BECA / IB Math 02-Descriptive Statistics Name:
19 November 2021

2.1: Box and whisker plots

1. Find the 5-figure summary statistics of the following data (without a calculator):

   5 14 3 6 15 11 9 7 14

   (a) Rewrite the data in order.

   (b) Minimum =

   (c) 1st Quartile =

   (d) Median =

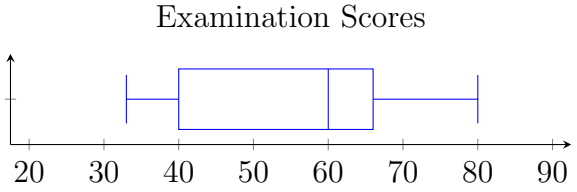
   (e) 3rd Quartile =

   (f) Maximum =

   (g) Range =

   (h) IQR =

2. The box-and-whisker plot represents the examination scores of a group of students.



   (a) Write down each value: [1 marks]

   i. median = ii. Q_1 = iii. max =

   The range of the scores is 47 marks, and the interquartile range is 26 marks.

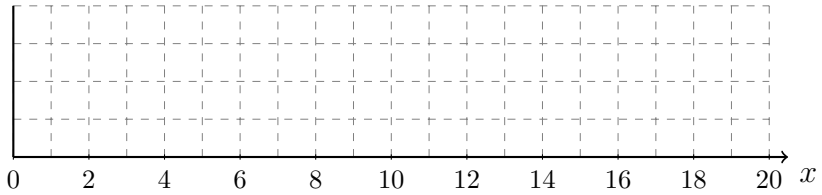
   (b) Find the value of

   i. the minimum score; [2 marks]

   ii. the third quartile. [2 marks]

3. Draw a box and whiskers plot of the five-figure summary on the grid. Use a ruler for full credit. [2 marks]

   min = 2, $Q_1 = 5$, median = 9, $Q_3 = 13$, maximum = 16



4. Given the following set of 15 data:

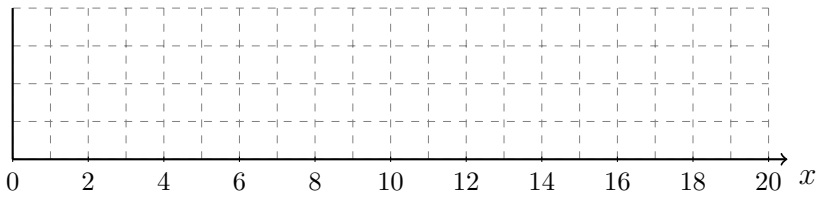
   3, 4, 4, 5, 5, 5, 6, 8, 9, 11, 11, 15, 15, 16, 17

   (a) Write down the mode [1 marks]

   (b) Find the median. [1 marks]

   (c) Find the interquartile range. [2 marks]

   (d) Draw a box and whiskers plot of the data on the axis below. [2 marks]



   (e) Find the mean. [2 marks]

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5. Consider the following frequency table.

x	Frequency
10	2
11	6
12	11
13	12
14	8
15	3

(a) Write down the mode [1 marks]

(b) Find the value of the range. [2 marks]

(c) Find the value of the mean. [2 marks]

(d) Find the value of the standard deviation. [2 marks]

6. A box contains 100 cards. Each card has a number between one and six written on it. The following table shows the frequencies for each number.

Number	1	2	3	4	5	6
Frequency	26	10	20	k	29	11

(a) Calculate the value of k. [3 marks]

(b) Find

i. the median; [2 marks]

ii. the interquartile range. [3 marks]

7. There are 250 high school students at BECA ranging in age from 13 to 18 years old. The following table shows the frequencies of each age.

Age (years)	13	14	15	16	17	18
Frequency	27	53	60	55	43	12

(a) Write down the mode. [1 mark]

(b) Find the value of the range. [1 marks]

(c) Find the median. [1 marks]

(d) Find the mean. [2 marks]

(e) Find the standard deviation. [2 marks]

(f) Four years later the same 250 people have moved on to college and career. Find the new values of the

i. mean; [1 marks]

ii. standard deviation. [1 marks]

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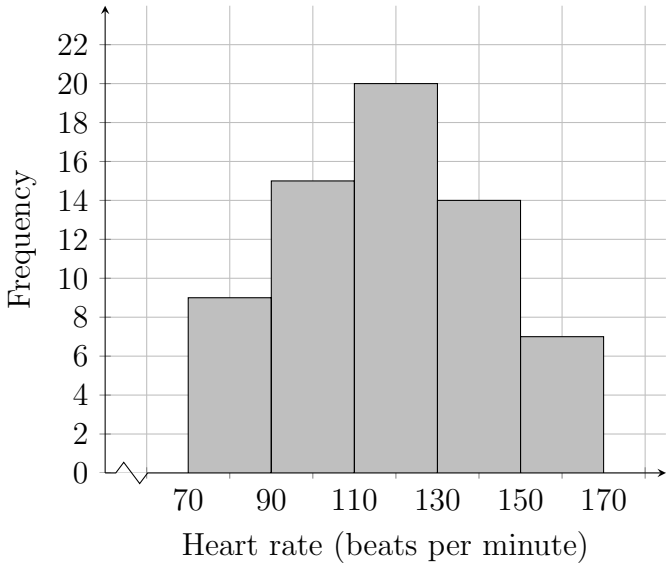
8. The histogram below shows the heart rate x in beats per minute for 65 athletes after a fitness exercise.



The following is the frequency table for the distribution of x.

HR (x)	$70 \leq x < 90$	$90 \leq x < 110$	$110 \leq x < 130$	$130 \leq x < 150$	$150 \leq x < 170$
Freq	9	p	20	14	7

(a) Write down the value of p. [1 mark]

(b) Write down the modal class. [2 marks]

(c) What percentage of the athletes have a heart rate of 130 beats per minute or greater? [2 marks]

(d) Consider the class interval $70 \leq x < 90$.

i. Write down the interval width. [1 mark]

ii. Write down the mid-interval value. [1 mark]

(e) Hence find an estimate for the

i. mean; [2 marks]

ii. standard deviation. [2 marks]

9. The scores of 30 students taking an IB Paper 2 are shown in the frequency table below.

Mark (x)	$10 \leq x < 30$	$30 \leq x < 50$	$50 \leq x < 70$	$70 \leq x < 90$
Frequency	8	12	7	3

(a) Write down the modal class. [1 mark]

(b) Estimate the mean score $\overline{x}$. [3 marks]

(c) Estimate the standard deviation of the scores, σ. [3 marks]