S01-30min Mean Median Mode and Range: 30-minute Pack

Total Marks

EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The number of minutes spent revising one evening by each of 8 students was:

45, 30, 60, 45, 50, 40, 45, 55

(a) Write down the mode. **(1)**

.....

(b) Find the median. **(2)**

.....

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

.....

(d) Work out the range. **(1)**

.....

(Total for Question 1 is 6 marks)

2 The distances, in km, walked by 11 dog walkers in one week were:

8, 15, 6, 20, 11, 9, 14, 6, 17, 10, 13

(a) Find the median distance walked. **(2)**

.....

(b) Write down the mode. **(1)**

.....

(c) Work out the range. **(1)**

.....

(Total for Question 2 is 4 marks)

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3 The temperature, in degrees C, recorded at midnight on 7 nights was:

-4, -1, 3, 0, -2, 5, -1

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

.....

(b) Find the median temperature. **(2)**

.....

(c) Write down the mode. **(1)**

.....

(d) Work out the range of temperatures. **(1)**

.....

(Total for Question 3 is 6 marks)

4 Priya wants to investigate how long pupils in her class spend on homework on a typical weekday evening.

(a) Before Priya starts collecting her data, write down one decision she should make about how she will carry out her survey. **(1)**

.....

(b) Priya collects data from 8 pupils. The times, in minutes, they spent on homework one evening were: **(2)**

35, 40, 40, 40, 45, 55, 65, 70

Find the median time.

.....

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

.....

(d) Write down the mode and work out the range of the times. **(2)**

.....

(e) Priya concludes: 'Most pupils spend about 40 minutes on homework, but a few spend much longer.' Use your answers to parts (b) to (d) to assess whether this is a reasonable conclusion. **(2)**

(Total for Question 4 is 9 marks)

5 Six people are waiting in a queue. Their ages, in years, are:

22, 23, 24, 25, 26, 80

(a) Work out the mean age and the median age of all 6 people in the queue. **(4)**

(b) The person aged 80 then leaves the queue. Work out the new mean age and the new median age of the remaining 5 people. **(3)**

(c) Explain which average, the mean or the median, gives a better representation of the 'typical' age of the people originally in the queue. **(2)**

(Total for Question 5 is 9 marks)

Mark scheme · S01-30min Mean Median Mode and Range: 30-minute Pack

Question 1

- (a) **B1** 45 cao
- **(a) Answer: 45**
- (b) **M1** data in order: 30, 40, 45, 45, 45, 50, 55, 60, with the middle two values identified as 45 and 45
- (b) **A1** 45 cao
- **(b) Answer: 45**
- (c) **M1** 30+40+45+45+45+50+55+60 (= 370), oe
- (c) **A1** 46.25 cao
- **(c) Answer: 46.25**
- (d) **B1** 30 cao
- **(d) Answer: 30**

Question 2

- (a) **M1** all 11 values placed in order: 6, 6, 8, 9, 10, 11, 13, 14, 15, 17, 20
- (a) **A1** 11 cao
- **(a) Answer: 11**
- (b) **B1** 6 cao
- **(b) Answer: 6**
- (c) **B1** 14 cao
- **(c) Answer: 14**

Question 3

- (a) **M1** -4 + -1 + 3 + 0 + -2 + 5 + -1 (= 0), oe
- (a) **A1** 0 cao
- **(a) Answer: 0**
- (b) **M1** data in order: -4, -2, -1, -1, 0, 3, 5
- (b) **A1** -1 cao
- **(b) Answer: -1**
- (c) **B1** -1 cao
- **(c) Answer: -1**
- (d) **B1** 9 cao
- **(d) Answer: 9**

Question 4

- (a) **B1** any sensible planning decision, e.g. how many pupils to ask, which evening(s) to record, or how to measure the time accurately, oe
- **(a) Answer: e.g. How many pupils in the class to ask (so the sample is large enough to be representative).**
- (b) **M1** data in order (already ordered): 35, 40, 40, 40, 45, 55, 65, 70, with the middle two values identified as 40 and 45
- (b) **A1** 42.5 minutes cao
- **(b) Answer: 42.5 minutes**
- (c) **M1** 35+40+40+40+45+55+65+70 (= 390), oe
- (c) **A1** 48.75 minutes cao
- **(c) Answer: 48.75 minutes**
- (d) **B1** mode = 40 minutes cao
- (d) **B1** range = 35 minutes cao
- **(d) Answer: Mode = 40 minutes, range = 35 minutes**
- (e) **B1** the mode (40) and median (42.5) are both close to 40 minutes, supporting the first part of the conclusion, oe
- (e) **B1** the range (35) is large and the mean (48.75) is noticeably higher than the mode/median, showing some pupils take much longer, supporting the second part of the conclusion, oe
- **(e) Answer: Yes, it is reasonable: the mode and median are both close to 40 minutes, but the large range and the mean being higher than the mode/median show that a few pupils spend considerably longer.**

Question 5

- (a) **M1** 22+23+24+25+26+80 (= 200), oe
- (a) **A1** mean = awrt 33.3 years
- (a) **M1** data in order (already ordered): 22, 23, 24, 25, 26, 80, with the middle two values identified as 24 and 25
- (a) **A1** median = 24.5 years cao
- **(a) Answer: Mean = awrt 33.3 years, median = 24.5 years**
- (b) **M1** 22+23+24+25+26 (= 120), oe
- (b) **A1** mean = 24 years cao
- (b) **B1** median = 24 years cao
- **(b) Answer: Mean = 24 years, median = 24 years**
- (c) **B1** the median cao
- (c) **B1** reason: the median (24.5) is barely affected by the outlier of 80, while the mean changes a lot (from 24 to 33.3) once the outlier is included, so the median better represents the typical age, oe
- **(c) Answer: The median, because it changes very little (24 to 24.5) when the age 80 is included, whereas the mean is pulled up considerably (24 to 33.3) by this one extreme value.**