Name: SOLUTIONS

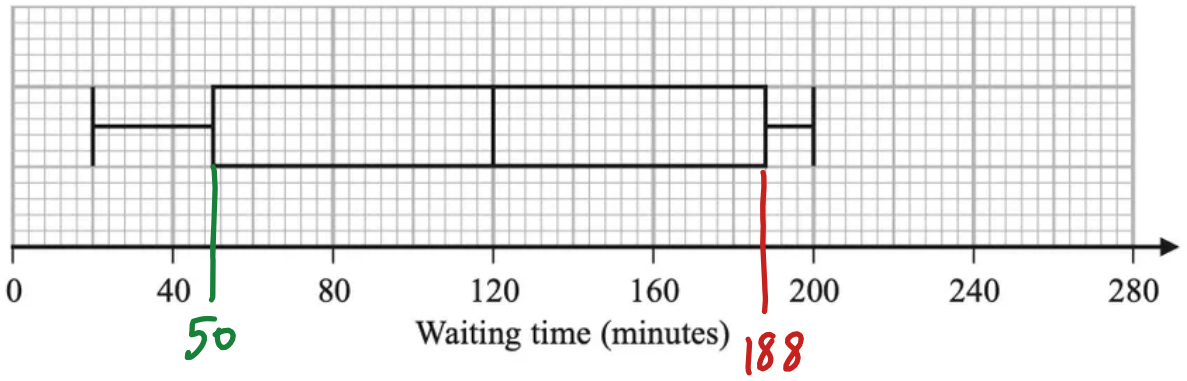
GCSE (1 - 9) Box Plots	Solutions:

These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***November 2021*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk
These worksheets were made using examq.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2021, Paper 2H, Q9
2	Edexcel, GCSE, Autumn 2020, Paper 2H, Q9
3	Edexcel, GCSE, Autumn 2019, Paper 2H, Q11
4	Edexcel, GCSE, Autumn 2019, Paper 3H, Q12
5	Edexcel, GCSE, Autumn 2018, Paper 1H, Q9
6	Edexcel, GCSE, Summer 2018, Paper 1H, Q10
7	Edexcel, GCSE, Autumn 2017, Paper 1H, Q12
8	Edexcel, GCSE, Summer 2017, Paper 3H, Q9

1

The box plot shows information about the length of time, in minutes, some people waited to see a doctor at a hospital on Monday.



(a) Work out the interquartile range of the information in the box plot.

188 - 50 = 138

..... minutes

(2)

Becky says,

"50% of the people waited for at least 2 hours."

(b) Is Becky correct?
Explain why.

Yes, with reason

Acceptable examples

Yes, because the median is at 2 hour (120 min)

Yes, since 50% is at the 2 hour mark

Yes, because the middle is at 2 hours

Not acceptable examples

No ….

The median is at the 2 hour mark

Yes, because 50% is exactly half way between "188 " and "50"

(1)

The table gives information about the length of time, in minutes, some people waited to see a doctor at the same hospital on Tuesday.

	Waiting time (minutes)
Shortest time	20
Lower quartile	50
Median	100
Upper quartile	140
Longest time	210

Becky was asked to compare the distribution of the lengths of times people waited on Monday with the distribution of the lengths of times people waited on Tuesday.

She wrote,

"People had to wait longer on Tuesday than on Monday."

(c) Give **one** reason why Becky may be wrong.

Acceptable examples

The median is lower on Tuesday (higher on Monday)

The upper quartile is lower on Tuesday (higher on Monday)

There may just have been one person waiting for 210 mins

We don't know how many people were waiting for each time **(1)**

(Total for Question 9 is 4 marks)

[Edexcel, GCSE, Autumn 2021, Paper 2H, Q9]

Not acceptable examples

The range is bigger for Tuesday (smaller for Monday)

