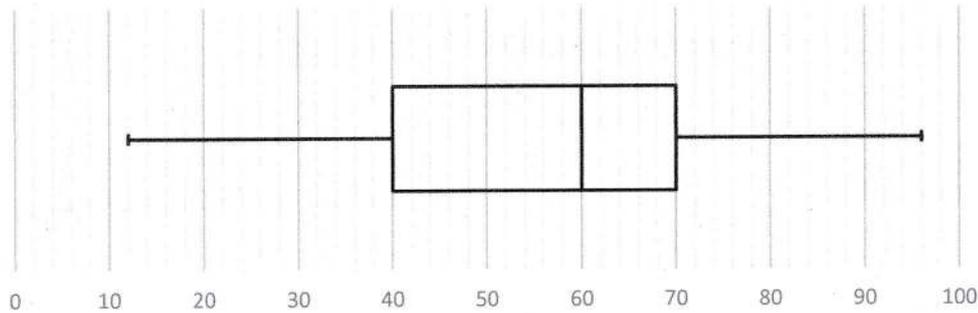


## BOX PLOTS - PRACTICE QUESTIONS

1.

The box plot below shows the marks, out of 100, that a group of students scored in a maths test.



(a) Complete the table below.

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
12	40	60	70	96

(b) What was the range of the scores?

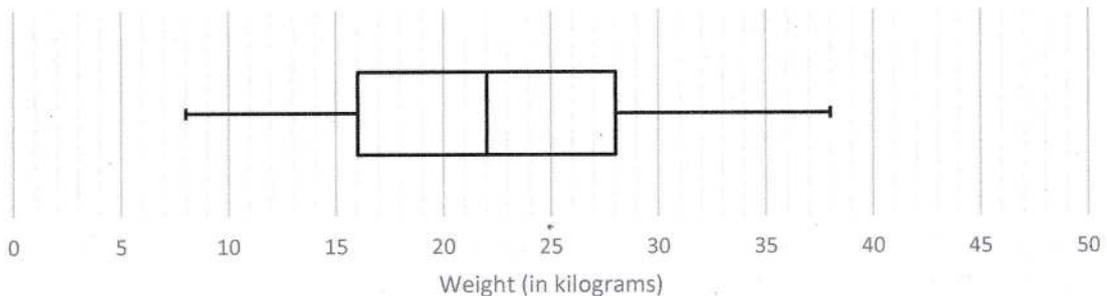
$$96 - 12 = 84$$

(c) What was the interquartile range of the scores?

$$70 - 40 = 30$$

2.

The box plot below shows the weights of a group of dogs.



(a) What is the weight of the lightest dog in the group?

$$8 \text{ kg}$$

(b) What is the median weight?

$$22 \text{ kg}$$

(c) What is the weight of the heaviest dog in the group?

$$38 \text{ kg}$$

(d) What is the range of the weights?

$$38 - 8 = 30 \text{ kg}$$

(e) What is the interquartile range of the weights?

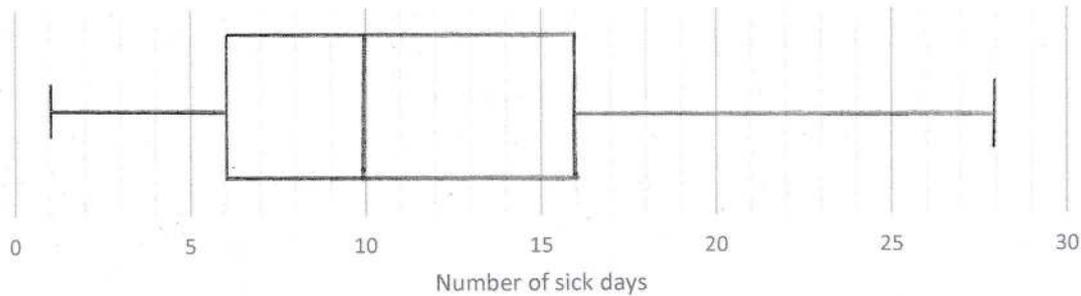
$$28 - 16 = 12 \text{ kg}$$

3.

The table below shows the number of sick days a group of employees took over a two-year period.

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
1	6	10	16	28

Use the information to construct a box plot on the axis below.



