2008 Mathematics

Intermediate 1 Units 1, 2 & Applications Paper 1

Finalised Marking Instructions

Mathematics Intermediate 1: Paper 1, Units 1, 2 and Applications

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
1 (a)	**Ans: 2·368** •[1] process: calculate 2·658 - 0·29	•[1] 2·368 **1 mark**
(b)	**Ans: 42000** •[1] process: calculate 14×3000	•[1] 42000 **1 mark**
(c)	**Ans: 1·09** •[1] process: calculate $5{\cdot}45 \div 5$	•[1] 1·09 **1 mark**
NOTES:		
2	**Ans: 8 hours 40 minutes** •[1] process: calculate number of hours and minutes from 2235 to 0715	•[1] 8 hours 40 minutes **1 mark**
NOTES: 1. Accept 8:40		
3 (a)	**Ans: 559** •[1] interpret/process: evaluate formula	•[1] 559 **1 mark**
(b)	**Ans: = AVERAGE(B3..E3)** •[1] communicate: state formula	•[1] AVERAGE(B3..E3) or equivalent **1 mark**
NOTES: 1. Accept any punctuation mark or space between B3 and E3 2. Accept abbreviations for AVERAGE eg AV(B3..E3) 3. Accept (B3 + C3 + D3 + E3)/4 or SUM(B3..E3)/4 (must be / **not** ÷) 4. Do not accept AVERAGE=(B3..E3) , AVERAGE(B3*E3) , AVERAGE B3..E3 , (B3..E3)/4 ,		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
4	**Ans: £116** •[1] strategy: correct method •[2] process: carry out calculations correctly	 •[1] 20 + 12 × (no. of 15 minute slots) •[2] 116 **2 marks**

NOTES:

1. Correct answer without working award 2/2

2. Some common answers (no working necessary)
   (a) 256 [(20+12)×8] award 1/2
   (b) 96 [12×8] award 1/2

3. Award of 2nd mark

   (a) 2nd mark is available for correctly calculating the answer to
   20 + 12×(number of 15 minute slots)
   where **working** shows candidate has **calculated** "number of 15 minute slots" incorrectly.

   (b) where there is no working to support an incorrect number of 15 minute slots the 2nd mark is **only** available for (working must be shown)
   (i) 20 + 12×4 = 68
   (ii) 20 + 12×120 = 1460
   (iii) 20 + 15×8 = 140
   } award 1/2 ×√

   (c) (i) 20 + 12×2 = 44
   (ii) 20 + 12×15 = 200
   } award 0/2

Question No	**Marking Scheme** **Give 1 mark for each •**	Illustrations of evidence for awarding a mark at each •
5 (a)	**Ans:** $\frac{7}{70}$ •[1] process: find probability	 •[1] $\frac{7}{70}$ or equivalent **1 mark**
NOTES: 1. Accept 7:70, 7 out of 70, 7 in 70, 7-70, 1/10, 0.1, 10% 2. Do not penalise subsequent incorrect cancelling		
5 (b)	**Ans: 2·1** •[1] communicate/process: complete table •[2] strategy: know to divide Σfx by 70 •[3] process: correctly divide Σfx	 •[1] 33 32 25 147 •[2] 147 ÷ 70 •[3] 2·1 **3 marks**

NOTES:

1.

Final answer	**Criteria for 1st mark met**	**Criteria for 1st mark not met**
2·1	3/3	2/3
24·5 (147 ÷ 6)	2/3	1/3

2. Award of 1st mark
   33, 32, 25 and 147 need not appear in table but must be shown in working

3. (a) 3rd mark may only be awarded where answer to division is given to one or more decimal places (accept rounding or truncation)
   e.g. 147÷5 = 29·4, 146÷70 = 2·0… or 2·1
   (b) Do not award 3rd mark where working is eased e.g. 147÷7 = 21

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6	**Ans: see below** •[1] interpret: interpret information •[2] strategy: find some possibilities •[3] strategy: find all possibilities	•[1] one correct column •[2] another two correct columns •[3] final two correct columns **3 marks**

Dinner and Cabaret – £55	**55**	**55**	**55**		
Pirate Cruise – £40	**40**			**40**	
Volcano Trip – £35		**35**	**35**		**35**
Caves and Grottos – £30		**30**		**30**	**30**
Parrots and Dolphins – £25	**25**		**25**	**25**	**25**
Reps' Show – £20 or Free	**Free**	**Free**	**Free**	**20**	**20**
Total Price	**120**	**120**	**115**	**115**	**110**

