3.14 Median Quartiles and IQR: 1-hour Pack

Total Marks

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The table shows the number of cars owned by a household for 27 households.

Number of cars	Frequency
0	3
1	1
2	3
3	11
4	9

(a) Work out the cumulative frequency for each value.
(b) Find the median, the lower quartile and the upper quartile.
(c) Work out the interquartile range.

Use position $(n + 1)/4$ and $3(n + 1)/4$ for the quartiles.

(Total for Question 1 is 4 marks)

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2 Here is a stem and leaf diagram, written out in rows, showing the number of sweets in 15 packets.

1	**9**
2	4 5 6
3	0 2 3
4	1 3 3 6
5	1 3 4 6

Key: 3 | 4 means 34

(a) Find the median.
(b) Work out the range.
(c) How many of the values are greater than 51?

(Total for Question 2 is 6 marks)

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3 Here are the number of minutes 7 trains were late.

16, 10, 3, 0, 1, 17, 0

Use position $(n + 1)/4$ for the lower quartile and $3(n + 1)/4$ for the upper quartile, where n is the number of values.

(a) Find the median.
(b) Work out the range.

(Total for Question 3 is 3 marks)

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4 Here is a stem and leaf diagram, written out in rows, showing the lengths, in centimetres, of 11 fish caught in a competition.

1	**2 4 7 8**
2	0 4
3	0 5 8 8
4	0

Key: 3 | 4 means 34

(a) Find the median.
(b) Work out the interquartile range (use positions $(n + 1)/4$ and $3(n + 1)/4$).
(c) How many of the values are greater than 17?

(Total for Question 4 is 6 marks)

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5 Here are the marks scored by 11 pupils in a spelling test.

26, 34, 17, 32, 21, 19, 13, 30, 10, 8, 35

Use position $(n + 1)/4$ for the lower quartile and $3(n + 1)/4$ for the upper quartile, where n is the number of values.

(a) Find the median.
(b) Work out the range.

(Total for Question 5 is 3 marks)

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6 The table shows the number of siblings for 51 pupils asked.

Number of siblings	Frequency
1	11
2	4
3	7
4	6
5	11
6	12

(a) Work out the cumulative frequency for each value.
(b) Find the median, the lower quartile and the upper quartile.
(c) Work out the interquartile range.

Use position $(n + 1)/4$ and $3(n + 1)/4$ for the quartiles.

(Total for Question 6 is 4 marks)

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7 Here are the cost, in pounds, of 11 school lunches ordered one week.

6, 10, 7, 5, 11, 12, 9, 8, 13, 9, 4

Use position $(n + 1)/4$ for the lower quartile and $3(n + 1)/4$ for the upper quartile, where n is the number of values.

(a) Find the lower quartile.
(b) Find the upper quartile.
(c) Work out the interquartile range.

(Total for Question 7 is 6 marks)

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8 The table shows the number of times a customer visited a cafe in a week for 35 customers.

Visits	Frequency
1	9
2	5
3	3
4	2
5	6
6	10

(a) Work out the cumulative frequency for each value.
(b) Find the median, the lower quartile and the upper quartile.
(c) Work out the interquartile range.

Use position $(n + 1)/4$ and $3(n + 1)/4$ for the quartiles.

(Total for Question 8 is 4 marks)

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9 Here is a stem and leaf diagram, written out in rows, showing the lengths, in centimetres, of 19 fish caught in a competition.

1	**2 3 6 8**
2	0 3 6 7 9
3	1 2 2 5 6 7
4	0 3 8 9

Key: 3 | 4 means 34

(a) Find the median.

(b) Work out the range.

(c) How many of the values are greater than 32?

(Total for Question 9 is 6 marks)

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10 The table shows the number of goals scored in a match for 51 matches.

Goals	Frequency
0	7
1	6
2	12
3	3
4	6
5	10
6	7

(a) Work out the cumulative frequency for each value.
(b) Find the median, the lower quartile and the upper quartile.
(c) Work out the interquartile range.

Use position $(n + 1)/4$ and $3(n + 1)/4$ for the quartiles.

(Total for Question 10 is 4 marks)

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11 Here is a stem and leaf diagram, written out in rows, showing the marks of 11 students in a test out of 100.

