

Surname	
Other Names	
Candidate's Signature	

## GCSE 9 - 1 Questions

### Box Plots 2

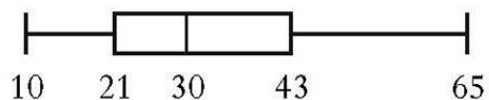
**Calculator Allowed**

#### INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

**Total Marks :**

- 1) The boxplot, drawn below, shows the marks scored by pupils in a class test.



- (i) State the median mark.

(1)

- (ii) State the interquartile range.

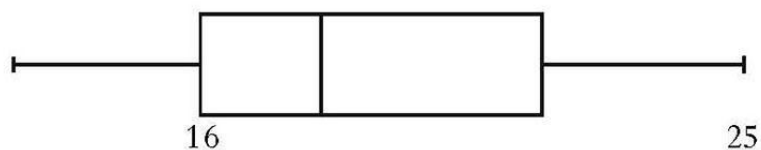
(1)

- 2) A child health survey monitors the ages at which young children can build a tower of four wooden blocks.

The ages (in months) of a group of children are shown below.

23 16 14 20 18 17 16 20 17 19 13 25 24

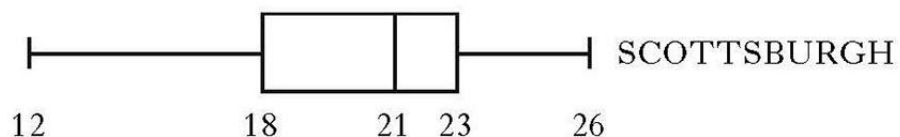
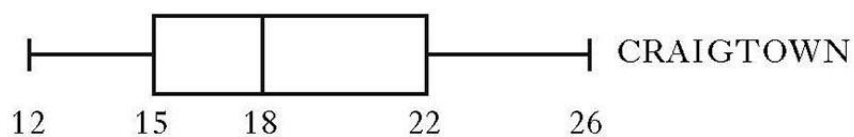
Complete the boxplot, drawn below, to show this information.



[3]

- 3) The temperatures (in  $^{\circ}\text{C}$ ) were recorded at noon each day in August at Craigtown and Scottsburgh.

The results are shown in the boxplots below.



- (a) Calculate the interquartile range of the temperatures in Craigtown.

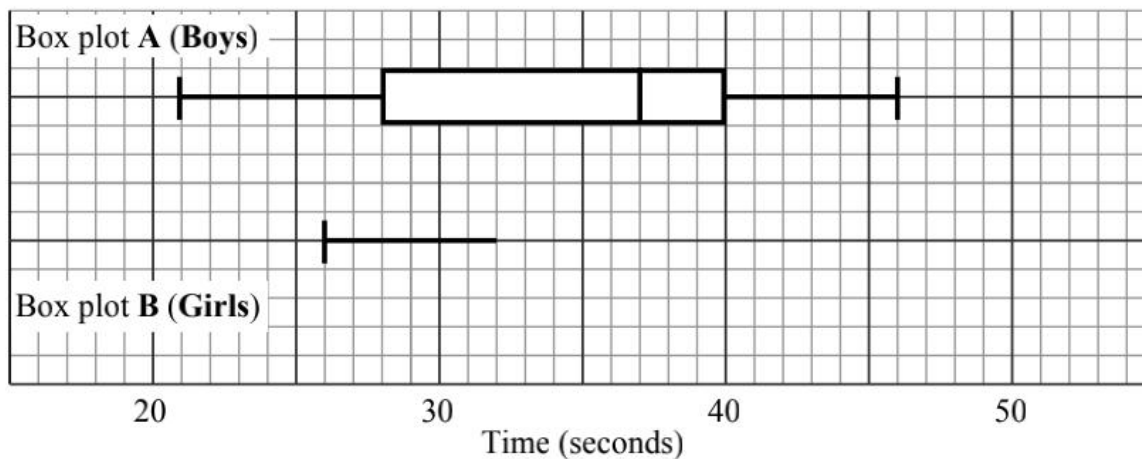
2

- (b) Explain how you can tell from the boxplots that the statement below is true.

“On average, the temperatures in Scottsburgh are higher and they tend to be more consistent.”

2

- 4) A group of **boys** took part in a sack race organised during a village fun day. The box plot **A** shows the distribution of the times in seconds taken by the **boys** to complete the race.



- (a) What **percentage** of the **boys** took **more** than 40 seconds to complete the race?
- (b) A different race for **girls** was also organised. Below is some information about the distribution of the times in seconds taken by the girls to complete the race.

