6.4 Averages: Mean, Median, Mode and Range: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Here are 5 numbers: 14, 31, 46, 50, 56.
Work out the median.

(2)

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2 Here are 6 numbers: 24, 23, 25, 3, 12, 3.
Work out the mean, the median and the range.

(3)

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3 Here are 6 numbers: 35, 14, 42, 17, 4, 14.
Work out the median.

(2)

---

4 Here are some numbers of goals scored by a team in different matches: 33, 21, 38, 11, 6.
Work out the mean.

(2)

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5 Here are 10 numbers: 41, 52, 20, 8, 14, 27, 48, 18, 4, 3.
Work out the median.

(2)

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6 The mean of 4 numbers is 20. One of the numbers, 17, is removed. Work out the mean of the remaining 3 numbers.

(3)

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7 Here are 7 numbers: 22, 28, 10, 44, 12, 31, 52.
Work out the median.

(2)

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8 Here are 8 numbers: 60, 55, 27, 58, 51, 26, 54, 45.
Work out the median.

(2)

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9 Here are 8 numbers: 4, 18, 29, 15, 15, 15, 24, 24.
Work out the mean, the median and the range.

(3)

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10 The mean of 4 numbers is 16. 3 of the numbers are 10, 16, 30. Work out the other number.

(3)

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11 Here are 8 numbers: 41, 23, 58, 5, 1, 1, 3, 41.
Work out the median.

(2)

---

12 Here are 9 numbers: 47, 42, 37, 13, 47, 8, 56, 10, 11.
Work out the median.

(2)

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13 Here are 10 numbers: 14, 3, 12, 12, 27, 26, 18, 21, 20, 12.
Work out the mean, the median and the range.

(3)

---

14 Here are some numbers of goals scored by a team in different matches: 8, 12, 19, 28.
Work out the mean.

(2)

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15 The mean of 5 numbers is 18. 4 of the numbers are 17, 13, 2, 22. Work out the other number.

(3)

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16 Here are 8 numbers: 9, 46, 5, 34, 6, 60, 55, 48.
Work out the median.

(2)

---

17 Here are some numbers: 11, 10, 19, 18, 23, 7, 19, 19, 1.
Work out (a) the mode and (b) the range.

(2)

---

18 Here are 10 numbers: 7, 17, 22, 10, 28, 9, 30, 4, 24, 22.
Work out the mean, the median and the range.

(3)

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19 The times in minutes that 6 people spent in a queue are: 17, 18, 21, 21, 26, 116.
Work out the mean and the median. Which average is a better summary of a typical wait? Give a reason.

(4)

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20 Here are some numbers: 21, 10, 5, 11, 15, 21, 6.
Work out (a) the mode and (b) the range.

(2)

---

21 Here are 7 numbers: 2, 29, 22, 16, 51, 14, 54.
Work out the median.

(2)

---

22 A set of exam scores is: 48, 52, 55, 60, 62, 95.

(a) Calculate the mean of the six scores. **(1)**

(b) Calculate the median of the six scores. **(1)**

(c) Explain briefly how the 95 affects the mean compared to the median. **(1)**

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23 The mean of 4 numbers is 16. One of the numbers, 13, is removed. Work out the mean of the remaining 3 numbers.

(3)

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24 Here are some test scores: 32, 39, 37, 15, 10, 9, 9, 11.
Work out the mean.

(2)

---

25 The times in minutes that 8 people spent in a queue are: 10, 11, 16, 17, 25, 27, 30, 96.
Work out the mean and the median. Which average is a better summary of a typical wait? Give a reason.

(4)

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26 Here are some numbers: 2, 10, 7, 10, 13, 13, 10, 5, 20, 21.
Work out (a) the mode and (b) the range.

(2)

---

27 Here are some test scores: 5, 30, 13, 14, 22.
Work out the mean.

(2)

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28 Here are some numbers: 11, 21, 21, 21, 11, 25, 5, 12, 25, 13.
Work out (a) the mode and (b) the range.

(2)

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29 The mean of 4 numbers is 18. 3 of the numbers are 32, 28, 7. Work out the other number.

(3)

---

30 Here are some numbers: 7, 23, 22, 4, 3, 22, 23, 23.
Work out (a) the mode and (b) the range.

(2)

---

31 The times in minutes that 6 people spent in a queue are: 16, 18, 20, 25, 27, 143.
Work out the mean and the median. Which average is a better summary of a typical wait? Give a reason.

(4)

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32 The number of minutes a group of 7 pupils spent on homework: 20, 35, 25, 40, 30, 35, 50. Calculate the mean, median and mode. Give the mean to 1 decimal place if needed.

(a) Calculate the mean. **(1)**

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(b) Calculate the median. **(1)**

.....

(c) Calculate the mode. **(1)**

.....

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33 Here are some numbers: 25, 17, 3, 21, 18, 17, 19, 13, 17.
Work out (a) the mode and (b) the range.

(2)

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34 Here are some numbers: 17, 8, 1, 13, 23, 6, 8, 11, 8, 3.
Work out (a) the mode and (b) the range.

(2)

---

35 Here are some test scores: 3, 12, 30, 27, 39, 33, 39, 9.
Work out the mean.

(2)

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36 Here are some numbers of goals scored by a team in different matches: 21, 14, 5, 39.
Work out the mean.

(2)

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37 Here are some times in minutes taken to travel to school: 18, 30, 11, 36.
Work out the mean.

(2)

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38 Here are 7 numbers: 2, 48, 57, 16, 6, 17, 39.
Work out the median.

