GENERAL MATHEMATICS 2024

Unit 3
Key Topic Test 2 – Data Analysis Investigating association between 2 variables

Recommended writing time*: 45 minutes
Total number of marks available: 25 marks

SOLUTIONS

SECTION A – Multiple Choice (1 mark per question)

Question 1
Answer: B

As data is non symmetrical, IQR is a more accurate measure of spread.
Worm A IQR = 2.05
Worm B IQR = 2

Question 2
Answer: C

Median is a more appropriate measure of centre.
Median Worm A = 14.1
Median Worm B = 14.4

Worm B has a higher centre as demonstrated by the median.

Question 3
Answer: D

$$\frac{220}{400} \times 100 = 55\%$$

Question 4
Answer: C

$$\% \ males \ (disagree) = \frac{40}{400} \times 100 = 10\%$$
$$\% \ females \ (disagree) = \frac{90}{300} \times 100 = 30\%$$

There is a significant difference here, so this supports a relationship exists

Question 5
Answer: D

Age group = ordinal
Type of camping = nominal

SECTION B – Short Answer

Question 1

    a. Age group is the explanatory variable

<div align="right">1 mark</div>

    b. $\frac{44}{100} \times 420 = 184.8$

        ≈ 185 people

<div align="right">1 mark</div>

    c. Yes, there is a significant difference in the percentage of single never married people for each age group; under 50 much higher at 22% compared to 50 and over with 8 %

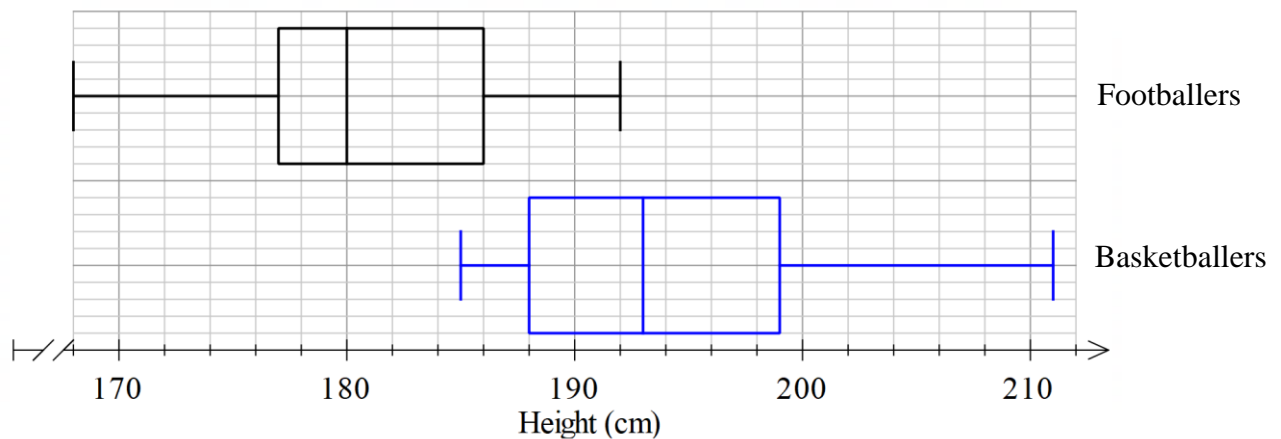<div align="right">2 marks
Total 4 marks</div>

Question 2

    a. $\bar{x} = 180.7$ cm

<div align="right">1 mark</div>

    b.

Minimum	Q_1	Median	Q_3	Maximum
185	**188**	**193**	**199**	**211**

<div align="right">2 marks for table</div>

Footballers

Basketballers

Height (cm)

<div align="right">2 marks for plot</div>

    c. The centre of heights for basketballers is **significantly higher**, with a **median** height of **192 cm compared to 180 cm** for footballers.

<div align="right">2 marks</div>

    d. The spread of heights for basketballers is **higher**, with an **interquartile range of 11cm, compared** to footballers with an **interquartile range of 9**.

<div align="right">2 marks</div>

    e. The heights of the 10 basketballers have a positively skewed distribution with no outliers.

<div align="right">1 mark</div>
<div align="right">Total 10 marks</div>

Question 3

    a. Group B has a slightly higher spread than Group A, with an interquartile range of 7 minutes compared to 5.5 minutes.

<div align="right">2 marks</div>

    b. Group B has a significantly higher centre, with a median of 23 minutes compared to Group A median of 10.5 minutes.

<div align="right">2 marks</div>

    c. The data does support the contention that there is a relationship between someone's ability to complete a problem solving activity and the activity they were doing immediately before it as there is a significant difference in the median completion time for the two types of activities, with Group B far higher median of 23 minutes compared to Group A median of 10.5 minutes.

<div align="right">2 marks</div>
<div align="right">Total 6 marks</div>

END OF KEY TOPIC TEST SOLUTIONS