

### **2008 Mathematics**

# Intermediate 1 Units 1, 2 & 3 Paper 1

# **Finalised Marking Instructions**

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Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
1 (a)	Ans: 2·395	
	• process: calculate $2.685 - 0.29$	• 2·395 <b>1 mark</b>
(b)	Ans: 42000	
	• <sup>1</sup> process: calculate $14 \times 3000$	• <sup>1</sup> 42000 <b>1 mark</b>
(c)	Ans: 1.09	
	• 1 process: calculate $5.45 \div 5$	• <sup>1</sup> 1.09 <b>1 mark</b>
NOTES:		
2	Ans: 8 hours 40 minutes	
	• <sup>1</sup> process: calculate number of hours and minutes from 2235 to 0715	• <sup>1</sup> 8 hours 40 minutes <b>1 mark</b>
NOTES:		
1. Ad	ccept 8:40	
3	Ans: 0.0065	
	• <sup>1</sup> • <sup>2</sup> process: write $6.5 \times 10^{-3}$ in full	• <sup>1</sup> • <sup>2</sup> (0)·0065 [award 1 for $6.5 \times 0.001$ or $6500$ $(6.5 \times 10^3)$ ]
NOTES		2 marks
1. (0	)·006·5 award 1/2	
2. 00	06·5, 0065 award 0/2	

### Mathematics Intermediate 1: Paper 1, Units 1, 2 and 3

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
4	Ans: £116	
	• <sup>1</sup> strategy: correct method	• <sup>1</sup> $20 + 12 \times (\text{no. of } 15 \text{ minute slots})$
	• <sup>2</sup> process: carry out calculations correctly	• <sup>2</sup> 116 <b>2 marks</b>
NOTES:		
1. C	Correct answer without working	award 2/2
2. So (a (b	to me common answers (no working necessary) a) 256 $[(20+12)\times 8]$ award 1/2 b) 96 $[12\times 8]$ award 1/2	
3. <u>A</u>	ward of 2 <sup>nd</sup> mark	
(a	a) $2^{nd}$ mark is available for correctly calculating the $20 + 12 \times (number \text{ of } 15 \text{ minute slots})$ where <b>working</b> shows candidate has <b>calculated</b>	answer to "number of 15 minute slots" incorrectly.
(1	b) where there is no working to support an incorrect is <b>only</b> available for (working must be shown) (i) $20 + 12 \times 4 = 68$ (ii) $20 + 12 \times 120 = 1460$ (iii) $20 + 15 \times 8 = 140$ award $1/2 > 120$	et number of 15 minute slots the $2^{nd}$ mark
(	(c) (i) $20 + 12 \times 2 = 44$ (ii) $20 + 12 \times 15 = 200$ award $0/2$	

Question	Marking Scheme	Illustrations of evidence for awarding		
No	Give 1 mark for each •	a mark at each •		
5 (a)	<ul> <li>Ans: 7/70</li> <li>•<sup>1</sup> process: find probability</li> </ul>	• <sup>1</sup> $7_{70}$ or equivalent <b>1 mark</b>		
<b>NOTES:</b> 1. 2.	Accept 7:70, 7 out of 70, 7 in 70, 7-70, 1/10, ( Do not penalise subsequent incorrect cancellin	0.1, 10% ng		
5 (b)	<ul> <li>Ans: 2·1</li> <li>•<sup>1</sup> communicate/process: complete table</li> <li>•<sup>2</sup> strategy: know to divide Σfx by 70</li> </ul>	• <sup>1</sup> 33 32 25 147 • <sup>2</sup> 147 ÷ 70		
	• process: correctly divide Σfx	• <sup>3</sup> 2·1 <b>3 marks</b>		
NOTES:				
1. <u>F</u> i		et Criteria for 1 <sup>st</sup> mark not met 2/3 1/3		
<ol> <li>Award of 1<sup>st</sup> mark</li> <li>33, 32, 25 and 147 need not appear in table but must be shown in working</li> </ol>				
<ul> <li>3. (a) 3<sup>rd</sup> mark may only be awarded where answer to division is given to one or more decimal places (accept rounding or truncation)</li> <li>e.g. 147÷5 = 29·4, 147÷6 = 24·5, 146÷70 = 2·0 or 2·1</li> <li>(b) Do not award 3<sup>rd</sup> mark where working is eased eg 147÷7 = 21</li> </ul>				

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6	Ans: see below	
	• <sup>1</sup> interpret: interpret information	• <sup>1</sup> one correct column
	• <sup>2</sup> strategy: find some possibilities	$\bullet^2$ another two correct columns
	$\bullet^3$ strategy: find all possibilities	$\bullet^3$ 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

