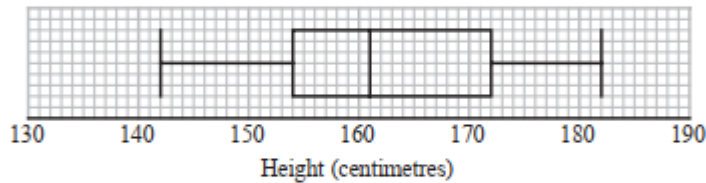**BOX PLOTS**

Pearson Edexcel – Thursday 4 June 2020 - Paper 2 (Calculator) Higher Tier

1.

9 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.

Height (centimetres)

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

1 ....

....

....

2 ....

....

....
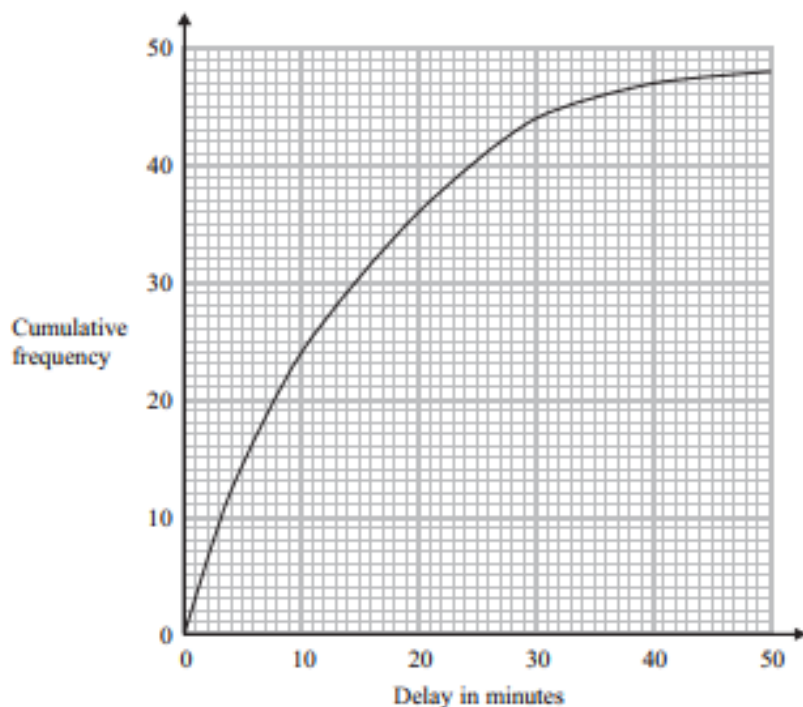
(Total for Question 9 is 2 marks)

Pearson Edexcel - Tuesday 6 November 2018 - Paper 1 (Non-Calculator) Higher Tier

2.

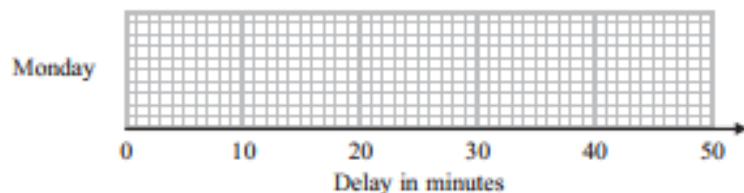**9** The times that 48 trains left a station on Monday were recorded.

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.
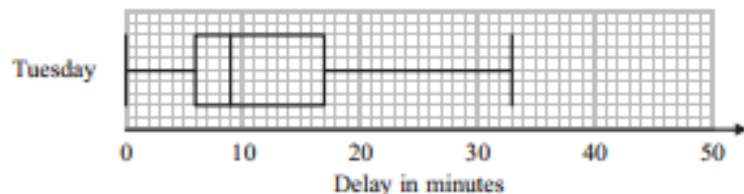The longest delay was 42 minutes.

(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.

....

....

....

....

(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.

....

....
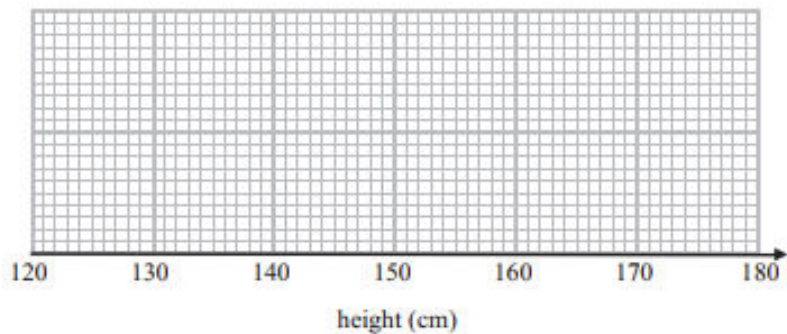
(1)

(Total for Question 9 is 6 marks)

Pearson Edexcel - Thursday 24 May 2018 - Paper 1 (Non-Calculator) Higher Tier

3.

10 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.

height (cm)

(3)

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

(2)

(Total for Question 10 is 5 marks)

Pearson Edexcel - Thursday 2 November 2017 - Paper 1 (Non-Calculator) Higher Tier

4.

12 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

(a) Draw a box plot for this information.

height (cm)

(3)
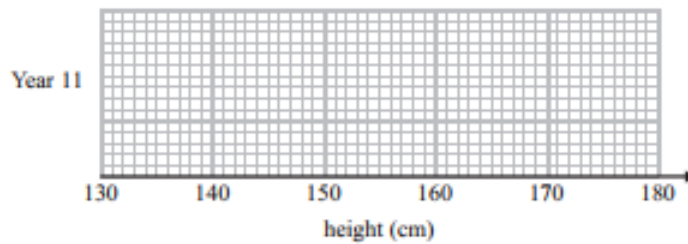
The box plot below shows information about the heights, in cm, of a group of Year 7 girls.
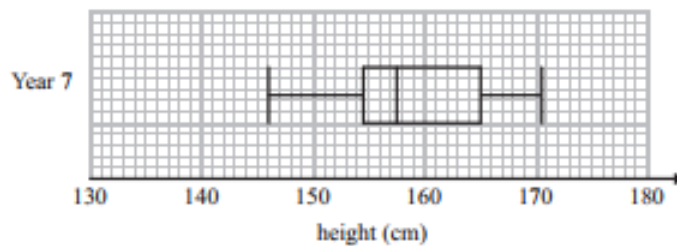
height (cm)

