

Statistical Measures

Mark Scheme 1

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Handling Data Statistics
Sub Topic	Statistical Measures(Mean, Median, Mode)
Booklet	Mark Scheme 1

Time Allowed: 59 minutes

Score: /49

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

Question Number	Working	Answer	Mark	Notes
1.	6x5 (= 30) or 3+2+7+6+2 (=20) or (3+2+7+6+2 + "x")/6=5 "30" – "20"	10	3	M1 M1 dep A1
Total 3 marks				

2. (a)		9 to 11	1	B1
(b)	(1 x 3) + (4 x 6) + (7 x 10) + (10 x 15) + (13 x 5) + (16 x 1) (=328) "328" ÷ ("3+6+10+15+5+1")	8.2	4	M2 All products, $t \times f$ using $\frac{1}{2}$ way points correctly, and intention to add. Award M1 if all products, $t \times f$ using their $\frac{1}{2}$ way points consistently, from 6 to 8 interval onwards and intention to add. M1 (dep on one at least M1) A1 Accept 8 with working. 8 without working = M0A0
(ii)		Mid-points used as actual data is unknown	1	B1 Mention of mid-points <u>or</u> exact (actual) data is unknown.
Total 6 marks				

3.	1 7 7		3	B2 for 1 7 7 in any order B1 for three positive whole numbers with either a median of 7 or a sum of 15 SC Award B1 for 0 7 8
			6	B1 cao
Total 3 marks				

4.		1 3 8	2	B2 for 1 3 8 in any order B1 for three positive whole numbers with either a sum of 12 or a range of 7 SC Award B1 for 0 5 7
Total 2 marks				

5.	$(12 \times 18) + (8 \times 16.5) (=348)$ “348” $\div 20$	17.4	4	M2	M1 for 12×18 (=216) or 8×16.5 (=132)
				M1	dep on at least 1 previous M1
				A1	17.4
				Alt	Ratio method
				M1:	$12:8 = 3:2$ or $6:4$
				M1:	18×3 and 16.5×2 or 18×6 and 16.5×4
				M1:	$(18 \times 3 + 16.5 \times 2) \div 5$ or $(18 \times 6 + 16.5 \times 4) \div 10$
				A1:	17.4
				Alt	Proportion method
				M1	60 % boys and 40% girls stated or implied
				M2	$(0.6 \times 18) + (0.4 \times 16.5) (= 10.8 + 6.6)$
					M1 for 0.6×18 or 0.4×16.5
				A1	17.4
				SC B1 for 17.1 (from $\{(8 \times 18) + (12 \times 16.5)\} \div 20$)	
Total 4 marks					

6.	$(19 \times 1)(=19) + (8 \times 3)(=24) + (3 \times 5)(=15) + (1 \times 9) (=9)$	67	3	M2	for freq x all correct midpoint values correctly evaluated (condone omission of 4 th interval) {do not have to see intention to add}
					if not M2 then M1 for freq x consistent point in each interval or M1 for 1 error in list of 19, 24, 15, (0), 9
				A1	isw if 67 calculated correctly. (2.16.. = M2A1)
Total 3 marks					

7. (a)		$25 < d \leq 30$	1	B1 identifies 25 → 30 class
7. (b)	$(12 \times 2.5) + (6 \times 7.5) + (4 \times 12.5) + (6 \times 17.5) + (14 \times 22.5) + (18 \times 27.5)$ (totals: 30, 45, 50, 105, 315, 495)	1040	3	M2 do not have to see intention to add If not M2 then M1 for freq x consistent interval value (890 = freq x lower limit, 1190 = freq x upper limit) or 3 or more correct products stated or evaluated A1 isw if 1040 calculated correctly and correct mean calculation follows ($1040 \div 60 = 17.3$ or better)
				Total 4 marks

8.	$6 \times 2 + 7 \times 4 + 8 \times 5 + 9 \times 8 + 10 \times 1$ or $12 + 28 + 40 + 72 + 10$ or 162		3	M1 for at least 3 correct products and summing them
	"162" ÷ 20			M1 (dep) for division by 20
		8.1		A1 Accept 8 if $162 \div 20$ seen NB: Award A0 if 8.1 clearly comes from incorrect figures
				Total 3 marks

Question Number	Working	Answer	Mark	Notes
9.	$(0 \times 13) + 1 \times 2 + 2 \times 3 + 3 \times 8 + 4 \times 14$ or $(0) + 2 + 6 + 24 + 56$ or 88		3	M1 for sum of at least 3 products (products may or may not be evaluated)
	"88" + 40			M1 (dep) for division by 40 (or by their 40)
		2.2		A1 accept 2.2 or $\frac{11}{5}$ or $2\frac{1}{5}$ Also accept „2“ if both method marks are scored.
				Total 3 marks

10. (a)	$\frac{6}{32} \times 100$	18.75	2	M1 Allow "32" from evidence of adding frequencies A1 Accept 19 if the correct method or 18.75 seen
(b)	$(7 \times 10) + (16 \times 30) + (3 \times 50) + (6 \times 70)$ $= 70 + 480 + 150 + 420$	1120	3	M1 $f \times x$ for 3 products with x used consistently within interval (incl. end points) & intention to add M1(dep) use of correct half way values $(\frac{1120}{32}$ implies M2) A1 cao
				Total 5 marks

11.	$10 \times 24, 30 \times 20, 50 \times 9, 70 \times 12, 90 \times 15$ $10 \times 24 + 30 \times 20 + 50 \times 9 + 70 \times 12 + 90 \times 15$ $240 + 600 + 450 + 840 + 1350$	3480	3	M1 at least 4 products $f \times x$ used consistently within interval (inc end points) M1(dep) for $\sum fx$ with use of at least 4 correct $\frac{1}{2}$ way values A1
				Total 3 marks

12.	(i)	$3 \times 2 + 4 \times 5 + 5 \times 14 + 6 \times 19 + 7 \times 10$ or $6 + 20 + 70 + 114 + 70$ or 280		4	M1 for sum of products condone one error
		"280" + 50			M1 (dep) for division by 50
			5.6		A1 cao Also accept 6 if both method marks scored and 5 following 5.6
	(ii)			5	B1 ft from their (i)
					Total 4 marks

Question	Working	Answer	Mark	Notes
13.	$1 \times 6 + 2 \times 8 + 3 \times 7 + 4 \times 3 + 5 \times 1$ or $6 + 16 + 21 + 12 + 5$ or 60		3	M1 for at least 4 correct products stated or evaluated
	"60" ÷ 25			M1 (dep)
		2.4 oe		A1 Also accept 2 if both method marks are scored
				Total 3 marks

14.	$(0 \times 2) + 1 \times 10 + 2 \times 7 + 3 \times 6 + 4 \times 3 + 5 \times 2$ "64" ÷ 30	2.13 rec oe	3	M1 M1 for 5 correct products stated or evaluated M1 Dependent on first M1 A1 Accept 2.1 or better with no working. Accept 2 if M2 awarded.
				Total 3 marks