Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2025

Marking Scheme

Mathematics

Foundation Level

Note to teachers and students on the use of published marking schemes

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

Future Marking Schemes

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2025

Mathematics

Foundation Level

Marking scheme

300 marks

Structure of the marking scheme

Candidate responses are marked according to different scales, depending on the types of response 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	**B**	**C**	**D**
No of categories	3	4	5
5-mark scale	0, 3, 5	0, 2, 3, 5	0, 2, 3, 4, 5
10-mark scale	0, 4, 10	0, 4, 6, 10	0, 4, 5, 7, 10
15-mark scale		0, 5, 9, 15	0, 4, 7, 8, 15

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

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 (mid partial credit)
- almost correct response (high partial credit)
- correct response (full credit)

In certain cases, typically involving incorrect rounding, omission of units, a misreading that does not oversimplify the work, or an arithmetical error that does not oversimplify the work, a mark that is one mark below the full-credit mark may also be awarded. Such cases are denoted with a * and this level of credit is referred to as *Full Credit -1*. Thus, for example, in Scale 10C, *Full Credit -1* of 9 marks may be awarded.

The only marks that may be awarded for a question are those on the scale below, or *Full Credit -1*.

A rounding penalty is applied each time it occurs in the scheme. There is no penalty for omitted units if the question specifies the unit to be used in the answer, and there is generally no penalty for an omitted euro symbol in questions involving money.

In general, accept a candidate's work in one part of a question for use in subsequent parts of the question, unless this oversimplifies the work involved.

Palette of annotations available to examiners

Symbol	Name	Meaning in the body of the work	Meaning when used in the right margin
✓	Tick	Work of relevance	The work presented in the body of the script merits full credit
✗	Cross	Incorrect work (distinct from an error)	The work presented in the body of the script merits 0 credit
*	Star	Rounding / Unit / Arithmetic error Misreading	
	Horizontal wavy	Error	
P			The work presented in the body of the script merits partial credit
L			The work presented in the body of the script merits low partial credit
M			The work presented in the body of the script merits mid partial credit
H			The work presented in the body of the script merits high partial credit
F*	F star		The work presented in the body of the script merits Full Credit (– 1)
[	Left Bracket		Another version of this solution is presented elsewhere and it merits equal or higher credit
	Vertical wavy	No work on this page (portion of the page)	
o	Oversimplify	The candidate has oversimplified the work	
WOM	Work of Merit	Nothing correct but **Work of Merit** within the body of work	

Note: Where work of substance is presented in the body of the script, the annotation on the right margin should reflect a combination of annotations in the work

In a **C scale** where * and  and  appear in the body of the work, then **L** should be placed in the right margin.

In the case of a **D scale** with the same annotations, **M** should be placed in the right margin.

A ✓ in the body of the work may sometimes be used to indicate where a portion of the work presented has value and has merited one of the levels of credit described in the marking scheme. The level of credit is then indicated in the right margin.

Model Solutions & Marking Notes

Note: The model solutions for each question are not intended to be exhaustive – there may be other correct solutions. Any Examiner unsure of the validity of the approach adopted by a particular candidate to a particular question should contact his / her Advising Examiner.

<table>
<tr><th>Q1</th><th>Model Solution – 30 Marks</th><th>Marking Notes</th></tr>
<tr><td>(a)</td><td>
<table>
<tr><td>1</td><td>3</td><td>5</td><td>7</td><td>8</td><td></td></tr>
<tr><td>2</td><td>1</td><td>3</td><td>6</td><td>9</td><td>9</td></tr>
<tr><td>3</td><td>0</td><td>4</td><td>6</td><td></td><td></td></tr>
<tr><td>4</td><td>4</td><td>6</td><td></td><td></td><td></td></tr>
</table>
</td><td>Scale 15C (0, 5, 9, 15)

Low Partial Credit:
• One correct entry

High Partial Credit:
• Seven correct entries</td></tr>
<tr><td>(b)
(c)</td><td>(b)
Range $= 46 - 13 = 33$

(c)
Mode $= 29$</td><td>Scale 5D (0, 2, 3, 4, 5)

Low Partial Credit:
• Work of merit in (b) or (c), for example, a relevant formula
• Calculates median in (c)