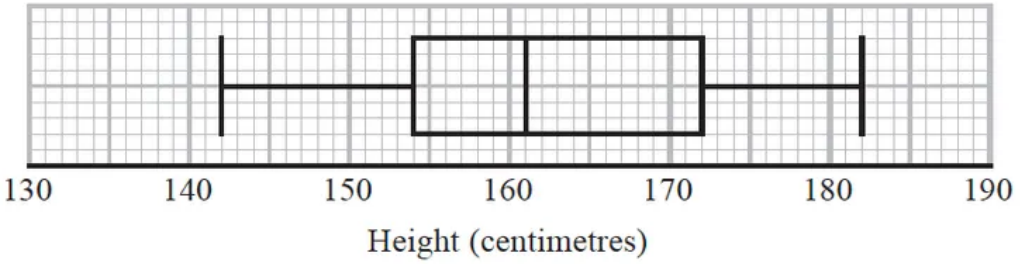
The IQR is smaller for Tuesday (bigger for Monday)

2

Aisha recorded the heights, in centimetres, of some girls.
She used her results to work out the information in this table.

Least height	142 cm
Lower quartile	154 cm
Interquartile range	17 cm
Median	162 cm
Range	40 cm

Aisha drew this box plot for the information in the table.
The box plot is **not** fully correct.



Write down the two things Aisha should do to make the box plot fully correct.

Plot the median at 162, not 161.

Plot the upper quartile at 171, not 172.

Acceptable examples
the median has been plotted at 161 / upper quartile at 172
the upper quartile should be 171 (not 172)
UQ is wrong as IQR is 17 not 18

(Total for Question 9 is 2 marks)

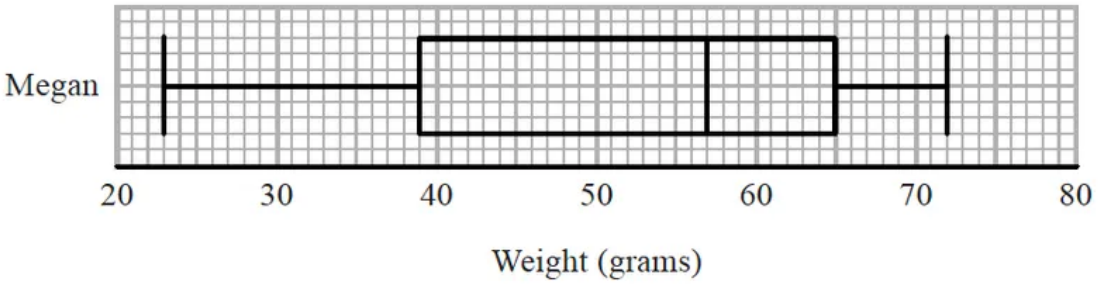
[Edexcel, GCSE, Autumn 2020, Paper 2H, Q9]

Not acceptable examples
the median / upper quartile have been plotted / drawn wrong
the upper quartile has been worked out incorrectly
She needs to work out the UQ

3

Megan grows potatoes.

The box plot below shows information about the weights of Megan's potatoes.



Megan says that half of her potatoes weigh less than 50 grams each.

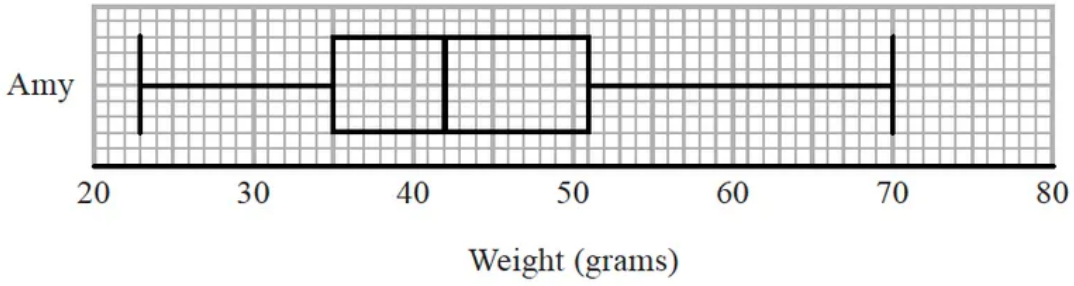
(a) Is Megan correct?
Give a reason for your answer.

No. The median is 57.

(1)

Amy also grows potatoes.

The box plot below shows information about the weights of Amy's potatoes.



(b) Compare the distribution of the weights of Megan's potatoes with the distribution of the weights of Amy's potatoes.