NOTES:

1. A correct column must have 4 valid entries and a correct total.

2. Where there are missing or incorrect totals a maximum of 2 marks is available
   (a) 5 columns otherwise "correct" award 2/3
   (b) 2 columns otherwise "correct" award 1/3

3. If ticks are used totals must be shown

Dinner and Cabaret – £55	√	√	√		
Pirate Cruise – £40	√			√	
Volcano Trip – £35		√	√		√
Caves and Grottos – £30		√		√	√
Parrots and Dolphins – £25	√		√	√	√
Reps' Show – £20 or Free	√	√	√	√	√
Total Price	**120**	**120**	**115**	**115**	**110**

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
7	**Ans: boxplot** •[1] process: arrange numbers in order •[2] interpret: minimum •[3] interpret: median •[4] interpret: upper quartile	•[1] 13 14 16 16 17 17 18 19 20 20 23 24 25 •[2] 13 •[3] 18 •[4] 21·5 **4 marks**

NOTES:

1. Correctly completed boxplot (no working necessary) award 4/4

2. If any of min, Q_2 or Q_3 is not shown on boxplot a maximum of 3/4 is available

3. Ordered list with one missing or one extra number
   Working should be followed through with the possibility of awarding 3/4

4. Where there is no working:
   (a) any two of min=13, Q_2 = 18, Q_3 = 21·5 shown on boxplot award 2/4
   (b) any one of min=13, Q_2 = 18, Q_3 = 21·5 shown on boxplot award 1/4

5. Where the list is not ordered
   min=13, Q_2=16, Q_3=16 shown on boxplot award 2/4

6. If Q_2 is incorrect working should be followed through with the possibility of awarding the 4th mark

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
8	**Ans: 1750 metres, 310°** •[1] strategy/process: correctly measure distance •[2] strategy/process: correctly multiply measured distance by 250 •[3]•[4] strategy/process: find bearing	 •[1] 7 (±0·2cm) •[2] 7 × 250 = 1750 •[3]•[4] 310 (±2) [award 1 for 50(±2) or 130(±2)] **4 marks**

NOTES:

1. Where there is no working the only other acceptable answers for the award of first 2 marks are 1700 (6·8×250), 1725 (6·9×250), 1775 (7·1×250), 1800 (7·2×250)

2. The first 2 marks are not available for correctly multiplying an angle by 250.
   Assume that 40, 50, 130, 310 are angles unless there is clear evidence to suggest otherwise.

9	**Ans: –9** •[1] •[2] interpret/process: square -8 correctly •[3] interpret/process: subtract 73 correctly	 •[1]•[2] 64 (award 1 for $-8^2 = -64$ or $8^2 = \pm 64$ or -8×-8) •[3] –9 **3 marks**

NOTES:

1. **Be aware !!!**
   (a) –9 with no working — award 2/3 ×√√
   (b) $8^2 - 73 = 64 - 73 = -9$ — award 2/3 ×√√
   (c) $64 - 73 = -9$ — award 3/3 √√√
   (d) $-8^2 - 73 = -9$ — award 3/3 √√√

2. Some common answers:
   (a) $-8^2 - 73 = -64 - 73 = -137$ — award 2/3 ×√√
   (b) $-8^2 - 73 = 16 - 73 = -57$ — award 1/3 ××√
   (c) $-8^2 - 73 = -16 - 73 = -89$ — award 1/3 ××√

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10	**Ans: £18**	
	•[1] strategy: know how to calculate annual interest	•[1] 1440 ÷ 10 ÷ 2 or equivalent
	•[2] process: calculate 5% of 1440	•[2] 72
	•[3] strategy: know how to calculate interest for 3 months	•[3] 72 ÷ 12 × 3 or equivalent (or 72 ÷ 12 = 6)
	•[4] process: calculate 72 ÷ 12 × 3	•[4] 18 **4 marks**

NOTES:

1. Some common answers (no working necessary)
   (a) 18 (correct answer) award 4/4
   (b) 72 (annual interest) award 2/4 √√××