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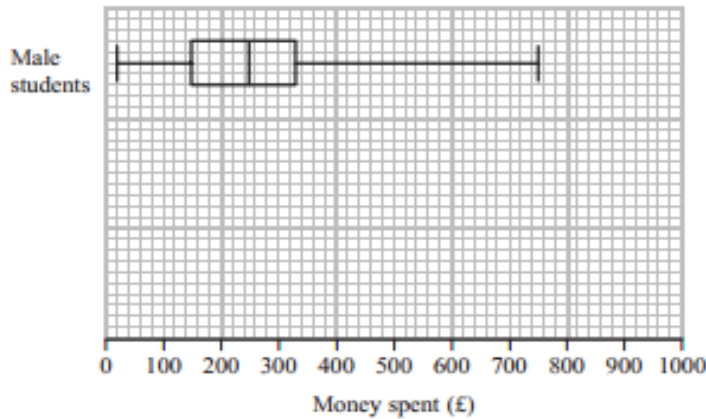
....

....

....

....

(2)

(Total for Question 12 is 5 marks)

Pearson Edexcel - Tuesday 13 June 2017 - Paper 3 (Calculator) Higher Tier

5.

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

Money spent (£)

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

£...
                                                                              (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.

....

....

....

....
                                                                              (1)

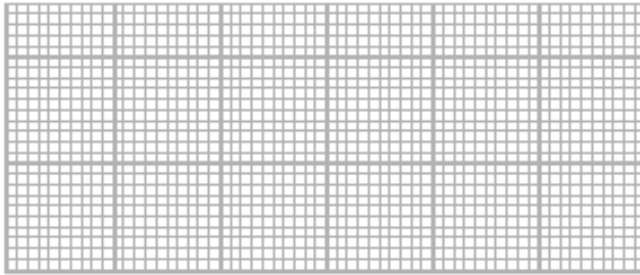   (Total for Question 9 is 5 marks)

Pearson Edexcel - Sample Paper 1 - (Non-Calculator) Higher Tier

6.

14 Ben played 15 games of basketball.
   Here are the points he scored in each game.

   17   18   18   18   19   20   20   22   23   23   23   26   27   28   28

   (a) Draw a box plot for this information.

   (3)

   Sam plays in the same 15 games of basketball.

   The median number of points Sam scored is 23
   The interquartile range of these points is 12
   The range of these points is 20

   (b) Who is more consistent at scoring points, Sam or Ben?
       You must give a reason for your answer.

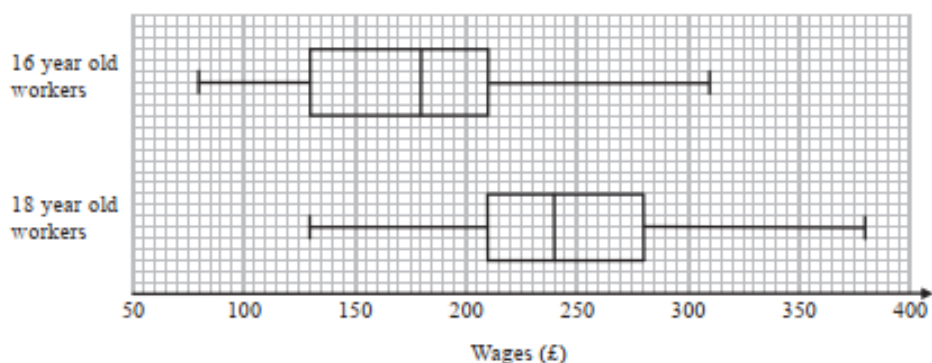   ....

   ....

   ....

   (2)

   (Total for Question 14 is 5 marks)

Pearson Edexcel - Thursday 26 May 2016 - Paper 1 (Non-Calculator) Higher Tier

7.

15 The box plots give information about the wages of a group of 16 year old workers and a group of 18 year old workers.

Wages (£)

*(a) Compare the distribution of the wages of the 16 year old workers with the distribution of the wages of the 18 year old workers.

There are 200 workers who are 16 years old.

(b) Work out an estimate for the number of these workers whose wages are £130 or more.

(2)

(Total for Question 15 is 5 marks)

Pearson Edexcel - Friday 6 November 2015 - Paper 2 (Calculator) Higher Tier

8.

18 The box plot shows information about the number of countries competing in each Winter Olympic Games since 1948

Number of countries in the Winter Olympics

(a) Write down the median.

....
(1)

(b) Work out the interquartile range.

....
(2)

The table below shows information about the number of countries competing in each Summer Olympic Games since 1948

	Smallest	Lower quartile	Median	Upper quartile	Largest
Number of countries	59	83	121	199	204

*(c) Compare the two distributions.

....

....

....

....
(2)

(Total for Question 18 is 5 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier

9.

15 The students in a class kept a record of the amount of time, in minutes, they spent doing homework last week.

The table shows information about the amount of time the girls spent doing homework last week.
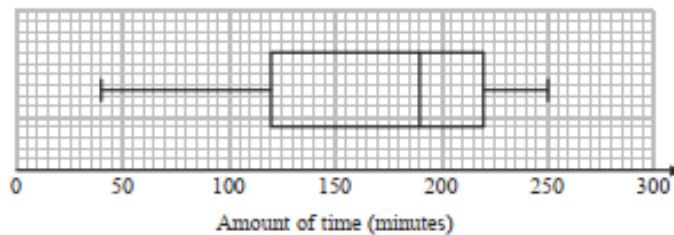
	Minutes
Least amount of time	60
Range	230
Median	170
Lower quartile	100
Upper quartile	220

(a) On the grid, draw a box plot for the information in the table.
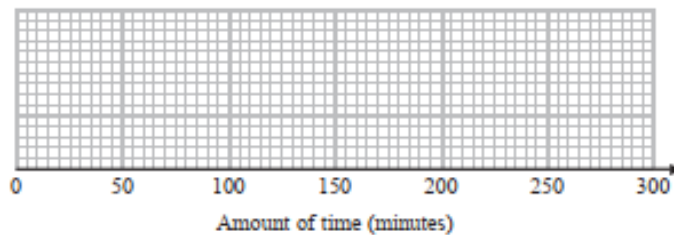
Amount of time (minutes)

(2)

The box plot below shows information about the amount of time the boys spent doing homework last week.

