

Question	Scheme	Marks	AOs
5(a)	The box plot should have the box towards the left as the raw data has a lot of zeroes/low data.	B1	2.2b
	or The outliers should be the higher values, not the lower values.		
		(1)	
(b)	$x + 1.5(x - 1000) < 3400$ or $x + 1.5(x - 1000) \geq 3300$	B1	2.1
	$x + 1.5x - 1500 < 3400$ $x < 1960$	M1	1.1b
	$x + 1.5x - 1500 \geq 3300$ $x \geq 1920$	M1	1.1b
	$1920 \leq x < 1960$	A1	2.2a
		(4)	
(c)	This would lead to the higher values being <u>additional</u> outliers...	B1	3.2a
	...as $1400 + (1400 - 1000) \times 1.5 = 2000$ and the higher end of the data all lie above 2000 making them outliers too.	B1	2.2a
		(2)	
(d)	Quota sampling	B1	1.2
		(1)	
(e)	Might not be enough data for <u>fresh</u> or <u>moderate</u>	B1	2.2b
		(1)	
(Total 9 marks)			
Notes:			
(a)	B1	Statement that the real data is weighted towards the lower values.	
(b)	B1	Correct statement of outliers $UQ + 1.5(IQR)$ or $LQ - 1.5(IQR)$ with the correct sign according to the value used (3400, 3300, 400, 600).	
	M1	Correct process for finding the upper boundary of the upper quartile.	
	M1	Correct process for finding the lower boundary of the upper quartile.	
	A1	Selecting the correct boundaries and showing them in a correct inequality. Accept $1920 < x < 1960$	
(c)	B1	Statement indicating that this would lead to an increase in the number of outliers	
	B1	Calculation leading to 2000 being the upper limit for outliers would mean all of the listed values of 3300 – 3700 (as well as all those above 2000 that are unlisted) would be outliers too	
(d)	B1	Quota sampling	
(e)	B1	Not likely to meet the fresh or moderate quota.	