2. Some common answers (working must be shown)
   (a) $1440 \times {}^{5}/_{100}$ award 1/4 √×××
   (b) 288 [72 × 12 ÷ 3] award 3/4 √√×√
   (c) 288 [1440 ÷ 5] award 0/4
   (d) 216 [72 × 12 ÷ 4 or 72 × 3] award 2/4 √√××
   (e) 24 [72 ÷ 3] award 2/4 √√××

3. 1458 (1440 + 18)
   (a) if the candidate **states** that the interest is 18 award 4/4
   (b) otherwise (no working necessary) award 3/4 √√√×

4. Award of 3rd mark: accept 72÷10÷ 2 as evidence of attempt to calculate 72÷12
   e.g. 72÷10÷ 2×3 = 10·8(0) award 3/4 √√√×

5. Alternative strategies
   (a) 18 [5 ÷12 × 3 = 1·25 → 1440 ÷ 100 × 1·25] award 4/4
   (b) 0·41… or 0·42 [5 ÷12] (working must be shown) award 1/4 ××√×
   (c) 18 [1440 ÷12 × 3 = 360 ÷ 10 ÷ 2] award 4/4
   (d) 120 [1440 ÷12] (working must be shown) award 1/4 ××√×

TOTAL MARKS FOR PAPER 1

30

2008 Mathematics

Intermediate 1 – Units 1, 2 & Applications Paper 2

Finalised Marking Instructions

Mathematics Intermediate 1: Paper 2, Units 1, 2 and Applications

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
1 (a)	**Ans: diagram** •[1] communicate: plot point •[2] communicate: plot points	•[1] plot A or B or C •[2] plot other two points **2 marks**
(b)	**Ans: D(3,2) plotted** •[1] strategy: plot 4th vertex of square	•[1] plot(3,2) **1 mark**

NOTES:

1. Accept (3,2) if D not plotted
2. If D(3,2) is plotted but wrong coordinates are stated then award 1/1
3. Where (y,x) is consistently plotted
   - award 1/2 for (a)
   - award 1/1 for (b) for plotting 4th vertex of square

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
2 (a)	**Ans: £841** •[1] interpret: find basic premium	•[1] 841 **1 mark**
NOTES: 1. Working subsequent to "correct" answer e.g. 841÷12 = 70·08 award 0/1		
2 (b)	**Ans: £277·53** •[1] interpret/strategy/process: find discount •[2] strategy/process: find net premium	•[1] $\frac{67}{100} \times 841 = 563 \cdot 47$ •[2] 277·53 **2 marks**

NOTES:

1. Some common answers

	with working	without working
(a) 277·53	2/2	2/2
(b) 563.47	1/2	1/2
(c) 277·50 (841 – 563·50)	1/2	1/2
(d) 278 (841 – 563)	1/2	1/2
(e) 563·50, 563	see note 2	0/2

2.
(i) $^{67}/_{100} \times 841 = 563 \cdot 47 = 563 \cdot 50$ or 563 award 1st mark
(ii) $^{67}/_{100} \times 841 = 563 \cdot 50$ or 563 do **not** award 1st mark

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
3	**Ans: £928.80** •[1] interpret: find basic cost per room per night •[2] interpret/process: find total basic cost •[3] interpret/process: find total cost	 •[1] 43 •[2] 1032 •[3] 928·8(0) **3 marks**

NOTES:

1. Correct answer without working award 3/3

2. Some common answers (no working necessary)

(a)	232·2(0)	[43 × 6 × 0·9]	award 2/3	✓×✓
(b)	154·8(0)	[43 × 4 × 0·9]	award 2/3	✓×✓
(c)	38·7(0)	[43 × 0·9]	award 2/3	✓×✓
(d)	258	[43 × 6]	award 1/3	✓××
(e)	172	[43 × 4]	award 1/3	✓××
(f)	1036·8(0)	[48 × 6 × 4 × 0·9]	award 2/3	×✓✓
(g)	1152	[48 × 6 × 4]	award 1/3	×✓×
(h)	43·2(0)	[48 × 0·9]	award 1/3	××✓
(i)	1123·2(0)	[52 × 6 × 4 × 0·9]	award 2/3	×✓✓
(j)	1248	[52 × 6 × 4]	award 1/3	×✓×
(k)	46·8(0)	[52 × 0·9]	award 1/3	××✓