Mid Partial Credit:
• One part correct
• Work of merit in both parts

High Partial Correct:
• One part correct and work of merit in the other part</td></tr>
<tr><td>(d)</td><td>Mean $= \frac{30+34+36+44+46}{5}$
$= \frac{190}{5}$
$= 38$</td><td>Scale 10C (0, 4, 6, 10)

Low Partial Credit:
• Relevant addition
• 5 written
• Calculates median

High Partial Credit:
• Calculates 190

Full Credit -1:
• Calculates mean of all 14 numbers</td></tr>
</table>

Q2	Model Solution – 30 Marks	Marking Notes
(a)	**(i)** 3 small boxes = $3 \times 500\text{g} = 1500$ [g] **(ii)** $4500 - 1500 = 3000$ $3000 \div 750 = 4$ [boxes]	**Scale 15D (0, 4, 7, 8, 15)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)**, for example, some relevant multiplication or division *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part
(b)	$5:7 \Rrightarrow 12$ parts Total of 12 parts $= €300$ 1 part $= €300 \div 12 = €25$ Mary $= €25 \times 7 = [€]175$	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Work of merit • Identifies 12 parts *High Partial Credit:* • Calculates $€25$
(c)	Tom Jack Michael T $T + €3$ $T + €8$ Jack and Michael spent $€11$ more than Tom Equal spending shared $= €200 - €11 = €189$ Equal amount spent = $€189 \div 3 = €63$ Tom = $€63$ Jack = $€66$ Michael = $€71$	**Scale 10C (0, 4, 6, 10)** *Low Partial Credit:* • Work of merit, for example, indicates $€11$ or addition of 3 or 8 *High Partial Credit:* • Finds $€189$ • Finds $€63$ *Full Credit -1:* • Correct figures assigned to the incorrect person

<table>
<tr><th>Q3</th><th>Model Solution – 30 Marks</th><th>Marking Notes</th></tr>
<tr><td>(a)
(i)</td><td>Any combination of one starter, one main and one dessert.</td><td>Scale 10B (0, 4, 10)

Partial Credit:
• Writes any one item</td></tr>
<tr><td>(a)
(ii)
(iii)</td><td>(ii)
$2 \times 4 \times 3 = 24$

(iii)
$1 \times 4 \times 2 = 8$</td><td>Scale 10D (0, 4, 5, 7, 10)

Low Partial Credit:
• Work of merit in (ii) or (iii), for example, some relevant multiplication

Mid Partial Credit:
• One part correct
• Work of merit in both parts

High Partial Correct:
• One part correct and work of merit in the other part</td></tr>
<tr><td>(b)</td><td>(i)
<table><tr><th></th><th>W</th><th>R</th><th>C</th><th>Total</th></tr><tr><td>M</td><td>8</td><td>5</td><td>10</td><td>23</td></tr><tr><td>F</td><td>4</td><td>7</td><td>8</td><td>19</td></tr></table>$8 + 5 + 10 = 23$
$19 - (4 + 8) = 19 - 12 = 7$

(ii)
$\frac{19}{42}$</td><td>Scale 10D (0, 4, 5, 7, 10)

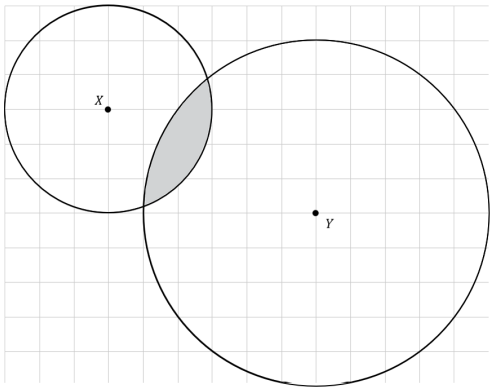
Low Partial Credit:
• Work of merit in (i) or (ii), for example, in (i), some relevant addition or subtraction; in (ii), mentions 19 or 42

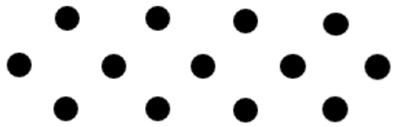
Mid Partial Credit:
• One part correct
• Work of merit in both parts

High Partial Correct:
• One part correct and work of merit in the other part</td></tr>
</table>

