MASTER MATHS GCSE

GCSE Mathematics 9-1

Averages: Mean, Median, Mode and Range

(Non-Calculator)

Mark Scheme

Total available marks: 55

Q	Answer	Working	Mark
1(a)	8	8 appears 3 times, more than any other number	1
1(b)	10.5	In order: 8, 8, 8, 10, 11, 12, 14, 14 The middle two numbers are 10 and 11: (10 + 11) ÷ 2	1
1(c)	6	Largest − smallest = 14 − 8	1
1(d)	10.625	Add them up: 8 + 12 + 14 + 8 + 10 + 11 + 14 + 8 = 85 Divide by how many numbers there are: 85 ÷ 8	2
2(a)	No mode	Every number appears only once	1
2(b)	8	In order: 5, 6, 7, 8, 10, 12, 15 The middle number is 8	1
2(c)	10	Largest − smallest = 15 − 5	1
2(d)	9	Add them up: 5 + 12 + 7 + 10 + 8 + 6 + 15 = 63 Divide by how many numbers there are: 63 ÷ 7	2
3(a)	No mode	Every number appears only once	1
3(b)	15	In order: 10, 12, 14, 16, 18, 20 The middle two numbers are 14 and 16: (14 + 16) ÷ 2	1
3(c)	10	Largest − smallest = 20 − 10	1
3(d)	15	Add them up: 12 + 18 + 14 + 16 + 10 + 20 = 90 Divide by how many numbers there are: 90 ÷ 6	2
4(a)	3	3 appears 3 times, more than any other number	1
4(b)	4	In order: 3, 3, 3, 4, 4, 5, 5, 6 The middle two numbers are 4 and 4: (4 + 4) ÷ 2	1
4(c)	3	Largest − smallest = 6 − 3	1
4(d)	4.125	Add them up: 3 + 4 + 5 + 3 + 6 + 5 + 4 + 3 = 33 Divide by how many numbers there are: 33 ÷ 8	2
5(a)	No mode	Every number appears only once	1
5(b)	13	In order: 11, 12, 13, 14, 17 The middle number is 13	1

Q	Answer	Working	Mark
5(c)	6	Largest − smallest = 17 − 11	1
5(d)	13.4	Add them up: 12 + 14 + 11 + 13 + 17 = 67 Divide by how many numbers there are: 67 ÷ 5	2
6(a)	No mode	Every number appears only once	1
6(b)	3.5	In order: 1, 2, 3, 4, 5, 6 The middle two numbers are 3 and 4: (3 + 4) ÷ 2	1
6(c)	5	Largest − smallest = 6 − 1	1
6(d)	3.5	Add them up: 4 + 2 + 3 + 6 + 5 + 1 = 21 Divide by how many numbers there are: 21 ÷ 6	2
7(a)	1	1 pet has the highest frequency (3)	1
7(b)	1.5	8 households, so the median is halfway between the 4th and 5th values In order: 0, 1, 1, 1, 2, 2, 3, 4 → (1 + 2) ÷ 2	1
7(c)	4	Largest − smallest = 4 − 0	1
7(d)	1.75	Total pets = 0×1 + 1×3 + 2×2 + 3×1 + 4×1 = 14 14 ÷ 8 households	2
8(a)	4	Total of all six = 6 × 8 = 48 Total of the five known = 7 + 9 + 6 + 12 + 10 = 44 48 − 44	3
8(b)	8	In order: 4, 6, 7, 9, 10, 12 (7 + 9) ÷ 2	1
8(c)	8	12 − 4	1
8(d)	No mode	Every number appears only once	1
9(a)	No mode	Every number appears only once	1
9(b)	13	21 − 8	1
10	Boys: 64 Girls: 56	Mean = total ÷ number of people Boys: 640 ÷ 10 Girls: 560 ÷ 10	2

Q	Answer	Working	Mark
11	22	Total = $5 \times 20 = 100$ New total = $100 + 10 = 110$ New mean = $110 \div 5$	3
12(a)	6.96	Number of students = $2 + 6 + 10 + 5 + 2 = 25$ Total = $5\times2 + 6\times6 + 7\times10 + 8\times5 + 9\times2 = 174$ $174 \div 25$	1
12(b)	7	Size 7 has the highest frequency (10)	1
13	26	Total of 12 numbers = $12 \times 15 = 180$ Total of 11 numbers = $11 \times 14 = 154$ $180 - 154$	2
14	19.7 (to 3 s.f.)	Use the midpoint of each group: 5, 15, 25 $5 \times 2 + 15 \times 5 + 25 \times 10 = 335$ $335 \div 17 = 19.705...$	3

Total available marks for this paper	**55**