2.14 Averages: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Here are the times, in minutes, taken by 7 students to travel to school:
12, 18, 9, 25, 14, 20, 11
Write down the median travel time.

(Total for Question 1 is 1 mark)

---

2 A cricketer scored these numbers of runs in 6 innings:
34, 28, 45, 31, 26, 40
Work out the mean number of runs per innings.

(Total for Question 2 is 3 marks)

© Revision Library | revisionlibrary.co.uk

3 Here are the midday temperatures, in degrees Celsius, recorded in Aberdeen on six days in January:
-3, 5, -1, 8, 0, -6

(a) Write these temperatures in order from lowest to highest. **(1)**

.....

(b) Work out the range of the temperatures. **(2)**

.....

(c) Calculate the mean temperature. **(2)**

.....

(Total for Question 3 is 5 marks)

---

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

(a) Work out the total marks scored by all the students in Class 10A. **(2)**

.....

(b) Work out the total marks scored by all the students in Class 10B. **(2)**

.....

(c) Calculate the combined mean score of all 53 students in Class 10A and Class 10B together. **(3)**

.....

(Total for Question 4 is 7 marks)

© Revision Library | revisionlibrary.co.uk

5 Here are the times, in minutes, taken by 8 runners to complete a park run:
32, 45, 28, 39, 41, 35, 30, 44
Find the median time.

(Total for Question 5 is 2 marks)

---

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

(a) The range of a data set depends only on the highest and lowest values, not on how many times each value occurs. **(1)**

.....

(b) It is impossible for the mean of a data set to equal a value that is not one of the data values. **(1)**

.....

(c) For a data set with an even number of values, the median is the mean of the two middle values when the data is placed in order. **(1)**

.....

(Total for Question 6 is 3 marks)

© Revision Library | revisionlibrary.co.uk

7 Two hockey teams recorded the number of goals they scored in their last 6 matches.
Team Red: 2, 1, 3, 0, 4, 2
Team Blue: 1, 2, 2, 3, 1, 3

(a) Work out the mean number of goals for Team Red and the mean number of goals for Team Blue. **(2)**

.....

(b) Work out the range of goals for Team Red and the range of goals for Team Blue. **(2)**

.....

(c) Both teams have the same mean. Use the ranges to state which team's goal-scoring was more consistent, giving a reason. **(1)**

(Total for Question 7 is 5 marks)

---

8 The mean temperature over 5 days in February was -2 degrees Celsius. The temperatures on four of the days were -5, 1, -4 and 2 degrees Celsius. Work out the temperature on the fifth day.

(Total for Question 8 is 3 marks)

© Revision Library | revisionlibrary.co.uk

9 A student, Erin, is finding the range of these temperatures, in degrees Celsius, recorded over a week:

3, -5, 8, -2, 6, -1, 4

Erin writes: 'The range is 8 - (-1) = 9.'

(a) Identify the error in Erin's method. **(1)**

(b) Work out the correct range. **(2)**

(Total for Question 9 is 3 marks)

---

10 A delivery company is deciding which of two drivers, Driver A or Driver B, to keep on for weekend shifts, based on their delivery times, in minutes, over their last 6 shifts.

Driver A: 18, 20, 19, 45, 21, 19

Driver B: 24, 23, 25, 22, 26, 24

(a) Calculate the mean delivery time for Driver A and the mean delivery time for Driver B. Give your answers correct to 2 decimal places where necessary. **(3)**

(b) Work out the range of delivery times for each driver, and use your answers to recommend which driver the company should keep on for weekend shifts. Give a reason. **(3)**

(Total for Question 10 is 6 marks)

© Revision Library | revisionlibrary.co.uk

11 Three consecutive integers can be written as n - 1, n and n + 1. Show that the mean of any three consecutive integers is always equal to their median.

(Total for Question 11 is 3 marks)

---

12 Six positive integers have a mean of 7, a median of 6.5, a mode of 5, and a range of 9. Find a set of six numbers that satisfies all four conditions.