$\checkmark$	$\checkmark$	$\checkmark$		
$\checkmark$			$\checkmark$	
	$\checkmark$	$\checkmark$		$\checkmark$
	$\checkmark$		$\checkmark$	$\checkmark$
$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$
$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
120	120	115	115	110
	√ √ √ √ 120	$ \begin{array}{c c}          &  \\          &  \\          &  \\          &  \\          &  \\         120 & 120 \end{array} $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

Question	Marking Scheme	Illustrations of evidence for awarding
7	Ans: $m = 8$	
	• <sup>1</sup> process: start to collect like terms	• <sup>1</sup> 6m or 48
	• <sup>2</sup> process: collect like terms <b>and</b> equate	$\bullet^2$ 6m = 48
	• <sup>3</sup> process: solve equation for m	• <sup>3</sup> $m = 8$ 3 marks
NOTES:		
1. F( eş	or answers without valid working (i) $6m - 8 = 40 \rightarrow 48 \div 6 \rightarrow m = 8$ (ii) $m = 8$ without working (iii) $48 \div 6 = 8$ (iv) $7 \times 8 - 8 = 40 + 8 \rightarrow m = 8$	award 2/3 award 1/3 award 1/3 award 1/3
2. Fe	or the award of the 3 <sup>rd</sup> mark an answer of the form	m = is required
3. A (i) (i) (i) (i) (i)	nswers acceptable for partial credit (valid working ) $6m = 48 \rightarrow 8$ i) $6m = 32 \rightarrow m = 5 \cdot 3$ award 2/3 ii) $8m = 48 \rightarrow m = 6$ v) $6m = 32 \rightarrow m = 5r2$ $m = 32 \rightarrow m = 4$ award 1/3	must be shown)

Question	Marking Scheme	Illustrations of evidence for awarding
NO	Give I mark for each •	a mark at each •
8 (a)	x       -2       0       2       4         y       -8       -3       2       7	
	• 1 process: calculate y when $x = -2$	• <sup>1</sup> -8
	• <sup>2</sup> process: calculate y when $x = 0$ and 4	• -3 and / 2 marks
8 (b)(i)	Ans: straight line graph of $y = 2 \cdot 5x - 3$	
	• communicate: prepare to draw line $y = 2 \cdot 5x - 3$	• <sup>1</sup> all three points from table plotted correctly
	• <sup>2</sup> communicate: draw the line $y = 2 \cdot 5x - 3$	• <sup>2</sup> draw straight line through the four points shown in the table
		2 marks
NOTES:		
1. If 1 [m	the line $y = 2.5x - 3$ is drawn award $2/2$ inimum acceptable length: line joining (-2,-8) to	(4,7)]
2. Wh for	here the four points in the table satisfy $y = x$ or y drawing a line through the four points	= $4-x$ then award $1/2$
3. W th	here the four points plotted are consistent with tab e 2 <sup>nd</sup> mark is unavailable	le and are not collinear,
4. W po	here $(y,x)$ is consistently plotted, answer should be ossibility of awarding the $2^{nd}$ mark	e followed through with the
8 (b)(ii)	Ans: straight line graph of $y = 3$	
	• communicate: draw the line $y = 3$	• draw the line $y = 3$ <b>1 mark</b>
NOTES:		
1. M	linimum acceptable length: 4 units with at least 1 u	unit in each of quadrants 1 & 2
2. W	There $(y,x)$ is consistently plotted in (b)(i), the marked he line $x=3$	k is only available for drawing

Question	Marking Scheme	Illustrations of evidence for awarding
INO	Give 1 mark for each •	a mark at each •
9	Ans: -9	
	• <sup>1</sup> • <sup>2</sup> interpret/process: square -8 correctly	• $^{1}$ • $^{2}$ 64 (award 1 for $-8^{2} = -64$ or $8^{2} = \pm 64$
	• <sup>3</sup> interpret/process: subtract 73 correctly	or $-8 \times -8$
		• <sup>3</sup> –9
		3 marks
NOTES:		
1. E	Be aware !!!	
(	a) -9 with no working award $2/3 \times \sqrt{3}$	
(	b) $8^2 - 73 = 64 - 73 = -9$ award $2/3 \times \sqrt{3}$	
	c) $64 - 73 = -9$ award $3/3 \sqrt{\sqrt{2}}$	
	d) $-8^2 - 73 = -9$ award $3/3 \sqrt{\sqrt{3}}$	J
2. S	ome common answers:	
(a	a) $-8^2 - 73 = -64 - 73 = -137$ award $2/3 \times \sqrt{\sqrt{2}}$	
(t	b) $-8^2 - 73 = 16 - 73 = -57$ award $1/3 \times 10^{-10}$	
(c	$-8^2 - 73 = -16 - 73 = -89 \qquad \text{award } 1/3  \times \times 10^{-10}$	$\checkmark$

