

Principal Assessor Report 2002

Assessment Panel:

Mathematics and Statistics

Qualification area

**Subject(s) and Level(s)
included in this report**

Mathematics and Statistics Intermediate 1

Statistical information: update

Number of entries in 2001	
Pre appeal	3721
Post appeal	3950

Number of entries in 2002	
Pre appeal	5045
Post appeal	

General comments re entry numbers

The number of entries in 2002 was 5,045, an increase of 10% from 2001. Many markers felt that there had been an improved performance this year.

Grade boundaries at C, B and A for each subject area included in the report

Intermediate 1: Pass mark stage

Maximum mark 78		
A	B	C
71%	59%	49%

General commentary on grade boundaries

Notional percentage cut-offs for each grade

Question papers and their associated marking schemes are designed to be of the required standard and to meet the assessment specification for the subject/level concerned.

For National courses the examination paper(s) are set in order that a score of approximately 50% of the total marks for all components merits a grade C (based on the grade descriptions for that grade), and similarly a score of 70 % for a grade A. The lowest mark for a grade B is set by the computer software as half way between the C and A grade boundaries.

Comments on candidate performance

General comments

Overall the response was more encouraging than last year. The inability of a significant number of candidates to carry out routine numerical work is a concern. Candidates appeared to be better at showing their working and were therefore able in many cases to receive partial credit for questions. The straightforward algebra questions in the version covering units 1, 2 and 3 proved too challenging for the majority of candidates.

Areas of external assessment in which candidates performed well

Paper 1 (both versions) Questions 2, 3, 4 and 5(a)

Although the majority of candidates knew how to calculate the volume in question 2, the carrying out of the multiplication proved too difficult for many (6 by 7 by 12).

Paper 2 (both versions) Questions 1, 3(a) and 4(a)

In addition, question 13(a) on evaluation of a formula was well tackled by candidates tackling Maths 1, 2 and 3.

Areas of external assessment in which candidates had difficulty

Paper 1 (units 1, 2 and 3)

Question 6 Minimum acceptable working here is

$$6y = 12 \text{ leading to } y = 2.$$

An answer of 2 from trial and improvement or without working is not given full credit.

Question 8 Many candidates were able to find the gross premium and therefore were able to receive partial credit.

However for the majority, this type of non-routine question continues to prove too challenging.

Question 9(c) Many candidates were unable to interpret the statistics calculated and see the mean as the only measure of average.

Question 10 The understanding of the algebraic notation, the substitution involving negative integers and the evaluation proved too challenging for the majority of candidates.

In paper 1 (units 1, 2 and applications)

- Question 7 Few candidates could find the bearing of Aberdeen from Nordic Bravo.
- Questions 8 and 9(c) The same concerns were identified in this version as in paper covering units 1, 2 and 3.

Paper 2 (units 1, 2 and 3)

- Question 2 Many were unable to express a number in standard form.
- Question 4(b) Many candidates appeared to be unfamiliar with the idea of exchange with commission.
- Question 6 The majority of candidates knew how to find the time taken ($406 \div 56$) and how to then find the starting time. A common wrong answer was 7 hours 25 minutes. The working backwards over midnight proved difficult for many.
- Question 7 Performance in finding the mean from a frequency table is a major area of concern. In each successive year, the question covering this syllabus section has been set to provide the candidates with a more structured approach. Division by 6 was a common error.
- Question 8 This question was recognised as a more difficult non-routine question. Few candidates could use the co-ordinates (6,8) to calculate the radius. Many instead stated the radius as 6.8 and used this to calculate the area of the circle. Partial credit was available.
- Question 11 and 12 Performance in these questions was poorer than in similar questions in previous years. In particular question 12, was a major concern.

Paper 2 (units 1, 2 and applications)

The same concerns were identified in this version as in the paper covering units 1, 2 and 3.

- Question 5(b) Few candidates were awarded full credit due to the complete lack of evidence of numerical calculations on which decisions were based.
- Question 11 Inability to select the correct formula from the formulae list, substitute values into this formula and then evaluate is a concern.

Recommendations

Feedback to centres

From the candidates who tackled the Applications option, it would appear that the poorer candidates tackled this option.

In view of the poor performance in the algebraic questions, centres should consider how best to provide an appropriate choice of third unit.