(2)

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Mark scheme · 6.4 Averages: Mean, Median, Mode and Range: 2-hour Pack

Question 1

puts the numbers in order: 14, 31, 46, 50, 56 **M1**

46 cao **A1**

Answer: **46**

Question 2

mean 15 **B1**

median 17.5 **B1**

range 22 **B1**

Answer: **mean 15, median 17.5, range 22**

Question 3

puts the numbers in order: 4, 14, 14, 17, 35, 42 **M1**

15.5 cao **A1**

Answer: **15.5**

Question 4

adds all 5 values: 109 **M1**

21.8 cao **A1**

Answer: **21.8**

Question 5

puts the numbers in order: 3, 4, 8, 14, 18, 20, 27, 41, 48, 52 **M1**

19 cao **A1**

Answer: **19**

Question 6

4 x 20 = 80 **M1**

(80 - 17) ÷ 3 **M1**

21 cao **A1**

Answer: **21**

Question 7

puts the numbers in order: 10, 12, 22, 28, 31, 44, 52 **M1**

28 cao **A1**

Answer: **28**

Question 8

puts the numbers in order: 26, 27, 45, 51, 54, 55, 58, 60 **M1**

52.5 cao **A1**

Answer: **52.5**

Question 9

mean 18 **B1**

median 16.5 **B1**

range 25 **B1**

Answer: **mean 18, median 16.5, range 25**

Question 10

4 x 16 = 64 **M1**

64 - 56 **M1**

8 cao **A1**

Answer: **8**

Question 11

puts the numbers in order: 1, 1, 3, 5, 23, 41, 41, 58 **M1**

14 cao **A1**

Answer: **14**

Question 12

puts the numbers in order: 8, 10, 11, 13, 37, 42, 47, 47, 56 **M1**

37 cao **A1**

Answer: **37**

Question 13

mean 16.5 **B1**

median 16 **B1**

range 24 **B1**

Answer: **mean 16.5, median 16, range 24**

Question 14

adds all 4 values: 67 **M1**

16.75 cao **A1**

Answer: **16.75**

Question 15

5 x 18 = 90 **M1**

90 - 54 **M1**

36 cao **A1**

Answer: **36**

Question 16

puts the numbers in order: 5, 6, 9, 34, 46, 48, 55, 60 **M1**

40 cao **A1**

Answer: **40**

Question 17

(a) 19 **B1**

(b) 22 **B1**

Answer: **(a) 19, (b) 22**

Question 18

mean 17.3 **B1**

median 19.5 **B1**

range 26 **B1**

Answer: **mean 17.3, median 19.5, range 26**

Question 19

mean 36.5 **B1**

median 21 **B1**

median chosen **B1**

reason: 116 is an extreme value which pulls the mean up **B1**

Answer: **mean 36.5, median 21; the median is better because 116 is an extreme value**

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Question 20

(a) 21 **B1**

(b) 16 **B1**

Answer: **(a) 21, (b) 16**

Question 21

puts the numbers in order: 2, 14, 16, 22, 29, 51, 54 **M1**

22 cao **A1**

Answer: **22**

Question 22

(a) mean 62 stated cao **B1**

(a) Answer: **62**

(b) median 57.5 stated cao **B1**

(b) Answer: **57.5**

(c) explanation that mean is pulled up by 95 while median less affected (mention mean uses all values or outlier increases mean) oe **B1**

(c) Answer: **The 95 raises the mean because it is included in the total; the median is less affected as it depends on middle values which stay near 55 and 60**

Question 23

4 x 16 = 64 **M1**

(64 - 13) ÷ 3 **M1**

17 cao **A1**

Answer: **17**

Question 24

adds all 8 values: 162 **M1**

20.25 cao **A1**

Answer: **20.25**

Question 25

mean 29 **B1**

median 21 **B1**

median chosen **B1**

reason: 96 is an extreme value which pulls the mean up **B1**

Answer: **mean 29, median 21; the median is better because 96 is an extreme value**

Question 26

(a) 10 **B1**

(b) 19 **B1**

Answer: **(a) 10, (b) 19**

Question 27

adds all 5 values: 84 **M1**

16.8 cao **A1**

Answer: **16.8**

Question 28

(a) 21 **B1**

(b) 20 **B1**

Answer: **(a) 21, (b) 20**

Question 29

4 x 18 = 72 **M1**

72 - 67 **M1**

5 cao **A1**

Answer: **5**

Question 30

(a) 23 **B1**

(b) 20 **B1**

Answer: **(a) 23, (b) 20**

Question 31

mean 41.5 **B1**

median 22.5 **B1**

median chosen **B1**

reason: 143 is an extreme value which pulls the mean up **B1**

Answer: **mean 41.5, median 22.5; the median is better because 143 is an extreme value**

Question 32

(a) mean 33.6 stated to 1 d.p. cao **B1**

(a) Answer: **33.6**

(b) median 35 stated cao **B1**

(b) Answer: **35**

(c) mode 35 stated cao **B1**

(c) Answer: **35**

Question 33

(a) 17 **B1**

(b) 22 **B1**

Answer: **(a) 17, (b) 22**

Question 34

(a) 8 **B1**

(b) 22 **B1**

Answer: **(a) 8, (b) 22**

Question 35

adds all 8 values: 192 **M1**

24 cao **A1**

Answer: **24**

Question 36

adds all 4 values: 79 **M1**

19.75 cao **A1**

Answer: **19.75**

Question 37

adds all 4 values: 95 **M1**

23.75 cao **A1**

Answer: **23.75**

Question 38

puts the numbers in order: 2, 6, 16, 17, 39, 48, 57 **M1**

17 cao **A1**

Answer: **17**

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