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ASSESSMENT and QUALIFICATIONS ALLIANCE

Free Standing Maths Qualification

Handling and Interpreting Data 6986
Intermediate Level

Mark Scheme

2006 examination - January series

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Handling and Interpreting Data

Free-Standing Mathematics Qualifications
Intermediate Level: Handling and Interpreting Data (6986/2)

Answers and Marking Schemes – January 2006

Question 1

	A	B	C	D
1	Retailer	Sales (in billions of pounds)	Number of head-office staff	Sales per head-office employee (in millions of pounds)
2	Asda	13.4	1000	13
3	Morrison	4.3	425	10
4	Safeway	8.8	1800	5
5	Sainsbury	17.4	4000	4
6	Tesco	26.1	5000	5
7	Marks and Spencer	8.1	3000	3

1(a)		M1A1 A1 B1	Any in D. Accept any which round Rest in D. Accept any which round Correct to integers SC2 consistent dp error Or SC3 if not in millions
(b)	$\frac{B6}{C6}\times 1000$	B1	
(c)	Asda has less head-office staff per sale. Marks and Spencer has more head-office staff per sale.	B1	Any sensible conclusion
	TOTAL	**6**	

Question 2

Waiting time (w minutes)	Frequency, f	Mid interval, x	fx
$0 \le w < 40$	25	20	500
$40 \le w < 80$	106	60	6360
$80 \le w < 120$	85	100	8500
$120 \le w < 160$	34	140	4760
$160 \le w < 200$	21	180	3780
$200 \le w < 240$	9	220	1980
Total	280		25880

2(a)	40 to 80 minutes	B1	
(b)		B1	Mid interval Condone 1 error
		M1	fx (at least 4 correct)
	25880	A1	Total fx
	Mean = $\frac{25880}{280}$	M1	Dep M1 above
	92.4	A1	Accept 92; 92.42…,92.43.
	TOTAL	**6**	

Question 3

3(a)	$\frac{64}{280}$	B1	
	$\frac{8}{35}$	B1	$\frac{27}{35}$ SC1
(b)	30	B1	
	$\frac{30}{64}$ or $\frac{15}{32}$	B1	
	TOTAL	**4**	

Question 4

4 (a)	Angle is 121° Number is $\frac{121}{360}\times 3600$ 1210	B1 M1 A1	Accept ±2°
(b)	Radii are 5cm and 2cm Areas are in the ratio 25 : 4 Number = $\frac{4}{25}\times 3600$ = 576	B1 M1 M1 A1	
(c)	Angle is 78° Number is $\frac{78}{360}\times 576$ = 125	 M1 A1	Accept ±2° ft from (b) dep M1 gained Accept 124
	TOTAL	**9**	

Question 5

5	Weight × percentage = 4 × 78 + 1 × 92 + 3 × 81 + 2 × 85 = 312 + 92 + 243 + 170 = 817 Weighted percentage = $\frac{817}{10}$ = 81.7	M1 A1 A1	
	TOTAL	**3**	

Question 6

Time taken (t minutes)	Number of tests	Cumulative frequency
$0 < t \leq 30$	0	0
$30 < t \leq 40$	1	1
$40 < t \leq 50$	24	25
$50 < t \leq 60$	72	97
$60 < t \leq 70$	19	116
$70 < t \leq 80$	3	119
$80 < t \leq 90$	1	120

6 (a)	Cumulative frequency	B1	
	Plot at upper values	B1	
	Accuracy of plots	B1	
	Smooth curve	B1	
(b)(i)	Median is 60th value	M1	
	= 55	A1	Accept 54
(ii)	51 or 52	B1	
(iii)	59 or 60	B1	Accept 59 ½
(iv)	8	B1ft	
(c)	Median	B1	
	Quartiles	B1	
	Whiskers	B1	
(d)	At least one test on Saturday took less than 30 minutes, unlike Wednesday.	B2	For first comparison
	No tests on Saturday took more than 75 minutes, unlike Wednesday.	B1	Any sensible comparison B2
	Quartiles are very similar	B1	Any sensible comment B1
	Means are very similar	B1	Maximum B3
	TOTAL	**17**	

Question 7

7	$80 \times \frac{3}{5}$ $= 48$	M1 A1	
	TOTAL	**2**	

Question 8

8	Heights are not in ratio	B2	Can't see keel, B2 or B1 (vague) Ignore 'No Scale' etc
	TOTAL	**2**	

Question 9

9	Increases of £99 and £54 are given as same line. No [vertical] scale Boxes (with numbers) increase in size	B2 B1 B1	Increase is given as straight line B1 Not plotted accurately B1 Maximum B3 False zero
	TOTAL	**3**	
	TOTAL MARK	**52**	