Amount of time (minutes)

*(b) Compare the amount of time the girls spent doing homework with the amount of time the boys spent doing homework.

....

....

....

....

(2)

(Total for Question 15 is 4 marks)

Pearson Edexcel - Monday 9 June 2014 - Paper 1 (Non-Calculator) Higher Tier

10.

16 Colin took a sample of 80 football players.

He recorded the total distance, in kilometres, each player ran in the first half of their matches on Saturday.

Colin drew this box plot for his results.

First half
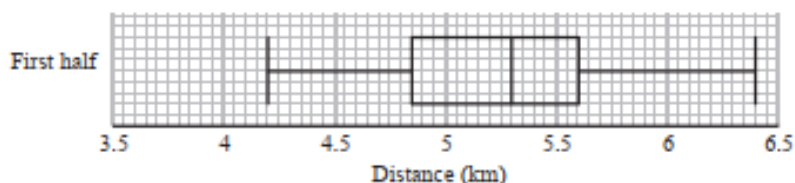
Distance (km)
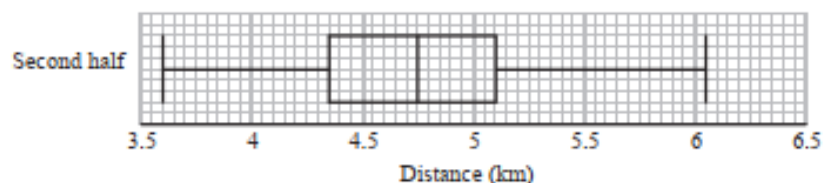
(a) Work out the interquartile range.

.... km

(2)

There were 80 players in Colin's sample.

(b) Work out the number of players who ran a distance of more than 5.6 km.

....

(2)

Colin also recorded the total distance each player ran in the second half of their matches.

He drew the box plot below for this information.

Second half

Distance (km)

(c) Compare the distribution of the distances run in the first half with the distribution of the distances run in the second half.

....

....

....

....

(2)

(Total for Question 16 is 6 marks)

Pearson Edexcel - Wednesday 6 November 2013 - Paper 1 (Non-Calculator) Higher Tier

11.

18 The cumulative frequency graph shows information about the times 80 swimmers take to swim 50 metres.
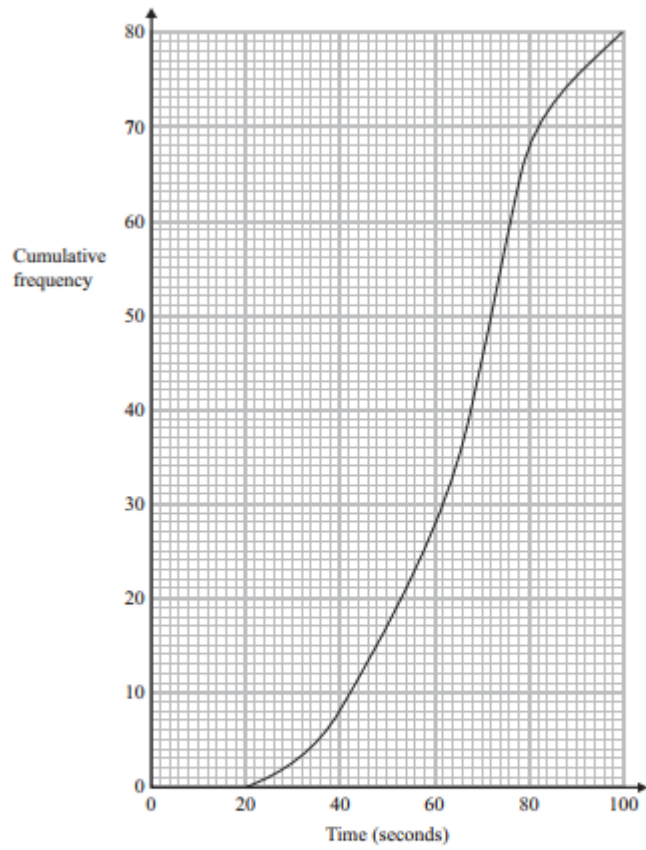
(a) Use the graph to find an estimate for the median time.

.... seconds

(1)

A swimmer has to swim 50 metres in 60 seconds or less to qualify for the swimming team.

The team captain says,

"More than 25% of swimmers have qualified for the swimming team."
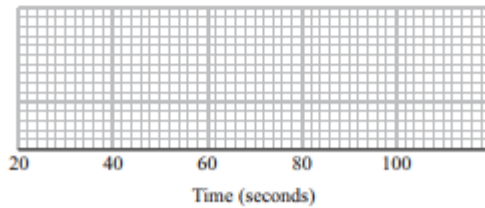
*(b) Is the team captain right?

You must show how you got your answer.

(3)

For these 80 swimmers

the least time taken was 28 seconds
and the greatest time taken was 96 seconds.

(c) Use the cumulative frequency graph and the information above to draw a box plot for the times taken by the swimmers.

Time (seconds)

(3)

(Total for Question 18 is 7 marks)

Pearson Edexcel - Friday 14 June 2013 - Paper 2 (Calculator) Higher Tier

12.

17 Some girls did a sponsored swim to raise money for charity.

The table shows information about the amounts of money (£) the girls raised.

Least amount of money (£)	10
Greatest amount of money (£)	45
Median	25
Lower quartile	16
Upper quartile	42

(a) On the grid, draw a box plot for the information in the table.
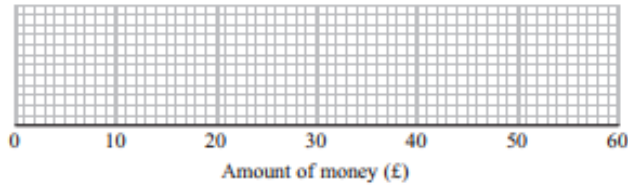
Amount of money (£)

(2)

Some boys also did the sponsored swim.

The box plot shows information about the amounts of money (£) the boys raised.
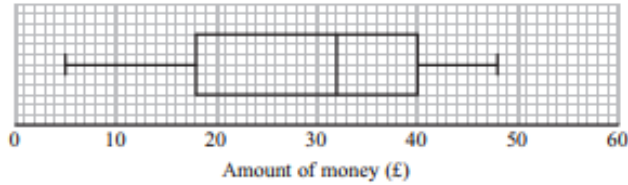
Amount of money (£)

(b) Compare the amounts of money the girls raised with the amounts of money the boys raised.