In the NABs, candidates have access to a calculator. Centres need to consider how best to maintain and practice numeracy skills acquired in S1/2 and S3/4 throughout the session.

2002 Mathematics

Intermediate 1 Units 1, 2, 3

Finalised Marking Instructions

Special Instructions

- 1 The main principle in marking scripts is to give credit for the skills which have been demonstrated. Failure to have the correct method may not preclude a pupil gaining credit for the calculations involved or for the communication of the answer.

Where a candidate has scored zero marks for any question attempted, "0" should be shown against the answer in the place in the margin.

It is of great importance that the utmost care should be exercised in adding up the marks. Where appropriate, all summations for totals and grand totals must be carefully checked.

- 2 The answer to one part, correct or incorrect must be accepted as a basis for subsequent dependent parts of a question. Full marks in the dependent part is possible if it is of equivalent difficulty.
- 3 Do not penalise insignificant errors. An insignificant error is one which is significantly below the level of attainment being assessed.
- 4 Working after a correct answer should only be taken into account if it provides **firm** evidence that the requirements of the question have not been met.
- 5 In certain cases an error will ease subsequent working. **Full** credit cannot be given for this subsequent work but **partial** credit may be given.
- 6 Accept answers arrived at by inspection or mentally, where it is possible for the answer to have been so obtained.
- 7 Do not penalise omission or misuse of units unless marks have been specifically allocated to units.

8 A wrong answer without working receives no credit unless specifically mentioned in the marking scheme.

The rubric on the outside of the papers emphasises that working must be shown. In general markers will only be able to give credit to partial answers if working is shown. However there may be a few questions where partially correct answers unsupported by working can still be given some credit. **Any such instances will be stated in the marking scheme.**

9 Acceptable alternative methods of solution can only be given the marks specified, ie a more sophisticated method cannot be given more marks.

Note that for some questions a method will be specified.

10 In general do not penalise the same error twice in the one question.

11 Accept legitimate variations in numerical/algebraic questions.

12 Do not penalise bad form eg $\sin x^\circ = 0.5 = 30^\circ$.

13 A transcription error is not normally penalised except where the question has been simplified as a result.

14 Do not penalise inadvertent use of radians in trigonometry questions, provided its use is consistent within the question.

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •																																				
5. (a)	<p>Ans:</p> <table border="1" data-bbox="288 353 916 651"> <thead> <tr> <th>CD player</th> <th>Air Conditioning</th> <th>Insurance</th> <th>Central Locking</th> <th>Electric Sunroof</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td>£850</td> </tr> <tr> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> <td></td> <td>£650</td> </tr> <tr> <td>✓</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td>£800</td> </tr> <tr> <td>✓</td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td>£700</td> </tr> <tr> <td></td> <td>✓</td> <td></td> <td>✓</td> <td>✓</td> <td>£850</td> </tr> </tbody> </table> <ul style="list-style-type: none"> •¹ interpret: interpret information •² strategy: find some possibilities •³ strategy: find all possibilities 	CD player	Air Conditioning	Insurance	Central Locking	Electric Sunroof	Total	✓	✓	✓			£850	✓	✓		✓		£650	✓	✓			✓	£800	✓			✓	✓	£700		✓		✓	✓	£850	<ul style="list-style-type: none"> •¹ one correct combination •² two more correct combinations •³ final two correct combinations <p style="text-align: right;">3 marks</p>
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NOTES:

5. (b)	<p>Ans: £550</p> <ul style="list-style-type: none"> •¹ strategy: correct method •² process: carry out calculations 	<ul style="list-style-type: none"> •¹ eg total – 850 •² 550 <p style="text-align: right;">2 marks</p>
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NOTES:

1. Correct answer with or without working award 2/2

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6.	Ans: $y = 2$ <ul style="list-style-type: none"> •¹ process: collect terms in y •² process: collect constants •³ process: solve equation for y 	<ul style="list-style-type: none"> •¹ $6y$ •² 12 •³ 2 <p style="text-align: right;">3 marks</p>
NOTES:		
7. (a)	Ans: $-3, 1, 4$ <ul style="list-style-type: none"> •¹ process: calculate y •² process: complete table of values 	<ul style="list-style-type: none"> •¹ eg -3 •² 1 and 4 <p style="text-align: right;">2 marks</p>
NOTES:		
(b)	Ans: straight line graph of $y = \frac{1}{2}x + 1$ <ul style="list-style-type: none"> •¹ communicate: prepare to draw line •² communicate: draw the line $y = \frac{1}{2}x + 1$ 	<ul style="list-style-type: none"> •¹ all three points from table plotted (see note (ii)) •² draw straight line through the three points (see note (iii)) <p style="text-align: right;">2 marks</p>
NOTES: (i) If the line $y = \frac{1}{2}x + 1$ is drawn award 2/2. (ii) Where three points consistent with the table of values are plotted correctly, the first mark is available. (iii) The second mark is only available where the three points plotted from the table are collinear.		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
8.	<p>Ans: £512</p> <ul style="list-style-type: none"> •¹ strategy: know how to find gross premium •² process: find gross premium (must involve fraction calculation followed by addition) •³ strategy: know how to find net premium •⁴ process: find net premium (must involve percentage calculation followed by subtraction) 	<ul style="list-style-type: none"> •¹ $\left(\frac{1}{3} \text{ of } 480\right) + 480$ •² 640 •³ $640 - 20\% \text{ of } 640$ •⁴ 512 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p> <p>1. Correct answer without working award 0/4</p> <p>2. Examples of answers <u>with working</u></p> <p>(a) $640 - 20\% \text{ of } 480 = 544$ award 3/4</p> <p>(b) $640 + 20\% \text{ of } 640 = 768$ award 2/4</p> <p>(c) $(480 - 160) - 20\% \text{ of } 320 = 256$ award 2/4</p> <p>(d) $20\% \text{ of } 640 = 128$ award 2/4</p> <p>(e) $480 - 20\% \text{ of } 480 = 384$ award 1/4</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10.	Ans: 4 • ¹ process: substitute into expression • ² process: start to evaluate • ³ process: complete evaluation correctly	• ¹ $3 \times -1 \times 2 = -10$ • ² -6 or $+10$ • ³ 4 <div style="text-align: right;">3 marks</div>

NOTES:

1. Correct answer without working award 0/3
2. 3rd mark only available for correctly calculating
 - (i) $a + b$ where $a < 0$ or $b < 0$
 - (ii) $a - b$ where $a < b$