Megan's median weight of potatoes is 57g which is more than Amy's median weight of 42g.

The interquartlie range of weight of Megan's potatoes is 26g which is more than Amy's interquartile range of 16g.

Simply quoting values for median, range and IQR is insufficient, they must be compared

Figures given must be correct.
Comparisons can relate to the range or the IQR

(2)

(Total for Question 11 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 2H, Q11]

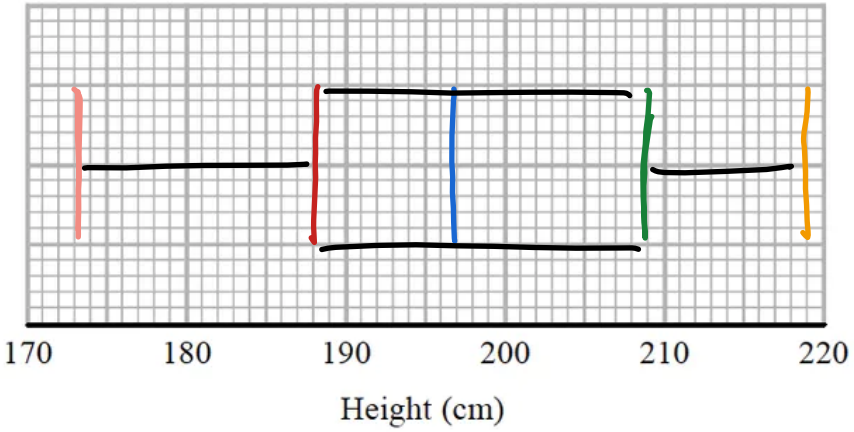
4

The stem and leaf diagram shows information about the heights, in cm, of 23 sunflowers.

17	3	4	9				
18	6	8	8				
19	0	0	1	4	6	7	8
20	1	4	7	7	9	9	
21	4	8	8	9			

Key: 17|3 represents 173 cm

On the grid, draw a box plot for this information.



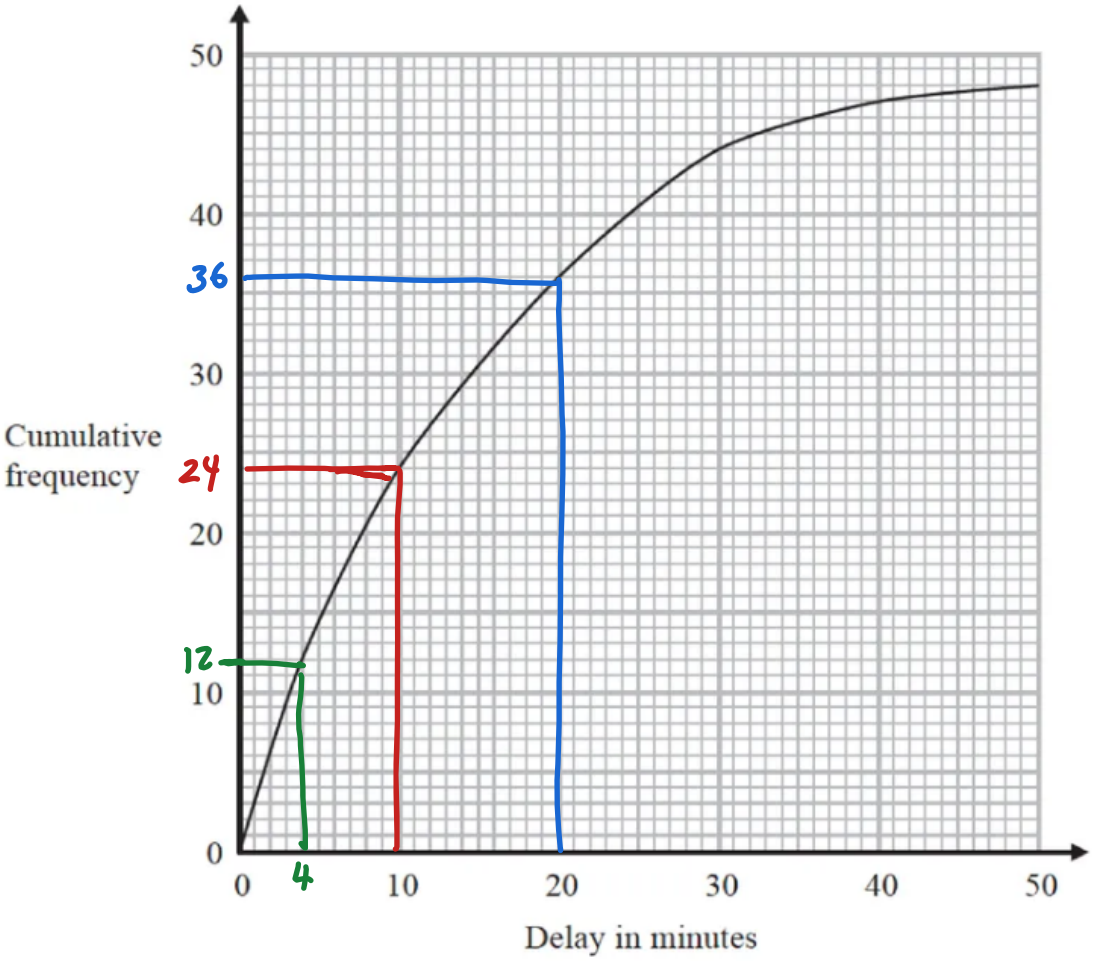
(Total for Question 12 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 3H, Q12]

