Statistics: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

The number of books read last year by 10 students is shown in order:

3, 5, 6, 8, 9, 11, 12, 14, 15, 18

(a) Find the median.

(b) Find the range.

Question 2

The five-number summary for a set of test marks is: minimum 12, lower quartile Q_1 = 18, median 25, upper quartile Q_3 = 31, maximum 40.

(a) Find the range.

(b) Find the interquartile range (IQR).

Question 3

Here are 8 values in order:

2, 4, 7, 9, 12, 13, 17, 20

Find:

(a) the lower quartile Q_1

(b) the upper quartile Q_3

(c) the interquartile range.

Question 4

A box plot shows the waiting times of 60 people at a bus stop. Its five-number summary is: minimum 1 minute, Q_1 = 4 minutes, median 7 minutes, Q_3 = 12 minutes, maximum 20 minutes.

(a) What percentage of the people waited between 4 and 12 minutes?

(b) Approximately how many people waited more than 7 minutes?

(c) Approximately how many people waited less than 4 minutes?

Section B: Standard (Questions 5-10)

Question 5

The maximum daily temperatures (in °C) in a country town over 12 days were:

21, 18, 25, 30, 19, 23, 27, 22, 17, 24, 29, 26

Find the five-number summary.

Question 6

A call centre records how many minutes customers spend on hold. For one day, $Q_1 = 20$ minutes and $Q_3 = 28$ minutes.

A value is an outlier if it is more than 1.5 × IQR below Q_1 or more than 1.5 × IQR above Q_3.

(a) Find the IQR.

(b) Find the lower and upper limits (fences) for outliers.

(c) Which of these waiting times would be outliers: 5, 10, 38, 42?

Question 7

The number of push-ups 16 students did in one minute is shown in order:

12, 15, 18, 20, 21, 22, 24, 25, 27, 28, 30, 32, 33, 35, 40, 44

(a) Find the five-number summary.

(b) Show that there are no outliers (use the 1.5 × IQR rule).

(c) Draw a box plot of the data on a scale from 10 to 50.

Question 8

Two Year 10 classes sat the same test, marked out of 50. Their five-number summaries are:

	Minimum	Q_1	Median	Q_3	Maximum
Class A	18	28	34	40	48
Class B	22	31	36	39	45

(a) Which class has the higher median?

(b) Find the IQR for each class.

(c) Find the range for each class.

(d) Which class had more consistent results? Give a reason.

Question 9

The commute times (in minutes) of workers in two suburbs, Northvale and Southbank, are summarised below.

	Minimum	Q_1	Median	Q_3	Maximum
Northvale	10	22	30	38	55
Southbank	15	30	42	50	70

State whether each statement is true or false.

(a) The median commute in Southbank is 12 minutes longer than in Northvale.

(b) About 75% of Southbank workers commute for 30 minutes or more.

(c) Northvale has the larger interquartile range.

(d) The range of Southbank commute times is 50 minutes.

Question 10

For each five-number summary (minimum, Q_1, median, Q_3, maximum), state whether the data is symmetric, positively skewed or negatively skewed.

(a) 2, 10, 12, 14, 22

(b) 5, 8, 10, 18, 35

(c) 20, 45, 52, 55, 58

Statistics: answers

Question 1

Answer: (a) 10 ((9 + 11)/(2)) (b) 15 (18 - 3)

Question 2

Answer: (a) 28 (b) 13 (31 - 18)

Question 3

Answer: (a) 5.5 ((4 + 7)/(2)) (b) 15 ((13 + 17)/(2)) (c) 9.5

Question 4

Answer: (a) 50% (b) about 30 people (c) about 15 people

Question 5

Answer: minimum 17, $Q_1 = 20$, median 23.5, $Q_3 = 26.5$, maximum 30 (ordered: 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 29, 30)

Question 6

Answer: (a) 8 minutes (b) lower limit 8, upper limit 40 (20 - 12 and 28 + 12) (c) 5 and 42

Question 7

Answer: (a) 12, 20.5, 26, 32.5, 44 (b) IQR = 12; limits are 20.5 - 18 = 2.5 and 32.5 + 18 = 50.5; all values lie between these, so no outliers. (c) Box from 20.5 to 32.5 with a line at 26; whiskers to 12 and 44.

Question 8

Answer: (a) Class B (b) A: 12, B: 8 (c) A: 30, B: 23 (d) Class B, because its IQR and range are both smaller, so its marks are less spread out.

Question 9

Answer: (a) true (b) true (c) false (Northvale 16, Southbank 20) (d) false (it is 55 minutes)

Question 10

Answer: (a) symmetric (b) positively skewed (also accept skewed right) (c) negatively skewed (also accept skewed left)