3. Some common answers (working must be shown)

(a)	387	[((43×6) + (43×4)) ×0·9]	award 2/3	✓×✓
(b)	430	[(43×6) + (43×4)]	award 1/3	✓ ××
(c)	296·7(0)	[(43 × 6) + (43 × 0·9)]	award 1/3	✓ ××

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
4 (a)	**Ans: 2·5** •[1] strategy: know to order numbers •[2] process: find median	•[1] 1 1 1 2 2 3 3 4 6 7 •[2] 2·5 **2 marks**

NOTES:

1. **Answer** — **with valid working** — **without valid working**

Answer	with valid working	without valid working
2·5	2/2	2/2
4 (numbers not ordered)	1/2	0/2
3 (mean)	1/2	0/2

2. If "correct" median is found from ordered list with one missing (or one extra) number award 1/2

3. Accept ordered list written in part (a) or part (b)

4 (b)	**Ans: 6** •[1] strategy/process: find range	•[1] 6 **1 mark**

NOTES:

4 (c)	**Ans: Less weeds remain with Noweed. Number of remaining weeds vary more with Noweed.** •[1] interpret/communicate: interpret calculated statistics •[2] interpret/communicate: interpret calculated statistics	•[1] Less weeds remain with Noweed or Noweed is a better weedkiller, etc. •[2] Number of remaining weeds vary more with Noweed. **2 marks**

NOTES:

1. Answer must be consistent with answers to parts (a) and (b)

2. Do not accept
   eg Weedclear's median is more
   Noweed's range is more

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
5	**Ans: 36 mph** •[1] strategy/process: calculate distance on motorway •[2] strategy/process: find distance on other roads •[3] strategy: know how to find speed on other roads •[4] process: calculate speed	•[1] 2 × 68 = 136 •[2] D = 54 •[3] S = 54 ÷ 1h 30m •[4] 54 ÷ 1·5 = 36 **4 marks**

NOTES:

1. Answers without working
   (a) 36 award 4/4
   (b) 136 award 1/4 ✓×××

2. For a **final answer** of 54
   (a) 54 [190 – 136] award 2/4 ✓✓××
   (b) 54(·2…) [190 ÷ 3·5] award 1/4 ×××✓
   (c) 54 with no working award 1/4 ×××✓

3. Examples of answers (working must be shown)

(a)	42, 41(·…)	[54 ÷ 1·3]	3/4 (disregard incorrect rounding)	✓✓✓×
(b)	0·6	[54 ÷ 90]	3/4	✓✓✓×
(c)	0·4…	[54 ÷ 130]	3/4	✓✓✓×
(d)	81	[54 × 1·5]	3/4	✓✓×✓
(e)	4860	[54 × 90]	2/4	✓✓××
(f)	70(·2)	[54 × 1·3]	2/4	✓✓××
(g)	7020	[54 × 130]	2/4	✓✓××
(i)	81(·3…)	[(190–68)÷1·5]	3/4	×✓✓✓
(j)	1·3(5…)	[(190–68)÷90]	2/4	×✓✓×
(k)	94, 93(·…)	[(190–68)÷1·3]	2/4	×✓✓×
(l)	1, 0·9(…)	[(190–68)÷130]	2/4	×✓✓×
(m)	183	[(190–68)×1·5]	2/4	×✓×✓
(n)	10980	[(190–68) ×90]	1/4	×✓××
(o)	159,158·6	[(190–68) ×1·3]	1/4	×✓××
(p)	15860	[(190–68) ×130]	1/4	×✓××
(q)	91, 90(·…)	[(68×2)÷1·5]	3/4	✓×✓✓
(r)	127, 126(·..)	[190÷1·5]	2/4	××✓✓
(s)	34	[68÷2]	0/4	

4. 4th mark is not available for division by a whole number.

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6	**Ans: 77** •[1] strategy/process: find angle at centre of "beetles" sector •[2] strategy: know how to find number of beetles •[3] process: find number of beetles	•[1] 126 •[2] $\frac{126}{360} \times 220$ •[3] 77 **3 marks**
	Alternative Strategy •[1] strategy: know to calculate 220 – (flies + ants + spiders) •[2] strategy: know how to find number of flies, ants and spiders •[3] process: find number of beetles	•[1] 220 – (flies + ants + spiders) •[2] flies = 220 ÷ 2, ants = 220 ÷ 10, spiders = ants ÷ 2 or equivalent •[3] 77 **3 marks**

NOTES:

1. Correct answer without working — award 3/3
2. 143 [flies + ants + spiders] (no working necessary) — award 2/3
3. 57 [$^{126}/_{220} \times 100$] (no working necessary) — award 1/3
4. ⅓ of 220 = 73(·3…) — award 0/3

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
7	**Ans: 117 cm** •[1] strategy: correct form of Pythagoras Theorem •[2] process: calculate sum of two squares •[3] process: calculate square root of sum (or difference) of two squares •[4] strategy/process: add 20 to previously **calculated** value	 •[1] $80^2 + 55^2$ •[2] 9425 (the **only** cases where this mark is available for calculating the difference of two squares are shown in notes 2a and 3b) •[3] 97(·08….) (correctly rounded or truncated) •[4] 117 **4 marks**

NOTES:

1. Some common answers (no working necessary)
   (a) 117 4/4
   (b) 97 3/4 ✓✓✓×

2. Some common answers (working must be shown) where correct horizontal distance of 80 is used
   (a) 78(·…) $[\sqrt{(80^2 - 55^2)} + 20]$ 3/4 ×✓✓✓
   (b) 156(·…) $[\sqrt{(80^2 + 110^2)} + 20]$ 3/4 ×✓✓✓
   (c) 95(·…) $[\sqrt{(110^2 - 80^2)} + 20]$ 2/4 ××✓✓

3. Some common answers (working must be shown) where incorrect horizontal distance of 80+20=100 is used
   [4th mark is unavailable since 20 has been added inappropriately]
   (a) 114(·…) $\sqrt{(100^2 + 55^2)}$ 3/4 ✓✓✓×
   (b) 84,83(·…) $\sqrt{(100^2 - 55^2)}$ 2/4 ×✓✓×
   (c) 149,148(·…) $\sqrt{(100^2 + 110^2)}$ 2/4 ×✓✓×
   (d) 46,45(·…) $\sqrt{(110^2 - 100^2)}$ 1/4 ××✓×

4. Award of first 2 marks if trigonometry is used:
   (a) $55 \div \sin(\tan^{-1}(^{55}/_{80}))$ or $80 \div \cos(\tan^{-1}(^{55}/_{80}))$ award marks 1 & 2
   (b) eg $110 \div \sin(\tan^{-1}(^{110}/_{80}))$ award 1 of the first 2 marks

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
8	**Ans: 360 grams** •[1] strategy: know to calculate volume •[2] process: calculate volume •[3] strategy: know to use proportion •[4] strategy: carry out calculations correctly	•[1] $10 \times 10 \times 3$ •[2] 300 •[3] $\frac{300}{400} \times 480$ or equivalent •[4] 360 **4 marks**

NOTES:

1. Correct answer without working award 4/4

2. Some common answers (no working necessary)
   (a) 380 [300 + 80] award 2/4 ✓✓××
   (b) 300 award 2/4 ✓✓××

3. Some common answers (working must be shown)
   (a) 300 ÷ (480 ÷ 400) = 250 award 3/4 ✓✓×✓
   (b) 300 × (400 ÷ 480) = 250 award 3/4 ✓✓×✓
   [Do not penalise premature rounding eg 400 ÷ 480 = 0·8 × 300 = 240]

4. Alternative strategy
   (a) 300 + 300÷5 = 360 (no working necessary) award 4/4
   (b) 300 + 300÷6 = 350 (working must be shown) award 3/4 ✓✓×✓

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
9	**Ans: £183·45** •[1] interpret/process: find cost of tickets in euros •[2] strategy: know how to convert cost into sterling •[3] process: convert cost into sterling to the nearest penny	•[1] 255 •[2] 255 ÷ 1·39 •[3] 183·45 **3 marks**

NOTES:

1. (a) Correct answer without working — award 3/3
   (b) 354·45 [255 × 1·39] (no working necessary) — award 1/3 ✓××

2. Alternative strategy

•[1] interpret/strategy: know how to convert valid number of euros into sterling	•[1] 90÷1·39 **or** 75÷1·39 **or** 180÷1·39
•[2] process: convert valid cost into sterling to the nearest penny	•[2] 90 ÷ 1·39 = 64·74 or 64·75 **or** 75 ÷ 1·39 = 53·95 or 53·96 **or** 180 ÷ 1·39 = 129·49 or 129·50
•[3] interpret/strategy: find total cost of tickets in sterling	•[3] 183·43 **or** 183·44 **or** 183·45 **or** 183·46