A **quarter** of the girls took 32 seconds or **less**, the **fastest** taking 26 seconds.  
 A **quarter** of the girls took 43 seconds or **more**, the **slowest** taking 50 seconds.  
 The **median** time was 42 seconds.

Complete box plot **B** to show this information.

(c) Which **one** of the following statements is **true**? **Explain** your answer by **referring** to the **box plots**.

- (i) "The **boys'** times are generally **faster** than the girls' ".
- (ii) "The **girls'** times are generally **faster** than the boys' ".

(d) The **central half** of the data shows that:

"the spread of the times for boys and girls are almost the same".

(i) What **feature** of the **box plots** shows that this statement is **true**?

(ii) What is the **central half** of the data called?

- A) Upper quartile    B) Interquartile range    C) Median    D) Range

[8 marks]

5) The number of podcasts Omar downloaded each month for a year is shown in the table below.

12	34	19	22	9	13
21	19	5	26	10	28

(a) For this data, calculate:

the median

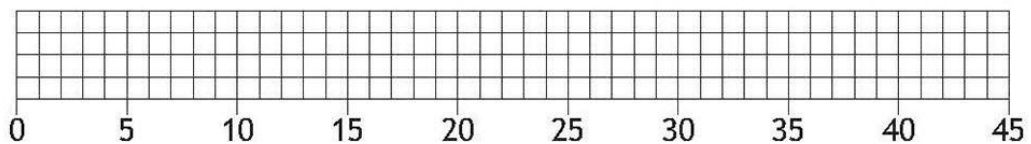
the lower quartile

the upper quartile.

2

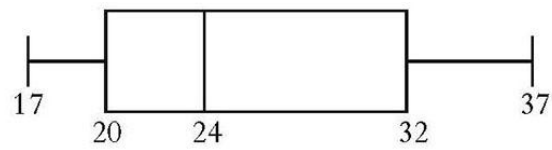
(b) Construct a boxplot for this data.

2



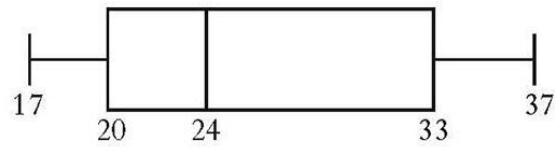
6) A book club has **seven** members.

The ages of the members have been used to construct the following boxplot.



After an **eighth** member joins the club, a new boxplot is drawn.

This boxplot is shown below.



What age is the eighth member?

2

7) Sandi takes the bus to work each day.

Over a two week period, she records the number of minutes the bus is late each day. The results are shown below.

5 6 15 0 6 11 2 9 8 7

(a) From the above data, find:

(i) the median;

**1**

Answer.....

(ii) the lower quartile;

**1**

Answer.....

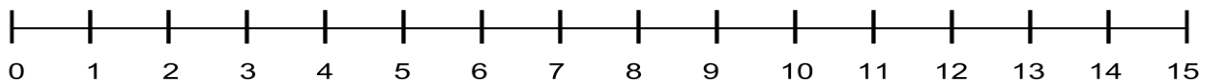
(iii) the upper quartile.

**1**

Answer.....

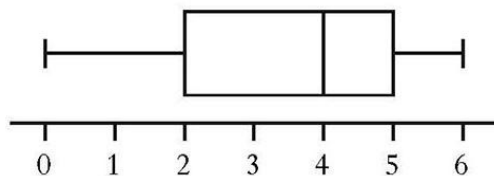
(b) Use the above data to construct a boxplot.

**2**



Sandi decides to take the train over the next two week period and records the number of minutes the train is late each day.

The boxplot, drawn below, was constructed for the new data.

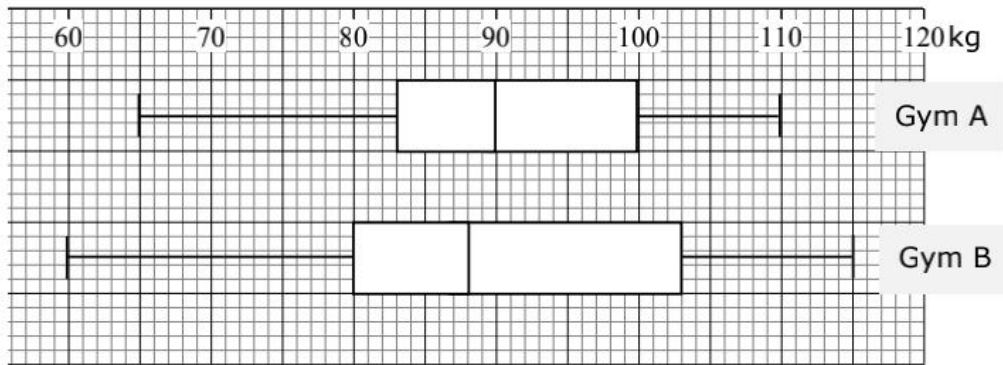


(c) Compare the two boxplots and comment.