....

....

....

....

(2)

(Total for Question 17 is 4 marks)

Pearson Edexcel - Monday 4 March 2013 - Paper 2 (Calculator) Higher Tier

13.

18 Here are the times, in seconds, that 15 people waited to be served at Rose's garden centre.

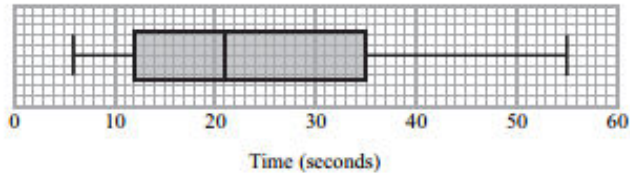5   9   11   14   15   20   22   25   27   27   28   30   32   35   44

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

Time (seconds)

(3)
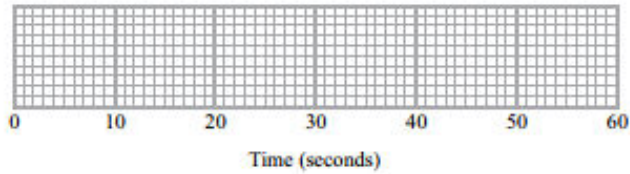
The box plot below shows the distribution of the times that people waited to be served at Green's garden centre.

Time (seconds)

(b) Compare the distribution of the times that people waited at Rose's garden centre and the distribution of the times that people waited at Green's garden centre.

....

....

....

....

(2)

(Total for Question 18 is 5 marks)

Pearson Edexcel - Tuesday 6 November 2012 - Paper 1 (Non-Calculator) Higher Tier

14.

19 Sameena recorded the times, in minutes, some girls took to do a jigsaw puzzle.

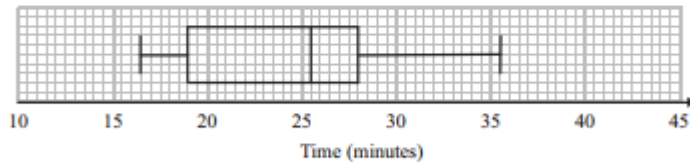Sameena used her results to work out the information in this table.

	Minutes
Shortest time	18
Lower quartile	25
Median	29
Upper quartile	33
Longest time	44

(a) On the grid, draw a box plot to show the information in the table.

(2)
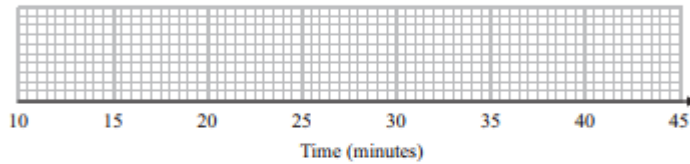
The box plot below shows information about the times, in minutes, some boys took to do the same jigsaw puzzle.

(b) Compare the distributions of the girls' times and the boys' times.

----

(2)

(Total for Question 19 is 4 marks)

Pearson Edexcel - Monday 11 June 2012 - Paper 1 (Non-Calculator) Higher Tier

15.

15 Harry grows tomatoes.
This year he put his tomato plants into two groups, group A and group B.

Harry gave fertiliser to the tomato plants in group A.
He did not give fertiliser to the tomato plants in group B.

Harry weighed 60 tomatoes from group A.
The cumulative frequency graph shows some information about these weights.
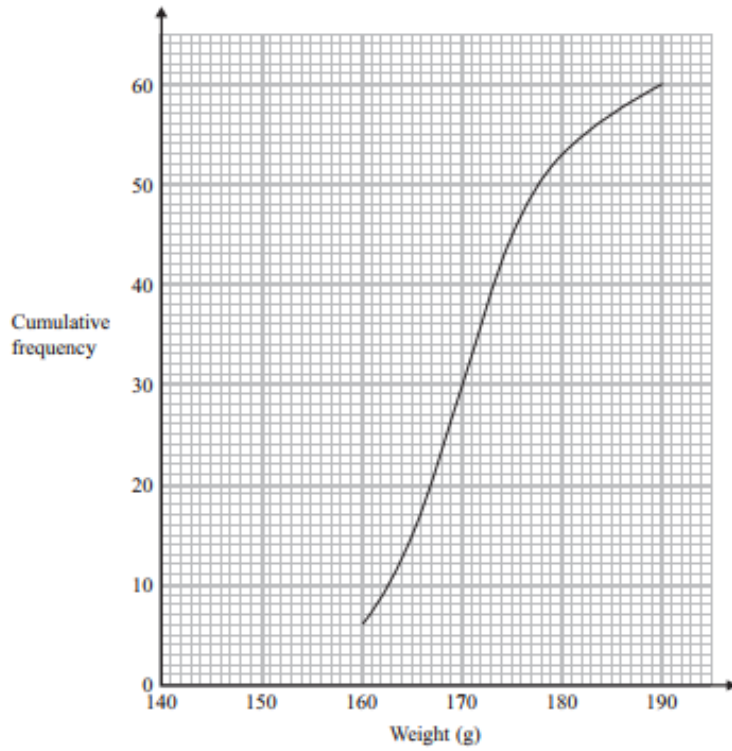
(a) Use the graph to find an estimate for the median weight.

.... g

(1)

The 60 tomatoes from group A
had a minimum weight of 153 grams
and a maximum weight of 186 grams.

(b) Use this information and the cumulative frequency graph to draw a box plot
for the 60 tomatoes from group A.

Group A

140   150   160   170   180   190
                    Weight (g)
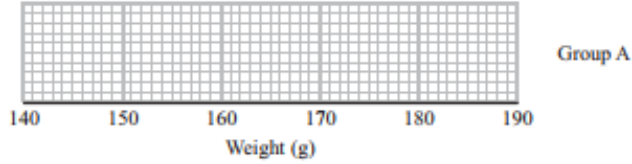
(3)

Harry did not give fertiliser to the tomato plants in group B.

Harry weighed 60 tomatoes from group B.
He drew this box plot for his results.