TOTAL MARKS FOR PAPER 1
32

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
3. (a)	<p>Ans:</p> <pre> 1 8 9 2 2 3 3 3 5 5 7 8 3 0 2 8 4 2 5 5 1 </pre> <p>•¹ communicate: start to construct stem and leaf diagram</p> <p>•² communicate: complete stem and leaf diagram</p>	<p>•¹ •² correct answer (award 1 for up to 3 errors)</p> <p style="text-align: right;">2 marks</p>
<p>NOTES:</p> <p>1. Examples of a single error</p> <p>(a) data not ordered</p> <p>(b) one item of data in wrong row</p> <p>(c) one item of data omitted</p> <p>(d) one additional item of data</p>		
(b)	<p>Ans: 23</p> <p>•¹ process: find mode</p>	<p>•¹ 23</p> <p style="text-align: right;">1 mark</p>
<p>NOTES:</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
4. (a)	Ans: 1230 • ¹ strategy/process: change £500 into Swiss francs (£1 = 2.46 francs)	• ¹ 1230 1 mark
NOTES:		
(b)	Ans: Travelsun • ¹ • ² strategy: valid strategy • ³ strategy: know how to find commission • ⁴ process/communicate: carry out all calculations (at least a percentage and a subtraction) <u>and</u> state conclusion	• ¹ • ² eg $500 \times 2.50 - [2\% \text{ of } (500 \times 2.50)]$ (award 1 for valid strategy with one incorrect or omitted step) • ³ eg $\frac{2}{100} \times 1250$ • ⁴ 1225 Travelsun 4 marks
NOTES: 1. Examples of other valid strategies (a) $(500 - [2\% \text{ of } 500]) \times 2.50$ (b) $[2.50 - (2\% \text{ of } 2.50)] \times 500$ 2. For an answer without working award 0/4		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
5. (a)	Ans: $8m - 7$ • ¹ process: multiply out brackets • ² process: collect like terms	• ¹ $5 + 8m - 12$ or $8m - 12$ • ² $8m - 7$ <p style="text-align: right;">2 marks</p>
NOTES:		
(b)	Ans: $7(3 - t)$ • ¹ process: identify common factor • ² process: factorise expression	• ¹ 7 or $(3 - t)$ • ² $7(3 - t)$ <p style="text-align: right;">2 marks</p>
NOTES:		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6.	Ans: 2315 or 11.15 pm • ¹ strategy: know how to find time taken • ² process: find time taken • ³ strategy: know how to find starting time • ⁴ process: find starting time	• ¹ $T = \frac{406}{56}$ • ² 7h 15m or $7\frac{1}{4}$ hours • ³ 0630 – 7h 15m • ⁴ 2315 or 11.15 <p style="text-align: right;">4 marks</p>
NOTES: 1. Correct answer without working award 0/4 2. For 7:25 leading to 11:05 (pm) award 3/4, provided there is working 3. 7:25 (no working necessary) award 1/4		
7.	Ans: 1.1 • ¹ communicate: complete table • ² strategy: know how to find mean • ³ process: division followed by rounding to one decimal place	• ¹ 0, 56, 88, 60, 40, 5 Total = 249 • ² $249 \div 235$ • ³ 1.1 <p style="text-align: right;">3 marks</p>
NOTES: 1. 3 rd mark not available if rounding to 1 d.p. not required 2. Examples of answers <u>with working</u> (a) Total = 353 Mean = 1.5 award 2/3 (b) $353 \div 6 = 58.8$ award 1/3		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
8.	Ans: 314 cm^2 <ul style="list-style-type: none"> •¹ strategy: know to use right angled triangle •² strategy: correct form of Pythagoras Theorem •³ process: find radius •⁴ process: find area of circle 	<ul style="list-style-type: none"> •¹ evidence of use 6 and 8 in right angled triangle formula or in diagram •² $6^2 + 8^2$ •³ 10 •⁴ 314 (·15 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p> <p>1. The final mark is available for correctly calculating the area of a circle of any radius.</p>		
9.	Ans. $p < 6$ <ul style="list-style-type: none"> •¹ process: collect constants •² process: solve inequality for p 	<ul style="list-style-type: none"> •¹ 24 •² $p < 6$ <p style="text-align: right;">2 marks</p>
<p>NOTES:</p> <p>1. Accept $p < 6$ without working award 2/2</p> <p>2. Correct inequality sign must be used for 2nd mark eg $p = 6$ (no working necessary) award 1/2</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10.	<p>Ans. 25%</p> <ul style="list-style-type: none"> •¹ strategy: find profit •² strategy: know to express profit as a fraction of cost price •³ strategy: know to multiply fraction by 100 •⁴ process: carry out all calculations correctly 	<ul style="list-style-type: none"> •¹ 30 •² $\frac{30}{120}$ •³ $\frac{30}{120} \times 100$ •⁴ 25 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p> <p>1. Correct answer without working award 4/4</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
11.	Ans: 157° • ¹ strategy: know how to use sin ratio • ² process: calculate ratio • ³ process: carry out trigonometric calculation • ⁴ process: find bearing	• ¹ $\sin x^\circ = \frac{35}{38}$ • ² $\sin x^\circ = 0.921$ • ³ $x^\circ = 67^\circ$ • ⁴ 157° <p style="text-align: right;">4 marks</p>

NOTES:

1. Where an incorrect trig ratio is used, working should be followed through with the possibility of awarding 3/4.
2. Disregard premature or incorrect rounding
3. 4th mark is only available for correctly adding the answer to a previous calculation to 90

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
12.	<p>Ans: 306 cm</p> <ul style="list-style-type: none"> •¹ strategy: know how to find bottom •² strategy: know how to find d •³ strategy: know to add two sides to bottom •⁴ process: carry out all calculations correctly (must involve a circle calculation) •⁵ process: round to nearest unit 	<ul style="list-style-type: none"> •¹ $\frac{1}{2}\pi d \times 4$ •² $d = 80 \div 4$ •³ $\left(\frac{1}{2}\pi \times 20\right) \times 4 + 180$ •⁴ 305.6 or 305.66..... (π button) •⁵ 306 <p style="text-align: right;">5 marks</p>

NOTES:

1. Do not penalise premature rounding
2. The final mark is for rounding an answer to the nearest unit. Where the answer requires no rounding, the final mark cannot be awarded.