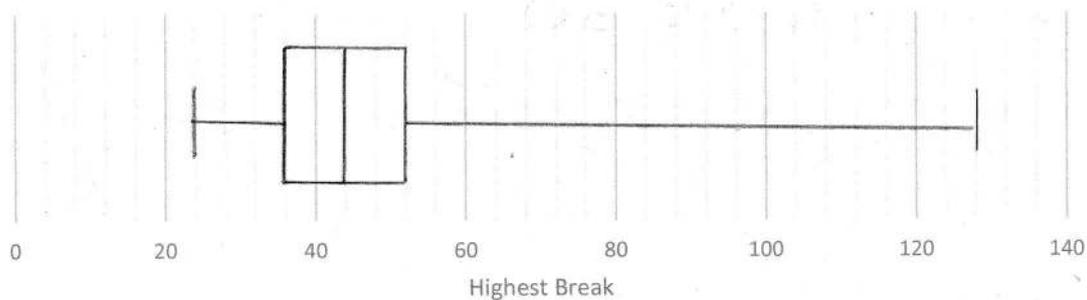
4.

The table below shows the highest break scored by members of a snooker club last season.

Minimum	Lower Quartile	Median	Upper Quartile	Range
24	36	44	52	104

Use the information to construct a box plot on the axis below.

$$\text{Maximum} = 104 + 24 = 128$$

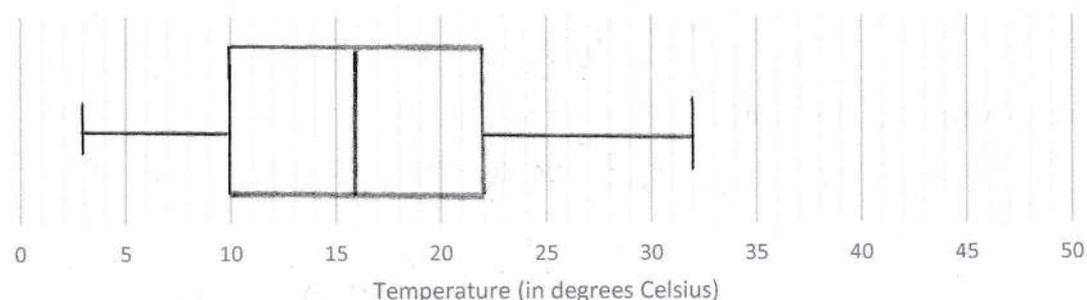


5.

The table below shows the temperatures (in degrees Celsius) recorded at midday in Bristol over 100 days.

Lower Quartile	Median	Maximum	Range	Interquartile Range
10	16	32	29	12

Use the information to construct a box plot on the axis below.



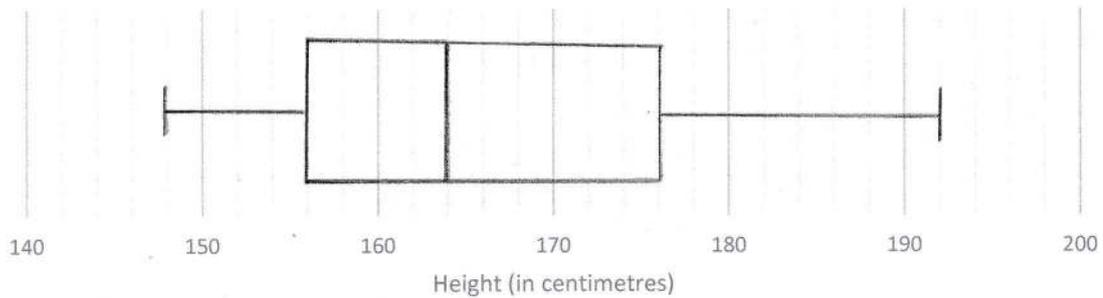
$$\text{Upper quartile} = 10 + 12 = 22$$

$$\text{Minimum} = 32 - 29 = 3$$

6.

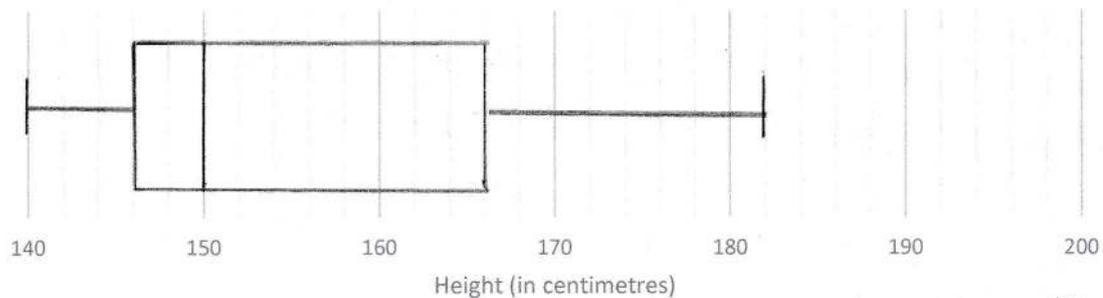
A group of Year 11s had their heights measured.  
The boys had a median height of 164 centimetres.  
The tallest boy had a height of 192 centimetres.  
The shortest boy had a height of 148 centimetres.  
The lower quartile for the boys was 156 centimetres.  
The upper quartile for the boys was 176 centimetres.

