Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Statistics (2ST01)
Higher Paper 1H

Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Higher (Non-Calculator) Paper 1H

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 No working

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8   Follow through marks
Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9   Ignoring subsequent work
It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10   Probability
Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths), unless it states otherwise on the mark scheme.

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11   Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12   Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13   Range of answers
Unless otherwise stated, when an answer is given in a range
(e.g. 3.5 – 4.2) then this is inclusive of the end points, and includes all the numbers in between.

14   Quality of Written Communication
This is denoted by an asterisk near the question number/part (*). Mark schemes will indicate within the table how marks are to be allocated. In this subject we need to see that correct statistical terms are used.

Guidance on the use of codes within this mark scheme

M1 – method mark
A1 – accuracy mark
B1 – Working mark
C1 – communication mark
QWC – quality of written communication
oe – or equivalent
awrt – anything which rounds to
cao – correct answer only
ft – follow through
sc – special case
dep – dependent (on a previous mark or conclusion)
indep – independent
isw – ignore subsequent working

Question		Scheme	Marks
1	(a)(i)	France	B1
	(a)(ii)	Spain	B1
			(2)
	(b)	24 – 3 21	M1 A1
			(2)
	(c)	$\dfrac{12}{36} \times 100 = 33(.333\ldots\%)$	M1 A1
			(2)
			[6]
		Notes	
	(b)	M1 for 24 – 3 with at least one of these correct (subtraction may be implied by their answer) A1 for answer in the range 20 to 22 not inclusive SC: 22 – 1.5 scores M1A0	
	(c)	M1 for 12÷36 oe A1 awrt 33(%)	

Question	Scheme	Marks
2 **(a)**	$$\begin{array}{r|llll} 7 & 4 & 6 & 6 & 8 \\ 8 & 1 & 2 & 5 & 7 & 9 \\ 9 & 5 & 7 & 8 \\ 10 & 0 & 1 & 2 & 3 \end{array}$$ Key 7|6 = 76 (points) Stems correct Ordered leaves correct (condone one error or omission) Fully correct with key	B1 B1 B1 (3)
(b)	88	M1A1 (2)
(c)	103 – 74 = 29	M1 A1 (2)
(d)	Bolton has a smaller median/Durham has a larger median Bolton has a larger range/Durham has a smaller range	B1ft B1ft (2)
(e)	Durham, as they have a higher median.	B2ft (2) **[11]**
Notes		
(a)	B1 for correct stems identified (may be reversed) B1 for correct ordered leaves (condone one error or omission) B1 for fully correct diagram with key	
(b)	M1 for using $\dfrac{n+1}{2}$ from ordered diagram or from ordered list <u>or</u> for identifying '87' **and '**89' (may be implied by a correct ft median from their stem and leaf diagram) A1 cao	
(c)	M1 for 103 – 74 <u>or</u> for identifying 103 and 74 seen together A1 cao	
(d)	B1ft for a correct comparison of **medians**. (for ft, must have an answer to (b)) B1ft for a correct comparison of **ranges** (for ft, must have an answer to (c)) Must use words in bold. Condone misspelling if intention is clear.	
(e)	B2ft for Durham plus correct supporting reason <u>comparing</u> medians (condone average here). Allow converse. Ignore comments about range or other values. (B1 for Durham with any reason)	

Question	Scheme	Marks
3 **(a)**		B2
		(2)
(b)(i)	$150 < w \le 160$	B1
(b) (ii)	Yes, the median is in the interval $150 < w \le 160$ as the cumulative frequency first reaches 40 (condone 40.5) in that interval, so Marc is correct.	B1
		(2)
		[4]

	Notes	
(a)	B2 for a fully correct frequency polygon (ignore histogram and ignore line segments before 125 and after 165) ½ small square tolerance on plotted points (B1 One vertical or horizontal plotting error OR incorrect but consistent error in placing the midpoints horizontally OR correct plotting but not joined/joined up with non-line segments OR correct plotting with a line joining the first to the last point)	
(b)(ii)	B1 Yes/it is in the modal class with correct supporting evidence using $\dfrac{n}{2}$ (condone $\dfrac{n+1}{2}$) May be seen in the frequency table. (e.g. 'Yes, since 7 + 13 + 18 (=38) < 40')	

