Question Number	Scheme	Marks
1.		
(a)	$\frac{38.2}{10} = 3.82$ so lower bound is 4 (planks/bins)	M1 A1 **(2)**
(b)	Bin 1: **5.0** **1.8** **2.8** Bin 2: **6.2** **3.0** 0.6 Bin 3: 4.0 3.8 0.8 Bin 4: 2.4 Bin 5: 7.8	**M1** A1 A1 **(3)**
(c)	e.g. Middle Right 5.0 1.8 6.2 2.8 3.0 **4.0** 3.8 2.4 0.6 0.8 7.8 — Pivots: 4.0 5.0 **6.2** 7.8 4.0 1.8 2.8 3.0 **3.8** 2.4 0.6 0.8 — Pivots: 6.2, 3.8 7.8 6.2 5.0 4.0 3.8 1.8 2.8 3.0 **2.4** 0.6 0.8 — Pivots: (7.8, 5.0), 2.4 7.8 6.2 5.0 4.0 3.8 2.8 **3.0** 2.4 1.8 **0.6** 0.8 — Pivots: 3.0, 0.6 7.8 6.2 5.0 4.0 3.8 3.0 2.8 2.4 1.8 **0.8** 0.6 — Pivots: (2.8), 0.8 7.8 6.2 5.0 4.0 3.8 3.0 2.8 2.4 1.8 0.8 0.6 — Pivots: (1.8)	M1 A1 A1ft A1 **(4)**
	e.g. Middle Left 5.0 1.8 6.2 2.8 3.0 **4.0** 3.8 2.4 0.6 0.8 7.8 — Pivots: 4.0 5.0 **6.2** 7.8 4.0 1.8 2.8 3.0 **3.8** 2.4 0.6 0.8 — Pivots: 6.2, 3.8 7.8 6.2 5.0 4.0 3.8 1.8 2.8 **3.0** 2.4 0.6 0.8 — Pivots: (7.8, 5.0), 3.0 7.8 6.2 5.0 4.0 3.8 3.0 1.8 2.8 **2.4** 0.6 0.8 — Pivots: 2.4 7.8 6.2 5.0 4.0 3.8 3.0 2.8 2.4 1.8 **0.6** 0.8 — Pivots: (2.8), 0.6 7.8 6.2 5.0 4.0 3.8 3.0 2.8 2.4 **1.8** 0.8 0.6 — Pivots: 1.8 7.8 6.2 5.0 4.0 3.8 3.0 2.8 2.4 1.8 0.8 0.6 — Pivots: (0.8)	
(d)	Bin 1: **7.8** 1.8 Bin 2: **6.2** **3.8** Bin 3: **5.0** **4.0** 0.8 Bin 4: **3.0** 2.8 2.4 0.6	**M1** A1 **(2)**
		11 marks

	Notes for Question 1	
	If 5.0 4.0 3.0 written as 5, 4, 3 penalise once only with the first CSO mark earned in a part of the question where they have used 5, 4 or 3	
a1M1	38.2 (30.4 – 46) / 10 total in the range 38.2 +/- 7.8	
a1A1	CAO correct calculation seen or 3.82 and 4 (planks/bins) An answer of 4 with no working is M0. Do not award if any incorrect working seen.	
b1M1	First five numbers placed correctly (the bold numbers) and at least seven numbers put in bins. Condone cumulative totals here only.	
b1A1	First nine numbers placed correctly (bold and underlined) with no repeated or additional values.	
b2A1	CSO – all correct.	
c1M1	Quick sort – pivots, p, selected and first pass gives >p, p, <p. If only choosing 1 pivot per iteration M1 only. Must choose middle item as pivot – any other choice is M0. Bubble sort is M0. If sort ascending this can score a maximum of M1 A1 A0 A0 for fully correct even if then reversed. Condone one additional number/error/omission.	
c1A1	First pass correct and next pivots chosen correctly/consistently for second pass.	
c2A1ft	Second and third passes correct (ft from their first pass and choice of pivots) – next pivots chosen correctly/consistently for fourth pass.	
c3A1	CSO all correct including choice of pivots for the fifth pass (MR) or sixth pass (ML)	
d1M1	Must be using their 'sorted' list in decreasing order. Their first six numbers placed correctly (bold numbers) and at least seven numbers put in bins. First-fit increasing is M0.	
d1A1	CSO – all correct.	

Sort ascending
Middle right

											Pivots
5.0	1.8	6.2	2.8	3.0	**4.0**	3.8	2.4	0.6	0.8	7.8	4.0
1.8	2.8	3.0	**3.8**	2.4	0.6	0.8	4.0	5.0	**6.2**	7.8	3.8, 6.2
1.8	2.8	3.0	**2.4**	0.6	0.8	3.8	4.0	5.0	6.2	7.8	2.4, (5.0, 7.8)
1.8	**0.6**	0.8	2.4	2.8	**3.0**	3.8	4.0	5.0	6.2	7.8	0.6, 3.0
0.6	1.8	**0.8**	2.4	2.8	3.0	3.8	4.0	5.0	6.2	7.8	0.8, (2.8)
0.6	0.8	1.8	2.4	2.8	3.0	3.8	4.0	5.0	6.2	7.8	

Middle left

											Pivots
5.0	1.8	6.2	2.8	3.0	**4.0**	3.8	2.4	0.6	0.8	7.8	4.0
1.8	2.8	3.0	**3.8**	2.4	0.6	0.8	4.0	5.0	**6.2**	7.8	3.8, 6.2
1.8	2.8	**3.0**	2.4	0.6	0.8	3.8	4.0	5.0	6.2	7.8	3.0, (5.0, 7.8)
1.8	2.8	**2.4**	0.6	0.8	3.0	3.8	4.0	5.0	6.2	7.8	2.4
1.8	**0.6**	0.8	2.4	2.8	3.0	3.8	4.0	5.0	6.2	7.8	0.6, (2.8)
0.6	**1.8**	0.8	2.4	2.8	3.0	3.8	4.0	5.0	6.2	7.8	1.8
0.6	0.8	1.8	2.4	2.8	3.0	3.8	4.0	5.0	6.2	7.8	