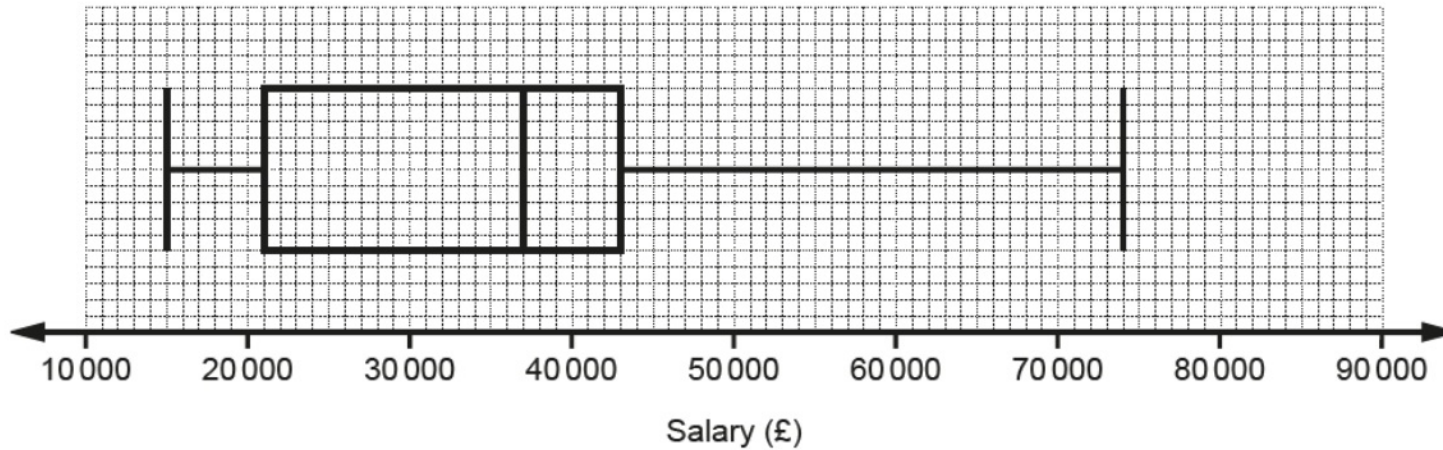


P36 - Boxplots

OCR

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

Created by W Neill



(a) State the median salary.

(a) £..... [1]

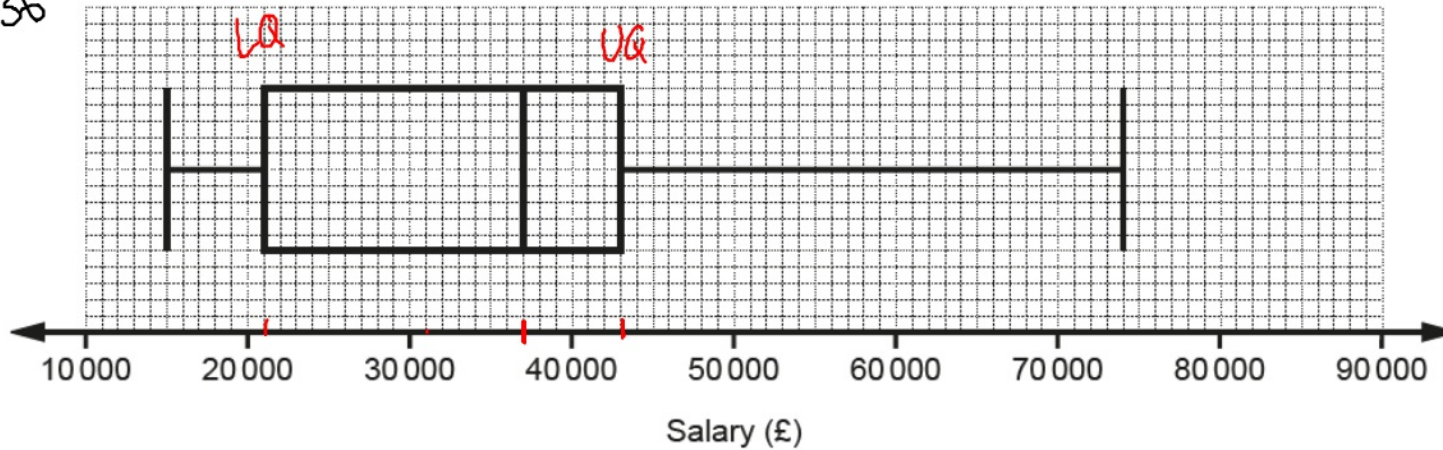
(b) Find the interquartile range.

(b) £..... [2]

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

Created by W Neill

P36



(a) State the median salary.

(a) £ 37000 [1]

(b) Find the interquartile range.

$$\begin{aligned} & \text{UQ} - \text{LQ} \\ & = 43000 - 21000 \end{aligned}$$

(b) £ 22,000 [2]

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

Created by W Neill

- 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.

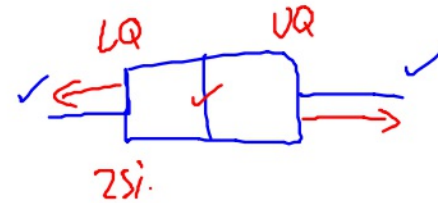


(c) The following salary information is true for workers at Camford Cookies.

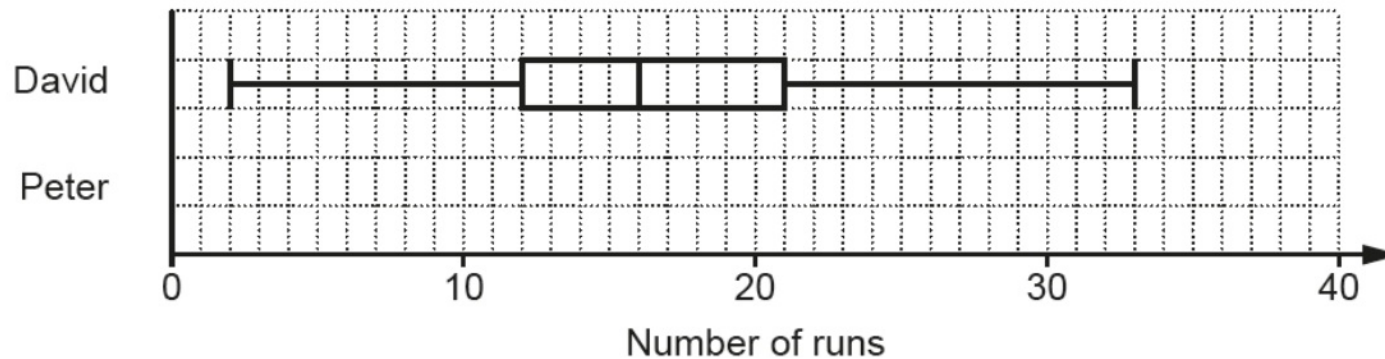
Created by W Neill

- The highest paid worker earns £85 000.
- The lowest paid worker earns 20% of the salary of the highest paid worker. 17,000
- 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.



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



(a) Another player, Peter, has

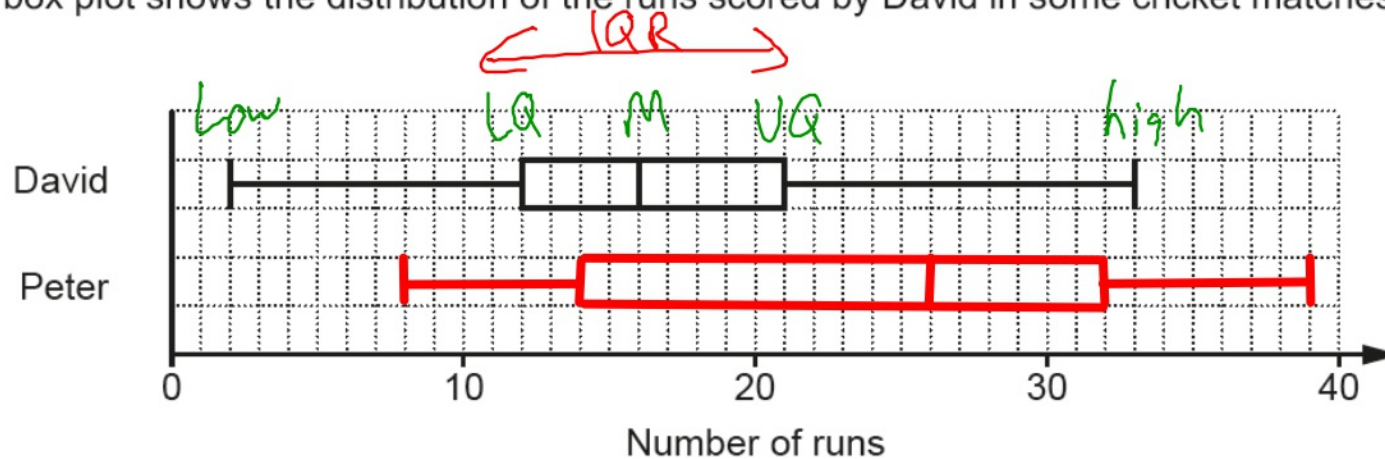
P36

- 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]

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



(a) Another player, Peter, has

P36

- 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.

$$14 + 18 = 32$$

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

[2]

