Pre-Leaving Certificate Mathematics – Paper 2 Ordinary level

Structure of the marking scheme

Candidate responses to the various questions are marked according to different scales, depending on the types of response that are anticipated. Scales labelled A divide candidate responses into two categories (correct and incorrect). Scales labelled B divide responses into three categories (correct, partially correct, and incorrect), and so on. The scales and the marks that they generate are summarised in this table:

Scale label	A	B	C	D	E
No of categories	2	3	4	5	6
5 mark scale	0, 5	0, 2, 5	0, 2, 4, 5		
10 mark scale	0, 10	0, 5, 10	0, 3, 7, 10	0, 2, 5, 8, 10	
15 mark scale	0, 15	0, 7, 15	0, 5, 10, 15	0, 4, 7, 11, 15	
20 mark scale	0, 20	0, 10, 20	0, 7, 13, 20	0, 5, 10, 15, 20	
25 mark scale		0, 12, 25	0, 8, 17, 25	0, 6, 12, 19, 25	0, 5, 10, 15, 20, 25

A general descriptor of each point on each scale is given below. More specific directions in relation to interpreting the scales in the context of each question are given in the scheme, where necessary.

Marking scales – level descriptors

A-scales (two categories)
- incorrect response (no credit)
- correct response (full credit)

B-scales (three categories)
- response of no substantial merit (no credit)
- partially correct response (partial credit)
- correct response (full credit)

C-scales (four categories)
- response of no substantial merit (no credit)
- response with some merit (low partial credit)
- almost correct response (high partial credit)
- correct response (full credit)

D-scales (five categories)
- response of no substantial merit (no credit)
- response with some merit (low partial credit)
- response about half-right (middle partial credit)
- almost correct response (high partial credit)
- correct response (full credit)

E-scales (six categories)
- response of no substantial merit (no credit)
- response with some merit (low partial credit)
- response almost half-right (lower middle partial credit)
- response more than half-right (upper middle partial credit)
- almost correct response (high partial credit)
- correct response (full credit)

Section 0 **Area and Volume (old syllabus)** **50 Marks**

Question 1

(a) 10 marks(att3) old syllabus

blunder -3 correct method incorrect answer

fails to complete

slip -1 error in addition/ multiplication to a maximum of 3

(b) 10 marks (att3) old syllabus

blunder -3 incorrect interval

error in substitution

failure to complete

slip -1 numerical error to a maximum of 3

attempt mark for writing Simpson's Rule

10 marks (att3) old syllabus

blunder -3 incorrect interval

error in substitution

failure to complete

fails to find difference in areas

slip -1 numerical error to a maximum of 3

attempt mark for writing Simpson's Rule

(c) 10 marks (att3) old syllabus

blunder -3 error in transposition

error in substitution

failure to complete

slip -1 failure to isolate K

10 marks (att3) old syllabus

blunder -3 error in transposition

error in substitution

failure to complete

slip -1 failure to reduce fraction

Detailed marking notes

Note: A ✪ associated with a mark/scale signifies that a deduction is made where the candidate has omitted the relevant units or has failed to round correctly.

Section A

Question 2

(a) Scale 5 A✪ (0,[4],5)
✪ omission of units once only

Scale 5 B✪ (0,2,[4],5)

Partial credit: Correct answer with no work or incorrect answer with set up correct.

Scale 5 B✪ (0,2,[4],5)

Partial credit: Correct answer with no work or incorrect answer with set up correct.

Scale 5 B✪ (0,2,[4],5)

Partial credit: Correct answer with no work or incorrect answer with set up correct.

(b) Scale 5 B (0,2,5)

Partial credit: Advice with no reason given or advice given with invalid reason.

Question 3

(a) Scale 10 B (0,5,10)

Partial credit: One correct line drawn or two lines that go through corresponding points on each diagram but that don't meet.

(b) Scale 5 B (0,2,5)

Full credit: accept answers in range 2.3 - 3.0

Partial credit: Correct method but incorrect answer or show measurements from both diagrams.

(c) Scale 10 B ✪ (0,5,[9],10)
✪ decimal place incorrect
Full credit: If solution presented is based on scale factor given in answer to part (b), accept ratio in the range 5.3 : 1 to 9 : 1 or equivalent (but must be consistent with answer to part (b) above). Note that correct fraction does not need to be presented in standard ratio form.

Partial credit: Significant work on finding areas or evidence of understanding of the relationship between scale factor and the ratio, e.g. 2.5^2 or 2.5 x 2.5 or ratio given as a fraction

Question 4

(a) Scale 10 C (0,3,7,10)

High Partial credit: at least 11 outcomes correct (but less than 16) or 32 outcomes with correct outcomes repeated.