Group B

140   150   160   170   180   190
                    Weight (g)
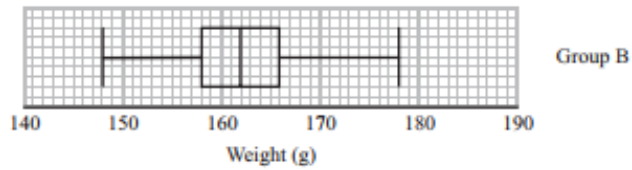
(c) Compare the distribution of the weights of the tomatoes from group A with the
distribution of the weights of the tomatoes from group B.

----

(2)

(Total for Question 15 is 6 marks)

Pearson Edexcel - Friday 2 March 2012 - Paper 3 (Non-Calculator) Higher Tier

16.

16. All the students in Mathstown school had a test.

The lowest mark was 18
The highest mark was 86
The median was 57
The lower quartile was 32
The interquartile range was 38
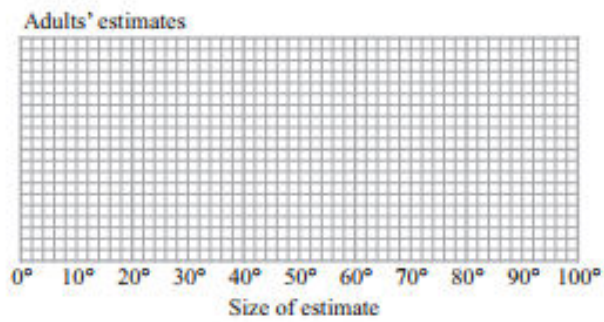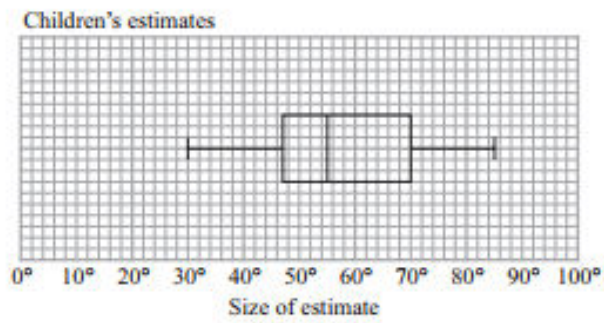
On the grid, draw a box plot to show this information.
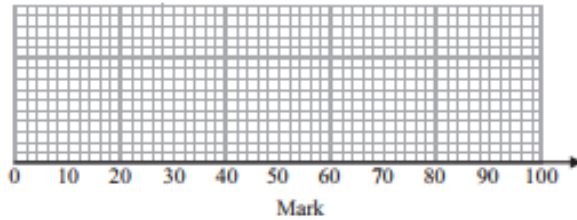
Mark

(Total 3 marks)

Pearson Edexcel - Monday 14 November 2011 - Paper 4 (Calculator) Higher Tier

17.

16. Barry drew an angle of 60°.
He asked some children to estimate the size of the angle he had drawn.
He recorded their estimates.
The box plot gives some information about these estimates.

Children's estimates

0° 10° 20° 30° 40° 50° 60° 70° 80° 90° 100°

Size of estimate

Adults' estimates

0° 10° 20° 30° 40° 50° 60° 70° 80° 90° 100°

Size of estimate

(a) Write down the median of the children's estimates.

....°

(1)

(b) Find the interquartile range of the children's estimates.

....°

(2)

Barry then asked some adults to estimate the size of the angle he had drawn.
The table gives some information about the adults' estimates.

	Angle
Lowest estimate	20°
Lower quartile	45°
Median	62°
Upper quartile	75°
Highest estimate	95°

(c) On the grid opposite, draw a box plot to show this information.

(2)

(d) Use the two box plots, to compare the distribution of the children's estimates with the distribution of the adults' estimates.
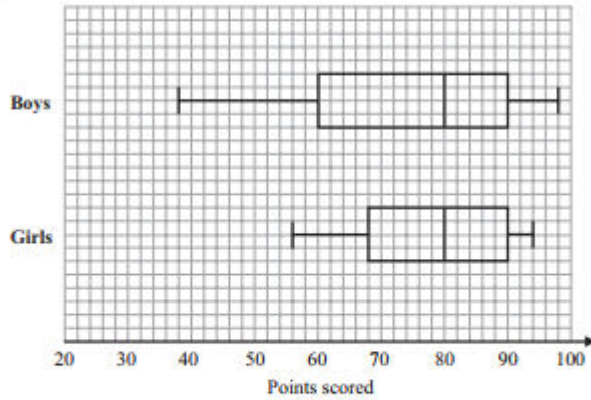
....

....

....

....

(2)

(Total 7 marks)

Pearson Edexcel - Monday 6 June 2011 - Paper 3 (Non-Calculator) Higher Tier

18.

20. The box plots show information about the points scored by some students in a spelling competition.

Points scored

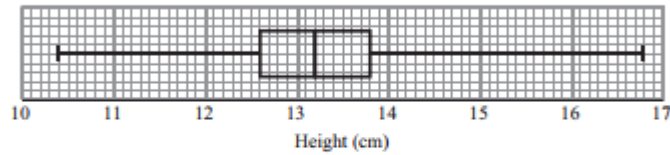Compare the distributions of the boys' scores and the girls' scores.

....

....

....

(Total 2 marks)

Pearson Edexcel - Tuesday 9 November 2010 - Paper 3 (Non-Calculator) Higher Tier

19.

20. Mr Green measured the height, in cm, of each tomato plant in his greenhouse.
He used the results to draw the box plot shown below:

Height (cm)

(a) Write down the median height.

.... cm
(1)

(b) Work out the interquartile range.

.... cm
(2)

(c) Explain why the interquartile range may be a better measure of spread than the range.

....

....
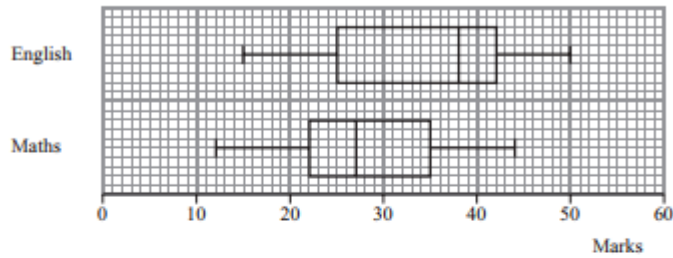
(1)

(Total 4 marks)

20.

