National
Qualifications
2015

2015 Lifeskills Mathematics

National 5 Paper 1

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) If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader.

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

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

(f) 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.

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

(h) 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.

(i) Unless specifically mentioned in the specific assessment guidelines, do not penalise:

- Working subsequent to a correct answer
- Correct working in the wrong part of a question
- Legitimate variations in solutions
- Bad form
- Repeated error within a question

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: No, supported by working** •[1] Process: calculate fraction of •[2] Communication: state conclusion	**2**	 •[1] 3/8 × 280 = 105 •[2] 105 < 110

Notes:

- Correct method with incorrect answer →'correct' conclusion — award 1/2
- Use of 'km' in conclusion instead of 'miles' — award 2/2
- Incorrect fraction used eg: 4/9 × 280 = 124(.444..) →'enough fuel' — award 1/2
- 3/9 × 280 = 93(.333..) →'not enough fuel' — award 1/2
- Correct conclusion with no working shown — award 1/2
- ½ × 280 = 140 →enough fuel (working significantly eased) — award 0/2

2.	**Ans: 0310/3·10am** •[1] Strategy: knows how to deal with time zone, flight time and security clearance •[2] Process/communication: state time	**2**	 •[1] Evidence of adding all three times in the question on to 1845 •[2] 0310

Notes:

- If any two out of the three times are added correctly — award 1/2
- An answer of 'pick up from 0310 to 0315' — award 2/2

Special case:

Candidate subtracts 4 hour time difference instead of adding → pick Usain up at 1910 — award 1/2

3.	**Ans:** **A, D or F** **B, G, F or D** **C, E** **H, K** **I, J, L** •[1] Strategy: attempt to re-arrange existing packages and add new packages •[2] Communication: arrange boxes on shelves	**2**	 •[1] Rearrange old stock onto 3 shelves •[2] Arrange new stock onto remaining 2 shelves

Notes:

- If new and old stock are mixed on the same shelf and all shelves hold ≤ 10m — award 1/2
- Common incorrect answer: — award 1/2

Shelf 1	A J
Shelf 2	B I
Shelf 3	C D L
Shelf 4	E H
Shelf 5	G F K

Question	Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
4.	**Ans: No, supported by working** •[1] Strategy: know to use upper/ lower limits •[2] Process: calculate % within tolerance •[3] Communication: state conclusion	**3**	•[1] Evidence of 2·35 and 2·45 (may be implied in [2]) •[2] 17/20 = 85% •[3] No, as 85% < 88%
	Alternative Strategy 1: •[1] Strategy: know to use upper/ lower limits •[2] Process: calculate % outwith tolerance •[3] Communication: state conclusion		•[1] Evidence of 2·35 and 2·45 (may be implied in [2]) •[2] 3/20 = 15% •[3] No, as 15%>12%
	Alternative Strategy 2: •[1] Strategy: know to use upper/ lower limits •[2] Process: calculate minimum number needed for batch to be accepted •[3] Communication: state conclusion		•[1] Evidence of 2·35 and 2·45 (may be implied in [2]) •[2] 88% of 20 = 17·6, ie need 18 •[3] No, as only 17 in tolerance, so batch fails

Notes:

- Limits need not be stated explicitly if the 3 washers out of tolerance are clearly shown
- If incorrect limits are **stated**, follow through to possibility of 2/3
- If limits are stated as 1·9 and 2·9 (± 0·5) → 100% within tolerance so batch accepted (working significantly eased) award 1/3
- Numerical comparison is not needed for 3rd mark

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
5.			**Ans: £2(·00)/200p per litre** •[1] Strategy: know to use proportion •[2] Process: price per litre	**2**	 •[1] $\frac{66}{330} \times 1000$ •[2] 200p = £2(·00)
			Alternative Strategy: •[1] Strategy: know to use proportion •[2] Process: price per litre		 •[1] 3 × 330ml +10ml →3 × 66p + ?, where ? < 66p •[2] 198p + 2p = 200p = £2(·00)
Notes: • 3 × 330ml = 1 litre → £1·98 (working significantly eased) award 0/2 • Correct answer with no working award 2/2					
6.			**Ans: £163·75** •[1] Process: calculate selling price of the shares •[2] Process: calculate 2½% of selling price •[3] Process: calculate amount she receives •[4] Process: calculate loss	**4**	 •[1] 200 × £2·75 = £550 •[2] 2½% of £550 = £13·75 •[3] £550 – £13·75 = £536·25 •[4] £700 – £536·25 = £163·75
			Alternative Strategy: **single share basis:** •[1] Process: calculate price per shares •[2] Process: calculate loss •[3] Process: calculate fee •[4] Process: calculate loss		 •[1] £700 ÷ 200 = £3·50 •[2] 200 × £0·75 = £150 •[3] 2·5% of (£700 – £150) = £13·75 •[4] Calculate total loss: £150 + £13·75 = £163·75
Notes: • For: £700 – (£550 + £13·75) = £136·25 award 3/4 • For: £700 – £550 = £150 award 2/4 **Some common answers for Alternative Strategy:** • Candidate calculates 2·5% of £150 = £3·75 → £150 + £3·75 = £153·75 award 3/4 • Candidate calculates the fee per share to be £0·06875 then rounds to £0·07 leading to a loss of £164 (premature rounding penalised) award 3/4					