Question	Scheme	Marks
4 **(a)**	Sampling frame	B1
		(1)
(b)	Each voter has an 'equal chance' (oe) of being selected.	B1
		(1)
(c)	<u>Daily Dispatch</u> is more reliable since its survey asked 'more people' (oe).	B2
		(2)
		[4]
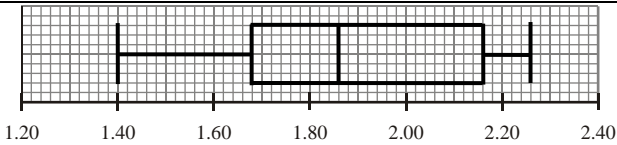
	Notes	
(a)	Condone 'sample frame'	
(b)	B1 for any correct equivalent expression Condone fair/no bias	
(c)	B2 Daily Dispatch is more reliable with correct <u>comparative</u> reason (B1 Daily Dispatch with any reason)	

Question	Scheme	Marks
5 (a)	Completely accurate/all opinions are considered/unbiased	B1
		(1)
(b)(i)	Data collected by the person using it	B1
(ii)	Know how data was obtained/Reliability is known/Up to date	B1
		(2)
(c)	IQR Standard deviation Variance Range	B1
		(1)
*(d)	Any 3 from… • **Closed/not open** • **Clear/unambiguous/easy to understand** • Questions need **non overlapping/response/tick/answer boxes** • **Unbiased**/**not leading/not persuasive** • Should **not be offensive/personal/embarrassing** questions • Include **units/time frame** • Questions which are **easy to analyse** results	B1 B1 B1
		(3)
(e)	Any 2 from… • Non-response/people may not return questionnaire • Errors in recorded data • Missing data/some questions may be left blank/unreadable • Some questions may be misunderstood • Questions designed poorly	B1 B1
		(2) **[9]**
(a)	B1 Any sensible advantage of using a census e.g. includes whole population / true representation / (completely) fair are all B1 Condone more accurate / more reliable / more representative for B1 more information / gets lots of data / more varied results ... **alone are B0**	
(b)(i) **(ii)**	B1 for a correct definition of primary data B1 for any sensible advantage of using primary data e.g. you collect the data you need for your hypothesis Condone (more) reliable / <u>accuracy</u> is <u>known</u> accurate / you collect it yourself…..**alone are B0**	
*(d)	Any 3 sensible features of a good question. Allow 1 mark per bullet point. Ignore extraneous, non-contradictory comments. For QWC, use of words in bold oe	
(e)	Any 2 sensible problems associated with **processing** or **analysing** the data. Allow 1 mark per bullet point. Ignore extraneous, non-contradictory comments. 'People may lie', 'Too much data', 'People may not eat in the canteen', 'not accurate' are all B0	

Question	Scheme	Marks
6 (a)	35 or 36	B1
		(1)
(b)	45 – 8 = 37	M1 A1
		(2)
(c)	Cumulative frequency at 86 metres is 38	M1
	So 12 are taller than 86 metres	A1
	$\dfrac{12}{50} \times 100 = 24(\%)$	A1
		(3)
		[6]

	Notes	
(a)	35.5 is B0	
(b)	M1 for the subtraction of two values read off the graph at 60 and 110 (45 – k or k – 8 scores this mark) A1 cao	
(c)	M1 for a vertical line drawn up at 86 <u>or</u> 38 seen or marked on cumulative frequency axis <u>or</u> 76% 1st A1 for 50 – 38 (= 12) or 100 – 76 (may be implied by correct answer) 2nd A1 for 24 (%)	

Question	Scheme	Marks
7 (a)		B1 M1 A1
		(3)
(b)	Year 7 is symmetric	B1
	Year 9 is positively skewed	B1ft
		(2)
(c)	$76 \times 0.75 = 57$	M1A1
		(2)
		[7]

	Notes	
(a)	B1 for median plotted at 1.86 M1 for a box with 2 whiskers drawn with 1.40, 1.68 and 2.26 correct A1 fully correct SC: If 0 scored, 1.86 in the correct place in the table or 2.16 seen scores B1M0A0	
(b)	B1 for Year 7 is symmetric / no skew condone 'symmetrical skew' B1 for Year 9 is positively skewed or allow ft for negative skew from a fully drawn box plot with their (median – lower quartile) > their (upper quartile – median) (Positive) correlation is B0 SC: Both box plots have negative skew B2	
(c)	M1 for identifying 75% or ¾ or 0.75 A1 cao	