Question	Marking Scheme	Illustrations of evidence for awarding
No	Give 1 mark for each •	a mark at each •
10	Ans: £18	
	• <sup>1</sup> strategy: know how to calculate annual interest	• <sup>1</sup> 1440 $\div$ 10 $\div$ 2 or equivalent
	• <sup>2</sup> process: calculate 5% of 1440	• <sup>2</sup> 72
	• <sup>3</sup> strategy: know how to calculate interest for 3 months	• <sup>3</sup> $72 \div 12 \times 3$ or equivalent (or $72 \div 12 = 6$ )
	• <sup>4</sup> process: calculate $72 \div 12 \times 3$	• <sup>4</sup> 18 <b>4 marks</b>
NOTES:		
1. So (a (b) (c) (d) (c) (d) (e)	to me common answers (no working necessary) ) 18 (correct answer) award 4/4 ) 72 (annual interest) award 2/4 prome common answers (working must be shown) ) $1440 \times {}^{5}/{}_{100}$ ) 288 [72 × 12 ÷ 3] ) 288 [1440 ÷ 5] ) 216 [72 × 12 ÷ 4 or 72 × 3] ) 24 [72 ÷ 3]	award 1/4 $\sqrt{\times \times \times}$ award 3/4 $\sqrt{\sqrt{\times} \times}$ award 0/4 award 2/4 $\sqrt{\sqrt{\times} \times}$ award 2/4 $\sqrt{\sqrt{\times} \times}$
3. 14 (i	458 (1440 + 18)a) if the candidate states that the interest is 18b) otherwise (no working necessary)	award 4/4 award 3/4 $\sqrt{\sqrt{\sqrt{\times}}}$
4. A	ward of $3^{rd}$ mark: accept $72 \div 10 \div 2$ as evidence o e.g. $72 \div 10 \div 2 \times 3 = 10 \cdot 8(0)$	f attempt to calculate 72÷12 award 3/4 $\sqrt[4]{\sqrt{\sqrt{\times}}}$
5. A (a) (b) (c) (d)	Iternative strategies 18 $[5 \div 12 \times 3 = 1.25 \rightarrow 1440 \div 100 \times 1.25]$ 0.41 or 0.42 $[5 \div 12]$ (working must be sh 18 $[1440 \div 12 \times 3 = 360 \div 10 \div 2]$ 120 $[1440 \div 12]$ (working must be shown)	award 4/4 own) award 1/4 $\times \times \sqrt{\times}$ award 4/4 award 1/4 $\times \times \sqrt{\times}$

TOTAL MARKS FOR PAPER 1

30



### **2008 Mathematics**

# Intermediate 1 Units 1, 2 & 3 Paper 2

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### Mathematics Intermediate 1: Paper 2, Units 1, 2 and 3

Question	Marking Scheme	Illustrations of evidence for awarding		
No	Give 1 mark for each •	a mark at each •		
1 (a)	Ans: diagram			
	$\bullet^1$ communicate: plot point	• <sup>1</sup> plot A or B or C		
	• <sup>2</sup> communicate: plot points	• <sup>2</sup> plot other two points <b>2 marks</b>		
(b)	Ans: D(3,2) plotted			
	• <sup>1</sup> strategy: plot 4 <sup>th</sup> vertex of square	• <sup>1</sup> plot(3,2) <b>1 mark</b>		
NOTES:				
1.	Accept (3,2) if D not plotted			
2.	If $D(3,2)$ is plotted but wrong coordinates are stated	d then award 1/1		
3.	<ul> <li>Where (y,x) is consistently plotted</li> <li>award 1/2 for (a)</li> <li>award 1/1 for (b) for plotting 4<sup>th</sup> vertex of s</li> </ul>	square		

-		mustrations of evidence for awarding
No	Give 1 mark for each •	a mark at each •
2 (a)	<ul> <li>Ans: £841</li> <li>•<sup>1</sup> interpret: find basic premium</li> </ul>	• <sup>1</sup> 841 <b>1 mark</b>
NOTES:		
1. W	Vorking subsequent to "correct" answer e.g. 841÷	12 = 70.08 award $0/1$
2 (b)	<ul> <li>Ans: £277.53</li> <li>•<sup>1</sup> interpret/strategy/process: find discount</li> </ul>	• $\frac{67}{3} \times 841 = 563 \cdot 47$
	• <sup>2</sup> strategy/process: find net premium	100 • <sup>2</sup> 277·53 <b>2 marks</b>
NOTES:		
1. Som (a) 2 (b) 5 (c) 2 (d) 2 (e) 5 2. (i) <sup>67</sup> (ii) <sup>67</sup>	with workingwithout working $77.53$ $2/2$ $2/2$ $263.47$ $1/2$ $1/2$ $77.50$ ( $841 - 563.50$ ) $1/2$ $1/2$ $78$ ( $841 - 563$ ) $1/2$ $1/2$ $63.50$ , $563$ see note 2 $0/2$ $/_{100} \times 841 = 563.47 = 563.50$ or $563$ award 1 <sup>st</sup> n $/_{100} \times 841 = 563.50$ or $563$ award 1 <sup>st</sup> n	<u>orking</u> mark ard 1 <sup>st</sup> mark