Question	Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
7.	**Ans: Yes, since 3·5m > 320cm** •[1] Strategy: Know to use correct form of Pythagoras' Theorem •[2] Process: Calculate half of third side of scarf •[3] Process: Calculate perimeter •[4] Communication: Yes with justification	**4**	•[1] $c^2 = 100^2 - 80^2$ or $c^2 + 80^2 = 100^2$ •[2] $\sqrt{3600} = 60$ •[3] $100 + 100 + 2 \times 60 = 320$ •[4] Yes, since 3·5m > 320cm Or she will have 30cm extra

Notes:

- If candidate finds $100^2 + 80^2$ →an answer of 456cm, so not enough ribbon, award 3/4
- Minimum working for 3rd mark: Correct answer to 100 + 100 + (2 × **their** 'length' of half the base)
- For: 3 × 100 = 300cm → enough ribbon as 300cm < 3·5m award 1/4
- For a conclusion of, eg,' enough ribbon as 3·5m > 3·2m, so she has 3m extra', disregard the subsequent incorrect calculation of extra length of ribbon

8.	**Ans: Rule 1: Yes as 640 is upper limit of tolerance** **Ans: Rule 2: No as 17/30>½** •[1] Strategy: know to check both rules •[2] Process: find 2 × riser + tread •[3] Communication: within tolerance, so passes rule 1 •[4] Process: calculate gradient •[5] Communication: shows that gradient > ½ , so fails rule 2	**5**	•[1] evidence •[2] 2 × 170 + 300 = 640 •[3] 625±15; range 610 – 640; 640 is within this range •[4] 170/300 or equivalent •[5] 170/300>½, so fails rule 2

Notes:

- For 3rd mark, limits do not need to be stated explicitly
- For 3rd mark, do not penalise error in calculation of **lower** limit
- G = V/H or equivalent is not sufficient to show that rule 2 has been considered

Special case: When candidate only considers one of the rules.

A: If candidate has correctly found the gradient and correctly used equivalent fractions to compare it with ½.
In this case if the conclusion states:
'Fails rule 2 so **both** rules not met' award 5/5
'Fails rule 2.' (no mention of both rules) award 2/5

B: If candidate only considers 2 × tread + height, but miscalculates so that the answer is outwith tolerance.
In this case if conclusion states:
'Fails rule 1, so **both** rules not met' award 4/5
'Fails rule 1' (no mention of both rules) award 1/5

Question			Expected Answer(s) Give one mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
9.	(a)		**Ans: £360** •[1] Process: correct total	**1**	 •[1] Total = £360
Notes:					
	(b)		**Ans: £165·50** •[1] Strategy: knows how to calculate finance package •[2] Process: calculate deposit •[3] Process: find total finance package •[4] Communicate: state extra cost	**4**	 •[1] Evidence of attempt to find deposit **and** attempt to find total finance package •[2] 10% of (40 + 120 + 180 + 10 + 105) = £45·50 •[3] £45·50 + 12 × £40 = £525·50 •[4] £525·50 – £360 = £165·50
Notes: • If candidate finds 10% of answer to (a), instead of 10% of £455 then a maximum of 3/4 is available Eg 12 × £40 + 10% of £360 = £516 £516 - £360 = £156					
10.	(a)		**Ans: 237·12m^2** •[1] Strategy: find radius of semi-circle •[2] Process: calculate area of semi-circle •[3] Process: calculate remaining area •[4] Process: calculate total area	**4**	 •[1] r = 4 •[2] A = ½ × 3·14 × 4^2 = 25·12 •[3] A = 18 × 12 – 2 × 2 = 212 •[4] A = 212 + 25·12 = 237·12
Notes: •[1] may be implied by •[2] **A common incorrect response:** If radius taken as 3m → A = ½ × 3·14 × 3^2 = 14·13 → 212 + 14·13 = 226·13m^2 award 3/4					
	(b)		**Ans: £4077** •[1] Strategy: find minimum number of packs •[2] Process: calculate cost	**2**	 •[1] 237·12 ÷ 4 = 59·28 Therefore 60 packs required •[2] 60 × £67·95 = £4077
Notes: • If answer to (a) is a multiple of 4, the 1st mark is not available • If answer to (a) is 226·13m^2 ,correct follow through would be 57 × £67·95 = £3873·15					

[END OF MARKING INSTRUCTIONS]