17. The box plots show the distribution of marks in an English test and in a Maths test for a group of students.

(a) What is the highest mark in the English test?

....
(1)

(b) Compare the distributions of the marks in the English test and marks in the Maths test.
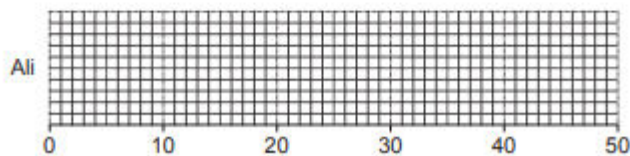
1 ....

....

2 ....

....
(2)

(Total 3 marks)

13 Ali and Beth take it in turns to play a computer game.
On each turn, the player achieves a score out of 50.
Ali and Beth play the computer game many times and record their scores.
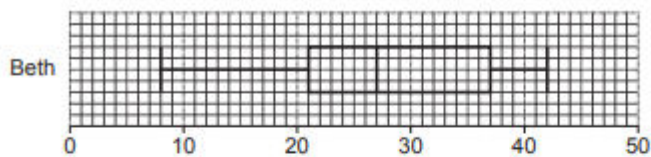
(a) Ali's scores are summarised below.

- median = 31
- highest score = 38
- range = 23
- lower quartile = 24
- interquartile range = 11

Draw a box plot to show the distribution of Ali's scores.

[3]

(b) This box plot shows the distribution of Beth's scores.

Find the interquartile range of Beth's scores.

(b) .... [2]

(c) Kareem says

Beth was more consistent than Ali because Beth had a lower median score.

Is his statement correct?
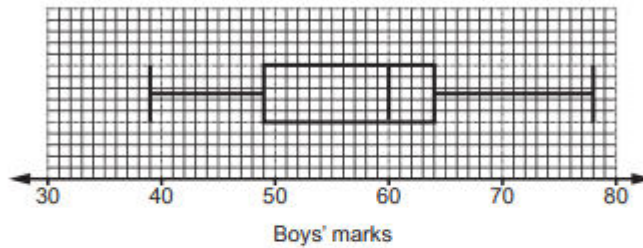Explain your reasoning.

....

....

.... [2]

12 The box plot shows the distribution of the marks scored by some boys in a test.

Boys' marks

(a) Find the interquartile range.

(a) .... **[2]**

(b) The marks for some girls in the same test are summarised below.

- median = 58
- lowest mark = 32
- range = 44
- upper quartile = 66
- interquartile range = 12

Draw a box plot to show the distribution of the marks scored by the girls.

Girls' marks
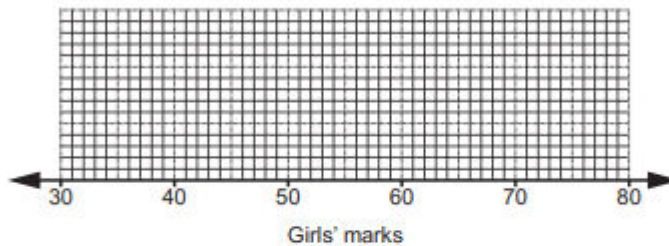
[3]

(c) Eleanor says

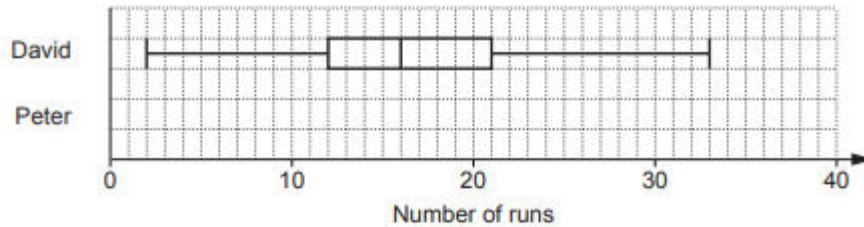The boys did better, on average, in the test as they had a bigger interquartile range.

Is her statement correct?
Explain your reasoning.

....

.... **[2]**

15 The box plot shows the distribution of the runs scored by David in some cricket matches.

(a) Another player, Peter, has

- a median score of 26
- a highest score of 39
- a lowest score of 8
- a lower quartile of 14
- an inter-quartile range of 18.

Show the distribution of Peter's scores as a box plot on the diagram above. [2]

(b) Decide whether David or Peter best satisfies each of these questions.
Give a reason for each of your decisions.

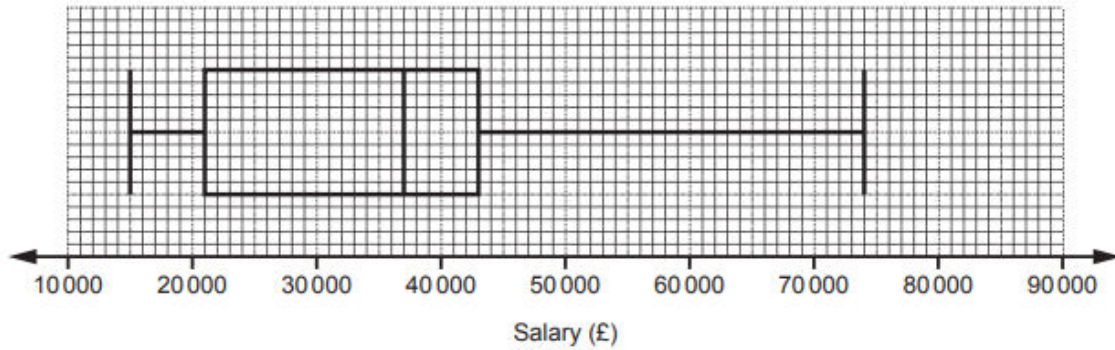**(i)** Who scored more runs on average?

.... because ....

.... [1]

(ii) Whose scores were more consistent?

.... because ....