(a) Use the information to construct a box plot for the boys on the axis below.



The tallest girl had a height of 182 centimetres.  
The shortest girl had a height of 140 centimetres.  
The girls had a median height of 150 centimetres.  
The lower quartile for the girls was 146 centimetres.  
The interquartile range for the girls was the same as the boys.

(b) Use the information to construct a box plot for the girls on the axis below.



$$\text{Upper quartile} = 146 + 20 = 166$$

(c) Compare the range of the heights of the boys to the girls.

$$\text{Boys} = 192 - 148 = 44 \text{ cm}$$

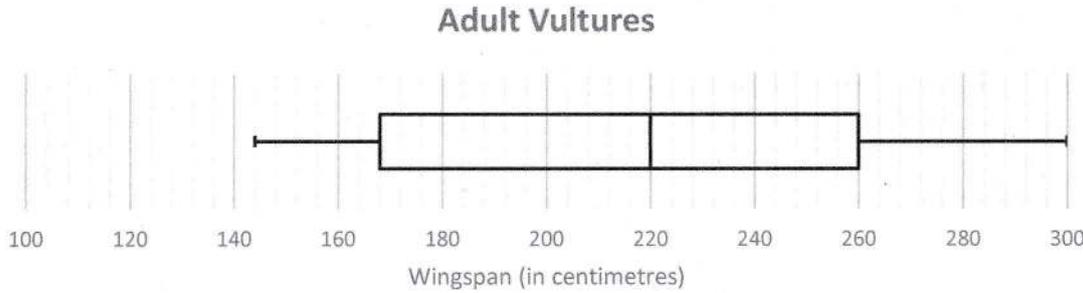
$$\text{Girls} = 182 - 140 = 42 \text{ cm}$$

The boys had a higher range of heights than the girls.

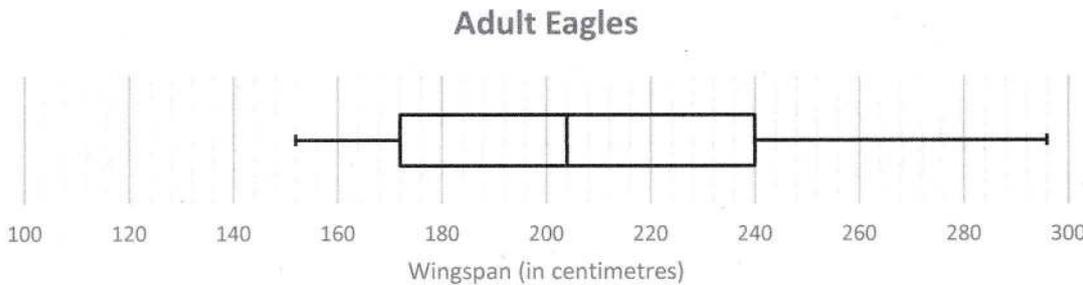
7.

A zoologist wanted to compare the wingspans of vultures and eagles.

The two box plots below show the wingspans of a group of adults from each species.



$$R = 300 - 144 = 156$$
$$IQR = 260 - 168 = 92$$



$$R = 296 - 152 = 144$$
$$IQR = 240 - 152 = 88$$

Make **three** comparisons about the distributions of wingspans of the vultures and the eagles.

- The vultures have a median of 220 cm compared to 204 cm for the eagles
- The vultures have a range of 156 cm compared to 144 cm for the eagles.
- The vultures have an interquartile range of 92 cm compared to 88 cm for the eagles.

8.

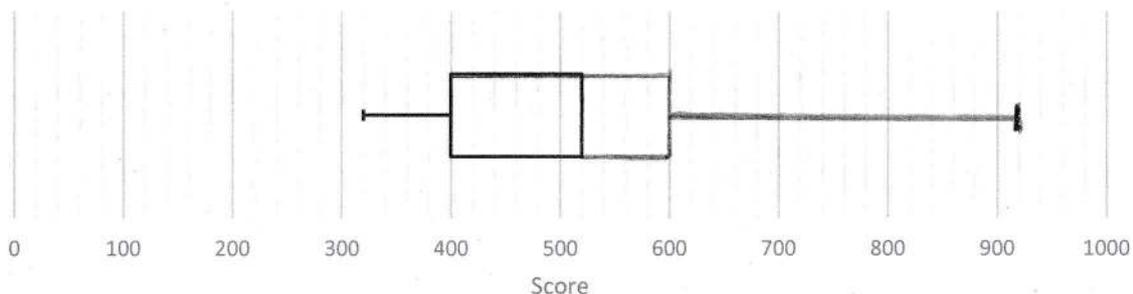
A group of friends played a game.