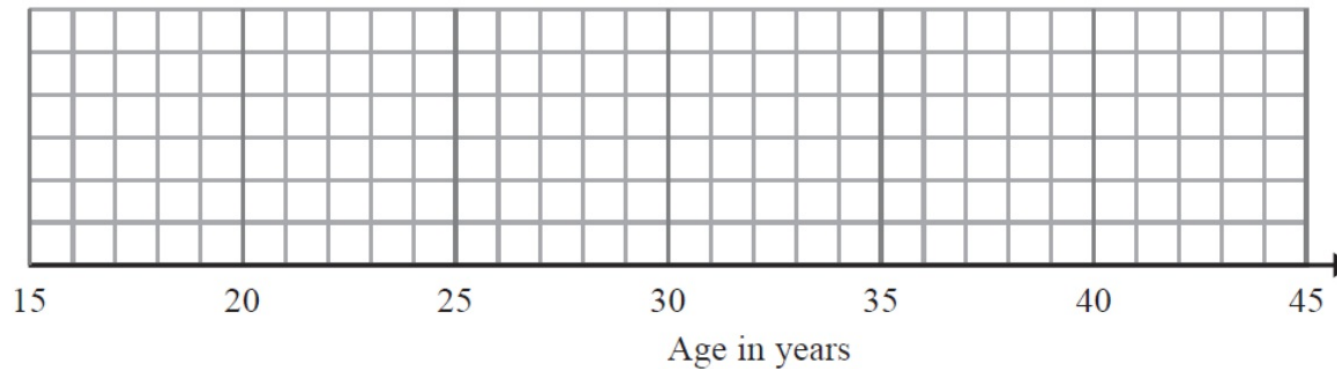
Edexcel

9 The stem and leaf diagram shows the ages, in years, of 25 people.

1	7	7	8	9							
2	1	2	4	4	5	5	6	7	8	9	9
3	0	1	2	2	3	4	5	6			
4	0	1									

Key: 1|7 represents 17 years

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



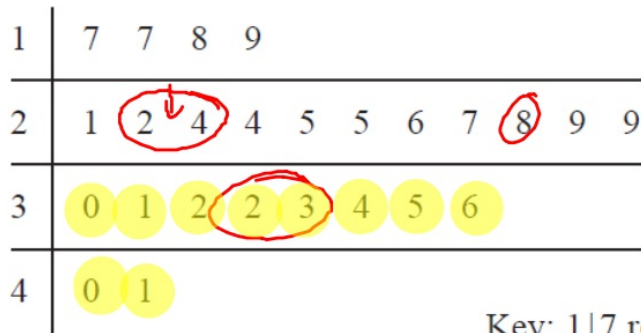
(3)

One of these people is chosen at random.

(ii) What is the probability that this person is 30 years of age or older?

.....
(2)

9 The stem and leaf diagram shows the ages, in years, of 25 people.



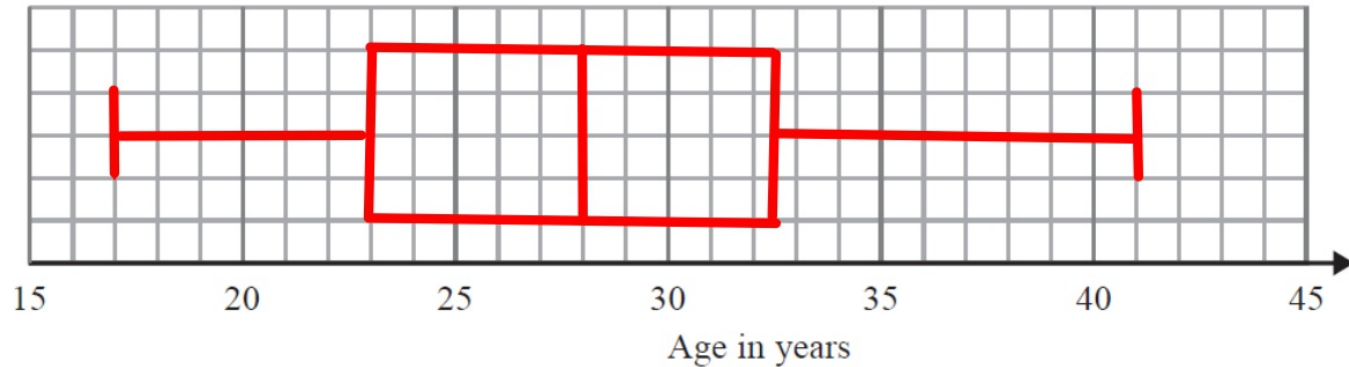
Key: 1|7 represents 17 years

$$\text{Median} = \frac{1}{2}(25+1) = 13^{\text{th}} = 28$$

$$\text{LQ} = \frac{1}{4}(26) = 6.5^{\text{th}} = 23$$

$$\text{UQ} = \frac{3}{4}(26) = 19.5^{\text{th}} = 32.5$$

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



(3)

One of these people is chosen at random.

(ii) What is the probability that this person is 30 years of age or older?

$$\frac{10}{25}$$

(2)

The grouped frequency table gives information about the ages of a different group of people.

Age (a years)	Frequency
$0 < a \leq 20$	7
$20 < a \leq 30$	12
$30 < a \leq 40$	5
$40 < a \leq 50$	1

Anne drew this cumulative frequency table for this information.

Age (a years)	Cumulative frequency
$0 < a \leq 20$	7
$20 < a \leq 30$	19
$30 < a \leq 40$	24
$40 < a \leq 50$	25

The cumulative frequency table is **not** correct.

(b) Write down one thing that is wrong with the table.

The grouped frequency table gives information about the ages of a different group of people.

Age (a years)	Frequency
$0 < a \leq 20$	7
$20 < a \leq 30$	12
$30 < a \leq 40$	5
$40 < a \leq 50$	1

19

Anne drew this cumulative frequency table for this information.

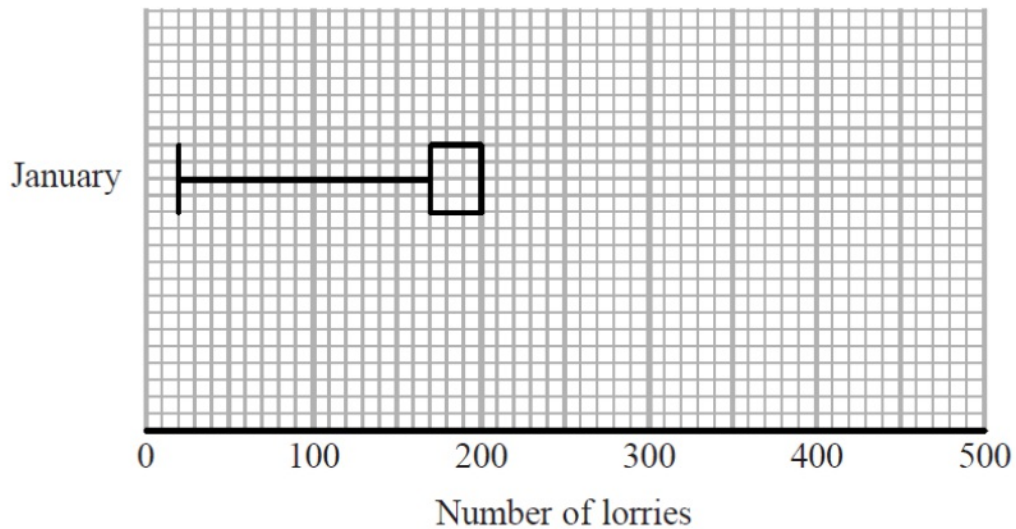
Age (a years)	Cumulative frequency
$0 < a \leq 20$	7
$20 < a \leq 30$	19 ✓
$30 < a \leq 40$	24
$40 < a \leq 50$	25

The cumulative frequency table is **not** correct.

(b) Write down one thing that is wrong with the table.

Incorrect class intervals. This should be $0 < a \leq 30$

- 11 The incomplete table and the incomplete box plot give information about the number of lorries using a bridge each day last January.



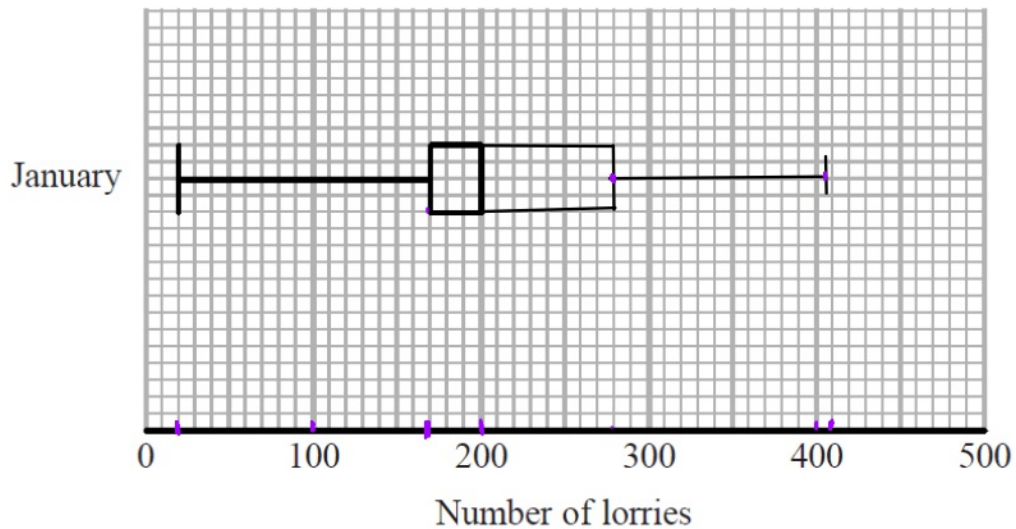
	Number of lorries
Least number	
Lower quartile	
Median	
Upper quartile	280
Greatest number	405

- (a) (i) Use the information in the table to complete the box plot.
 (ii) Use the information in the box plot to complete the table.

P36

(2)

- 11 The incomplete table and the incomplete box plot give information about the number of lorries using a bridge each day last January.