5

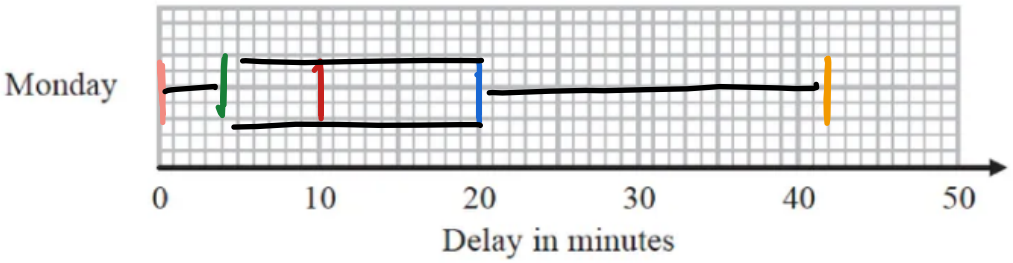
The times that 48 trains left a station on Monday were recorded.

The cumulative frequency graph gives information about the numbers of minutes the trains were delayed, correct to the nearest minute.



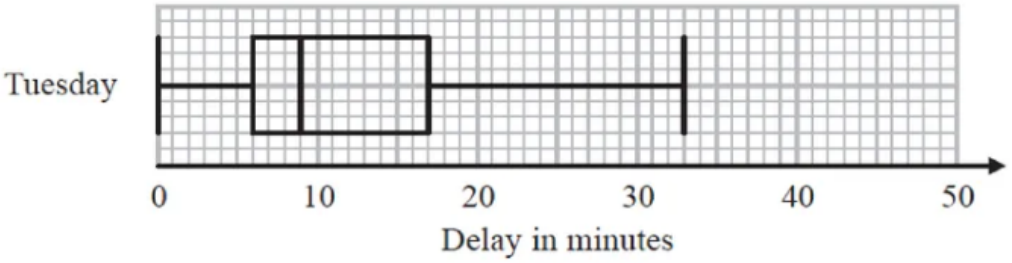
The shortest delay was 0 minutes.
The longest delay was 42 minutes.

(a) On the grid below, draw a box plot for the information about the delays on Monday.



(3)

48 trains left the station on Tuesday.
The box plot below gives information about the delays on Tuesday.



(b) Compare the distribution of the delays on Monday with the distribution of the delays on Tuesday.

The median delay on Mondays was 10 minutes which is more than the median delay of 9 minutes on Tuesday.

The range of delays on Monday was 42 minutes which is more than the range on Tuesday of 33 minutes.

(2)

Mary says,

"The longest delay on Tuesday was 33 minutes.
This means that there must be some delays of between 25 minutes and 30 minutes."