Q4	Model Solution – 30 Marks	Marking Notes
(a)	$\boldsymbol{A} = 80\,877 - 80\,455 = 422$	**Scale 5B (0, 3, 5)** *Partial Credit:* • $80\,877 - 80\,455$ and stops
(b) **(c)**	**(b)** $\boldsymbol{B}$ = Standing Charge $= \text{€}0{\cdot}7614 \times 58$ $= [\text{€}]\ 44{\cdot}16$ **(c)** $\boldsymbol{C} = 44{\cdot}16 + 167{\cdot}53 + 6{\cdot}46$ $= [\text{€}]\ 218{\cdot}15$	**Scale 15D (0, 4, 7, 8, 15)** *Low Partial Credit:* • Work of merit in **(b)**, for example, indicates $\times\ 58$ • Work of merit in **(c)**, for example, some relevant addition *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part
(d) **(e)**	**(d)** Levy $= \text{€}218{\cdot}15 \times 0.09$ $= [\text{€}]19{\cdot}63$ **(e)** $\text{€}19{\cdot}63 + \text{€}218{\cdot}15 = [\text{€}]\ 237{\cdot}78$	**Scale 10D (0, 4, 5, 7, 10)** *Low Partial Credit:* • Work of merit in **(d)**, for example, mentions $0{\cdot}09$ • Work of merit in **(e)**, for example, some relevant addition *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part

Q5	Model Solution – 30 Marks	Marking Notes
(a)	$€400 \times 0{\cdot}88 = [£]\ 352$	**Scale 10C (0, 4, 6, 10)** *Low Partial Credit:* • $400 \div 0{\cdot}88$ *High Partial Credit:* • Indicates multiplication by $0{\cdot}88$
(b)	**(i)** $£150 + £110 + £60 + £45 = [£]365$ **(ii)** $£365 \div 0{\cdot}88 = €414{\cdot}77$ $= [€]\ 415$	**Scale 15D (0, 4, 7, 8, 15)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)** *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part *Full Credit -1:* • Apply a * for incorrect or no rounding
(c)	Answer: 20 km Calculations: $20 \div 8 \times 5 = 12{\cdot}5$ miles **OR** $15 \div 5 \times 8 = 24$ km **OR** 5 miles $= 8$ km $(\times 3)$ 15 miles $= 24$ km	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Any correct step in converting from km to miles / miles to km • Correct answer with incorrect or no calculations *High Partial Credit:* • Correctly converts one value but fails to conclude the shorter distance • Correct answer with work of merit in calculations

Q6	Model Solution – 30 Marks	Marking Notes
(a) (i) (ii)	**(i)** $A = 90°$ **(ii)** $x = 16cm \quad y = 22cm$	**Scale 5C (0, 2, 3, 5)** Consider solution as being composed of 3 steps: **Step 1.** Finds A **Step 2.** Finds x **Step 3.** Finds y *Low Partial Credit:* • One step correct • Some work of merit *High Partial Credit:* • Two steps correct
(a) (iii)	Area of one square: $22^2 = 484$ $484 \times 14 = 6776$ [cm^2]	**Scale 15C (0, 5, 9, 15)** *Low Partial Credit:* • Work of merit, for example, some relevant multiplication *High Partial Credit:* • Area of one tile calculated
(b)		**Scale 10C (0, 4, 6, 10)** *Low Partial Credit:* • Correct radius indicated *High Partial Credit:* • Correct circle drawn with no shading

<table>
<tr><th>Q7</th><th>Model Solution – 30 Marks</th><th>Marking Notes</th></tr>
<tr><td>(a)</td><td>  </td><td>Scale 10B (0, 4, 10)

Partial Credit:
• Some work of merit</td></tr>
<tr><td>(b)</td><td><table><tr><td>Pattern 1</td><td>4</td></tr><tr><td>Pattern 2</td><td>7</td></tr><tr><td>Pattern 3</td><td>10</td></tr><tr><td>Pattern 4</td><td>13</td></tr><tr><td>Pattern 5</td><td>16</td></tr><tr><td>Pattern 6</td><td>19</td></tr></table></td><td>Scale 10C (0, 4, 6, 10)

Low Partial Credit:
• One correct or consistent entry

High Partial Credit:
• 3 correct or consistent entries</td></tr>
<tr><td>(c)
(d)</td><td>(c)
$3(42) + 1$
$= 126 + 1$
$= 127$

(d)
$3k + 1 = 154$
$3k = 153$
$k = 51$</td><td>Scale 10D (0, 4, 5, 7, 10)