**1**



8) The two box-and-whisker plots show the distribution of the weights of the members of Gym A and Gym B.



(a) What is the median weight of the members of Gym A?

Ans: \_\_\_\_\_

(b) What percentage of the members of Gym A are below 83 kg?

Ans: \_\_\_\_\_

(c) What percentage of the members of Gym B are above 88 kg?

Ans: \_\_\_\_\_

(d) Calculate the interquartile range of the weights of the members in both gyms.

Ans: Gym A \_\_\_\_\_

Ans: Gym B \_\_\_\_\_

(e) In which gym are the weights of the members more spread out? Explain your answer.

Ans: \_\_\_\_\_

Reason: \_\_\_\_\_

(f) In which gym are the members heavier overall? Explain your answer.

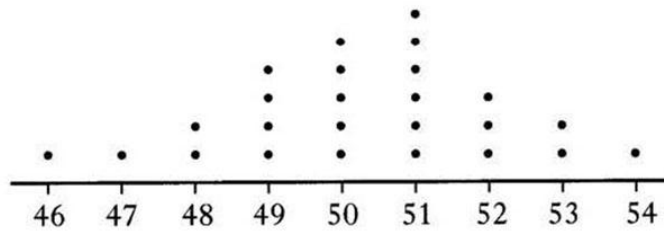
Ans: \_\_\_\_\_

Reason: \_\_\_\_\_

(10 marks)

9) The number of chocolates in each box from a sample of 25 boxes was counted.

The results are displayed in the dotplot below.



(a) For this sample find:

(i) the median;

**1**

Answer.....

(ii) the lower quartile;

**1**

Answer.....

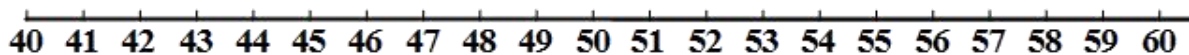
(iii) the upper quartile.

**1**

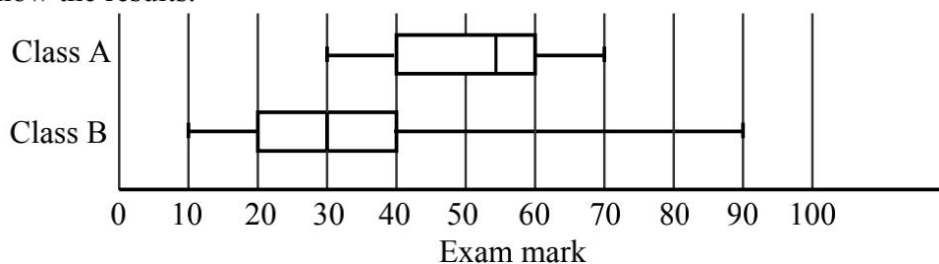
Answer.....

(b) Use the above data to construct a boxplot.

**2**



- 10) Two groups of students in class A and class B sat for the **same** exam. The box plots below show the results.



- (i) Give an **estimate** for the **percentage** of students in **class A** who obtained a mark of over 60.

\_\_\_\_\_

- (ii) **First prize** is awarded to the student who obtains the **highest** mark in the exam.

The **winner** of the **first prize** was from class \_\_\_\_\_ and the **highest** mark obtained was \_\_\_\_\_.

- (iii) "**On the whole** the marks for class A are **higher** than those for class B."  
Do you agree with the above statement? **Give reasons.**

[11 marks]

11) A sample of students was asked how many times each had visited the cinema in the last three months.

The results are shown below.

4 5 4 1 4 3 2 2 4 6 2  
3 4 4 1 3 1 2 3 1 1

(a) For this sample find:

(i) the median;

1

Answer.....

(ii) the lower quartile;

1

Answer.....

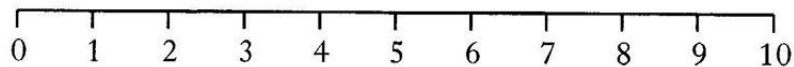
(iii) the upper quartile.

1

Answer.....

