6.9 Comparing Distributions: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Stretch question. A teacher compares two test score distributions out of 50.
Class G: 42, 43, 44, 45, 46, 47, 48, 49
Class H: 20, 30, 35, 40, 45, 46, 48, 50
Calculate mean and median for both classes, compute IQR for both, then recommend which class performed better overall and which was more consistent. Justify with the calculated statistics.

(5)

2 Here are the times, in seconds, of two runners over several races.
Runner A: 13, 8, 35, 30, 32, 26, 21
Runner B: 30, 21, 36, 6, 33, 29, 14
Compare the two runners using the median and the range.

(4)

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3 Here are summary statistics for goals.
Team A: mean 12, range 18.
Team B: mean 25, range 15.
Compare the two sets of data.

(2)

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4 Here are the times, in seconds, of two runners over several races.
Runner A: 6, 27, 33, 40, 27, 23, 28
Runner B: 7, 32, 18, 33, 29, 24, 9
Compare the two runners using the median and the range.

(4)

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5 Here are summary statistics for minutes.
Ali: mean 13, range 5.
Bea: mean 10, range 4.
Compare the two sets of data.

(2)

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6 The times in minutes that 8 people spent in a queue are: 11, 15, 18, 18, 20, 27, 28, 123. 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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7 Class A has mean score 72 from 10 pupils. Class B has mean 68 from 10 pupils. Which class has the higher average score?

(2)

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Mark scheme · 6.9 Comparing Distributions: 30-minute Pack

Question 1

correct mean for G shown (sum 364, mean = 45.5) or method	**M1**
correct mean for H shown (sum 314, mean = 39.25) or method	**M1**
correct medians found (G median = 45.5, H median = 42.5)	**M1**
correct IQRs computed (G Q1=43.5, Q3=47.5 so IQR=4; H Q1=32.5, Q3=47 so IQR=14.5) or equivalent	**M1**
clear recommendation: G performed better on average (mean and median higher) and G is more consistent (smaller IQR) cao	**A1**

Answer: **G mean = 45.5, median = 45.5, IQR = 4; H mean = 39.25, median = 42.5, IQR = 14.5; recommend G: higher performance and more consistent.**

Question 2

medians 26 and 29	**B1**
ranges 27 and 30	**B1**
comparison of medians: Runner B has the higher median	**B1**
comparison of ranges: Runner A is more consistent	**B1**

Answer: **Runner B has the higher median (26 and 29); Runner A is more consistent (ranges 27 and 30)**

Question 3

comparison of the averages: Team B has the higher mean	**B1**
comparison of the spread: Team B is more consistent (smaller range)	**B1**

Answer: **Team B has the higher mean; Team B is more consistent as it has the smaller range**

Question 4

medians 27 and 24	**B1**
ranges 34 and 26	**B1**
comparison of medians: Runner A has the higher median	**B1**
comparison of ranges: Runner B is more consistent	**B1**

Answer: **Runner A has the higher median (27 and 24); Runner B is more consistent (ranges 34 and 26)**

Question 5

comparison of the averages: Ali has the higher mean	**B1**
comparison of the spread: Bea is more consistent (smaller range)	**B1**

Answer: **Ali has the higher mean; Bea is more consistent as it has the smaller range**

Question 6

mean 32.5	**B1**
median 19	**B1**
median chosen	**B1**
reason: 123 is an extreme value which pulls the mean up	**B1**

Answer: **mean 32.5, median 19; the median is better because 123 is an extreme value**

Question 7

comparison of means stated (72 > 68) or statement of Class A higher	**M1**
Class A has the higher average cao	**A1**

Answer: **Class A**

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