# 6.4 Averages: Mean, Median, Mode and Range: Test Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** Write down the mode of each list of numbers.

**(a)** List: 2, 5, 7, 5, 9 **(1)**

**(b)** List: 4, 4, 6, 6, 8, 10 **(1)**

**2** Stretch: A small club records the number of goals scored by its players in a season: 0, 1, 1, 2, 3, 3, 3, 20.

**(a)** Calculate the mean and the median. **(2)**

**(b)** The club manager says the mean is not a good measure of typical performance here. Do you agree? Give a short justification. **(2)**

**3** Here are 8 numbers: 7, 4, 46, 48, 57, 14, 5, 3.
Work out the median.

**(2)**


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**4** Here are some numbers: 22, 13, 20, 8, 6, 6, 6.
Work out (a) the mode and (b) the range.

**(2)**

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**5** Find the median of each list.

**(a)** List: 3, 1, 4, 2, 6 **(1)**

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**(b)** List: 7, 3, 5, 9 **(1)**

.....

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**6** Here are some numbers: 17, 20, 10, 22, 25, 19, 16, 17.
Work out (a) the mode and (b) the range.

**(2)**

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**7** Calculate the range for each set of scores.

**(a)** Set: 12, 5, 9, 21, 17 **(1)**

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**(b)** Set: 8, 8, 8, 8, 8 **(1)**

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**8** Here are some numbers: 12, 18, 10, 18, 12, 4, 14, 18.
Work out (a) the mode and (b) the range.

**(2)**


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**9** The mean of 5 numbers is 14. One of the numbers, 16, is removed. Work out the mean of the remaining 4 numbers.

**(3)**

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**10** The times in minutes that 8 people spent in a queue are: 12, 12, 15, 15, 16, 29, 30, 147. 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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**11** The mean of 5 numbers is 13. One of the numbers, 13, is removed. Work out the mean of the remaining 4 numbers.

**(3)**


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**12** A teacher recorded the number of books read by 5 pupils in a term: 2, 3, 8, 4, 13.
Calculate the mean, median, mode and range of this data. Give the mean to 1 decimal place.

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

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

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

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**13** Here are 9 numbers: 47, 27, 19, 26, 13, 25, 5, 51, 25.
Work out the median.

**(2)**

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**14** Which average is most affected by an outlier? Choose one and give a short reason.

**(a)** Select mean, median or mode and give a reason. **(2)**

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**15** Here are 10 numbers: 21, 29, 57, 11, 4, 29, 38, 41, 54, 51.
Work out the median.

**(2)**


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**16** The mean of 4 numbers is 24. A new number, 6, is added. Work out the mean of all 5 numbers.

**(3)**

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**17** The mean of 4 numbers is 10.5. A new number, 40, is added. Work out the mean of all 5 numbers.

**(3)**

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**18** Here are 5 numbers: 50, 11, 4, 46, 19.
Work out the median.

**(2)**


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# Mark scheme · 6.4 Averages: Mean, Median, Mode and Range: Test Pack

## Question 1

(a) mode is 5 cao — B1

(a) Answer: **5**

(b) both 4 and 6 stated as modes (bimodal) cao — B1

(b) Answer: **4 and 6**

## Question 2

(a) correct sum shown: 0+1+1+2+3+3+3+20 = 33 or equivalent — M1

(a) mean 4.125 and median 2.5 stated (mean = 33/8 = 4.125; median = mean of the middle two values 2 and 3 = 2.5) cao — A1

(a) Answer: **mean 4.125; median 2.5**

(b) statement that mean is influenced by the outlier 20 — M1

(b) justification that most players scored 0-3 so median 2.5 better represents typical performance (mention outlier skews mean) oe — A1

(b) Answer: **Yes. The mean (4.125) is pulled up by the single outlier 20, while the median 2.5 better reflects the scores of most players who scored between 0 and 3.**

## Question 3

puts the numbers in order: 3, 4, 5, 7, 14, 46, 48, 57 — M1

10.5 cao — A1

Answer: **10.5**

## Question 4

(a) 6 — B1

(b) 16 — B1

Answer: **(a) 6, (b) 16**

## Question 5

(a) median is 3 cao — B1

(a) Answer: **3**

(b) median is average of middle two: (5+7)/2 = 6 cao — B1

(b) Answer: **6**

## Question 6

(a) 17 — B1

(b) 15 — B1

Answer: **(a) 17, (b) 15**

## Question 7

(a) range is 16 cao — B1

(a) Answer: **16**

(b) range is 0 cao — B1

(b) Answer: **0**

## Question 8

(a) 18 — B1

(b) 14 — B1

Answer: **(a) 18, (b) 14**

## Question 9

5 x 14 = 70 — M1

(70 - 16) ÷ 4 — M1

13.5 cao — A1

Answer: **13.5**

## Question 10

mean 34.5 — B1

median 15.5 — B1

median chosen — B1

reason: 147 is an extreme value which pulls the mean up — B1

Answer: **mean 34.5, median 15.5; the median is better because 147 is an extreme value**

## Question 11

5 x 13 = 65 — M1

(65 - 13) ÷ 4 — M1

13 cao — A1

Answer: **13**

## Question 12

(a) mean 6.0 stated cao — B1

(a) Answer: **6.0**

(b) median 4 stated cao — B1

(b) Answer: **4**

(c) mode none and range 11 stated (range = 13 - 2) cao — B1

(c) Answer: **mode: none; range: 11**

## Question 13

puts the numbers in order: 5, 13, 19, 25, 25, 26, 27, 47, 51 — M1

25 cao — A1

Answer: **25**

## Question 14

(a) mean identified as the average affected by outliers — M1

(a) reason given: mean uses all values so a very large or small value pulls the average oe — A1

(a) Answer: **Mean; because the mean uses every value and a very large or small value pulls it away from the centre**

## Question 15

puts the numbers in order: 4, 11, 21, 29, 29, 38, 41, 51, 54, 57 — M1

33.5 cao — A1

Answer: **33.5**

## Question 16

total of 4 numbers = 96 — M1

(96 + 6) ÷ 5 — M1

20.4 cao — A1

Answer: **20.4**


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## Question 17

| | |
|---|---|
| total of 4 numbers = 42 | **M1** |
| (42 + 40) ÷ 5 | **M1** |
| 16.4 cao | **A1** |

Answer: **16.4**

## Question 18

| | |
|---|---|
| puts the numbers in order: 4, 11, 19, 46, 50 | **M1** |
| 19 cao | **A1** |

Answer: **19**


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