Question		Scheme	Marks
8	**(a)**	Quota (sampling)	B1
			(1)
	(b)	Advantage: • Convenient • Easy • Same number of boys and girls selected/boys and girls are equally represented • Questions can be explained	B1
		Disadvantage: • Takes a long time (to reach quota)/May not reach quota • Biased/not random • May not be representative	B1
			(2)
	***(c)**	Use a **numbered list/spreadsheet/database/register** of all students	B1
		Select a **random sample/random numbers** (using computer)	B1
		The sample should be representative of the population (include the same proportion/percentage as the population of each gender)	B1
			(3)
			[6]
		Notes	
	(b)	B1 for any suitable advantage of quota sampling B1 for any suitable disadvantage of quota sampling	
	(c)	Must include bold words for QWC oe Random numbers from a hat/box scores B0	

Question		Scheme	Marks
9	**(a)**	The value must be between -1 and 1 (inclusive)	B1
			(1)
	(b)	Positive correlation.	B1
		There was agreement in the judges' rankings. (As one judge ranked higher, so did the other).	B1
			(2)
	(c)	Any two from… • **Both** are **positive/Still positive/still agree** oe • The correlation coefficient for the second dive shows **weaker correlation** oe • There was **less agreement** between the judges on the ranks of the second dive oe	B2
			(2)
			[5]
		Notes	
	(a)	B1 for indicating that -1.25 is smaller than -1	
	(b)	B1 for positive correlation B1 for a correct contextual interpretation	
	(c)	B2 for any two bullet points (B1 for any one bullet point) Lower/less on its own does not score.	

Question	Scheme	Marks
10 **(a)**	An 8% decrease (from 2008 to 2009).	B2
		(2)
(b)	2011: $\dfrac{27}{25}\times100$ 2012: $\dfrac{28}{27}\times100$	M1
	2011: **108** 2012: awrt **104**	A1 A1
		(3)
		[5]
	Notes	
(a)	B2 for decrease of 8% (or 92% of previous year) (B1 for decrease)	
(b)	M1 for one correct calculation (may be implied by one correct answer associated with correct year) Answers may be seen in table Note: 2011: 104 and 2012: 108 (answers reversed) with no working seen scores M0A0A0	

Question	Scheme	Marks
11 **(a)**	The variable being measured or studied.	B1
		(1)
(b)(i)	Point plotted at (1.4, 21.5)	B1
(b)(ii)	Line of best fit passing through (1.4, 21.5) in tolerance	B1
		(2)
(c)(i)	$\Delta y/\Delta x$ = 3.8 (100kCal/hour)	M1A1ft
(c)(ii)	(380) kCal burned for every additional hour of exercise	B1
		(3)
		[6]
	Notes	
(a)	Allow the variable you can't control / dependent variable	
(b)(i)	½ square tolerance	
(b)(ii)	Should extend from between (0.5, 17), (0.5, 19.5) and (2, 22.5), (2, 25) and pass through (or within tolerance of) (1.4 , 21.5) or their mean point	
(c)(i)	M1 for attempt at $\Delta y/\Delta x$ from their line of best fit drawn with figures seen (may be on graph) A1 for an answer in the range 2.1–5.4 <u>or</u> 210 – 540 <u>or</u> ft from their line of best fit with positive gradient	
(c)(ii)	Correct contextualised interpretation of the **gradient** which must include rate, kCal/calories and hours/time	

Question	Scheme	Marks
12 **(a)(i)**	$\dfrac{147}{650}$	B1
(ii)	$\dfrac{171}{650}$	B1
		(2)
(b)(i)	$1 - \dfrac{55}{650} = \dfrac{595}{650}$	M1 A1
(b)(ii)	$\dfrac{304}{650} + \dfrac{147}{650} - \dfrac{48}{650} = \dfrac{403}{650}$	M1 A1
		(4)
(c)	$\dfrac{97}{257} > \dfrac{147}{650}$	B1
	The proportion of females is greater in the Argentina's parliament.	B1
		(2)
		[8]

Notes	
(a)(i)	Allow awrt 0.23 or 23%
(ii)	Allow awrt 0.26 or 26%
(b)(i)	M1 for $1 - \dfrac{55}{650}$ or $\dfrac{257 + 304 + 34}{650}$ A1 allow any equivalent fraction e.g. $\dfrac{119}{130}$ or awrt 0.92 or 92%
(ii)	M1 for $\dfrac{304}{650} + \dfrac{147}{650} - \dfrac{48}{650}$ A1 allow any equivalent fraction e.g. $\dfrac{31}{50}$ or 0.62 or 62%
(c)	B1 for stating or using the required proportions $\dfrac{97}{257}$ and $\dfrac{147}{650}$ or 38% and 23% or sensible approximations B1 for Argentina has a greater proportion (of females) e.g. 'The proportion (of females) in Argentina is greater by 15%' scores B2

