2.14 Averages: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Bethany records the number of pages she reads each night for 5 nights:
18, 22, 15, 25, 20
Work out the mean number of pages she read per night.

(Total for Question 1 is 3 marks)

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2 Here are the number of goals scored by a school football team in their last 8 matches:
2, 1, 3, 2, 0, 2, 1, 4
Write down the mode of the number of goals scored.

(Total for Question 2 is 1 mark)

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3 The table shows the number of goals scored by a football team in each of its matches last season.

Goals scored	0	1	2	3	4
Frequency	4	7	8	4	2

(a) Show that the team played 25 matches last season. **(1)**

(b) Calculate the mean number of goals scored per match. **(3)**

.....

(Total for Question 3 is 4 marks)

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4 For each statement, write down whether it is True or False.

(a) If you add 4 to every value in a data set, the mean also increases by 4. **(1)**

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(b) If you add 4 to every value in a data set, the range stays the same. **(1)**

.....

(c) If a data set has an even number of values, the median is always one of the values in the data set. **(1)**

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(Total for Question 4 is 3 marks)

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5 The mean of five numbers is 9. Four of the numbers are 6, 8, 11 and 7. Work out the fifth number.

(Total for Question 5 is 3 marks)

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6 Class 10A (28 students) and Class 10B (25 students) sat the same maths test, out of 20 marks.
Class 10A: mean score = 14, range = 12
Class 10B: mean score = 14, range = 6

(a) Both classes have the same mean score. State what this tells you about the average performance of the two classes. **(1)**

(b) Use the ranges to explain why the performance within the two classes was different. **(2)**

(Total for Question 6 is 3 marks)

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7 Rhys recorded his journey times, in minutes, to work on 7 days:
21, 22, 23, 24, 25, 26, 95
(Day 7 included a cancelled train.)

(a) Calculate the mean of all 7 journey times. **(3)**

(b) Calculate the mean of the first 6 journey times only (excluding day 7). **(2)**

(c) Use your answers to parts (a) and (b) to explain why the mean of all 7 days is not a fair representation of Rhys's typical journey time. **(2)**

(Total for Question 7 is 7 marks)

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Mark scheme · 2.14 Averages: 30-minute Pack

Question 1

18 + 22 + 15 + 25 + 20 (= 100), oe **M1**

100 / 5 **M1**

20 cao **A1**

Answer: 20 pages

Question 2

2 cao **B1**

Answer: 2

Question 3

(a) 4 + 7 + 8 + 4 + 2 = 25, cso (answer of 25 is given, so working must be shown) **B1**

(a) Answer: 25 (shown)

(b) fx products found: 0, 7, 16, 12, 8, oe (at least 3 correct) **M1**

(b) (0 + 7 + 16 + 12 + 8) / 25 **M1**

(b) 1.72 cao **A1**

(b) Answer: 1.72 goals

Question 4

(a) True cao **B1**

(a) Answer: True

(b) True cao **B1**

(b) Answer: True

(c) False cao **B1**

(c) Answer: False

Question 5

9 x 5 (= 45), oe **M1**

45 - (6 + 8 + 11 + 7), oe (45 - 32) **M1**

13 cao **A1**

Answer: 13

Question 6

(a) on average, the two classes performed equally well / the same, oe **B1**

(a) Answer: On average, the two classes performed equally well.

(b) Class 10A's scores were more spread out / varied, since its range (12) is greater than Class 10B's range (6) **B1**

(b) Class 10B's scores were more consistent / closer together, since its range (6) is smaller **B1**

(b) Answer: Class 10A's scores were more spread out (range 12) while Class 10B's scores were more consistent (range 6), so the students in 10B performed more similarly to each other.

Question 7

(a) 21 + 22 + 23 + 24 + 25 + 26 + 95 (= 236), oe **M1**

(a) 236 / 7 **M1**

(a) 33.7 awrt **A1**

(a) Answer: 33.7 minutes (awrt)

(b) 21 + 22 + 23 + 24 + 25 + 26 (= 141), oe **M1**

(b) 23.5 cao **A1**

(b) Answer: 23.5 minutes

(c) compares the two means, e.g. the mean of all 7 days (33.7) is much higher than the mean of the usual 6 days (23.5), ft their (a) and (b) **B1**

(c) correct reason, e.g. the single unusually high value (95, caused by a cancelled train) pulls the overall mean up, so it does not represent a typical day, oe **B1**

(c) Answer: The mean of all 7 days (33.7) is much higher than the mean of the usual 6 days (23.5), because the single outlier of 95 minutes (caused by a cancelled train) pulls the overall mean up, so it does not fairly represent Rhys's typical journey time.

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