(Total for Question 12 is 4 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 2.14 Averages: 1-hour Pack

Question 1

14 cao **B1**

Answer: 14 minutes

Question 2

34 + 28 + 45 + 31 + 26 + 40 (= 204), oe **M1**

204 / 6 **M1**

34 cao **A1**

Answer: 34 runs

Question 3

(a) -6, -3, -1, 0, 5, 8, cao **B1**

(a) Answer: -6, -3, -1, 0, 5, 8

(b) 8 - (-6), oe **M1**

(b) 14 cao **A1**

(b) Answer: 14°C

(c) -3 + 5 - 1 + 8 + 0 - 6 (= 3), oe, / 6 **M1**

(c) 0.5 cao **A1**

(c) Answer: 0.5°C

Question 4

(a) 14 x 28, oe **M1**

(a) 392 cao **A1**

(a) Answer: 392

(b) 14 x 25, oe **M1**

(b) 350 cao **A1**

(b) Answer: 350

(c) 392 + 350 (= 742), ft their (a) and (b) **M1**

(c) 742 / 53, ft (28 + 25 students) **M1**

(c) 14 cao **A1**

(c) Answer: 14

Question 5

times correctly ordered: 28, 30, 32, 35, 39, 41, 44, 45 **M1**

37 cao, from (35 + 39) / 2 **A1**

Answer: 37 minutes

Question 6

(a) True **B1**

(a) Answer: True

(b) False **B1**

(b) Answer: False

(c) True **B1**

(c) Answer: True

Question 7

(a) Team Red mean = 2 (from 2+1+3+0+4+2=12, 12/6=2) **B1**

(a) Team Blue mean = 2 (from 1+2+2+3+1+3=12, 12/6=2) **B1**

(a) Answer: Team Red mean = 2, Team Blue mean = 2

(b) Team Red range = 4 (from 4 - 0) **B1**

(b) Team Blue range = 2 (from 3 - 1) **B1**

(b) Answer: Team Red range = 4, Team Blue range = 2

(c) Team Blue, because it has the smaller range (2 compared with 4), so its scores vary less/are more consistent **B1**

(c) Answer: Team Blue, because its range (2) is smaller than Team Red's range (4)

Question 8

5 x (-2) (= -10) found **M1**

-10 - (-5 + 1 - 4 + 2) (oe: -10 - (-6)) **M1**

-4 (°C) cao **A1**

Answer: -4 degrees Celsius

Question 9

(a) Erin has used -1 as the lowest value, but -5 is lower/more negative, so -1 is not the minimum, oe **B1**

(a) Answer: Erin used -1 as the lowest temperature, but -5 is lower than -1, so -5 is actually the minimum

(b) correct extremes identified: highest = 8, lowest = -5 **M1**

(b) 13 (°C) cao **A1**

(b) Answer: 13 degrees Celsius

Question 10

(a) 18+20+19+45+21+19 (= 142) and 24+23+25+22+26+24 (= 144) both found **M1**

(a) Driver A mean = 23.67 (minutes), awrt 2dp **A1**

(a) Driver B mean = 24 (minutes) cao **A1**

(a) Answer: Driver A mean = 23.67 minutes, Driver B mean = 24 minutes

(b) Driver A range = 27 (from 45 - 18) **B1**

(b) Driver B range = 4 (from 26 - 22) **B1**

(b) Driver B recommended (ft from correct ranges), because Driver B's much smaller range shows far more consistent delivery times, even though Driver B's mean is only slightly higher than Driver A's **B1**

(b) Answer: Driver A range = 27 minutes, Driver B range = 4 minutes; Driver B is recommended for consistency

Question 11

sum = (n - 1) + n + (n + 1) (= 3n) correctly found **M1**

mean = 3n / 3 = n **A1**

states that n is the median (middle value) of n - 1, n, n + 1, so the mean equals the median, cso **A1**

Answer: Mean = n = median (shown)

© Revision Library | revisionlibrary.co.uk

Question 12

uses the mean to find the total of the six numbers: 6 x 7 = 42 **M1**

uses the median condition correctly, e.g. the 3rd and 4th ordered values sum to 13 (since their mean is 6.5) **M1**

places two values equal to 5 (for the mode) consistent with the ordering, and uses the range condition to fix the highest and lowest values 9 apart **M1**

a fully correct set of six positive integers satisfying all four conditions, e.g. 3, 5, 5, 8, 9, 12 (accept any other valid set) **A1**

Answer: 3, 5, 5, 8, 9, 12 (one valid answer; other correct sets may exist)

© Revision Library | revisionlibrary.co.uk