3	**1 5 5**
4	
5	1
6	9
7	0 7
8	
9	1 1 1 7

Key: 3 | 4 means 34

(a) Find the median.

(b) Work out the interquartile range (use positions $(n + 1)/4$ and $3(n + 1)/4$).

(c) How many of the values are greater than 77?

(Total for Question 11 is 6 marks)

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12 Here are the heights, in centimetres, of 11 sunflower seedlings.

20, 13, 23, 51, 16, 28, 50, 17, 46, 36, 34

Use position $(n + 1)/4$ for the lower quartile and $3(n + 1)/4$ for the upper quartile, where n is the number of values.

(a) Find the lower quartile.
(b) Find the upper quartile.
(c) Work out the interquartile range.

(Total for Question 12 is 6 marks)

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Mark scheme · 3.14 Median Quartiles and IQR: 1-hour Pack

Question 1

cumulative frequencies 3, 4, 7, 18, 27 cao	**B1**
uses cumulative frequency to locate a quartile position	**M1**
median 3, lower quartile 2, upper quartile 4 cao	**A1**
interquartile range 2 cao	**A1**

Answer: (a) 3, 4, 7, 18, 27; (b) 3, 2, 4; (c) 2

Question 2

identifies the middle position (8th value)	**M1**
41 cao	**A1**
largest minus smallest	**M1**
37 cao	**A1**
counts leaves above 51	**M1**
3 cao	**A1**

Answer: (a) 41; (b) 37; (c) 3

Question 3

values put in order	**M1**
3 cao	**A1**
17 cao	**B1**

Answer: (a) 3; (b) 17

Question 4

identifies the middle position (6th value)	**M1**
24 cao	**A1**
quartiles found (17 and 38)	**M1**
21 cao	**A1**
counts leaves above 17	**M1**
8 cao	**A1**

Answer: (a) 24; (b) 21; (c) 8

Question 5

values put in order	**M1**
21 cao	**A1**
27 cao	**B1**

Answer: (a) 21; (b) 27

Question 6

cumulative frequencies 11, 15, 22, 28, 39, 51 cao	**B1**
uses cumulative frequency to locate a quartile position	**M1**
median 4, lower quartile 2, upper quartile 5 cao	**A1**
interquartile range 3 cao	**A1**

Answer: (a) 11, 15, 22, 28, 39, 51; (b) 4, 2, 5; (c) 3

Question 7

values in order; position 3 used	**M1**
6 cao	**A1**
values in order; position 9 used	**M1**
11 cao	**A1**
upper quartile minus lower quartile with both found	**M1**
5 cao	**A1**

Answer: (a) 6; (b) 11; (c) 5

Question 8

cumulative frequencies 9, 14, 17, 19, 25, 35 cao	**B1**
uses cumulative frequency to locate a quartile position	**M1**
median 4, lower quartile 1, upper quartile 6 cao	**A1**
interquartile range 5 cao	**A1**

Answer: (a) 9, 14, 17, 19, 25, 35; (b) 4, 1, 6; (c) 5

Question 9

identifies the middle position (10th value)	**M1**
31 cao	**A1**
largest minus smallest	**M1**
37 cao	**A1**
counts leaves above 32	**M1**
7 cao	**A1**

Answer: (a) 31; (b) 37; (c) 7

Question 10

cumulative frequencies 7, 13, 25, 28, 34, 44, 51 cao	**B1**
uses cumulative frequency to locate a quartile position	**M1**
median 3, lower quartile 1, upper quartile 5 cao	**A1**
interquartile range 4 cao	**A1**

Answer: (a) 7, 13, 25, 28, 34, 44, 51; (b) 3, 1, 5; (c) 4

Question 11

identifies the middle position (6th value)	**M1**
70 cao	**A1**
quartiles found (35 and 91)	**M1**
56 cao	**A1**
counts leaves above 77	**M1**
4 cao	**A1**

Answer: (a) 70; (b) 56; (c) 4

Question 12

values in order; position 3 used	**M1**
17 cao	**A1**
values in order; position 9 used	**M1**
46 cao	**A1**
upper quartile minus lower quartile with both found	**M1**
29 cao	**A1**

Answer: (a) 17; (b) 46; (c) 29

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