HIGHER

3.7 Skewness: 1-hour Pack

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Here are the number of text messages Hamza sent on each of 11 days.

10, 40, 8, 42, 11, 14, 14, 32, 31, 4, 16

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 1 is 3 marks)

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2 For the ages in years of people at a concert, the lower quartile is 40, the median is 55 and the upper quartile is 73.
(a) Work out (Q3 - Q2) and (Q2 - Q1).
(b) Hence describe the skewness.

(Total for Question 2 is 3 marks)

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3 For marks in a test, the mean is 55, the median is 50 and the mode is 46. Describe the skewness of the distribution and give one piece of evidence from the three averages.

(Total for Question 3 is 2 marks)

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4 Here are the ages, in years, of 7 members of a cycling club.

39, 68, 74, 50, 40, 63, 65

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 interquartile range.
(c) Work out the range.

(Total for Question 4 is 5 marks)

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5 For a data set, the mean is 55, the median is 58 and the standard deviation is 5. Use Pearson's coefficient of skewness = 3 x (mean - median) / standard deviation to work out the skewness, to 2 decimal places if needed, and describe the skew.

(Total for Question 5 is 3 marks)

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6 For house prices in a town (in thousands of pounds), the mean is 35, the median is 29 and the mode is 23. Describe the skewness of the distribution and give one piece of evidence from the three averages.

(Total for Question 6 is 2 marks)

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7 Here are the number of minutes 11 trains were late.

4, 18, 10, 12, 0, 1, 8, 8, 15, 5, 22

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 interquartile range.
(c) Work out the range.

(Total for Question 7 is 5 marks)

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8 For marks in a test, the lower quartile is 27, the median is 37 and the upper quartile is 51.
(a) Work out (Q3 - Q2) and (Q2 - Q1).
(b) Hence describe the skewness.

(Total for Question 8 is 3 marks)

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9 For a data set, the mean is 80, the median is 60 and the standard deviation is 10. Use Pearson's coefficient of skewness = 3 x (mean - median) / standard deviation to work out the skewness, to 2 decimal places if needed, and describe the skew.

(Total for Question 9 is 3 marks)

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10 Here are the ages, in years, of 11 members of a cycling club.

56, 49, 68, 20, 25, 73, 26, 33, 52, 42, 24

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 10 is 3 marks)

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11 For a data set, the mean is 52, the median is 36 and the standard deviation is 8. Use Pearson's coefficient of skewness = 3 x (mean - median) / standard deviation to work out the skewness, to 2 decimal places if needed, and describe the skew.

(Total for Question 11 is 3 marks)

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12 For the ages in years of people at a concert, the lower quartile is 15, the median is 30 and the upper quartile is 38.
(a) Work out (Q3 - Q2) and (Q2 - Q1).
(b) Hence describe the skewness.

(Total for Question 12 is 3 marks)

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13 Here are the number of emails Tom received on each of 7 school days.

8, 40, 18, 31, 29, 43, 36

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 13 is 3 marks)

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14 For the ages in years of people at a concert, the mean is 34, the median is 32 and the mode is 28. Describe the skewness of the distribution and give one piece of evidence from the three averages.

(Total for Question 14 is 2 marks)

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15 For the ages in years of people at a concert, the mean is 69, the median is 64 and the mode is 60. Describe the skewness of the distribution and give one piece of evidence from the three averages.

(Total for Question 15 is 2 marks)

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16 Here are the marks scored by 11 pupils in a spelling test out of 30.

15, 15, 32, 24, 29, 33, 11, 12, 8, 31, 36

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 interquartile range.
(c) Work out the range.

(Total for Question 16 is 5 marks)

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17 For waiting times in minutes at a clinic, the mean is 50, the median is 50 and the mode is 50. Describe the skewness of the distribution and give one piece of evidence from the three averages.

(Total for Question 17 is 2 marks)

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18 For a data set, the mean is 85, the median is 67 and the standard deviation is 12. Use Pearson's coefficient of skewness = 3 x (mean - median) / standard deviation to work out the skewness, to 2 decimal places if needed, and describe the skew.

(Total for Question 18 is 3 marks)

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19 Here are the number of apples picked from 11 trees in an orchard.

66, 42, 67, 63, 28, 69, 34, 43, 85, 99, 69

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 interquartile range.
(c) Work out the range.

(Total for Question 19 is 5 marks)

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Mark scheme · 3.7 Skewness: 1-hour Pack

Question 1

values put in order	M1
14 cao	A1
38 cao	B1

Answer: (a) 14; (b) 38

Question 2

73 - 55 or 55 - 40	M1
18 and 15	A1
positive skew	B1

Answer: (a) 18 and 15; (b) positive skew

Question 3

positive skew	B1
compares mean, median and mode: mean > median > mode	B1

Answer: positive skew

Question 4

values put in order	M1
63 cao	A1
upper quartile minus lower quartile with both found	M1
28 cao	A1
35 cao	B1

Answer: (a) 63; (b) 28; (c) 35

Question 5

3 x (55 - 58) / 5	M1
-1.8 cao	A1
negative skew	B1

Answer: -1.8; negative skew

Question 6

positive skew	B1
compares mean, median and mode: mean > median > mode	B1

Answer: positive skew

Question 7

values put in order	M1
8 cao	A1
upper quartile minus lower quartile with both found	M1
11 cao	A1
22 cao	B1

Answer: (a) 8; (b) 11; (c) 22

Question 8

51 - 37 or 37 - 27	M1
14 and 10	A1
positive skew	B1

Answer: (a) 14 and 10; (b) positive skew

Question 9

3 x (80 - 60) / 10	M1
6 cao	A1
positive skew	B1

Answer: 6; positive skew

Question 10

values put in order	M1
42 cao	A1
53 cao	B1

Answer: (a) 42; (b) 53

Question 11

3 x (52 - 36) / 8	M1
6 cao	A1
positive skew	B1

Answer: 6; positive skew

Question 12

38 - 30 or 30 - 15	M1
8 and 15	A1
negative skew	B1

Answer: (a) 8 and 15; (b) negative skew

Question 13

values put in order	M1
31 cao	A1
35 cao	B1

Answer: (a) 31; (b) 35

Question 14

positive skew	B1
compares mean, median and mode: mean > median > mode	B1

Answer: positive skew

Question 15

positive skew	B1
compares mean, median and mode: mean > median > mode	B1

Answer: positive skew

Question 16

values put in order	M1
24 cao	A1
upper quartile minus lower quartile with both found	M1
20 cao	A1
28 cao	B1

Answer: (a) 24; (b) 20; (c) 28

Question 17

symmetrical (no skew)	B1
compares mean, median and mode: all three equal	B1

Answer: symmetrical (no skew)

Question 18

3 x (85 - 67) / 12	M1
4.5 cao	A1
positive skew	B1

Answer: 4.5; positive skew

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Question 19

values put in order	**M1**
66 cao	**A1**
upper quartile minus lower quartile with both found	**M1**
27 cao	**A1**
71 cao	**B1**

Answer: (a) 66; (b) 27; (c) 71

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