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •			
3 (a)	Ans: $20u + 7$ • <sup>1</sup> process: multiply out brackets	• $20u - 8 + 15 \text{ or } 20u - 8$			
	• <sup>2</sup> process: collect like terms	• <sup>2</sup> $20u + 7$ <b>2 marks</b>			
NOTES:					
1.	Do not award $1^{st}$ mark for $20u - 8 + 60$				
2.	20u - 23, $20u + 13$ (no working necessary) av	vard 1/2			
3.	20 - 8 + 15 = 27 award $0/2$				
4.	Where a candidate creates and then tries to solve be awarded	an equation the 2 <sup>nd</sup> mark cannot			
3 (b)	<b>Ans:</b> $3(3c+8)$				
	• <sup>1</sup> process: identify common factor	• 1 3 or $3c + 8$			
	• <sup>2</sup> process: factorise	• <sup>2</sup> $3(3c+8)$ <b>2 marks</b>			
NOTES:	NOTES:				
1. 9 2. 9	(c + 2.7), 9(c + 2.66) award $1/2(c + 2.6) award 0/2 [24 \div9 =$	= 2 remainder 6]			

Question	Marking Scheme	Illustrations of evidence for awarding			
No	Give 1 mark for each •	a mark at each •			
4 (a)	Ans: 2.5				
	$\bullet^1$ strategy: know to order numbers	• <sup>1</sup> 1 1 1 2 2 3 3 4 6 7			
	$\bullet^2$ process: find median	•2 2.5			
		2 marks			
NOTES:					
1. A	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. I	f "correct" median is found from ordered list with o	one missing (or one extra) award 1/2			
3. A	ccept ordered list written in part (a) or part (b)				
4 (b)	Ans: 6				
	• strategy/process: find range	• 0 1 mark			
NOTES:					
4 (c)	Ans: Less weeds remain with Noweed.				
	Number of remaining weeds vary				
	more with Noweed.				
	a <sup>1</sup> interpret/communicates interpret	a <sup>1</sup> Loss woods remain with Newcod or			
	• Interpret/communicate. Interpret	Less weeds femalin with Noweed of     Noweed is a better weedbriller, etc.			
	statistics	Noweed is a better weedkiner, etc.			
	statistics				
	$\bullet^2$ interpret/communicate: interpret	$\bullet^2$ Number of remaining weeds vary			
	calculated	more with Noweed.			
	statistics				
		2 marks			
NOTES					
110110					
1. A	nswer must be consistent with answers to parts (a)	and (b)			
2. Г	2 Do not accept				
e	g Weedclear's median is more				
	Noweed's range is more				

Question	Marking Scheme		Marking Scheme Illustrations of evidence for awarding	
No	Gir	Give 1 mark for each •		a mark at each •
5	<b>Ans:</b> 36 mph $\bullet^1$ strategy/p	<ul> <li>Ans: 36 mph</li> <li><sup>1</sup> strategy/process: calculate distance on motorway</li> </ul>		• <sup>1</sup> $2 \times 68 = 136$
	• <sup>2</sup> strategy/p	• <sup>2</sup> strategy/process: find distance on other roads		• <sup>2</sup> $D = 54$
	• <sup>3</sup> strategy:	• <sup>3</sup> strategy: know how to find speed on other roads		• <sup>3</sup> S = 54 ÷ 1h 30m
	• <sup>4</sup> process:	calculate speed		$\bullet^4  54 \div 1.5 = 36$
				4 marks
NOTES:	1			1
1.	Answers without	working		
	(a) 36	award 4/4		
	(b) 136	award 1/4	√××>	×
2.	For a <b>final answe</b>	<b>r</b> of 54		
	(a) 54 [190 – 1	36] award 2/4	$\checkmark\checkmark$	<×
	(b) $54(\cdot 2)$ [1]	$90 \div 3.51$ award 1/4	×××	$\checkmark$
	(c) 54 with no	working award 1/4	×××v	/
	(•) • • • • • • • • • • • • • • • • • •	wonning uward if		
3.	Examples of answ	wers (working must be	e shown)	
(	(a) $42, 41(\dots)$	$[54 \div 1.3]$	3/4 (disrega	ard incorrect rounding) $\sqrt{\sqrt{4}}$
(	b) 0.6	[54 ÷ 90]	3/4	$\sqrt{\sqrt{\sqrt{\times}}}$
(	c) 0·4	[54 ÷ 130]	3/4	$\checkmark \checkmark \checkmark \times$
(	(d) 81	$[54 \times 1.5]$	3/4	$\checkmark\checkmark\checkmark\checkmark$
(	(e) 4860	[54 × 90]	2/4	$\checkmark\checkmark\times\times$
(	(f) $70(\cdot 2)$	$[54 \times 1.3]$	2/4	$\checkmark\checkmark$ ××
(	g) 7020	[54 × 130]	2/4	$\checkmark\checkmark$ ××
(	i) 81(·3…)	[(190-68)÷1·5]	3/4	$\times \checkmark \checkmark \checkmark$
(	j) 1·3(5)	[(190-68)÷90]	2/4	$\times \checkmark \checkmark \times$
(	(k) 94, 93(·)	[(190-68)÷1·3]	2/4	$\times \checkmark \checkmark \times$
(	1) $1, 0.9()$	[(190–68)÷130]	2/4	$\times \checkmark \checkmark \times$
(	m) 183	[(190–68)×1·51	2/4	$\times \checkmark \times \checkmark$
	(n) 10980	$[(190-68) \times 90]$	1/4	×√××
	(a) $159158.6$	$[(190-68) \times 1.3]$	1/4	×√××
	(n) 15860	[(190–68) ×130 1	1/4	×√××
	P) 10000		1/1	
(	(a) 91,90(· )	[(68×2)÷1·5]	3/4	$\checkmark \times \checkmark \checkmark$
(	(r) $127.126(\cdot)$	[190÷1·5]	2/4	××√√
(	(s) 34	[68÷2]	0/4	
		r]		
4.	4 <sup>th</sup> mark is not av	ailable for division by	a whole nun	nber.