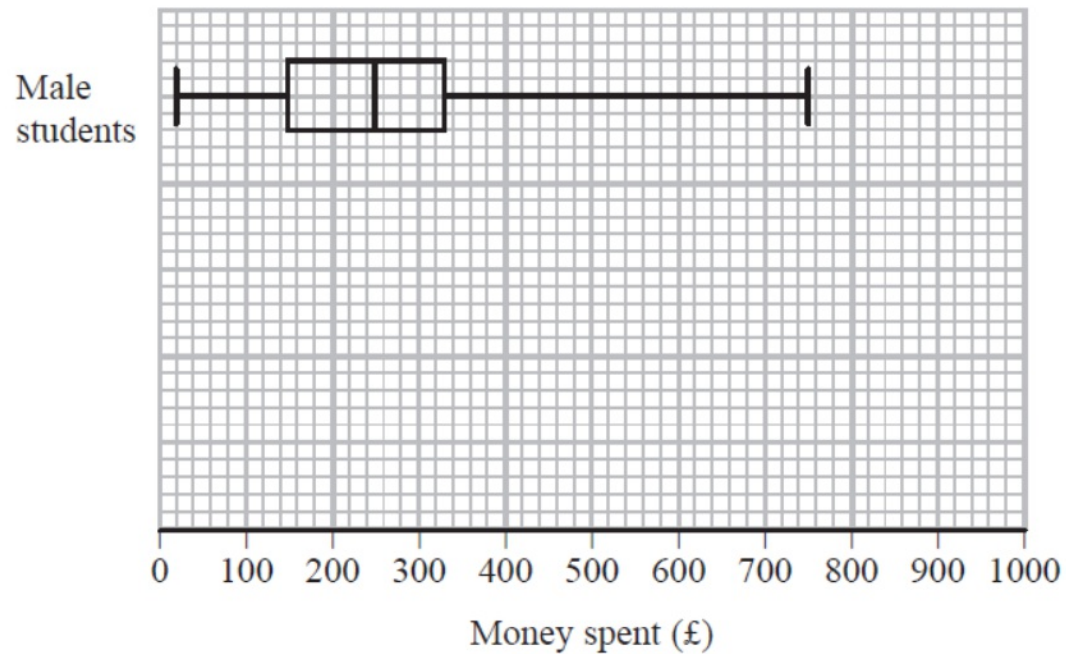
	Number of lorries
Least number	20
Lower quartile	170
Median	200
Upper quartile	280
Greatest number	405

- (a) (i) Use the information in the table to complete the box plot.
 (ii) Use the information in the box plot to complete the table.

P36

(2)

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

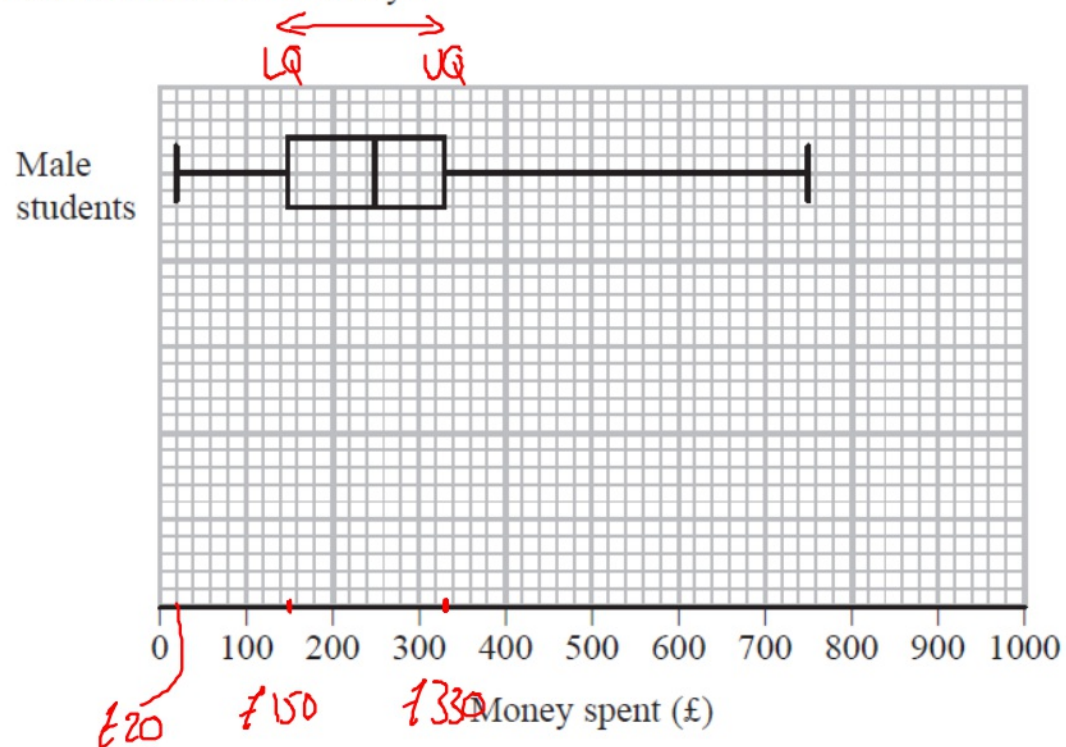


- (a) Work out the interquartile range for the amounts of money spent by these male students.

£.....

(2)

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

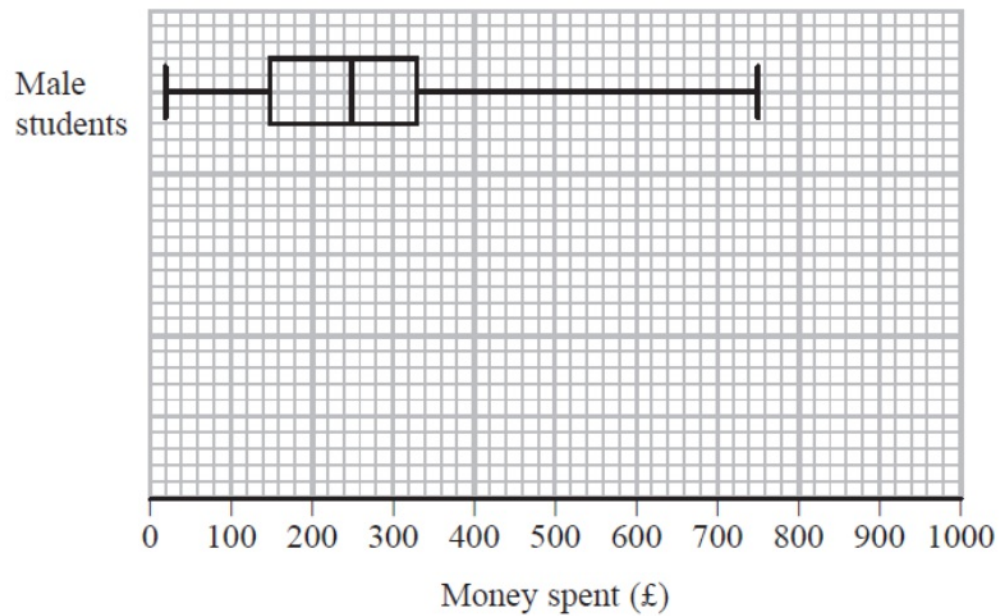


- (a) Work out the interquartile range for the amounts of money spent by these male students.

$$£330 - 150$$

$$£ \underline{180}$$

(2)



Video created by W Neill

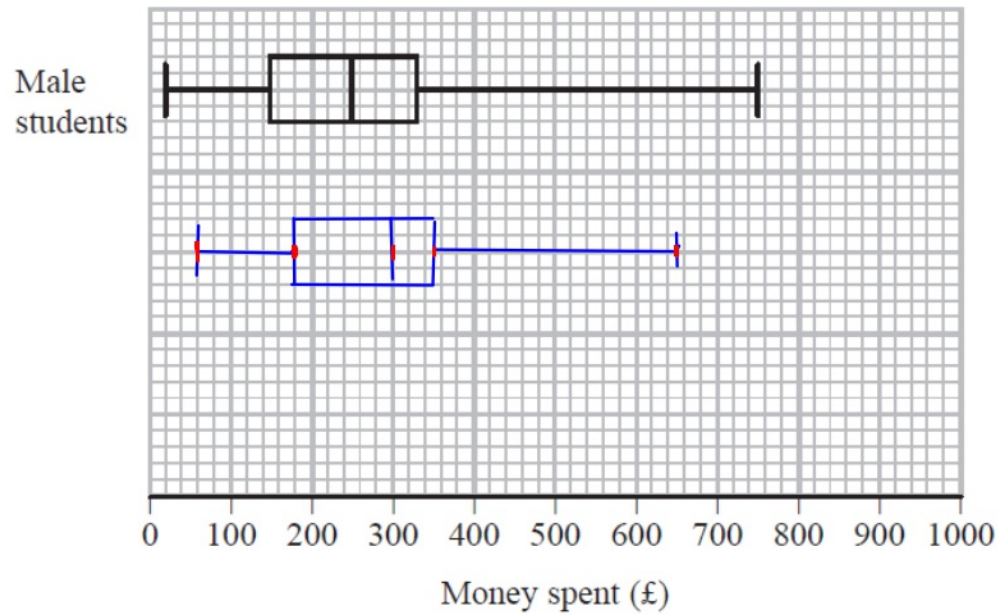
The table below shows information about the distribution of the amounts of money spent by some female students on their holidays.

	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)

Video created by W Neill



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.