Question		Scheme	Marks
13	**(a)**	170 (thousand)	B1
			(1)
	(b)	8 (thousand)	B1ft
			(1)
	(c)	Calculate the **seasonal variation** (for Q3s) **Add** the **average** seasonal variation to the value of the **trend line** (at Q3 2009)	B1 depB1
			(2)
	(d)	Not reliable + trend may not continue/extrapolation	B1
			(1)
	(e)	Does not agree + supporting reason.	B1
			(1)
			[6]
Notes			
	(b)	Allow awrt 8 (thousand) or ft their (a) – 162	
	(c)	B1 for any mention of seasonal variation or a description of how to find seasonal variation B1 (dependent on previous B1) for a complete description Alternative: B1 for 4 Q3 seasonal variations seen (8, 7.5, 8 and 3.5) B1 for a fully correct calculation (8 + 7.5 + 8 + 3.5)/4 +184.5 (= awrt 191)	
	(d)	Must mention not reliable <u>and</u> give a reason that states or implies the prediction is outside or beyond the given data set.	
	(e)	Does not agree <u>and</u> 'trend is positive' or 'seasonal variation is positive (for all other Q3s)' or '(seasonal variation) below all other Q3s' or 'it is below the trend line/184.5' etc.	

Question	Scheme	Marks
14 (a)	$\sum x^2 = 23^2 + 27^2 + 24^2 + 24^2 + 20^2 + 21^2 + 31^2 + 26^2$	B1
		(1)
(b)	$\dfrac{196}{8}(= 24.5)$	B1
	$\sqrt{\dfrac{4888}{8} - \left(\dfrac{196}{8}\right)^2}$	M1
		A1
	$= 3.3$	
		(3)
		[4]

	Notes	
(a)	B1 for the sum of the 8 terms squared Allow $529 + 729 + 576 + 576 + 400 + 441 + 961 + 676$	
(b)	B1 for a correct expression for the mean M1 for a correct expression for standard deviation including root <u>or</u> $\sqrt{\dfrac{4888}{8} - \left(\dfrac{k}{8}\right)^2}$ $(160 < k < 240)$ A1 awrt 3.3 Alternative B1 for a correct expression for mean M1 for $\sqrt{\dfrac{(23-'24.5')^2 + (27-'24.5')^2 + (24-'24.5')^2 + (24-'24.5')^2 + ...}{8}}$ with $20 < '24.5' < 30$ <u>or</u> $\sqrt{\dfrac{86}{8}}$ A1 awrt 3.3	

Question		Scheme	Marks
15	**(a)**		B1 depB1 depB1
			(3)
	(b)	Time taken. It is <u>continuous</u> data.	B1 B1
			(2)
			[5]
		Notes	
	(a)	B1 for a reasonable bell-shaped curve which does not cross *x*-axis depB1 (dependent on previous B1) for centre on 60 depB1 (dependent on 1st B1) for lower tail ending between 30 and 40 and upper tail ending between 80 and 90	
	(b)	Note the two marks are independent	

Question	Scheme	Marks
16 (a)	$\dfrac{1}{4} \times 3 = \dfrac{3}{4}$ and $\dfrac{1}{4} + \dfrac{3}{4} = 1$ $\qquad$ **or** $\qquad$ $3:1$ and $\dfrac{3}{3+1} = \dfrac{3}{4}$	B1
		(1)
(b)	$\dfrac{3}{4} \times \left(1 - \dfrac{3}{4}\right) + \left(1 - \dfrac{3}{4}\right) \times \dfrac{3}{4} = \dfrac{3}{8}$	M1A1
		(2)
(c)(i)	Binomial	B1
(ii)	Any one from: • fixed number of trials (known number of seeds planted) • only 2 outcomes (flower or not flower/success or failure) • independent trials • probability (a seed will flower) remains constant	B1
		(2)
(d)	$p^4 = \left(\dfrac{3}{4}\right)^4 \qquad 4p^3q = 4 \times \left(\dfrac{3}{4}\right)^3 \times \left(1 - \dfrac{3}{4}\right)$ $p^4 + 4p^3q$ $\dfrac{189}{256}$	M1 M1 A1
		(3)
		[8]