.... [1]

16 The box plot shows the distribution of the salaries for the workers at Bexbridge Biscuits.
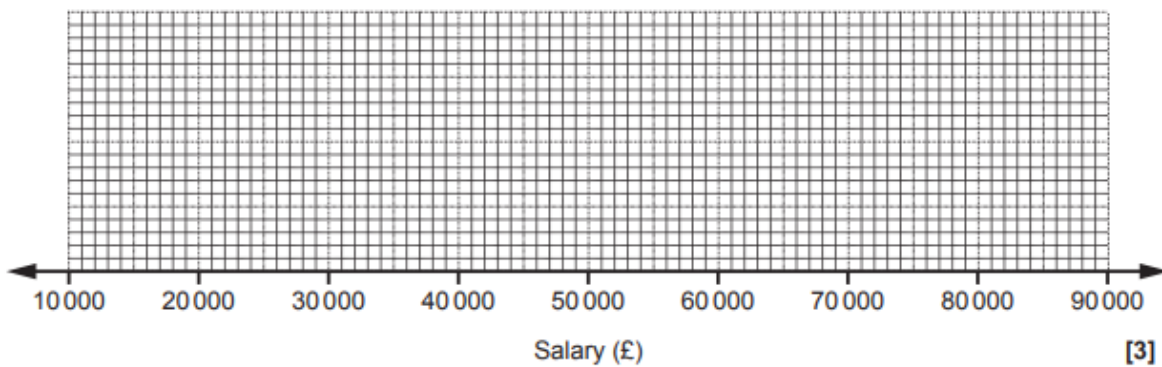

Salary (£)

(a) State the median salary.

(a) £ .... [1]

(b) Find the interquartile range.

(b) £ .... [2]

(c) The following salary information is true for workers at Camford Cookies.

- The highest paid worker earns £85 000.
- The lowest paid worker earns 20% of the salary of the highest paid worker.
- 25% of the workers earn more than £50 000.
- 25% of the workers earn less than £28 000.
- The median salary is £37 000.

Draw a box plot to show the salaries of the workers at Camford Cookies.

10 000   20 000   30 000   40 000   50 000   60 000   70 000   80 000   90 000

Salary (£)   [3]

(d) Make two different comparisons between the distribution of the salaries at Bexbridge Biscuits and the salaries at Camford Cookies.

1: ....

....

2: ....

.... [2]

25.

13 One day a museum monitored the time spent by visitors at six exhibitions.
The visitor times are summarised in the box plots below.
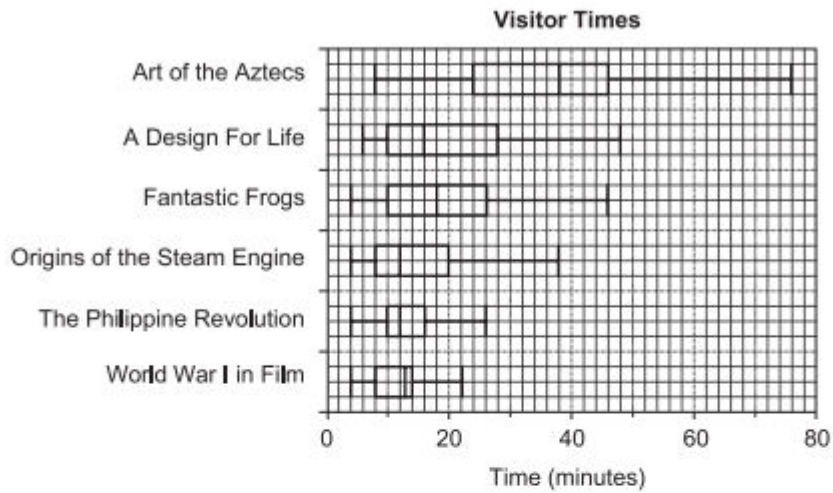
Visitor Times

(a) Work out the **range** in visitor times at the **Fantastic Frogs** exhibition.

(a) .... **[2]**

(b) At which exhibition were visitor times the most consistent?
Give a reason for your answer.

....

....

.... **[2]**

(c) Give one similarity and one difference between the **distributions** of the visitor times for **Origins of the Steam Engine** and **The Philippine Revolution**.

Similarity ....

....

Difference ....

....

[2]

(d) Is it possible to work out from the box plots which exhibition had the most visitors? Justify your answer.

....

....

....

.... [2]

AQA GSCE – Thursday 8 June 2020 – Paper 3 (Calculator) Higher Tier

26.

20   Amari and Ben each play a game.

20 (a)   Here is some information about Amari's scores.

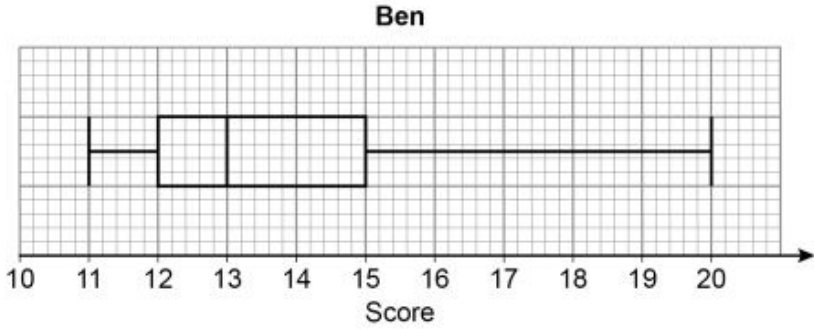Lowest 12
Highest 20

Lower quartile 13
Upper quartile 19

Median 17

Draw a box plot to represent his scores.

[2 marks]
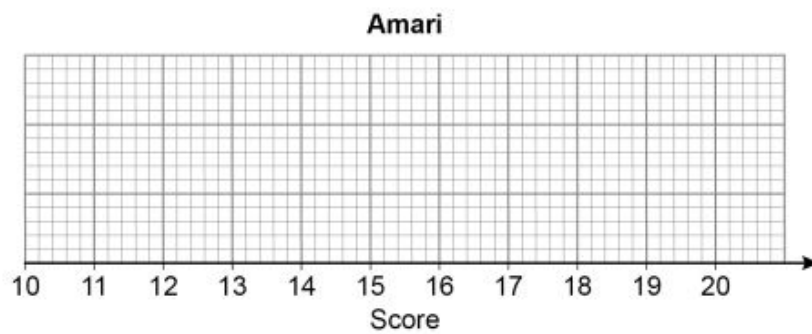
Amari

Score

20 (b) This box plot represents Ben's scores.

Ben

Score

Who had more consistent scores, Amari or Ben?

