



Q	Answer	Marks
1	a) 3, 9, 15, 9, 3 b) bars of heights 3, 9, 15, 9, 3 over 2 to 4, 4 to 5, 5 to 6, 6 to 8 and 8 to 12, with no gaps	3
2	a) 22 b) 9 c) $27 + 1.5 \times 9 = 40.5$ and $41 > 40.5$, so 41 is an outlier d) e.g. a recording error, or a driver who was distracted (a genuine but unusual value)	4
3	a) width 4 cm, height 2.8 cm b) about 20 students	5
4	a) 100 b) 54 c) 47.3 minutes (3 s.f.) d) 48.6 minutes (3 s.f.)	7
5	a) points (0, 0), (2, 14), (4, 46), (6, 86), (8, 108), (12, 120) joined with straight lines b) median about 4.7 kg, IQR about 3.4 kg c) about 23 parcels	7
6	a) IQR = 8, limits $11 - 12 = -1$ and $19 + 12 = 31$; only 38 is above 31 (26 is not) and nothing is below -1 b) box from 11 to 19 with median 15, whiskers to 4 and 26, and a cross at 38	4
7	a) P: 7 minutes, Q: 19 minutes b) Q has a slightly lower median (26 against 28), so is a little quicker on average; Q has a much larger IQR (19 against 7) and range, so its times vary much more c) Firm P, because its times are far less spread out, so its delivery times are more predictable	5
8	a) mean 46 s, standard deviation 9.70 s (3 s.f.) b) limits 26.6 and 65.4 (3 s.f.); $24 < 26.6$ but $63 < 65.4$ c) mean 46.9 s (3 s.f.), standard deviation 8.77 s (3 s.f.)	6
9	a) 36 b) a bar from 35 to 45 of height 3 c) $24/134 = 0.179$ (3 s.f.)	6
10	a) median about 74 s, IQR about 9.5 s b) the boys were faster on average (median 74 s against 81 s) and their times were less spread out (IQR 9.5 s against 12 s) c) about 70 s	6
11	a) 8 minutes b) mean 19 minutes, standard deviation 6.42 minutes (3 s.f.) c) yes: $19 + 2 \times 6.42 = 31.8$ and the longest time, 45, is above this d) (i) no change, both new times equal the median 17; (ii) the mean decreases, as both new times are below 19	8

12	a) 97 b) 31.5 years (3 s.f.) c) 0.0139 (3 s.f.) d) the classes above 40 contain a tail of older members, whose ages pull the mean up more than the median	8
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Full worked solutions, written out by hand, are on the solutions sheet for this topic.