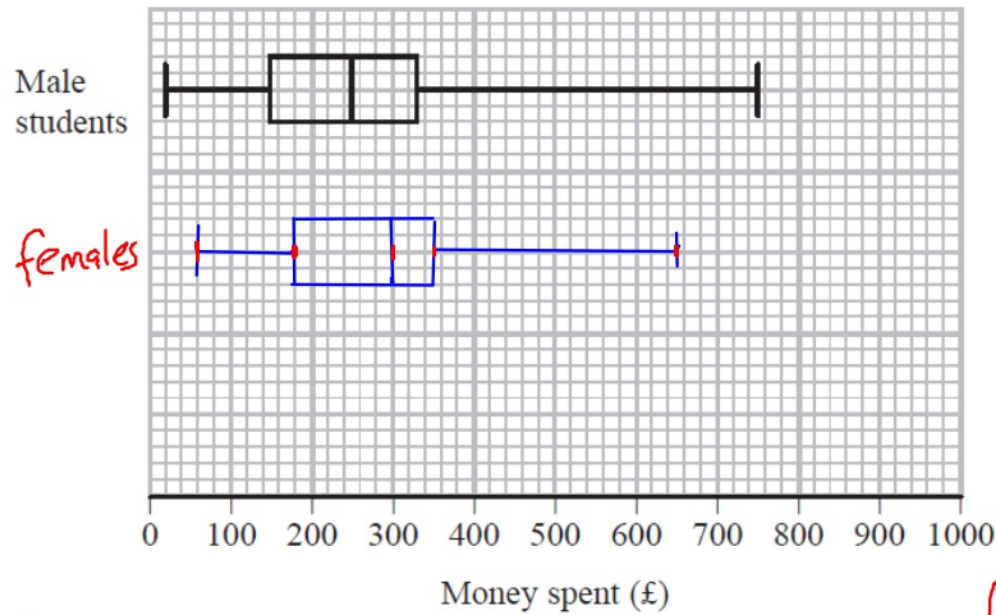
.....

.....

.....

.....

Video created by W Neill



Chris says,

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

(c) Is Chris correct?

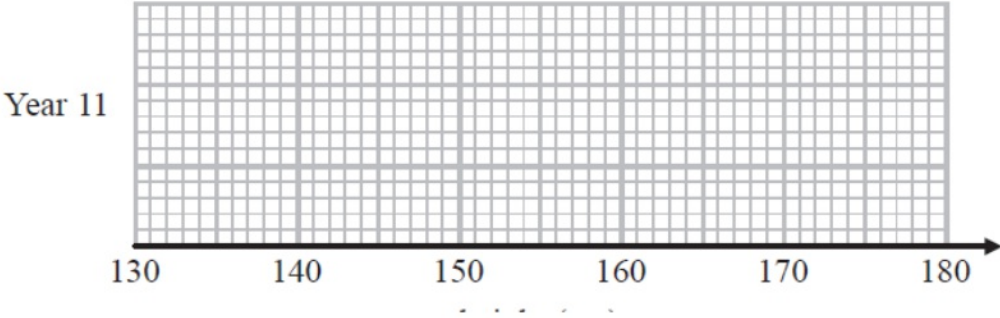
Give a reason for your answer.

Median females = £300
" Males = £250 } females spent more money
as they have a higher median.

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

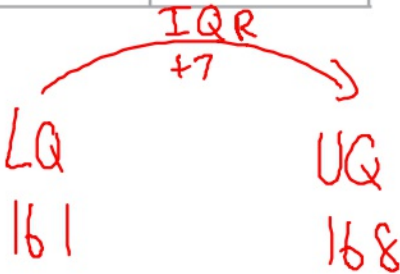
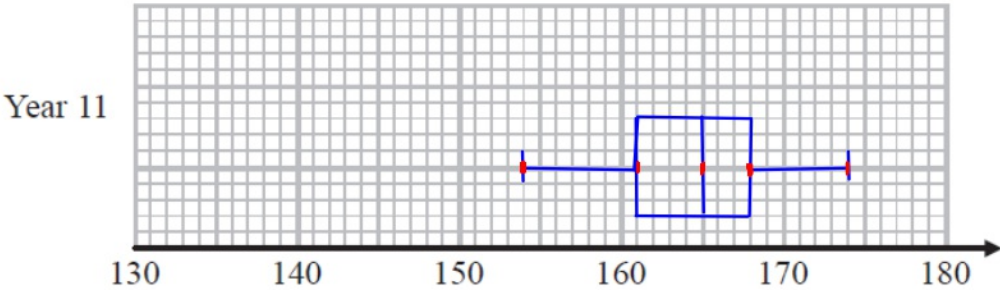
(a) Draw a box plot for this information.



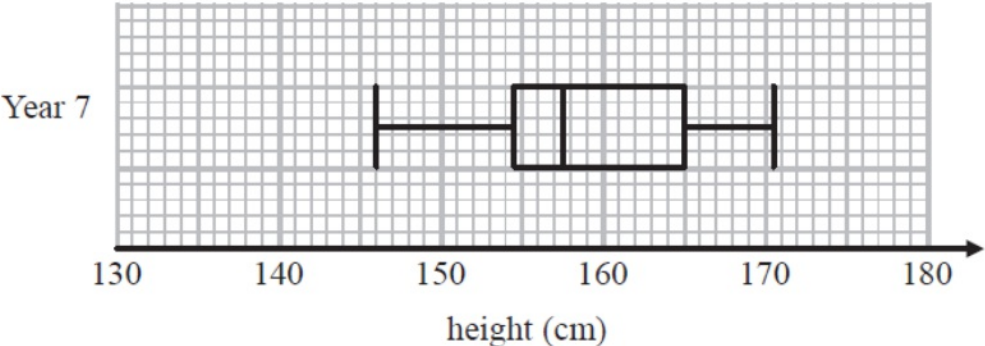
12 The table shows information about the heights, in cm, of a group of Year 11 girls.

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

(a) Draw a box plot for this information.



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

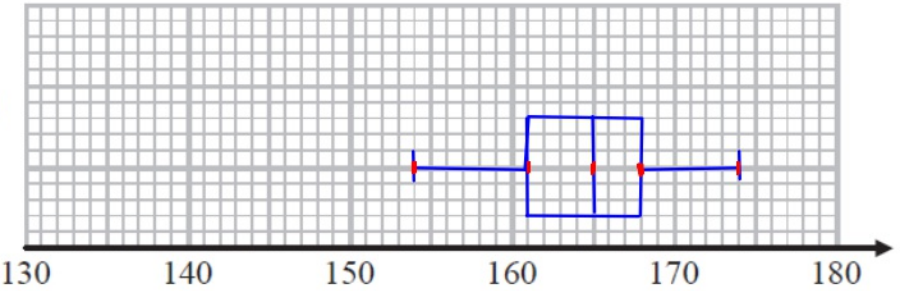


(b) Compare the distribution of heights of the Year 7 girls with the distribution of heights of the Year 11 girls.

.....

.....

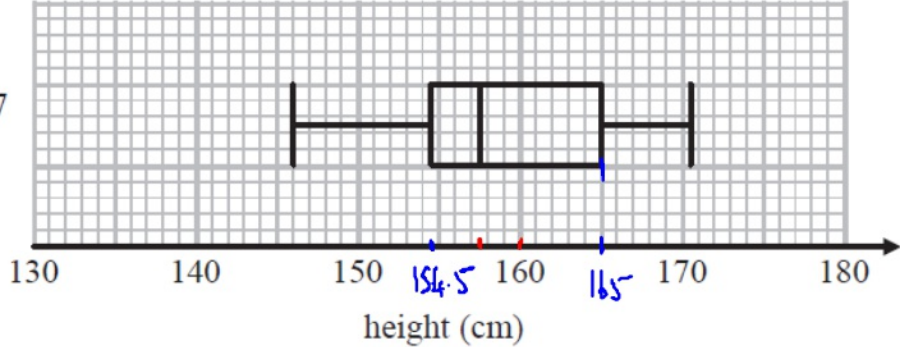
Year 11



Median
 Yr 11 Girls = 165cm
 Yr 7 Girls = 157.5cm

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

Year 7



Yr 11 girls are taller

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

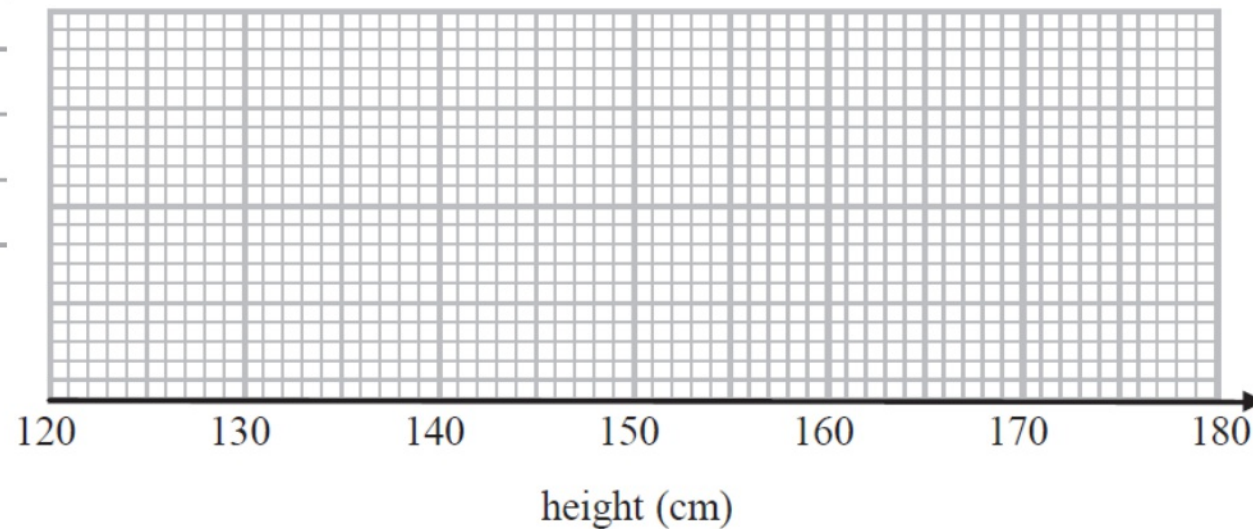
$$\left. \begin{array}{l} \text{IQR} = \text{Yr 11 } 7\text{cm} \\ \text{IQR} = \text{Yr 7 } 10.5\text{cm} \end{array} \right\} \text{Yr 11 heights are more consistent.}$$

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

Video created by W Neill

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.