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6	Ans: 77	• <sup>1</sup> 126
	"beetles" sector	
	• <sup>2</sup> strategy: know how to find number of beetles	• <sup>2</sup> $\frac{126}{360} \times 220$
	• <sup>3</sup> process: find number of beetles	• <sup>3</sup> 77 <b>3 marks</b>
	Alternative Strategy	
	• <sup>1</sup> strategy: know to calculate $220 - (\text{flies} + \text{ants} + \text{spiders})$	• <sup>1</sup> 220 – (flies + ants + spiders)
	• <sup>2</sup> strategy: know how to find number of flies, ants and spiders	• <sup>2</sup> flies = $220 \div 2$ , ants = $220 \div 10$ , spiders = ants $\div 2$ or equivalent
	• <sup>3</sup> process: find number of beetles	• <sup>3</sup> 77 <b>3 marks</b>
NOTES:		
1. C 2. 1 3. 4.	Correct answer without working 43 [flies + ants + spiders] (no working necess 57 $[^{126}/_{220} \times 100]$ (no working necess $\frac{1}{3}$ of 220 = 73(·3)	award 3/3 sary) award 2/3 sary) award 1/3 award 0/3

Question	Marking Scheme	Illustrations of evidence for awarding	
No	Give 1 mark for each •	a mark at each •	
7	Ans: 117 cm		
	• <sup>1</sup> strategy: correct form of Pythagoras Theorem	• <sup>1</sup> $80^2 + 55^2$	
	• <sup>2</sup> process: calculate sum of two squares	• <sup>2</sup> 9425 (the <b>only</b> cases where this mark is available for calculating the difference of two squares are shown in notes 2a and 3b)	
	• <sup>3</sup> process: calculate square root of sum (or difference) of two squares	• <sup>3</sup> 97( $\cdot$ 08) (correctly rounded or truncated)	
	• <sup>4</sup> strategy/process: add 20 to previously calculated value	• <sup>4</sup> 117	
		4 marks	
NOTES:			
1.	Some common answers (no working necessary)(a)117(b)973/2	/4 /4 √√√×	
2. 5	Some common answers (working must be shown) where correct horizontal distance of 80 is used		
	(a) $78(\dots)$ $[\sqrt{80^2 - 55^2} + 20]$	$3/4 \times \sqrt{\sqrt{2}}$	
	(b) $156(\dots)$ $[\sqrt{80^2 + 110^2} + 20]$ (c) $95(\dots)$ $[\sqrt{110^2 - 80^2} + 20]$	$3/4 \times \sqrt{\sqrt{2}}$	
3. V [	(c) $95(\cdot)$ $[\sqrt{(110^2 - 80^2) + 20}]$ Some common answers (working must be shown) where incorrect horizontal distance of $80+20=100$ is $4^{th}$ mark is unavailable since 20 has been added ina (a) $114(\cdot)$ $\sqrt{(100^2 + 55^2)}$ $3/4$ (b) $84,83(\cdot)$ $\sqrt{(100^2 - 55^2)}$ $2/4$ (c) $149,148(\cdot)$ $\sqrt{(100^2 + 110^2)}$ $2/4$ (d) $46,45(\cdot)$ $\sqrt{(110^2 - 100^2)}$ $1/4$	s used ppropriately] $\sqrt[4]{\sqrt{\sqrt{x}}}$ $\sqrt[4]{\sqrt{\sqrt{x}}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$ $\sqrt[4]{\sqrt{x}}$	
4. A	ward of first 2 marks if trigonometry is used: (a) $55 \div \sin(\tan^{-1}({}^{55}/_{80}))$ or $80 \div \cos(\tan^{-1}({}^{50}/_{80}))$ (b) eg $110 \div \sin(\tan^{-1}({}^{110}/_{80}))$	<sup>55</sup> / <sub>80</sub> )) award marks 1 & 2 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	
	$\bullet^1$ strategy: know to calculate volume	• <sup>1</sup> $10 \times 10 \times 3$
	$\bullet^2$ process: calculate volume	• <sup>2</sup> 300
	• <sup>3</sup> strategy: know to use proportion	• <sup>3</sup> $\frac{300}{400} \times 480$ or equivalent
	• <sup>4</sup> strategy: carry out calculations correctly	• <sup>4</sup> 360 <b>4 marks</b>
1. C	orrect answer without working award	4/4
2. S (a (t	ome common answers (no working necessary)a) 380 [300 + 80]award 2b) 300	$\frac{2}{4}  \checkmark \checkmark \times \times \\ \frac{2}{4}  \checkmark \checkmark \times \times$
3. S (a (t	ome common answers (working must be shown)a) $300 \div (480 \div 400) = 250$ award 2b) $300 \times (400 \div 480) = 250$ award 2c) Do not penalise premature rounding eg 400 ÷	$3/4  \checkmark \checkmark \checkmark \checkmark \\ 3/4  \checkmark \checkmark \checkmark \checkmark \\ 480 = 0.8 \times 300 = 240]$
4. A (a (t	alternative strategy a) $300 + 300 \div 5 = 360$ (no working necessary) b) $300 + 300 \div 6 = 350$ (working must be shown)	award 4/4 award 3/4 $\checkmark \checkmark \checkmark \checkmark$