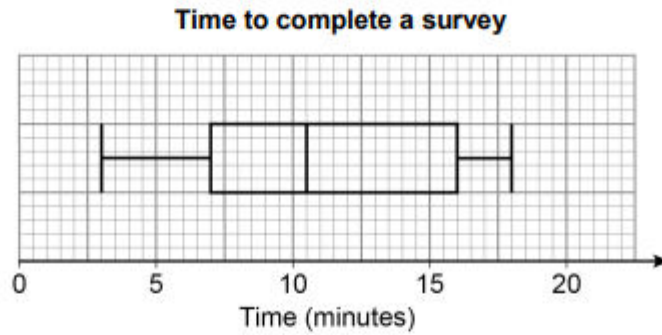Work out the interquartile ranges to support your answer.

[2 marks]

_____

_____

_____

_____

_____

_____

19   Here is some information about the times people took to complete a survey.

Fastest time	3 minutes
Slowest time	18 minutes
Median	11 minutes
Lower quartile	7 minutes
Interquartile range	8 minutes

Ben draws this box plot to show the information.

Time to complete a survey

Make **two** criticisms of his box plot.

[2 marks]

Criticism 1 _____

_____

_____

Criticism 2 _____

_____

_____

AQA GSCE – Tuesday 6 November 2018 – Paper 1 (Non - Calculator) Higher Tier

28.

15   In a survey, queuing times at supermarket checkouts were recorded.
       One morning, samples of 50 customers were taken at supermarkets A, B, C and D.
       The box plots represent the results.

Queuing times
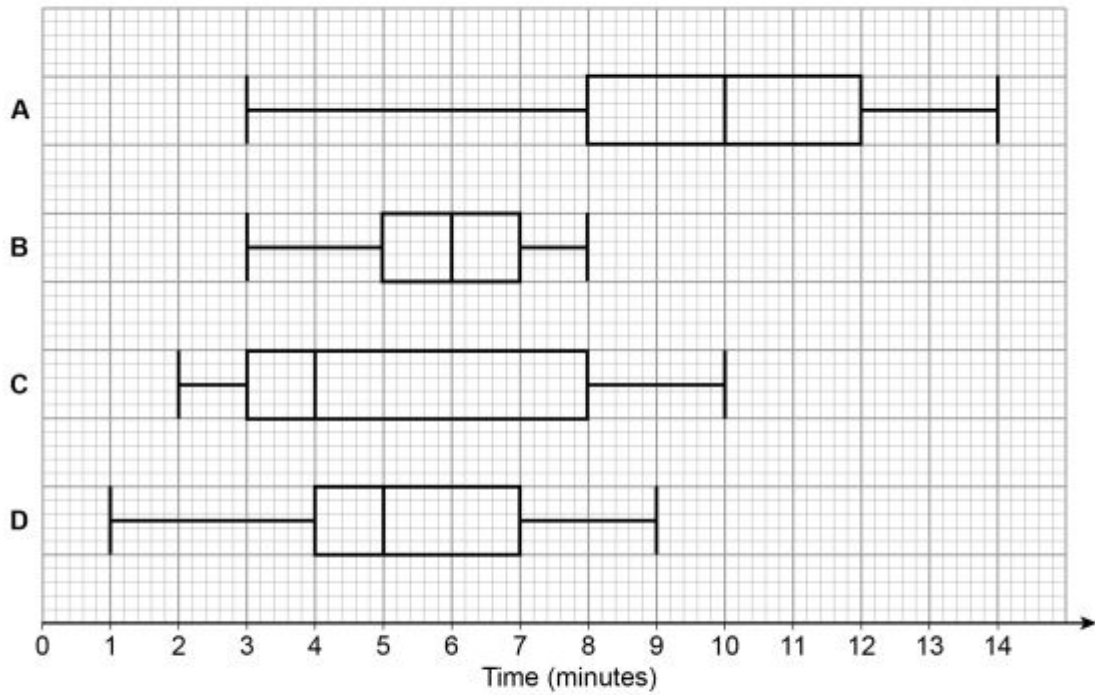
15 (a)   On average, which supermarket had the lowest queuing times?
          Give a reason for your answer.

[2 marks]

Supermarket   _____

Reason   _____

15 (b) At which supermarket were the queuing times most consistent?

Give a reason for your answer.

[2 marks]

Supermarket _____

Reason _____

_____

AQA GSCE – Wednesday 8 November 2017 – Paper 3 (Calculator) Higher Tier

29.

13   Here is some information about the length of time cars stayed in a car park.

Shortest time	30 minutes	Lower quartile	2 hours
Longest time	12 hours	Interquartile range	3 hours
		Median time	4 hours

Draw a box plot to show this information.

[3 marks]

Time (hours)
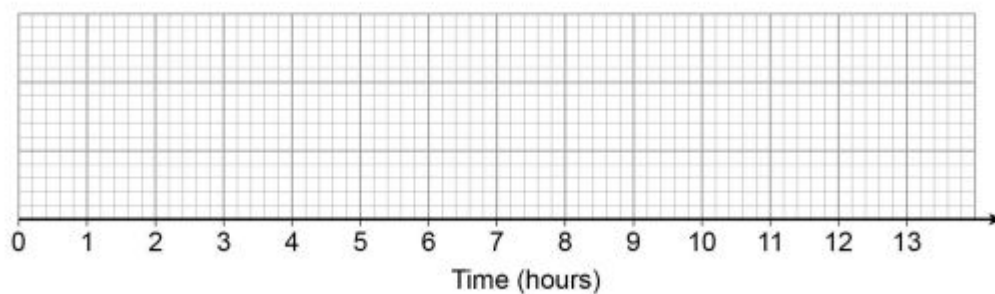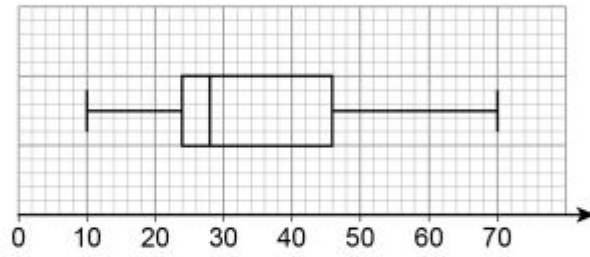
AQA GSCE – Thursday 8 June 2017 – Paper 2 (Calculator) Higher Tier

30.

16   Here is a box plot.

Circle the median value.

28   35   24   22