P36

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

(3)

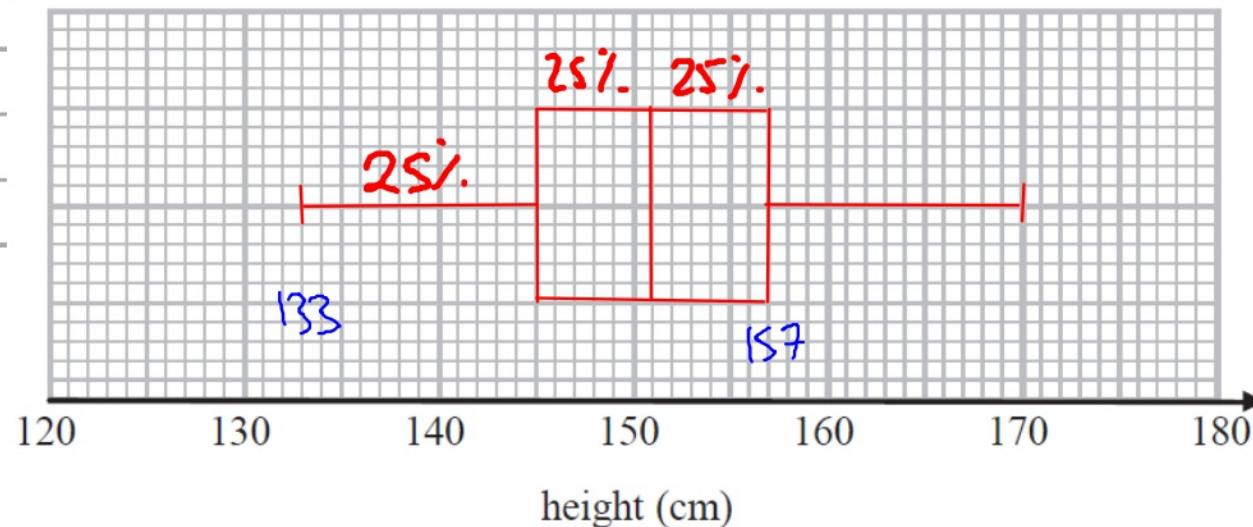
.....
(2)

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

Video created by W Neill

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.



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

(3)

$$75\% \text{ or } \frac{3}{4} \text{ of } 80 = 60 \checkmark$$

(2)

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

Video Created by W Neill

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

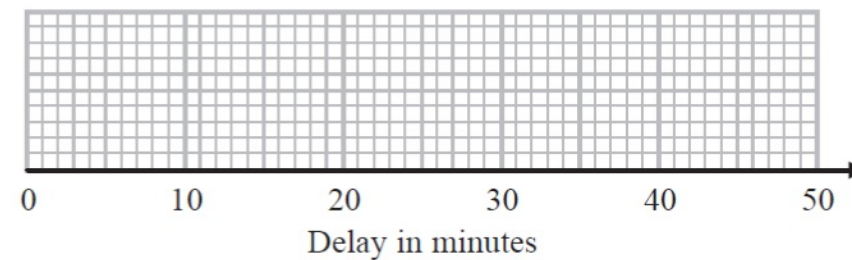
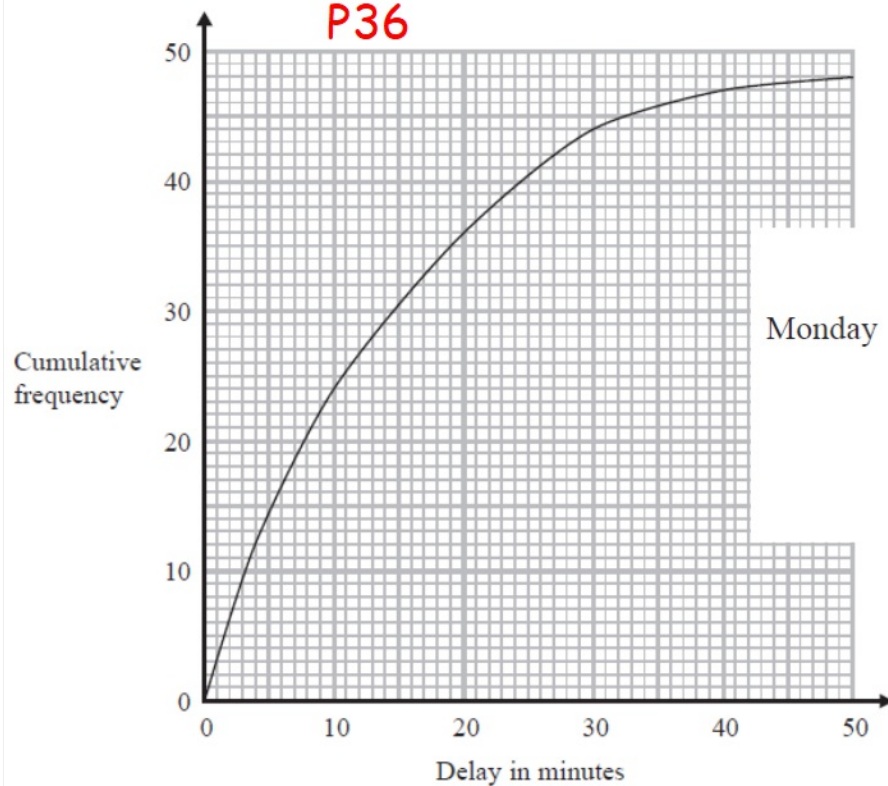
(a) On the grid below, draw a box plot for the information about the delays on Monday.

P35

The shortest delay was 0 minutes.

P36

The longest delay was 42 minutes.



(3)

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

Video Created by W Neill

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

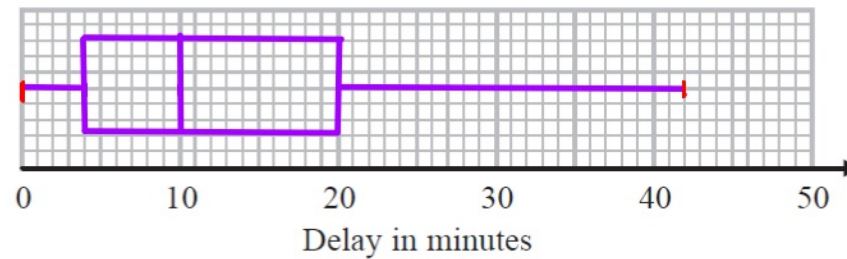
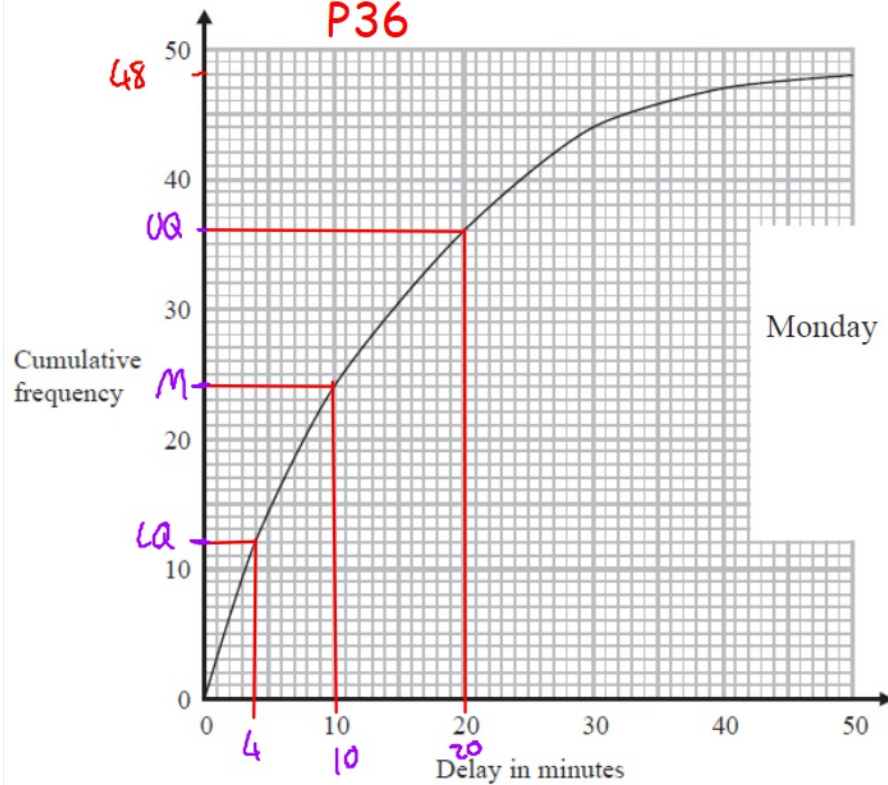
(a) On the grid below, draw a box plot for the information about the delays on Monday.

P35

P36

The shortest delay was 0 minutes.

The longest delay was 42 minutes.