Question No	Marking Scheme Give 1 mark for each •		Illustrations of evidence for awarding a mark at each •
9	Ans: £183·45		
	• <sup>1</sup> interpret/process: find cost of tickets euros	n	• <sup>1</sup> 255
	• <sup>2</sup> strategy: know how to convert cost into sterling		• <sup>2</sup> $255 \div 1.39$
	• <sup>3</sup> process: convert cost into sterling to nearest penny	the	• <sup>3</sup> 183·45
			3 marks
NOTES:		I	
1. (a (t	<ul> <li>a) Correct answer without working</li> <li>b) 354·45 [255 × 1·39] (no working necessar</li> </ul>	/)	award $3/3$ award $1/3 \checkmark \times \times$
2. A	lternative strategy		
	• <sup>1</sup> interpret/strategy: know how to convert valid number of euros into sterling	• <sup>1</sup> 9	90÷1·39 or 75÷1·39 or 180÷1·39
	• <sup>2</sup> process: convert valid cost into sterling to the nearest penny	• <sup>2</sup> 9	$90 \div 1.39 = 64.74 \text{ or } 64.75 \text{ or}$ $75 \div 1.39 = 53.95 \text{ or } 53.96 \text{ or}$ $180 \div 1.39 = 129.49 \text{ or } 129.50$
	• <sup>3</sup> interpret/strategy: find total cost of tickets in sterling	• <sup>3</sup> 1	83·43 or 183·44 or 183·45 or 183·46
3. W a	/here working shows that candidate has used ward 3/3 for final answers of 183.43, 183.44	lterna or 183·	tive strategy 46

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •	
10	<b>Ans:</b> $y > 20$		
	• <sup>1</sup> process: collect constants	• $\frac{1}{2} y > 10$	
	• <sup>2</sup> process: solve inequality for $y$	• <sup>2</sup> $y > 20$	
		2 marks	
NOTES:			
1. eg	For answers without valid working award 1/2 (i) $y > 20$ without working (ii) $\frac{1}{2} \times 20 + 3 > 13 \rightarrow y > 20$		
2.	answers acceptable for partial credit (valid working must be shown) ) $\frac{1}{2} y > 10 \rightarrow > 20$ i) $\frac{1}{2} y > 10 \rightarrow y = 20$ or $\frac{1}{2} y = 10 \rightarrow y = 20$ ii) $\frac{1}{2} y > 16 \rightarrow y > 32$ award 1/2		