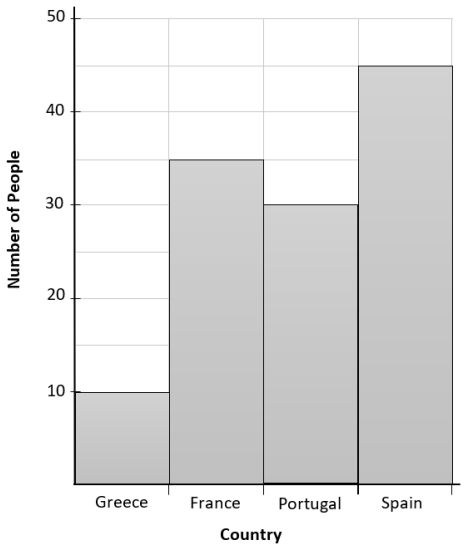
Low Partial Credit:
• Work of merit in (c) or (d), for example,
in (c), some correct substitution;
in (d), sets up equation or subtracts 1 from 154

Mid Partial Credit:
• One part correct
• Work of merit in both parts

High Partial Correct:
• One part correct and work of merit in the other part</td></tr>
</table>

Q8	Model Solution – 30 Marks	Marking Notes
(a)	$E = (4, 7)$	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • 4 or 7 mentioned. *High Partial Credit:* • Answer given as $(7, 4)$ *Full Credit -1:* • Finds $D\ (10, 1)$
(b)	**(i)** $\lvert AB \rvert = 2$ [units] $\lvert BD \rvert = 6$ [units] **(ii)** Scale factor, $k = \frac{6}{2} = 3$	**Scale 10D (0, 4, 5, 7, 10)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)**, for example, a relevant formula; indicates difference from 2 to 4 or from 4 to 10 *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part
(c)	Area $\frac{1}{2} \times 6 \times 6 = 18$ [units^2] **OR** Area $= 2 \times 3^2 = 18$ [units^2]	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Work of merit, for example, correct formula • Scale factor indicated *High Partial Credit:* • Fully correct substitution into the area of a triangle formula
(d)	$h^2 = 2^2 + 2^2$ $h^2 = 8$ $h = \sqrt{8} = 2{\cdot}828 \approx 2{\cdot}8$	**Scale 10C (0, 4, 6, 10)** *Low Partial Credit:* • Correct formula • Any substitution into formula *High Partial Credit:* • Fully correct substitution into formula

Q9	Model Solution – 45 Marks	Marking Notes
(a) (i) (ii)	**(i)** $11:30$ **(ii)** She stopped for a break/shop	**Scale 5B (0, 3, 5)** *Partial Credit:* • One part correct
(a) (iii) (iv)	**(iii)** 1 hour $/60$ mins **(iv)** $80 + 80 = 160$ [km]	**Scale 5D (0, 2, 3, 4, 5)** *Low Partial Credit:* • Work of merit in **(iii)** or **(iv)**, for example, in **(iv)**, mentions 80 *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part *Full Credit -1:* • Apply a * for no unit in part **(iii)**
(a) (v)	$\frac{80}{1\ hr\ 30\ mins} = \frac{80}{1.5\ hrs} = 53{\cdot}3333\ldots$ $= 53$ [km/hour]	**Scale 15C (0, 5, 9, 15)** *Low Partial Credit:* • Work of merit, for example, writes down the correct formula, or identifies the correct distance or time *High Partial Credit:* • $\frac{80}{1\ hr\ 30\ mins}$ • Calculates speed for entire journey

(b) (i)		**Scale 10C (0, 4, 6, 10)** *Low Partial Credit:* • One bar correct *High Partial Credit:* • Two bars correct *Full Credit -1:* • Heights all correct but one or more bars an incorrect width
(b) (ii)	$\frac{45}{120} \times 100 = 37{\cdot}5\%$	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Work of merit *High Partial Credit:* • $\frac{45}{120}$ or 0.375
(b) (iii)	$\frac{72}{360} = \frac{1}{5}$ $\frac{1}{5} \times 120 = 24$	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Work of merit *High Partial Credit:* • $\frac{72}{360}$ or $0{\cdot}2$