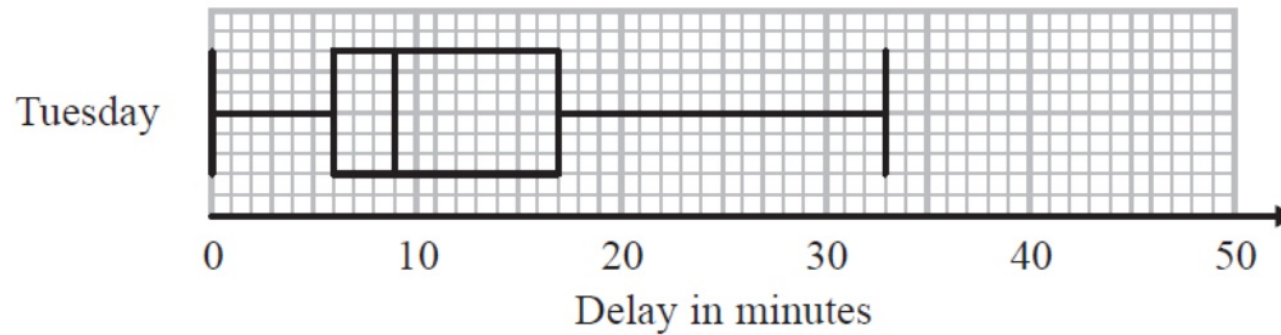


(3)

48 trains left the station on Tuesday.

Video Created by W Neill

The box plot below gives information about the delays on Tuesday.



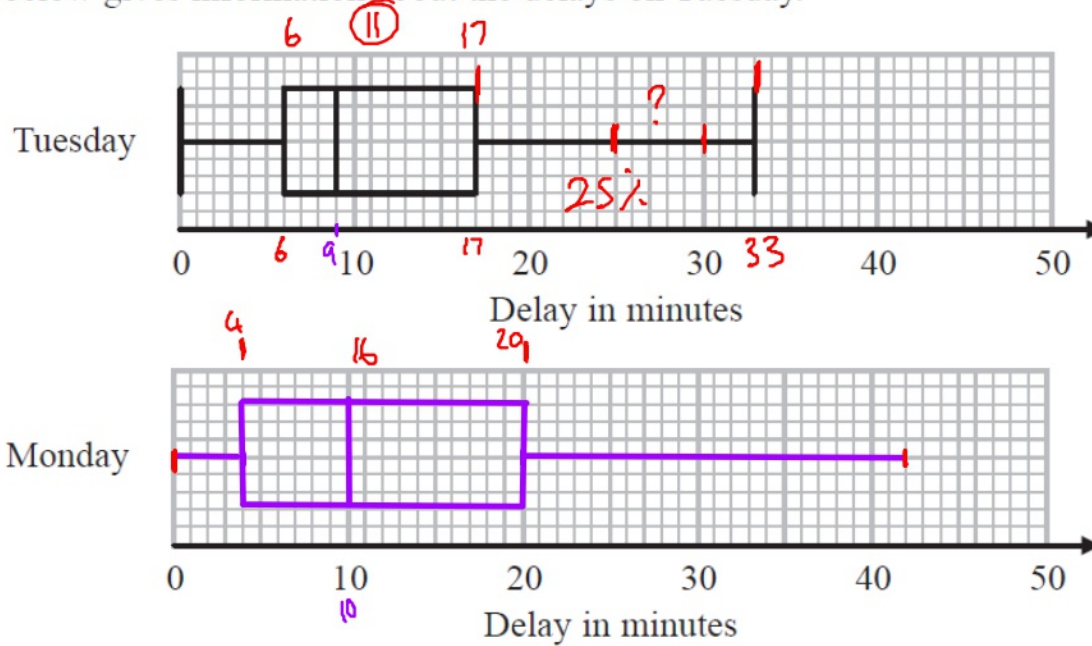
(b) Compare the distribution of the delays on Monday with the distribution of the delays on Tuesday.

P37

(2)

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

Video Created by W Neill



On Mon the IQR is 16 min and on Tuesday the IQR is 11 min, therefore train delays are more spread out on Monday.

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

P37

Median was 9 min on Tues and 10 min on Monday. Therefore we can say trains were later on Monday.

(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.

P36

(1)

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.

P36

You don't know where the data is situated
in a boxplot. Therefore Mary is incorrect.

(1)

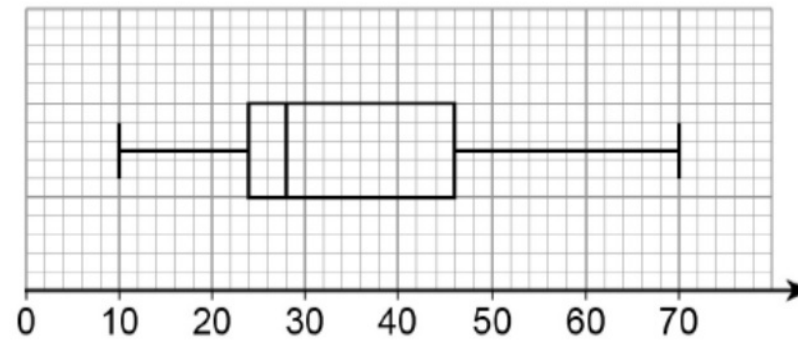
AQA

16

Here is a box plot.

Video created by W Neill

P36



Circle the median value.

[1 mark]

28

35

24

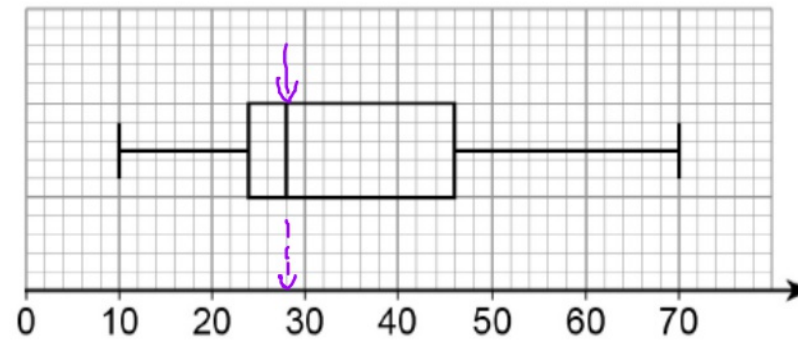
22

16

Here is a box plot.

Video created by W Neill

P36



Circle the median value.

28

35

24

22

[1 mark]

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

P36

Shortest time 30 minutes

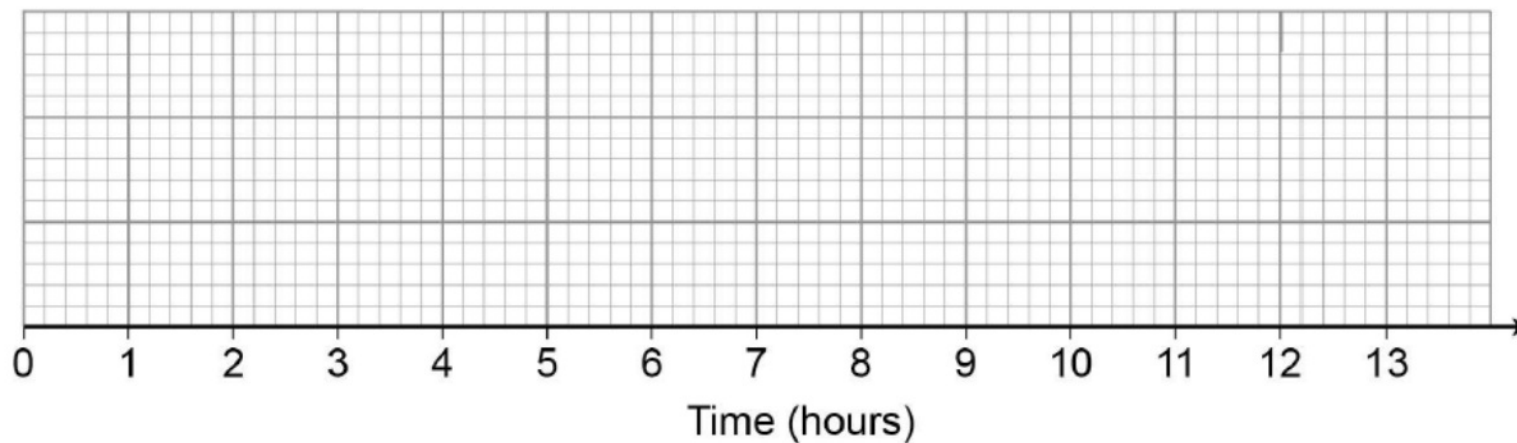
Lower quartile 2 hours

Longest time 12 hours

Interquartile range 3 hours

Median time 4 hours

Draw a box plot to show this information. [3 marks]