3. Where working shows that candidate has used alternative strategy award 3/3 for final answers of 183·43, 183·44 or 183·46

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10 (a)	**Ans: £27·20** •[1] strategy/process: find 1·6% of 1700	•[1] £27·2(0) **1 mark**
NOTES: 1. 1727·2(0) [27·2(0) + 1700] can only be awarded the mark if the candidate **states** that the interest is 27·2(0) 2. Mark not available for invalid working subsequent to correct interest e.g. 27·2(0) ÷ 12 = 2·66 or 2·67 award 0/1		
(b)	**Ans: £2057** •[1] strategy/process: find 21% of 1700 •[2] strategy/process: add interest onto loan	•[1] 357 •[2] 2057 **2 marks**
NOTES: 1. Correct answer without working award 2/2 2. 2026·4(0) [(27·2(0)×12) + 1700] award 1/2 ×✓ 3. 2nd mark only available for correctly adding a **calculated** value onto 1700		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
11	**Ans: 438·70**	
	$\bullet^1$ interpret/process: interpret table	$\bullet^1$ 3 hours @ time and a half **and** 7 hours @ double time
	$\bullet^2\bullet^3$ strategy/process: find overtime pay	$\bullet^2\bullet^3$ 151·7(0) [award 1 for time and half = 36·9(0) **or** double time = 49·2(0) + 65·6(0) **or** overtime rates = 12·3(0) **and** 16·4(0)]
	$\bullet^4$ strategy/process: find total pay	$\bullet^4$ 438·7(0) **4 marks**

NOTES:

1. Correct answer without working award 4/4

2. Acceptable alternative strategy for calculating overtime: 4·5×8·2(0) + 14×8·2(0)

3. Some common answers
   (a) 369 [3×8·2(0) + 7×8·2(0) + 287] (working must be shown) award 2/4 ✓××✓
   (b) 369 [10×8·2(0) + 287 or 45×8·2(0)] (working not necessary) award 1/4 ×××✓
   (c) 369 (with no working) award 1/4 ×××✓

4. Some common answers (working not necessary)
   (a) 717·5(0) [1·5×287 + 287 or 2·5×287] award 1/4 ×××✓
   (b) 430·5(0) [1·5×287] award 0/4

5. A common answer (working must be shown)
   414·1(0) [3×4·1(0) + 7×16·4(0) + 287] award 3/4 ✓×✓✓

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
12	**Ans: 141 cm^2**	
	•^{1} strategy: know how to find curved surface area	•^{1} $2\pi rh$ or πdh
	•^{2} process: substitute correct radius (or correct diameter) and height into formula involving π	•^{2} $2\times\pi\times9\times2\cdot5$ or $\pi\times18\times2\cdot5$
	•^{3} process: carry out calculation involving π	•^{3} 141(·37…) **3 marks**

NOTES:

1. Correct answer without working — award 3/3

2. Disregard premature or incorrect rounding

3. Some common answers (working must be shown)

(a)	282·6, 282·7(…) or 283	[$2\pi rh = 2\times\pi\times18\times2\cdot5$]	award 2/3 ✓×✓
(b)	282·6, 282·7(…) or 283	[$2\times\pi\times18\times2\cdot5$]	award 1/3 ××✓
(c)	113(·…)	[$2\pi rh = 2\times\pi\times18$]	award 2/3 ✓×✓
(d)	15·7(…) or 16	[$2\times\pi\times2\cdot5$]	award 1/3 ××✓
(e)	70·6(…) or 71	[$\pi rh = \pi\times9\times2\cdot5$]	award 2/3 ×✓✓
(f)	254(·…)	[$\pi r^2 = \pi\times9^2$]	award 1/3 ××✓
(g)	56·5(…) or 57	[$\pi r^2 = \pi\times9^2 = \pi\times18$]	award 0/3
(h)	56·5(…) or 57	[$\pi d = \pi\times18$]	award 1/3 ××✓

4 650(·…), 649(·…) [total surface area] or
396, 395(·…) [curved surface + area of one circular face]
(a) if the candidate **states** that curved surface area is 141(·37…) — award 3/3
(b) otherwise (no working necessary) — award 2/3