Q10	Model Solution – 45 Marks	Marking Notes
(a)	Area = $172 \times 98 = 16\,856$ [cm^2]	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Work of merit, for example, correct formula *High Partial Credit:* • Fully correct substitution into formula
(b) **(i)** **(ii)**	**(i)** $0{\cdot}4 \times 5 = 2$ **(ii)** $2 \times 4 \times 365 = 2920$	**Scale 10D (0, 4, 5, 7, 10)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)** *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part
(b) **(iii)**	$2920 \times 0{\cdot}95 = 2774$ $2774 \times 0{\cdot}3970 = 1101{\cdot}278$ $= €1101{\cdot}28$	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Mentions $0{\cdot}95$ • Some relevant multiplication *High Partial Credit:* • Finds 2774 *Full Credit -1:* • Apply a * for incorrect or no rounding
(c) **(i)** **(ii)**	**(i)** 150 cm and 80 cm **(ii)** $150 \times 80 \times 14 = 168\,000$ [cm^3]	**Scale 10D (0, 4, 5, 7, 10)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)**, for example, in **(ii)** identifies length, width, and height, or multiplication of 2 relevant numbers *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part

Q10	Model Solution – 45 Marks	Marking Notes
(c) (iii)	Vol of 1 column $= \pi \times 10^2 \times 90$ $= 28\,274{\cdot}33388\ \text{cm}^3$ Both columns $= 28\,274{\cdot}33388 \times 2$ $= 56548{\cdot}66776$ $\approx 56\,549$ [cm^3]	**Scale 10C (0, 4, 6, 10)** *Low Partial Credit:* • Some work of merit, for example, correct formula or relevant multiplication of 3 numbers *High Partial Correct:* • Fully correct substitution into formula *Full Credit -1:* • Apply a * for incorrect or no rounding • Volume of one column found
(c) (iv)	$225 \times 2{\cdot}24 = 504$ kg	**Scale 5B (0, 3, 5)** *Partial Credit:* • Some work of merit

Q11	Model Solution – 45 Marks	Marking Notes
(a) **(i)** **(ii)**	**(i)** $11{\cdot}30 \times 30 = €339$ **(ii)** $11{\cdot}30 \times 30 = 339$ $16{\cdot}95 \times 8 = 135{\cdot}60$ $339 + 135{\cdot}60 = €474{\cdot}60$	**Scale 10D (0, 4, 5, 7, 10)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)** *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part
(a) **(iii)**	Overtime Pay $= 525{\cdot}45 - 339$ $= 186{\cdot}45$ Overtime hours $= 186{\cdot}45 \div 16{\cdot}95$ $= 11$ [hours]	**Scale 5C (0, 2, 3, 5)** *Low Partial Credit:* • Work of merit, for example, subtracts answer in **(i)** or **(ii)** from $525{\cdot}45$ *High Partial Credit:* • Finds $186{\cdot}45$
(b) **(i)** **(ii)**	**(i)** $0{\cdot}2 \times 508{\cdot}50 = 101{\cdot}70$ **(ii)** Net Tax: $101{\cdot}70 - 76{\cdot}92 = 24{\cdot}78$ Net Pay: $508{\cdot}50 - 24{\cdot}78$ $= [€]483{\cdot}72$ **OR** $508{\cdot}50 - 101{\cdot}70 + 76{\cdot}92$ $= [€]\ 483{\cdot}72$	**Scale 5D (0, 2, 3, 4, 5)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)**, for example, a relevant formula *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part *Full Credit -1:* • Calculates extra hours compared to week 2

Q11	Model Solution – 45 Marks	Marking Notes
(c)	**(i)** $222 \div 18{\cdot}5 = 12$ litres **(ii)** $1{\cdot}73 \times 12 = [€]20{\cdot}76$	**Scale 10D (0, 4, 5, 7, 10)** *Low Partial Credit:* • Work of merit in **(i)** or **(ii)** *Mid Partial Credit:* • One part correct • Work of merit in both parts *High Partial Correct:* • One part correct and work of merit in the other part
(d)	Year 1: $23\,000 \times 0{\cdot}1 = 2300$ $23\,000 - 2300 = 20\,700$ Year 2: $20\,700 \times 0{\cdot}1 = 2070$ $20\,700 - 2070 = [€]18\,630$	**Scale 15D (0, 4, 7, 8, 15)** *Low Partial Credit:* • Some work of merit • Mentions $0{\cdot}1$ or $0{\cdot}9$ *Mid Partial Credit:* • Calculates $20\,700$ *High Partial Credit:* • Calculates 2070