2.7-2 Averages: Practice Set 2: 30-minute Pack

GL ASSESSMENT GL11PLUS-MATHS · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Over 6 days, Aisha practises the piano. On the first five days she practises for 20, 35, 15, 40 and 25 minutes. If the mean practice time per day over the 6 days is 28 minutes, calculate how many minutes she practised on day 6.

(3)

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2 Which of these is the mean of the numbers 9, 14, 7, 18 and 12?

- ☐ A) 11
- ☐ B) 12
- ☐ C) 13
- ☐ D) 15
- ☐ E) 18

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3 Which of these is the range of the numbers 34, 19, 47, 22 and 41?

- ☐ A) 47
- ☐ B) 66
- ☐ C) 19
- ☐ D) 25
- ☐ E) 28

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4 Three data sets are shown below. Set P: 4, 8, 10, 15. Set Q: 2, 6, 9, 20. Set R: 5, 7, 11, 14. Which of these has the largest range?

- ☐ A) Sets P and Q have equal range
- ☐ B) Set P
- ☐ C) Set Q
- ☐ D) All three sets have the same range
- ☐ E) Set R

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5 A tuck shop sold the following number of flapjacks over 5 days: 12, 18, 15, 20, 10. Which of these is the mean number sold per day?

- ☐ A) 13
- ☐ B) 14
- ☐ C) 15
- ☐ D) 16
- ☐ E) 20

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6 Six pupils recorded the number of minutes they spent on homework one evening: 25, 40, 18, 55, 30, 45. Which of these is the median number of minutes?

- ☐ A) 40
- ☐ B) 37.5
- ☐ C) 45
- ☐ D) 30
- ☐ E) 35

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7 Five numbers have a mean of 12. Four of the numbers are 8, 14, 10 and 16. Work out the fifth number.

(3)

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8 A survey asked 10 pupils how many pets they owned. Their answers were: 0, 1, 1, 2, 0, 3, 1, 2, 1, 0. Which of these is the mode of this data?

- ☐ A) 0
- ☐ B) 1
- ☐ C) 2
- ☐ D) 3
- ☐ E) 4

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9 The table shows the number of goals scored by a school hockey team in 10 matches. Goals scored (x): 0, 1, 2, 3, 4. Frequency (f): 2, 4, 2, 1, 1.

(a) State the modal number of goals. **(1)**

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

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10 A running club has two training groups. Group A has 15 members with a mean weekly training time of 40 minutes. Group B has 5 members with a mean weekly training time of 60 minutes. Calculate the mean weekly training time for all 20 members combined.

(4)

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11 In 8 matches, a school football team scored the following number of goals: 2, 1, 3, 2, 4, 2, 1, 2. Which of these is the mode of this data?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 8

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12 Find the median of these numbers: 21, 8, 15, 4, 19.

(2)

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13 The mean of four numbers is (x + 9). The four numbers are x, x+5, 2x-3 and 3x+10. Form an equation and solve it to find the value of x.

(4)

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14 A cricketer's mean score after 9 innings is 30 runs. In her 10th innings she scores 70 runs. Which of these is her new mean score after 10 innings?

- ☐ A) 34
- ☐ B) 38
- ☐ C) 50
- ☐ D) 30
- ☐ E) 32

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15 A set of six whole numbers has mean 11, median 11, mode 9 and range 12. Find a set of six numbers that satisfies all four conditions.

(4)

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Mark scheme · 2.7-2 Averages: Practice Set 2: 30-minute Pack

Question 1

total minutes needed over 6 days = 28 x 6 = 168 **M1**

sum of first five days = 20+35+15+40+25 = 135 **M1**

day 6 = 33 minutes, cao **A1**

Answer: 33 minutes

Question 2

B) 12, cao **B1**

Answer: B) 12

Question 3

E) 28, cao **B1**

Answer: E) 28

Question 4

C) Set Q, cao **B1**

Answer: C) Set Q

Question 5

C) 15, cao **B1**

Answer: C) 15

Question 6

E) 35, cao **B1**

Answer: E) 35

Question 7

total of all five numbers = 12 x 5 = 60 **M1**

sum of the four known numbers = 8 + 14 + 10 + 16 = 48 **M1**

fifth number = 60 - 48 = 12, cao **A1**

Answer: 12

Question 8

B) 1, cao **B1**

Answer: B) 1

Question 9

(a) mode = 1, cao **B1**

(a) Answer: 1

(b) correct values of fx: 0, 4, 4, 3, 4 summed to give 15 **M1**

(b) divides total fx by total frequency (10) **M1**

(b) mean = 1.5 (oe 15/10), cao **A1**

(b) Answer: 1.5

Question 10

total training time for Group A = 15 x 40 = 600 minutes **M1**

total training time for Group B = 5 x 60 = 300 minutes **M1**

combined total (900) divided by combined number of members (20) **M1**

combined mean = 45 minutes, cao **A1**

Answer: 45 minutes

Question 11

B) 2, cao **B1**

Answer: B) 2

Question 12

numbers ordered correctly: 4, 8, 15, 19, 21 **M1**

median = 15 (cao) **A1**

Answer: 15

Question 13

sum of the four expressions = 7x + 12 (oe, unsimplified acceptable); accept an equivalent route to the same value without algebra, such as trial and improvement **M1**

forms the equation (7x+12)/4 = x+9, oe **M1**

correct rearrangement: 7x+12 = 4x+36, leading to 3x = 24 **M1**

x = 8, cao **A1**

Answer: x = 8

Question 14

A) 34, cao **B1**

Answer: A) 34

Question 15

six whole numbers with a total of 66 (satisfying mean = 11) **B1**

middle pair (when ordered) averaging to 11 (satisfying median = 11) **B1**

value 9 appearing more often than any other value (satisfying mode = 9) **B1**

difference between highest and lowest value equal to 12 (satisfying range = 12); ft any other valid set meeting all four conditions **B1**

Answer: 4, 9, 9, 13, 15, 16 (or any other valid set satisfying all four conditions)

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