Question	Marking Scheme	Illustrations of evidence for awarding
No	Give 1 mark for each •	a mark at each •
11	Ans: 360 cm <sup>2</sup>	
	• <sup>1</sup> strategy: use correct tangent ratio	• <sup>1</sup> $\tan 58^\circ = \frac{L}{15}$
	$\bullet^2$ process: know how to solve equation	• <sup>2</sup> $L = 15 \tan 58^\circ$
	• <sup>3</sup> process: carry out trig. calculation	• 3 24
	• <sup>4</sup> strategy/process: calculate area of rectangle	• <sup>4</sup> $24 \times 15 = 360$ <b>4 marks</b>
NOTES:		
1.	Some answers without working	
	(a) 360 award 4/4	
	(b) 24 award 3/4	$\checkmark \checkmark \checkmark \checkmark \times$
2.	1,874( $\cdots$ ) (radians used)award 4/4290( $\cdots$ ) (grad used)award 4/4	
3.	Where an incorrect trig ratio is used, working should possibility of awarding 3/4. [Do not penalise premature rounding] (a) $15\cos 58^{\circ} \times 15 = 119(\cdot)$ (b) $15\sin 58^{\circ} \times 15 = 191$ or $190(\cdot)$ (c) $\tan 58^{\circ} = {}^{15}/_{L} \rightarrow (15 \div \tan 58^{\circ}) \times 15 = 141$ (d) $\cos 58^{\circ} = {}^{15}/_{L} \rightarrow (15 \div \cos 58^{\circ}) \times 15 = 425$ (e) $\sin 58^{\circ} = {}^{15}/_{L} \rightarrow (15 \div \sin 58^{\circ}) \times 15 = 265($ (f) $\tan 58^{\circ} = {}^{15}/_{L} \rightarrow (\tan 58^{\circ} \div 15) \times 15 = 1.6(.$ (g) $\tan^{-1}({}^{58}/_{15}) \times 15 = 1132(\cdot)$	d be followed through with the award $3/4 \times \sqrt[4]{\sqrt{4}}$ award $3/4 \times \sqrt[4]{\sqrt{4}}$ or $140(\dots)$ award $3/4 \times \sqrt[4]{\sqrt{4}}$ or $424(\dots)$ award $3/4 \times \sqrt[4]{\sqrt{4}}$ $\dots)$ award $3/4 \times \sqrt[4]{\sqrt{4}}$ award $2/4 \times \sqrt[4]{\sqrt{4}}$ award $2/4 \times \sqrt[4]{\sqrt{4}}$
4. 4	4 <sup>th</sup> mark is available for correctly multiplying previo	ously calculated value by 15

Question	Marking Scheme	Illustrations of evidence for
NU	Give 1 mark for each •	awarding a mark at each •
12	Ans: 0.91	
		1
	• interpret/process: correctly multiply $2 \cdot 6 \times 1 \cdot 4$	• $2 \cdot 6 \times 1 \cdot 4 = 3 \cdot 64$
	• <sup>2</sup> • <sup>3</sup> interpret/process: correctly divide $(2 \cdot 6 \times 1 \cdot 4) \div (2 \cdot 6 + 1 \cdot 4)$	• <sup>2</sup> • <sup>3</sup> $(2.6 \times 1.4) \div (2.6 + 1.4) = 0.91$ [award 1 for $2.6 \times 1.4 \div 2.6 + 1.4 = 2.8$ ]
		3 marks
NOTES:		
1. (	Correct answer without working award	3/3
2. 8	Some common answers (no working necessary)	
(	a) $2 \cdot 6 \times 1 \cdot 4 \div 2 \cdot 6 + 1 \cdot 4 = 2 \cdot 8$ award	2/3
(	(b) $3.64 \div 4 = 0.9$ award	2/3
(	(c) $\frac{3.64}{4}$ award	1/3 ✓××
(	(d) $\frac{2 \cdot 6 \times 1 \cdot 4}{2 \cdot 6 + 1 \cdot 4}$ or $\frac{2 \cdot 6 \times 1 \cdot 4}{4}$ award	1 0/3
3. S	ome common answers (working must be shown)	
(	a) $\frac{4}{2 \cdot 6 + 1 \cdot 4} = 4 \div 2 \cdot 6 + 1 \cdot 4 = 2 \cdot 9()$ award	$1/3 \times \checkmark \times$
(	b) $\frac{4}{4} = 1$ (calculation eased) award	$11/3 \times \checkmark \times$