(c) Is Mary right?
You must give a reason for your answer.

'No' with statement explaining that there might not be any delays between 25 minutes and 30 minutes as in the upper 25% (12 trains) the delays may all be between 17 and 25 or 30 and 33

(1)

(Total for Question 9 is 6 marks)

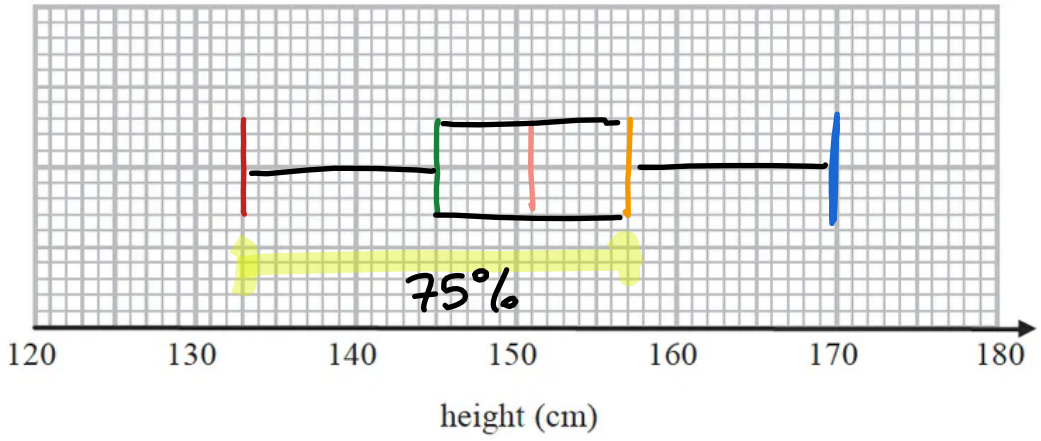
[Edexcel, GCSE, Autumn 2018, Paper 1H, Q9]

6

The table gives some information about the heights of 80 girls.

Least height	133 cm
Greatest height	170 cm
Lower quartile	145 cm
Upper quartile	157 cm
Median	151 cm

(a) Draw a box plot to represent this information.



(3)

(b) Work out an estimate for the number of these girls with a height between 133 cm and 157 cm.

75% of 80 = 60

60

(2)

(Total for Question 10 is 5 marks)

[Edexcel, GCSE, Summer 2018, Paper 1H, Q10]

7

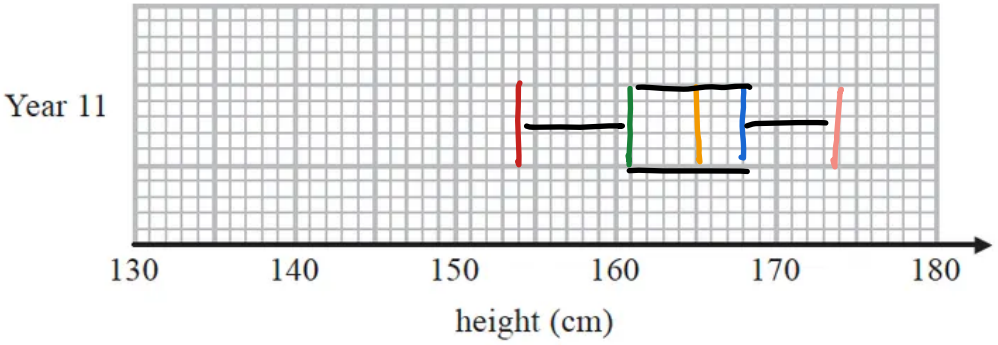
The table shows information about the heights, in cm, of a group of Year 11 girls.