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
13. (a)	Ans: 24.8 • ¹ process: substitute into formula • ² process: start to evaluate • ³ process: carry out both calculations (must involve a square and a division)	• ¹ $\frac{70}{1.68^2}$ • ² $1.68^2 = 2.822 \dots$ or $\frac{70}{1.68} = 41.6$ • ³ 24.8 3 marks
NOTES: 1. Do not penalise premature or incorrect rounding		
(b)	Ans: 60 kg • ¹ strategy: correct strategy • ² process: find weight	• ¹ $25 = \frac{w}{1.55^2}$ • ² 60 (disregard rounding) 2 marks
NOTES: 1. Correct answer without working award 2/2 2. 1 st mark can be awarded for trial and improvement strategy provided two cases are tested.		

TOTAL MARKS FOR PAPER 2
46



TOTAL MARKS FOR PAPER 1 AND 2
78

[END OF MARKING INSTRUCTIONS]



2002 Mathematics

Intermediate 1 Units 1, 2 and Applications

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NOTES:

5. (b)	<p>Ans: £550</p> <ul style="list-style-type: none"> •¹ strategy: correct method •² process: carry out calculations 	<ul style="list-style-type: none"> •¹ total – 850 •² 550 <p style="text-align: right;">2 marks</p>
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NOTES:

1. Correct answer with or without working award 2/2

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6.	Ans: £152·69 • ¹ strategy/process: find gross pay • ² strategy/process: find total deductions • ³ strategy/process: find net pay	• ¹ 180 • ² 27·31 • ³ 152·69 <p style="text-align: right;">3 marks</p>

NOTES:

- If the payslip is incomplete then marks may be awarded for each correct answer appearing elsewhere on page.

7.	Ans: 240 km, 232° • ¹ strategy: measured distance \times 30 • ² process: correctly measure distance <u>and</u> multiply by 30 • ³ • ⁴ strategy/process: find bearing	• ¹ 30×8 ($\pm 0\cdot2$ cm) • ² 240 • ³ • ⁴ 232° ($\pm 2^\circ$) (award 1 for 52 ($\pm 2^\circ$) or 128 ($\pm 2^\circ$)) <p style="text-align: right;">4 marks</p>
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NOTES:

- 240 without working award first 2 marks
- $232 (\pm 2)$ without working award final 2 marks
- $52 (\pm 2)$, $128 (\pm 2)$ without working award 3rd mark

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
8.	<p>Ans: £512</p> <ul style="list-style-type: none"> •¹ strategy: know how to find gross premium •² process: find gross premium (must involve fraction calculation followed by addition) •³ strategy: know how to find net premium •⁴ process: find net premium (must involve percentage calculation followed by subtraction) 	<ul style="list-style-type: none"> •¹ $\left(\frac{1}{3} \text{ of } 480\right) + 480$ •² 640 •³ $640 - 20\% \text{ of } 640$ •⁴ 512 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p> <p>1. Correct answer without working award 0/4</p> <p>2. Examples of answers <u>with working</u></p> <p>(a) $640 - 20\% \text{ of } 480 = 544$ award 3/4</p> <p>(b) $640 + 20\% \text{ of } 640 = 768$ award 2/4</p> <p>(c) $(480 - 160) - 20\% \text{ of } 320 = 256$ award 2/4</p> <p>(d) $20\% \text{ of } 640 = 128$ award 2/4</p> <p>(e) $480 - 20\% \text{ of } 480 = 384$ award 1/4</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10.	Ans: 4 • ¹ process: substitute into expression • ² process: start to evaluate • ³ process: complete evaluation correctly	• ¹ $3 \times -1 \times 2 = -10$ • ² -6 or $+10$ • ³ 4 <div style="text-align: right;">3 marks</div>

NOTES:

1. Correct answer without working award 0/3
2. 3rd mark only available for correctly calculating
 - (i) $a + b$ where $a < 0$ or $b < 0$
 - (ii) $a - b$ where $a < b$