The incomplete box plot below represents their scores.

The interquartile range of the scores was 200.

The range of the scores was three times the interquartile range of the scores.

Use the information to complete the box plot.

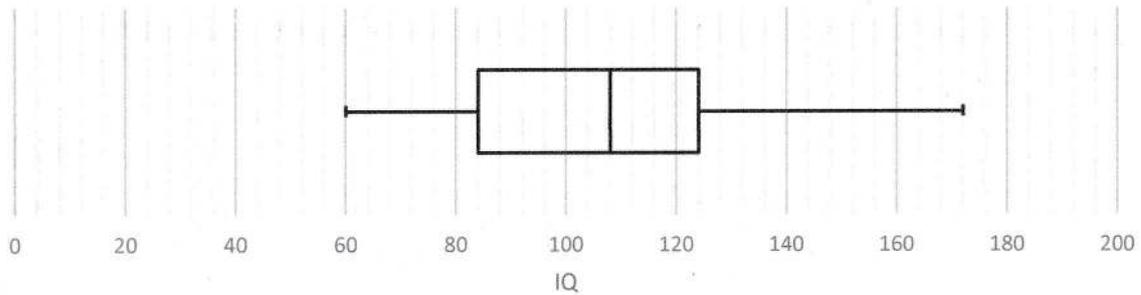


$$\text{Range} = 200 \times 3 = 600$$

$$\text{Maximum} = 320 + 600 = 920$$

9.

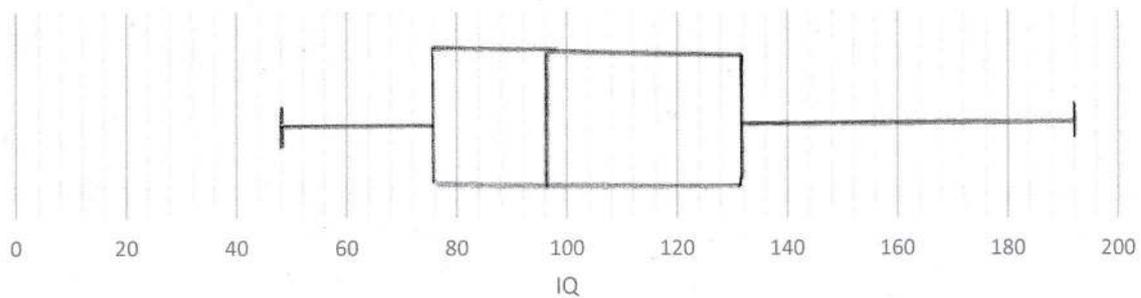
A scientist wanted to compare the IQs of girls and boys.  
The below box plot shows the IQs of a group of girls.



The minimum IQ of the boys was 48.  
The maximum IQ of the boys was 192.  
The median IQ of the boys was 12 less than the girls.  
The upper quartile of the boys was 8 more than the girls.  
The interquartile range of the boys was 56.

$$\begin{aligned} \text{Median} &= 108 - 12 = 96 \\ \text{uq} &= 124 + 8 = 132 \\ \text{Lq} &= 132 - 56 = 76 \end{aligned}$$

(a) Use the information to construct a box plot for the boys on the axis below.



(b) What percentage of the girls had an IQ greater than 84?

$$75\%$$

(c) What percentage of the boys had an IQ greater than 132?

$$25\%$$

(d) Compare the interquartile ranges of the boys and the girls.