Low Partial credit: 5-10 outcomes correct.

(b) Scale 5 B (0,2,5)

Full credit : Appropriate fraction/decimal/percentage based on result from part (a). or correct answer with no work, provided part (a) correct.

P*artial credit:* Correct method, incorrect answer or correct answer obtained from the outcomes listed in part a)

(c) 10 C (0,3,7,10)

Full credit: Compares relative frequency to theoretical probability.

High partial credit: Refers to relative frequency, and repetitions but does not refer to theoretical probability of $\frac{1}{4}$

Low partial credit refers to repetitions of experiment only

Question 5

(a) 5 B (0,2,5)

Partial credit: two points plotted but not forming parallelogram, or two accurate points but not labelled correctly.

(b) 10 C (0,3,7,10)

High partial credit: Correct method but one error in calculation of slopes.

Low partial credit: Shows accurately two line parallel.

(c) 10 B (0,5,10)

Partial credit: Shows diagonals on diagram with point indicated or calculates the midpoint of one diagonal only.

Question 6

(a) Scale 5 B (0,2,5)

Partial Credit: At least two points plotted accurately

(b) Scale 5 B (0,2,5)

Partial credit: point plotted correctly but no co-ordinates given or midpoint of AB or BC found correctly and labelled.

(c) Scale 5 B (0,2,5)

Partial credit: Accurate circle drawn on incorrect diameter, e.g. BC

(d) Scale 10 C (0,3,7,10)

High partial credit: Correct method and one or two errors with conclusion or correct method, correct answer and no conclusion.

Low partial credit: Correct method, incorrect answer and no conclusion or states theorem or makes an accurate measurement from diagram.

Question 7

(a) (i) Scale 5 A (0,5)

(ii) Scale 5 B (0,2,5)

Partial credit : Indicates that it is not symmetric or not quite normally distributed, i.e. recognises skew but does not mention right or left.

(iii) Scale 5 A (0,5)

(iv) Scale 5 B (0,2,5)

Partial credit: Recognises the middle but no reference to how it is obtained or order in the data.

N.B. No credit: for mean or mode

(b) (i) Scale 5 A (0,5)
(ii)Scale 10 C (0,3,7,10)

High partial credit: Accurate outcomes and probabilities, with one or two errors or fractions not reduced.

Low partial credit: Accurate outcomes with one or two errors and no, or inaccurate, probabilities

(c) Scale 5 B (0,2,5)
Partial credit: One probability correct or two correct but not summed.

Question 8

(a) (i) Scale 5 B (0,2,5)

Partial credit: Accurately shows 25° but shows the 92 m along the ground.

(ii) 10 C ✪ (0,3,7,[9],10)

High partial credit: the height found without adding Peter's height

Low partial credit: Correct formula and substitution or attempt to use any trig formula or Sine/Cos rule to solve problem.

(b) 15 C ✪ (0,5,10,[14],15)

✪ for omission of units

High partial credit: correct set but incorrect solution

Low partial credit: diagram drawn and labeled correctly or correct set up with incorrect trig ratio.

(c) Scale 5 B✪ (0,2,[4]5) × 2

✪ for omission of units

Partial credit: correct set-up, with error

Question 9A

(a) Scale 10 C (0,3,7,10)

High partial credit: correct plot with up to 3 errors

Low partial credit: correct plot of one data set

(b) Scale 5 B (0,2,5)

Partial credit: any valid statement of difference or similarity about the overall distribution not individual data points

(c) Scale 5 B (0,2,5)

Partial credit: correct set up but not executed correctly

(d) Scale 10 C (0,3,7,10)

High partial credit: points plotted accurately no curve drawn or one point plotted incorrectly or incorrect scale used or one error in scale

Low partial credit: points plotted with up to 3 errors

e) (i) Scale 5 A (0,5)

(ii) Scale 5 B (0,2,5)

Partial credit: at least one quartile accurately identified on the graph

f) Scale 5 B (0,2,5)

Partial credit: number identified no probability calculated

Question 9B

(a) Scale 5 B (0,2,5)

Partial credit: theorem identified but inaccurately stated

(b) Scale 20 D✪ (0,5,10,15,[19],20)

✪ for omission of units

High partial credit: lengths and heights measured accurately; at least two products calculated with up to 2 errors

Mid partial credit: lengths and heights measured accurately an attempt to calculate area

Low partial credit: at least one length and height measured accurately

(c) Scale 10 B✪ (0,5,[9]10)

Partial credit: correct method incorrect answer

(d) Scale 10 B (0,5,10)

Partial credit: cut indicated