Question	L	Marking Scheme	Illustrations of evidence for awarding
No		Give 1 mark for each •	a mark at each •
13	Ans: 7.5%		
	• <sup>1</sup> strategy:	find weight loss	• <sup>1</sup> 6
	• <sup>2</sup> strategy:	know to express loss as a fraction of 80	$\bullet^2  \frac{6}{80}$
	• <sup>3</sup> strategy:	know to multiply fraction by 100	• <sup>3</sup> $\frac{6}{80} \times 100$
	• <sup>4</sup> process:	carry out all calculations correctl	<sup>y</sup> • <sup>4</sup> 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 $3/4 \times \sqrt{\sqrt{2}}$
	(b) 8(·)	$[^{6}/_{74} \times 100]$	award $3/4$ $\checkmark \times \checkmark \checkmark$
	(c) 1333(·)	$[^{80}/_6 \times 100]$	award $3/4$ $\checkmark \times \checkmark \checkmark$
	(d) 108(·)	$[^{80}/_{74} \times 100]$	award $2/4 \times \times \sqrt{\checkmark}$
	(e) 4·8	$[^{6}/_{100} \times 80]$	award $2/4$ $\checkmark \times \times \checkmark$
	(f) 4·44	$[^{6}/_{100} \times 74]$	award $2/4$ $\checkmark \times \times \checkmark$
	(g) 59·2	$[^{74}/_{100} \times 80 \text{ or } ^{80}/_{100} \times 74]$	award $1/4 \times \times \times \checkmark$

Question	Marking Scheme		Illustrations of evidence for awarding	
No	Give 1 m	ark for each •	a mark at each •	
14	<b>Ans:</b> 63 m <sup>2</sup>			
	• <sup>1</sup> strategy: know to circle	o calculate area of semi-	$\bullet^1  \frac{1}{2} \pi r^2$	
	• <sup>2</sup> strategy: substitute correct radius into area formula		• <sup>2</sup> $\frac{1}{2} \times \pi \times 5^2$	
	• <sup>3</sup> strategy: know to area of	o add area of triangle to semi-circle	• <sup>3</sup> $\frac{1}{2} \times \pi \times 5^2 + \frac{1}{2} \times 8 \times 6$	
	• <sup>4</sup> process: carry out all calculations correctly (must include a circle calculation involving either squaring or halving <b>followed by</b> an addition or a subtraction)		• <sup>4</sup> 63(·2699) or 63(·25) ( $\pi$ ) (3·14)	4 marks
NOTES:				
1. Co	rrect answer without we	orking	award 0/4	
2. Be 3 <sup>rd</sup> eg	ware!!! mark not available for a (i) $\frac{1}{2} \times \pi \times 5^{2} + \frac{1}{2} \times 8$ (ii) $\frac{1}{2} \times \pi \times 5^{2} + 8 + 6$ - (iii) $\frac{1}{2} \times \pi \times 5^{2} + 24 =$	adding $8+6+10=24$ to area of $\times 6 = 63$ +10 = 63 -63	of semi-circle award $4/4$ award $3/4$ $\checkmark \checkmark \checkmark \checkmark$ award $3/4$ $\checkmark \checkmark \checkmark \checkmark$	
3. So	ne common answers (v	vorking must be shown)		
(a)	181(•)	$[\frac{1}{2}\pi r^{2} + \frac{1}{2} \times 8 \times 6, r=10]$	award $3/4$ $\checkmark \times \checkmark \checkmark$	
(b)	157(·)	$[\frac{1}{2}\pi r^2, r=10]$	award $1/4 \checkmark \times \times \times$	
(c)	102(·), 103	$[\pi r^2 + \frac{1}{2} \times 8 \times 6]$	award $3/4 \times \sqrt{\sqrt{\sqrt{2}}}$	
(d)	87()	$[\frac{1}{2}\pi r^2 + 48]$	award $3/4$ $\checkmark \checkmark \checkmark \checkmark$	
(e)	79,78(·)	$[\pi r^2]$	award $1/4 \times \checkmark \times \times$	
(f)	79(·…)	$[\pi d + 48, d=10)]$	award $1/4 \times \checkmark \times \times$	
(g)	63(·), 64	$[\frac{1}{2}\pi r^{2} + 48, r^{2} = 5^{2} = 10)]$	award $2/4$ $\checkmark \checkmark \times \times$	
(h)	(h) $63(\cdot), 64$ [½ $\pi d + 48, d=10$ )]		award $2/4 \times \checkmark \times \checkmark$	
(i)	(i) 55(·) $[\pi r^2 + \frac{1}{2} \times 8 \times 6, r^2 = 5^2 = 10)]$		award $2/4 \times \sqrt{4} \times$	
(j)	55(·)	$[\pi d + \frac{1}{2} \times 8 \times 6, d=10)]$	award $2/4 \times \sqrt{4} \times$	
(k)	39(·), 40	$\left[\frac{1}{2}\pi r^{2} + \frac{1}{2} \times 8 \times 6, r^{2} = 5^{2} = 10\right]$	] award $3/4$ $\checkmark \checkmark \checkmark \times$	
(1)	39(·), 40	$[\frac{1}{2}\pi d + \frac{1}{2} \times 8 \times 6, d=10)]$	award $3/4 \times \sqrt{\sqrt{2}}$	
(m)	) 39(·)	$[\frac{1}{2}\pi r^{2}]$	award $2/4$ $\checkmark \checkmark \times \times$	



#### [END OF MARKING INSTRUCTIONS]