	height (cm)
least height	154
median	165
lower quartile	161
interquartile range	7
range	20

upper quartile = 168

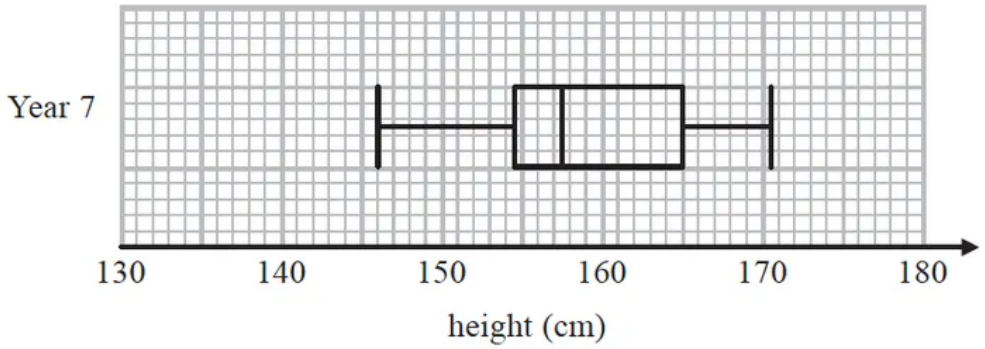
greatest height = 174

(a) Draw a box plot for this information.



(3)

The box plot below shows information about the heights, in cm, of a group of Year 7 girls.



(b) Compare the distribution of heights of the Year 7 girls with the distribution of heights of the Year 11 girls.

The median height of year 11 girls is 165cm which is more than the median height of year 7 girls (157.5cm)

The range of height for year 11 girls is 20cm which is less than the range of height of year 7 girls (24.5cm)

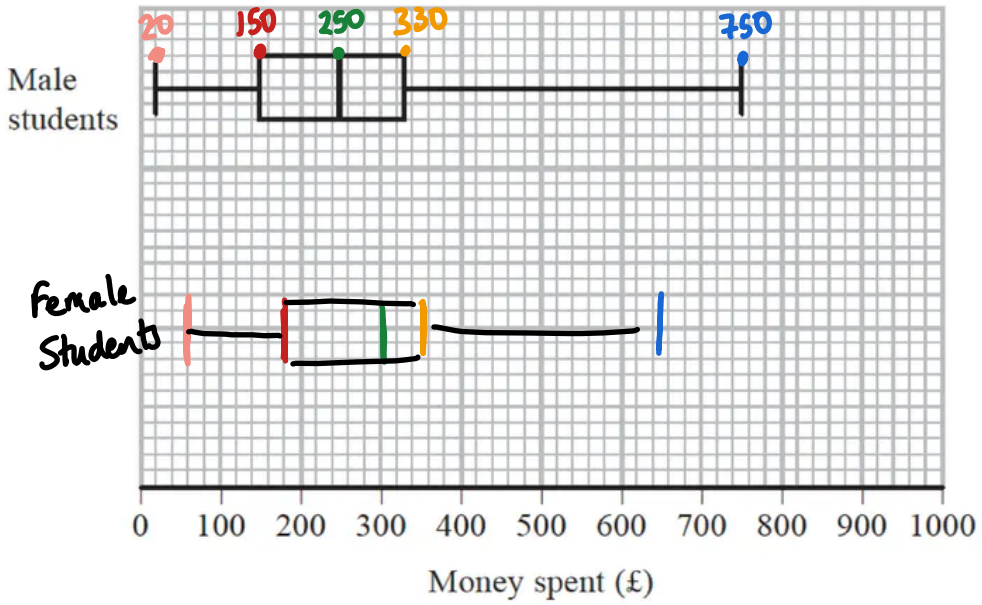
(2)

(Total for Question 12 is 5 marks)

[Edexcel, GCSE, Autumn 2017, Paper 1H, Q12]

8

The box plot shows information about the distribution of the amounts of money spent by some male students on their holidays.



(a) Work out the interquartile range for the amounts of money spent by these male students.

330 - 150 = 180

£.....

(2)

The table below shows information about the distribution of the amounts of money spent by some female students on their holidays.

	Smallest	Lower quartile	Median	Upper quartile	Largest
Money spent (£)	60	180	300	350	650

(b) On the grid above, draw a box plot for the information in the table.

(2)

Chris says,

"The box plots show that the female students spent more money than the male students."

(c) Is Chris correct?
Give a reason for your answer.

Yes. The median amount spent by males is £250 whereas the median spend by females is more at £300.

(1)

(Total for Question 9 is 5 marks)

[Edexcel, GCSE, Summer 2017, Paper 3H, Q9]