TOTAL MARKS FOR PAPER 1
32

Mathematics – Intermediate 1: Paper 2, Units 1, 2 and App. of Maths

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
1.	<p>Ans: $\frac{2}{11}$</p> <p>•¹ process: find probability</p>	<p>•¹ $\frac{2}{11}$</p> <p style="text-align: right;">1 mark</p>
<p>NOTES:</p> <p>1. Accept 2:11, 2 out of 11, 2 in 11, 2 – 11, 0·18</p> <p>2. Do not accept 0·2</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
2. (a) (i)	Ans: £206·12 • ¹ interpret: interpret table	• ¹ 206·12 1 mark
(ii)	Ans: £74 203·20 • ¹ strategy: know how to find total payments • ² process: find total payments	• ¹ • ² 74 203·2(0) [award 1 for correct method or 6183·6(0) (206·12 × 30) or 2473·44 (206·12 × 12)] 2 marks
NOTES: 1. Correct answer without working award 2/2		
2. (b)	Ans: £16 780·80 • ¹ strategy: know how to find total payments • ² process: find saving (must involve a multiplication and a subtraction)	• ¹ 239·26 × 12 × 20 • ² 16 780·8(0) 2 marks
NOTES: 1. Correct answer without working award 2/2		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •																																																		
3. (a)	<p>Ans:</p> <table style="margin-left: 40px;"> <tr><td>1</td><td> </td><td>8</td><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td> </td><td>2</td><td>3</td><td>3</td><td>3</td><td>5</td><td>5</td><td>7</td><td>8</td></tr> <tr><td>3</td><td> </td><td>0</td><td>2</td><td>8</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td> </td><td>2</td><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5</td><td> </td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p>•¹ communicate: start to construct stem and leaf diagram</p> <p>•² communicate: complete stem and leaf diagram</p>	1		8	9							2		2	3	3	3	5	5	7	8	3		0	2	8						4		2	5							5		1								<p>•¹ •² correct answer (award 1 for up to 3 errors)</p> <p style="text-align: right;">2 marks</p>
1		8	9																																																	
2		2	3	3	3	5	5	7	8																																											
3		0	2	8																																																
4		2	5																																																	
5		1																																																		
<p>NOTES:</p> <p>1. Examples of a single error</p> <p>(a) data not ordered</p> <p>(b) one item of data in wrong row</p> <p>(c) one item of data omitted</p> <p>(d) one additional item of data</p>																																																				
3. (b)	<p>Ans: 23</p> <p>•¹ process: find mode</p>	<p>•¹ 23</p> <p style="text-align: right;">1 mark</p>																																																		
<p>NOTES:</p>																																																				

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
4. (a)	Ans: 1230 • ¹ strategy/process: change £500 into Swiss francs (£1 = 2.46 francs)	• ¹ 1230 1 mark
NOTES:		
4. (b)	Ans: Travelsun • ¹ • ² strategy: valid strategy • ³ strategy: know how to find commission • ⁴ process/communicate: carry out all calculations (at least a percentage and a subtraction) <u>and</u> state conclusion	• ¹ • ² eg $500 \times 2.50 - [2\% \text{ of } (500 \times 2.50)]$ (award 1 for valid strategy with one incorrect or omitted step) • ³ eg $\frac{2}{100} \times 1250$ • ⁴ 1225 Travelsun 4 marks
NOTES: 1. Examples of other valid strategies (a) $(500 - [2\% \text{ of } 500]) \times 2.50$ (b) $[2.50 - (2\% \text{ of } 2.50)] \times 500$ 2. For an answer without working award 0/4		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
5. (a)	Ans: £35·70 <ul style="list-style-type: none"> •¹ interpret: interpret flowchart •² process: find bonus 	<ul style="list-style-type: none"> •¹ 35 •² 35·7(0) <p style="text-align: right;">2 marks</p>

NOTES:

1. Correct answer without working award 2/2

5. (b)	Ans: No. Any valid explanation <ul style="list-style-type: none"> •¹ strategy: experiment •² strategy: experiment further •³ communicate: conclusion with explanation 	<ul style="list-style-type: none"> •¹ evidence of checking 25p per shirt •² evidence of checking 35p per shirt •³ No <u>and</u> valid explanation based on <u>both</u> of above <p style="text-align: right;">3 marks</p>
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NOTES:

1. Examples of evidence for 1st mark
100 shirts = £25
 $85 \times 25p = £21.25$
2. Examples of evidence for 2nd mark
71·4 shirts = £25
71 shirts = £24.85 and 72 shirts = £25.20
 $86 \times 35p = £30.10$
3. Where there is insufficient numerical evidence award a maximum of 2/3.
Award 1 mark for each of the following statements (or equivalent statements):
 - (a) "must be more than 85" or "if she makes 85 shirts or less the bonus is less than £25"
 - (b) "35p does not divide into £25" or "if she makes more than 85 shirts the bonus is more than £25".