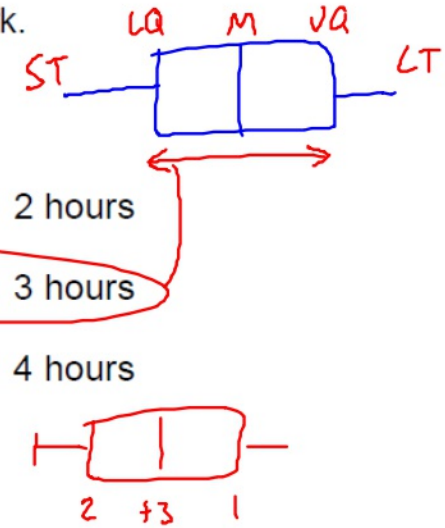


13 Here is some information about the length of time cars stayed in a car park.

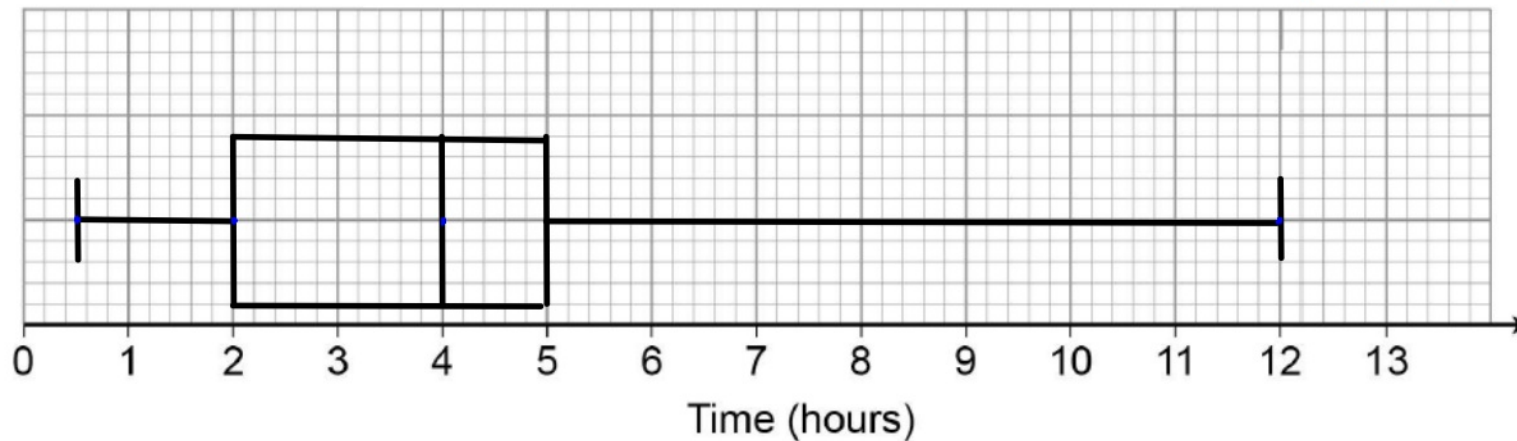
P36

Shortest time 30 minutes ^{1/2}
Longest time 12 hours

Lower quartile 2 hours
Interquartile range 3 hours
Median time 4 hours



Draw a box plot to show this information. [3 marks]



15

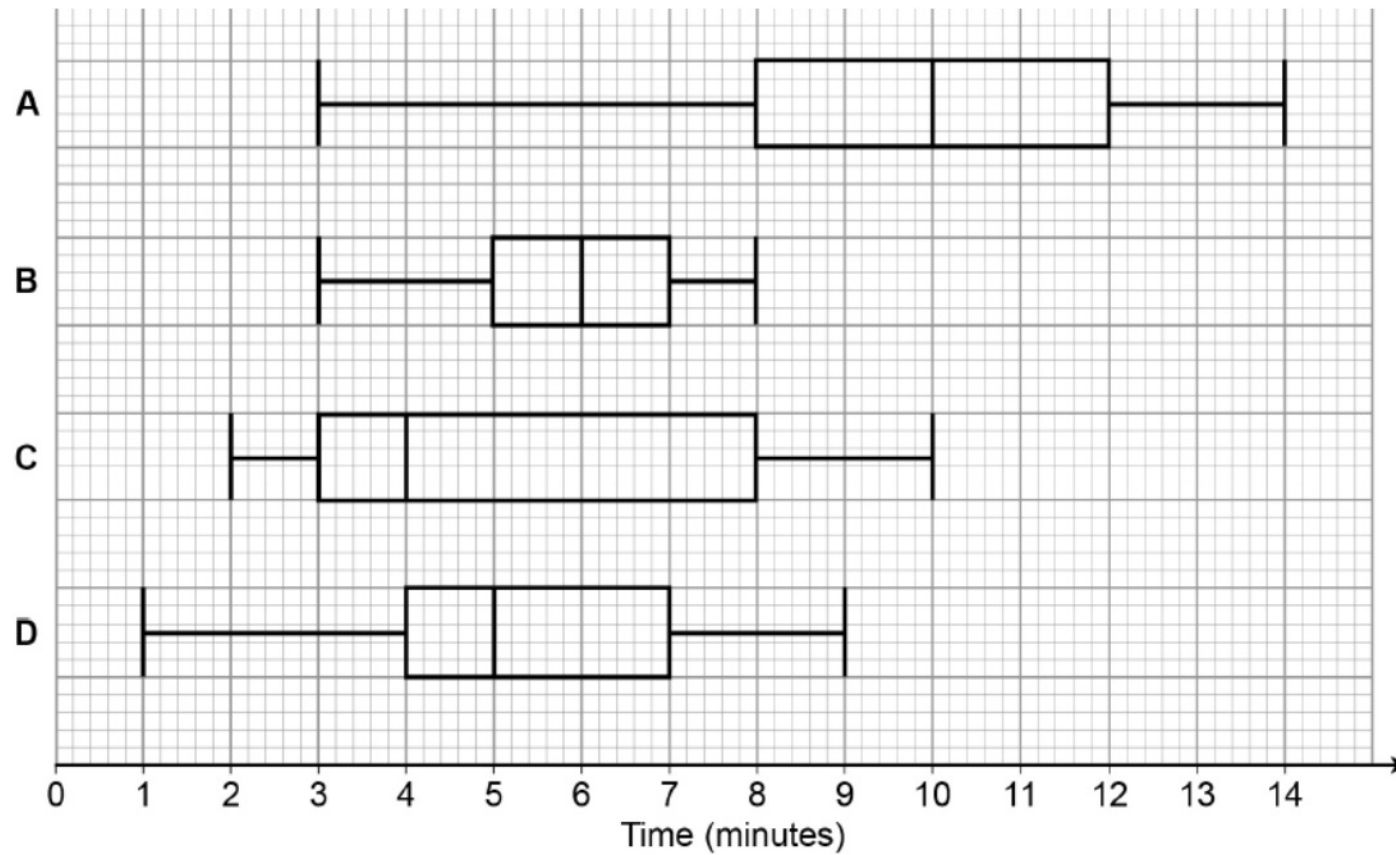
In a survey, queuing times at supermarket checkouts were recorded.

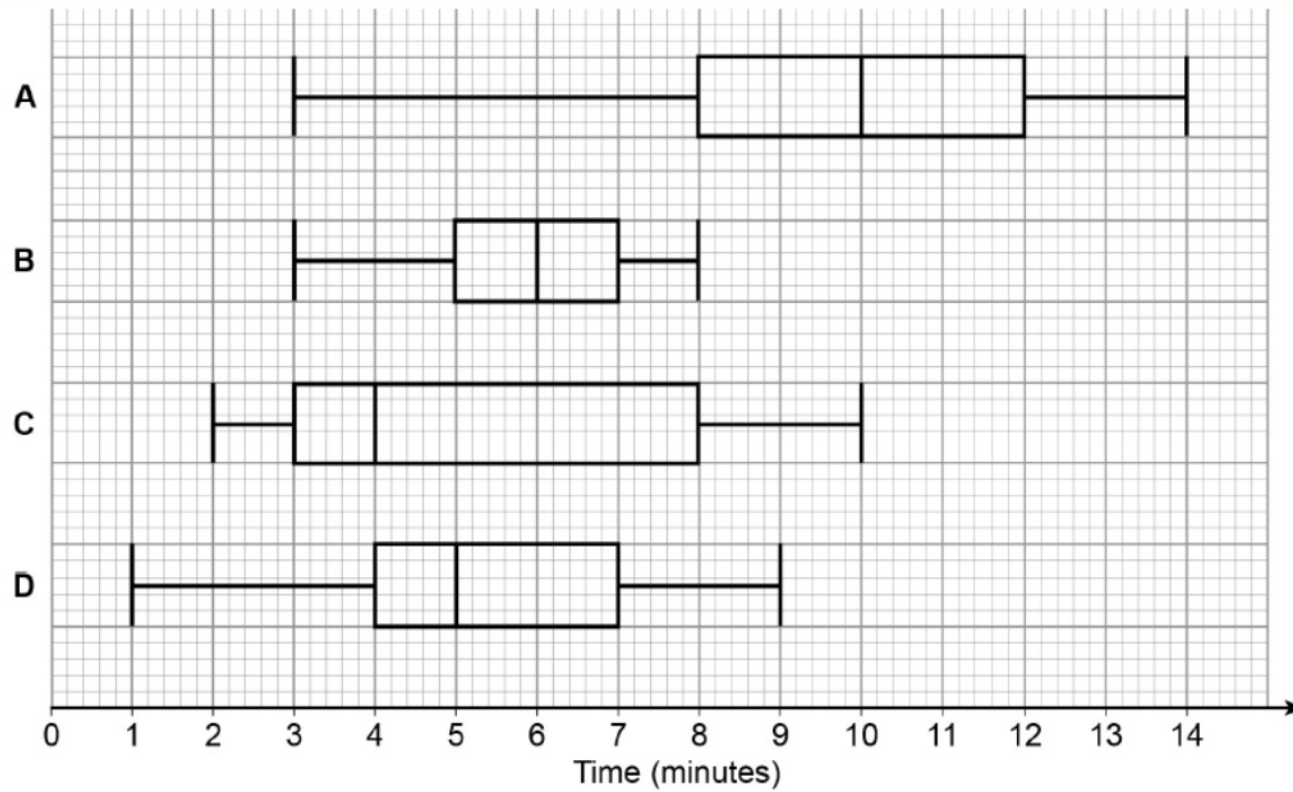
One morning, samples of 50 customers were taken at supermarkets A, B, C and D.

P36

The box plots represent the results.