	Notes	
(a)	B1 for a complete method with multiplication/division and sum of probabilities = 1 <u>or</u> for a complete method using the ratio 3:1 and 3+1 = 4 leading to $\dfrac{3}{4}$ e.g.'$3x + x = 4x \rightarrow \dfrac{3}{4}$' is B1	
(b)	M1 for one correct product of probabilities, $\dfrac{3}{4} \times \dfrac{1}{4}$ (may be implied by $\dfrac{3}{16}$) A1 for $\dfrac{3}{8}$ oe (allow 0.38)	
(d)	1st M1 for $\left(\dfrac{3}{4}\right)^4$ or **using** $4p^3q$ where $p + q = 1$ 2nd M1 for addition of the two required terms on their own with $p + q = 1$ A1 for awrt 0.74 Note: using all of $p^4 + 4p^3q + 6p^2q^2 + 4pq^3 + q^4$ (=1) with $p + q = 1$ on its own is M0	

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

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Question		Modification	Notes
1	(b)	Key is put at the top left. "No forest" – dotty shading "forest" – no shading Bars for Belgium, Ireland, Netherlands and Portugal have been removed. Bar for UK with forest raised to 4. Source changed to "adapted from".	M1 for $24 - 4$ with at least one of these correct (subtraction may be implied by their answer) A1 awrt 20 or 20 million or 20 000 000 SC: $22 - 2$ scores M1A0
3	(a)	Table frequencies changed to 5, 10, 20, 30, 15. Grid is enlarged and simplified. An extra row of squares has been added at the top of the grid.	B2 for a fully correct frequency polygon (ignore histogram and ignore line segments before 125 and after 165) (B1 One vertical or horizontal plotting error OR incorrect but consistent error in placing the midpoints horizontally OR correct plotting but not joined OR correct plotting with a line joining the first to the last point)
3	(b)(ii)	Table frequencies changed to 5, 10, 20, 30, 15. Grid is enlarged and simplified. An extra row of squares has been added at the top of the grid.	B1 Marc is correct + supporting evidence using $\dfrac{n}{2}$ (condone $\dfrac{n+1}{2}$)

Question		Modification	Notes
6	(a)	Grid has been enlarged and simplified.	B1 for 35 cao
6	(b)	Graph line has been altered to go through the points (60, 10) (80, 35) (90, 40) and (110, 45) Right axis is labelled and source changed to "adapted from". Grid has been enlarged and simplified. Graph line has been altered to go through the points (60, 10) (80, 35) (90, 40) and (110, 45) Right axis is labelled and source changed to "adapted from".	M1 for subtraction of two values read off the graph at 60 and 110 (45 – k or k – 10 scores this mark) A1 for 35
6	(c)	Grid has been enlarged and simplified. Graph line has been altered to go through the points (60, 10) (80, 35) (90, 40) and (110, 45) Right axis is labelled and source changed to "adapted from". 86 metres changed to 90 metres.	M1 for a vertical line drawn up at 90 or 40 seen or marked on cumulative frequency axis or 80% 1st A1 for 50 – 40 (=10) or 100 – 80 (may be implied by correct answer) 2nd A1 for 20 (%)
7	(a)	The two box plots are put on the same page in the data book. Wording is inserted "It (the diagram) shows a box plot labelled year 7 and a blank grid labelled year 9" Year 7 box plot; LQ changed to 1.60, median to 1.80. Year 9 information in the table; LQ changed to 1.70 and maximum changed to 2.30. These changes will affect answers.	B1 for median plotted at 1.80 M1 for a box with 2 whiskers drawn with 1.40, 1.70 and 2.30 correct A1 fully correct SC: If 0 scored, 1.80 in the correct place in the table or 2.20 seen scores B1M0A0

PAPER: 5ST1H _01				
Question		**Modification**		**Notes**
11	(b)(i)	Wording is added; "It (the diagram) shows a scatter graph". Crosses changed to filled in circles. Diagram enlarged and simplified.		Point plotted at (1.5, 22) ½ square tolerance
11	(b)(ii)	Wording is added; "It (the diagram) shows a scatter graph". Crosses changed to filled in circles. Diagram enlarged and simplified.		Should extend from between (0.5, 17), (0.5, 19.5) and (2, 22.5), (2, 25) and pass through (or within tolerance of) (1.5, 22) or their mean point
13	(a)	Grid – On the horizontal axis each quarter is 1.5 cm, the division between years is made clearer. Vertical axis; each 5 thousand Is 2 cm. The points are moved for 2007 Q3 (to 180), 2008 Q3 (to 185). Crosses changed to filled in circles. Source changed to "adapted from".		B1 for 170 or 170 000
13	(b)	Grid – On the horizontal axis each quarter is 1.5 cm, the division between years is made clearer. Vertical axis; each 5 thousand Is 2 cm. The points are moved for 2007 Q3 (to 180), 2008 Q3 (to 185). Crosses changed to filled in circles. Source changed to "adapted from".		B1ft Allow awrt 8 (thousand) or ft their (a) – 162