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
6.	<p>Ans: 2315 or 11.15 pm</p> <ul style="list-style-type: none"> •¹ strategy: know how to find time taken •² process: find time taken •³ strategy: know how to find starting time •⁴ process: find starting time 	<ul style="list-style-type: none"> •¹ $T = \frac{406}{56}$ •² 7h 15m or $7\frac{1}{4}$ hours •³ 0630 – 7h 15m •⁴ 2315 or 11.15 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p> <p>1. Correct answer without working award 0/4</p> <p>2. For 7:25 leading to 11:05 (pm) award 3/4, provided there is working</p> <p>3. 7:25 (no working necessary) award 1/4</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
7.	Ans: 1·1 <ul style="list-style-type: none"> •¹ communicate: complete table •² strategy: know how to find mean •³ process: division followed by rounding to one decimal place 	<ul style="list-style-type: none"> •¹ 0, 56, 88, 60, 40, 5 Total = 249 •² $249 \div 235$ •³ 1·1 <p style="text-align: right;">3 marks</p>

NOTES:

1. 3rd mark not available if rounding to 1 d.p. not required

2. Examples of answers with working

(a) Total = 353 Mean = 1·5

award 2/3


(b) $353 \div 6 = 58\cdot8$

award 1/3

8.	Ans: 314 cm² <ul style="list-style-type: none"> •¹ strategy: know to use right angled triangle •² strategy: correct form of Pythagoras Theorem •³ process: find radius •⁴ process: find area of circle 	<ul style="list-style-type: none"> •¹ evidence of use 6 and 8 in right angled triangle formula or in diagram •² $6^2 + 8^2$ •³ 10 •⁴ 314 (·15 <p style="text-align: right;">4 marks</p>
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NOTES:

1. The final mark is available for correctly calculating the area of a circle of any radius.

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
9.	<p>Ans.</p>  <p>35 48 61</p> <ul style="list-style-type: none"> •¹ process: arrange numbers in order •² interpret: maximum •³ interpret: lower quartile •⁴ interpret: upper quartile 	<ul style="list-style-type: none"> •¹ 25 29 35 35 37 37 39 41 46 47 49 56 61 •² 61 •³ 35 •⁴ 48 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10.	<p>Ans. 25%</p> <ul style="list-style-type: none"> •¹ strategy: find profit •² strategy: know to express profit as a fraction of cost price •³ strategy: know to multiply fraction by 100 •⁴ process: carry out all calculations correctly 	<ul style="list-style-type: none"> •¹ 30 •² $\frac{30}{120}$ •³ $\frac{30}{120} \times 100$ •⁴ 25 <p style="text-align: right;">4 marks</p>
<p>NOTES:</p> <p>1. Correct answer without working award 4/4</p>		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
11.	<p>Ans: 255·596 cm²... or 255·72 cm²</p> <ul style="list-style-type: none"> •¹ strategy: know how to find curved surface area •² strategy: substitute correct radius and height into formula involving π •³ process: carry out calculation involving π 	<ul style="list-style-type: none"> •¹ $2 \pi rh$ •² $2 \times \pi \times 3.7 \times 11$ •³ 255·596 or 255·72 ... <p style="text-align: right;">3 marks</p>

NOTES:

1. Correct answer without working award 3/3
2. Disregard premature or incorrect rounding

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
12.	<p>Ans: 306 cm</p> <ul style="list-style-type: none"> •¹ strategy: know how to find bottom •² strategy: know how to find d •³ strategy: know to add two sides to bottom •⁴ process: carry out all calculations correctly (must involve a circle calculation) •⁵ process: round to nearest unit 	<ul style="list-style-type: none"> •¹ $\frac{1}{2}\pi d \times 4$ •² $d = 80 \div 4$ •³ $\left(\frac{1}{2}\pi \times 20\right) \times 4 + 180$ •⁴ 305.6 or 305.66.... (π button) •⁵ 306 <p style="text-align: right;">5 marks</p>

NOTES:

1. Do not penalise premature rounding
2. The final mark is for rounding an answer to the nearest unit. Where the answer requires no rounding, the final mark cannot be awarded.

TOTAL MARKS FOR PAPER 2
46

TOTAL MARKS FOR PAPER 1 AND 2
78

[END OF MARKING INSTRUCTIONS]