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
13	**Ans: 7·5%** •[1] strategy: find weight loss •[2] strategy: know to express loss as a fraction of 80 •[3] strategy: know to multiply fraction by 100 •[4] process: carry out all calculations correctly	•[1] 6 •[2] $\frac{6}{80}$ •[3] $\frac{6}{80}\times 100$ •[4] 7·5 **4 marks**

NOTES:

1. Correct answer without working — award 4/4

2. Some common answers (working must be shown)

(a)	92·5	$[{}^{74}/_{80} \times 100]$	award 3/4	×✓✓✓
(b)	8(·…)	$[{}^{6}/_{74} \times 100]$	award 3/4	✓×✓✓
(c)	1333(·…)	$[{}^{80}/_{6} \times 100]$	award 3/4	✓×✓✓
(d)	108(·…)	$[{}^{80}/_{74} \times 100]$	award 2/4	××✓✓
(e)	4·8	$[{}^{6}/_{100} \times 80]$	award 2/4	✓××✓
(f)	4·44	$[{}^{6}/_{100} \times 74]$	award 2/4	✓××✓
(g)	59·2	$[{}^{74}/_{100} \times 80$ or $\,{}^{80}/_{100} \times 74]$	award 1/4	×××✓

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
14	**Ans: 63 m^2**	
	•^{1} strategy: know to calculate area of semi-circle	•^{1} $\frac{1}{2}\pi r^2$
	•^{2} strategy: substitute correct radius into area formula	•^{2} $\frac{1}{2} \times \pi \times 5^2$
	•^{3} strategy: know to add area of triangle to area of semi-circle	•^{3} $\frac{1}{2} \times \pi \times 5^2 + \frac{1}{2} \times 8 \times 6$
	•^{4} process: carry out all calculations correctly (must include a circle calculation involving either squaring or halving **followed by** an addition or a subtraction)	•^{4} 63(·2699…) or 63(·25) (π) (3·14) **4 marks**

NOTES:

1. Correct answer without working — award 0/4

2. **Beware!!!**
   3rd mark not available for adding 8+6+10=24 to area of semi-circle
   eg (i) $\frac{1}{2}\times\pi\times5^2 + \frac{1}{2}\times8\times6 = 63$ — award 4/4
   (ii) $\frac{1}{2}\times\pi\times5^2 + 8+6+10 = 63$ — award 3/4 ✓✓×✓
   (iii) $\frac{1}{2}\times\pi\times5^2 + 24 = 63$ — award 3/4 ✓✓×✓

3. Some common answers (working must be shown)

(a)	181(·…)	[$\frac{1}{2}\pi r^2 + \frac{1}{2}\times8\times6$, r=10]	award 3/4	✓×✓✓
(b)	157(·…)	[$\frac{1}{2}\pi r^2$, r=10]	award 1/4	✓×××
(c)	102(·…), 103	[$\pi r^2 + \frac{1}{2}\times8\times6$]	award 3/4	×✓✓✓
(d)	87(·…)	[$\frac{1}{2}\pi r^2 + 48$]	award 3/4	✓✓×✓
(e)	79,78(·…)	[πr^2]	award 1/4	×✓××
(f)	79(·…)	[$\pi d + 48$, d=10)]	award 1/4	×✓××
(g)	63(·…), 64	[$\frac{1}{2}\pi r^2 + 48$, $r^2=5^2=10$)]	award 2/4	✓✓××
(h)	63(·…), 64	[$\frac{1}{2}\pi d + 48$, d=10)]	award 2/4	×✓×✓
(i)	55(·…)	[$\pi r^2 + \frac{1}{2}\times8\times6$, $r^2=5^2=10$)]	award 2/4	×✓✓×
(j)	55(·…)	[$\pi d + \frac{1}{2}\times8\times6$, d=10)]	award 2/4	×✓✓×
(k)	39(·…), 40	[$\frac{1}{2}\pi r^2 + \frac{1}{2}\times8\times6$, $r^2=5^2=10$)]	award 3/4	✓✓✓×
(l)	39(·…), 40	[$\frac{1}{2}\pi d + \frac{1}{2}\times8\times6$, d=10)]	award 3/4	×✓✓✓
(m)	39(·…)	[$\frac{1}{2}\pi r^2$]	award 2/4	✓✓××

TOTAL MARKS FOR PAPER 2
50

TOTAL MARKS FOR PAPER 1 & 2
80

[END OF MARKING INSTRUCTIONS]