P37





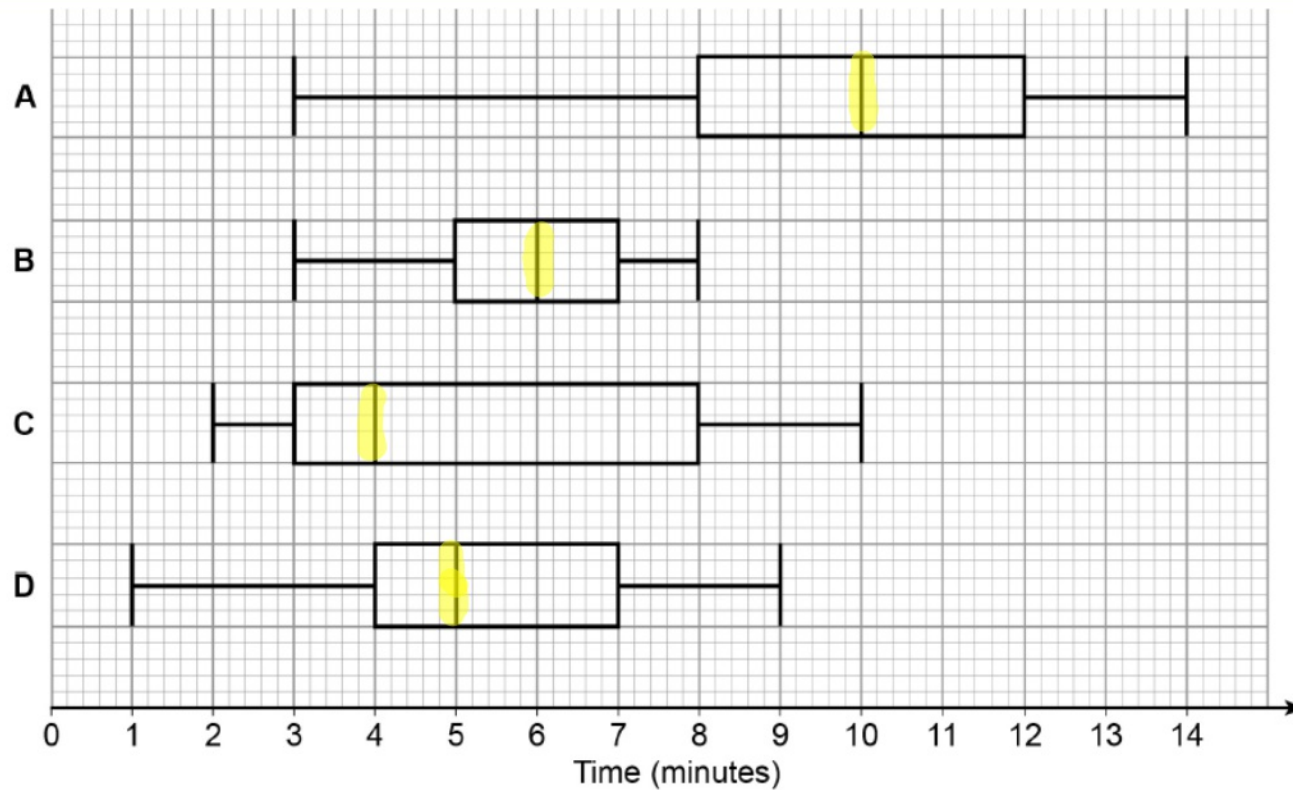
15 (a) On average, which supermarket had the lowest queuing times?

Give a reason for your answer.

[2 marks]

Supermarket _____

Reason _____



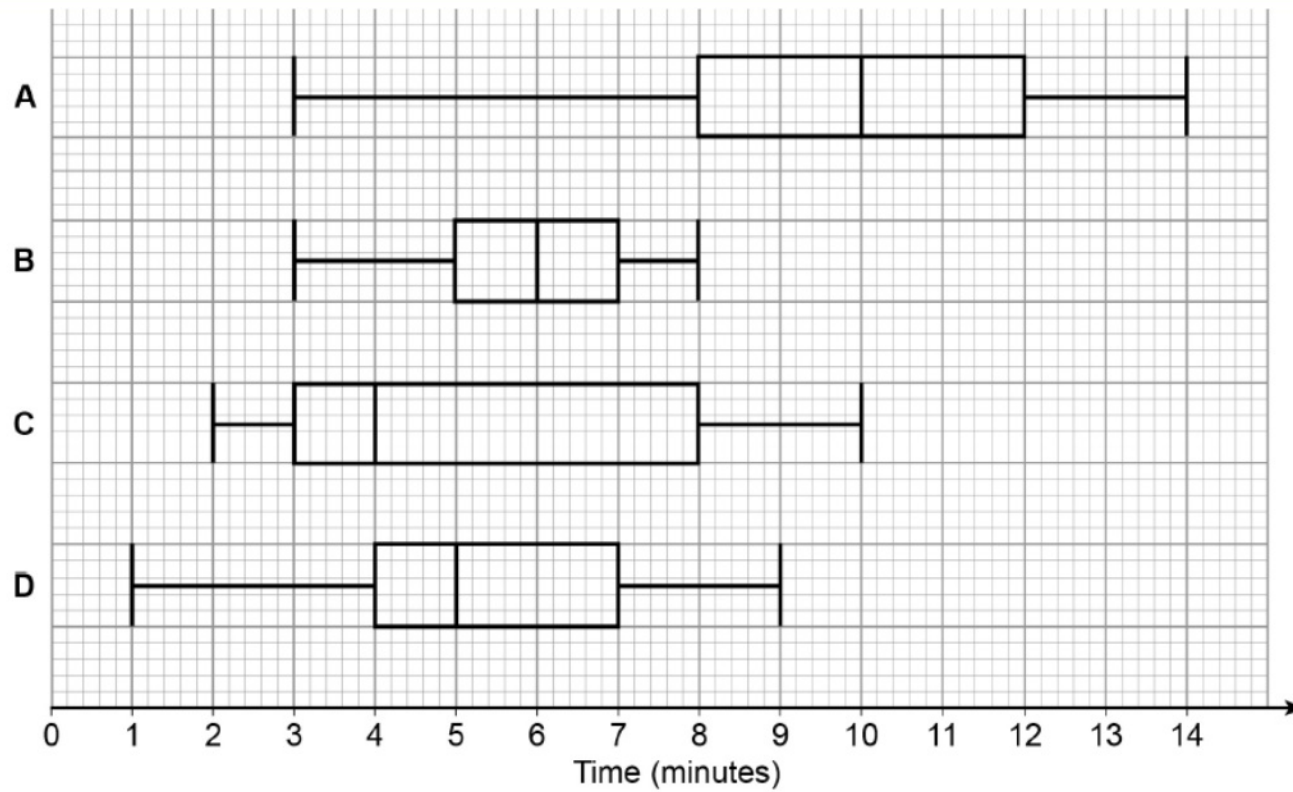
15 (a) On average, which supermarket had the lowest queuing times?

Give a reason for your answer.

[2 marks]

Supermarket C

Reason Lowest median time at 4 min ✓



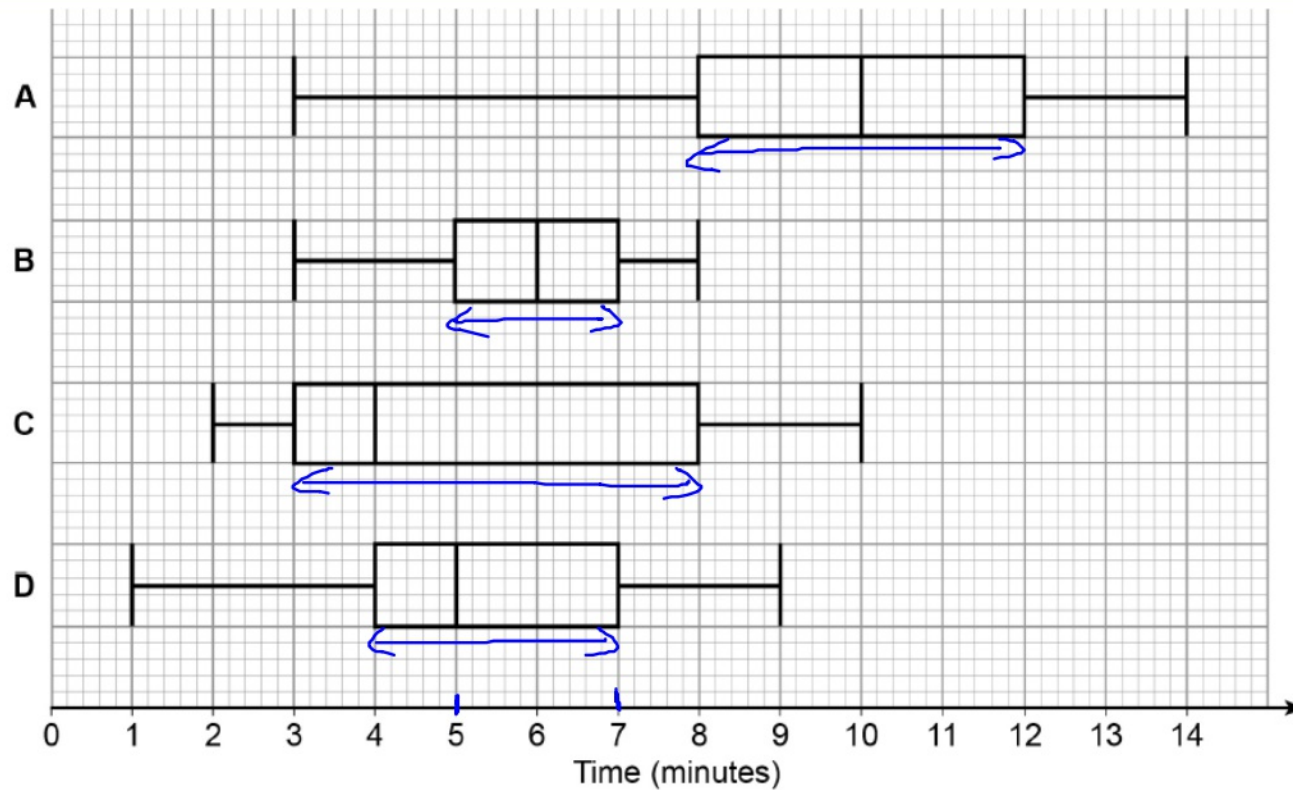
15 (b) At which supermarket were the queuing times most consistent?

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 B

Reason Smallest IQR of 2min ✓