 1and £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					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
	(b)		**Ans: £42·19** • [1] Process: find price for The Red Polka Dot Cycle Shop • [2] Process: find the difference between the price for The Red Polka Dot Cycle Shop and The Yellow Jersey Cycle Shop • [3] Process: calculate total refund	**3**	• [1] (310 +20 +50 + 10) ÷ 3 × 2 = 260 • [2] 298·35 – 260 = 38·35 • [3] 38·35 × 1·1 = 42·19
Notes: 1. Award third mark for £42·18 2. The actual cost from deal 1 part a must be used (not a rounded answer)					
3.	(a)		**Ans: Mark position** • [1] Process: correct bearing • [2] Process: correct length of line	**2**	• [1] 065 ± 2° • [2] 7·6cm ±0·2cm
Notes:					
	(b)	(i)	**Ans: Mark position** • [1] Strategy: bearing from Aberdeen • [2] Strategy: bearing from Ringkobing • [3] Strategy: mark position	**3**	• [1] Correct bearing of 125° ± 2° • [2] Correct bearing of 250°± 2° • [3] Correctly marks position
		(ii)	**Ans: 340km, 200°** • [1] Communication: Distance of fishing vessel from oil rig • • [2] Communication: Bearing of fishing vessel from oil rig	**2**	• [1] Correct distance of 340±10 • [2] Correct bearing of 200°± 2°
Notes:					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
4.	(a)		**Ans: £135 000** • [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	**5**	• [1] multiplier of 1·05 • [2] 130 000 $\times 1{\cdot}05^2$ = (143325) • [3] multiplier of 0·98 • [4] 134 896·34 • [5] 135 000
Notes: 1. £135 000 without working award 0/5 Do not accept £135 000·00					
	(b)		**Ans: no value of Saraish's house is about £1000 lower** • [1] Process: calculate value after 4.5% rise • [2] Communication: compare values	**2**	• [1] 135 850 • [2] no value of Saraish's house is lower
Notes: 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% (< 4·5%)					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
5.	(a)		**Ans: 9·8 metres** • [1] Strategy/Process: find the hypotenuse • [2] Strategy: know to use correct form of Pythagoras • [3] Process: calculate the length of the wall	**3**	• [1] $5 \times 2{\cdot}8 = 14$ • [2] $14^2 - 10^2$ • [3] 9·8
Notes:					
	(b)		**Ans: £254·15** • [1] Strategy: know to calculate area • [2] Process: area of triangle • [3] Process: area of quarter circle • [4] Process: area for turf • [5] Strategy: know how to calculate the number of rolls • [6] Process: calculate cost	**6**	• [1] Rectangle – quarter circle - triangle • [2] 49 • [3] 19·6 • [4] 150 – 49 – 19·6 = 81·4 • [5] 17 • [6] $17 \times 14{\cdot}95 = 254{\cdot}15$
Notes: 1. For mark 6 cost must be stated to 2 decimal places (eg do not accept £342·8 or similar)					

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
6.	(a)		**Ans: 0·9s** • [1] Process: find time difference	**1**	• [1] 1:50·6 – 1:49·7
Notes:					
	(b)		**Ans: 179 (km/hr)** • [1] Strategy: extract data and substitute • [2] Process: convert time to seconds • [3] Process: calculate speed in km/s • [4] Strategy: know how to convert to km/hr • [5] Communication: round answer correctly	**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					
	(c)		**Ans: 1 hour 47 minutes 8·8 seconds** • [1] Strategy: know to convert time and multiply by 56 • [2] Strategy: convert to minutes • [3] Strategy: convert to hours, minutes and seconds • [4] Process: all calculations correct	**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** • [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 slabbed drive	**9**	• [1] 45 m^2 × 10·76 = 484·2 sq ft • [2] 484·2 × £2 = £968·40 • [3] 45 x 50 = 2250kg • [4] 2 × 850kg + 11 × 50kg • [5] 2 × £125·99 + 11 × £8·29 + £14·31 = £357·48 • [6] Evidence • [7] 15 × 15 + 7 × 7 + 8 = 282 Or 45 ÷ 0.16 = 282 (rounded up) • [8] 45 m^2 × 0·04 m = 1·8 m^3 2 × 2 = 4 tonnes • [9] 282 × £2·12 + 4 × £18 + 2 × £35·99 = £741·82
Notes:					
	(b)		**Ans: Choice of surface plus reason** • [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	**3**	• [1] 968·40 ÷ 30, 357·48 ÷ 10, 741·82 ÷ 25 • [2] Tarmac costs £32·28 per year Gravel costs £35·75 per year Slabs cost £29·67 per year • [3] Slabs cheapest per year, or gravel cheaper initially etc
Notes:					

[END OF MARKING INSTRUCTIONS]