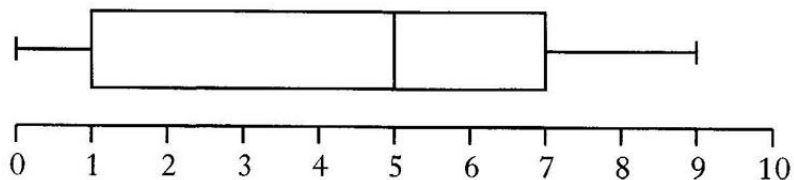
(b) Use the above data to construct a boxplot.

2



(c) The same sample of students was asked how many times each had attended a football match in the same three months.

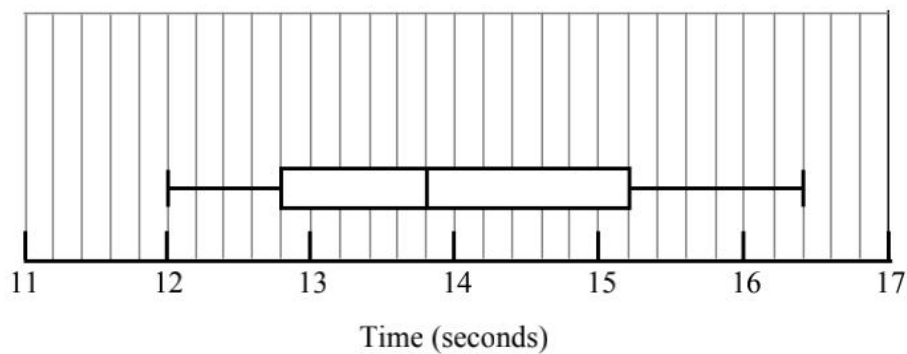
The boxplot below was drawn for this data.



Compare the two boxplots and comment.

1

12) The box plot for the times taken by a group of boys to run 100 metres is shown below.



(a) Fill in.

**fastest** time = \_\_\_\_\_ seconds

**median** time = \_\_\_\_\_ seconds

(b) What **percentage** of the boys ran the 100 metres in **less** than 12.8 seconds?

\_\_\_\_\_ %

(c) Work out the **interquartile** range.

interquartile range = \_\_\_\_\_ seconds

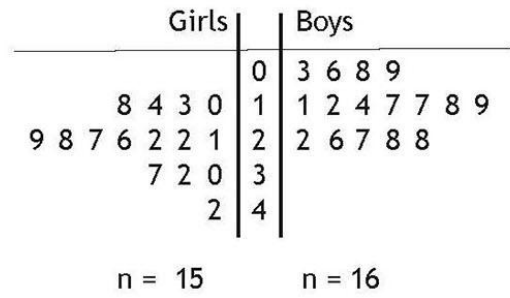
After a month training with an athletics coach, the boys obtained the following times (in seconds)

Fastest time	Lower quartile	Median	Upper Quartile	Slowest time
11.4	12.2	13.0	14.8	16.8

- (d) **Using the same scale and axes**, draw another box plot to show this data.
- (e) Do you think that the training was effective in improving the boys' time? Give reasons for your answer.

[10 marks]

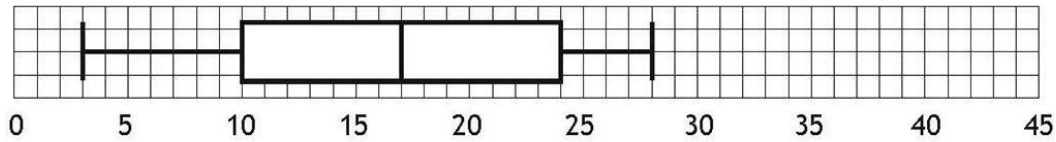
- 13) This back-to-back stem and leaf diagram represents the number of hours a class spends on social networking websites in a week.



KEY

$3 \mid 1$  represents 13 hours  
 $2 \mid 5$  represents 25 hours

- (a) A boxplot is drawn to represent one set of data.



Which set of data does this represent?

**Give a reason for your answer.**

1

- (b) For the other set of data, state:

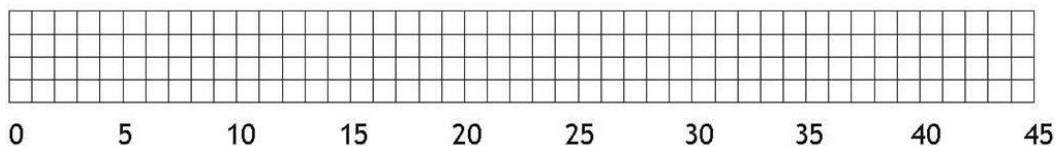
the median

the lower quartile

the upper quartile

2

- (c) Construct a box plot for the second set of data.



2