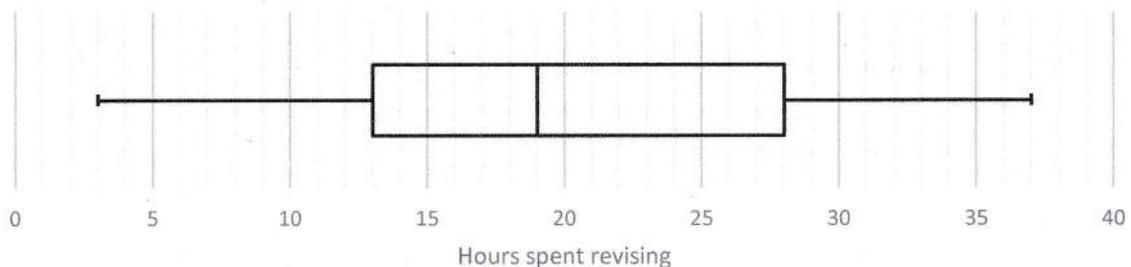
$$\text{Girls} = 124 - 84 = 40$$

$$\text{Boys} = 56$$

The interquartile range for the boys was 56, compared to 40 for the girls.

10.

Below is a box plot showing the number of hours students spent revising for a test.



What percentage of the students spent more than 19 hours revising?

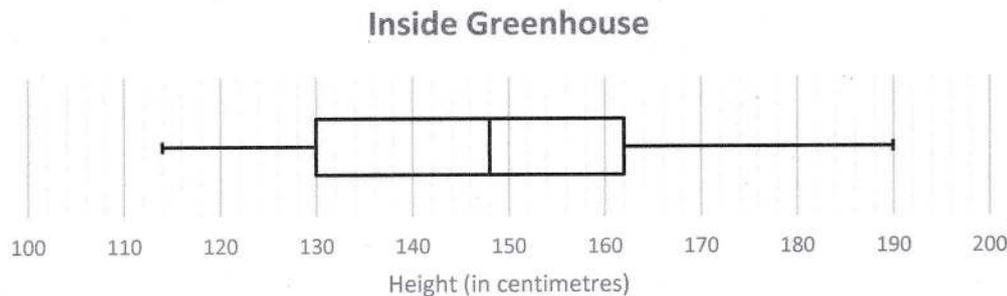
$$50\%$$

11.

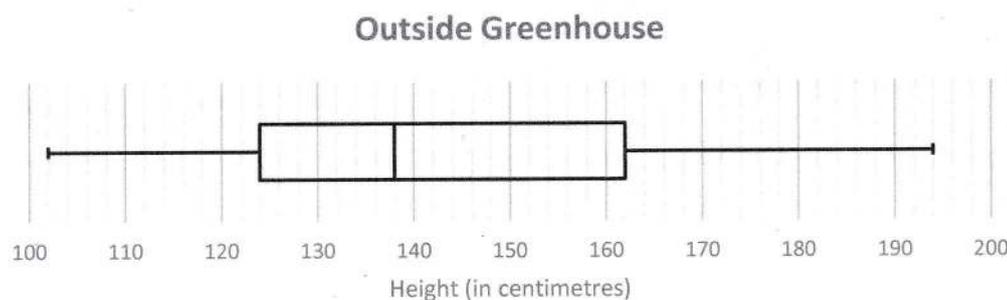
Susan grows tomatoes.

She grows some tomato plants inside her greenhouse and others outside her greenhouse.

The box plots below show the heights of the tomato plants inside and outside the greenhouse.



$$\begin{aligned} \text{Med} &= 148 \\ \text{Range} &= 190 - 114 \\ &= 76 \\ \text{IQR} &= 162 - 130 \\ &= 32 \end{aligned}$$



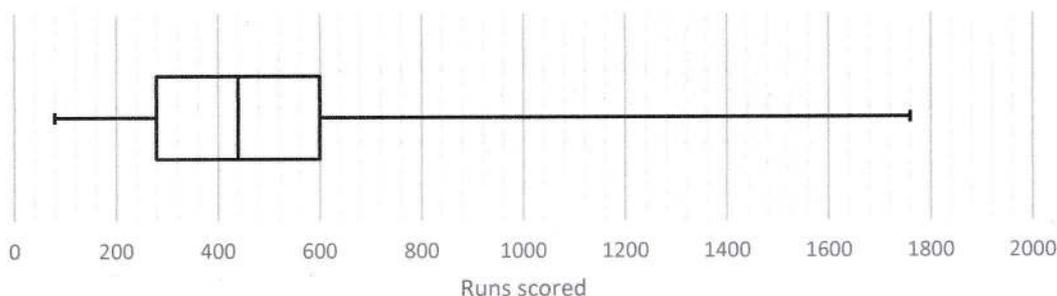
$$\begin{aligned} \text{Med} &= 138 \\ \text{Range} &= 194 - 102 \\ &= 92 \\ \text{IQR} &= 162 - 124 \\ &= 38 \end{aligned}$$

Make **three** comparisons about the distributions of the heights of tomato plants grown inside the greenhouse and those grown outside the greenhouse.

- Tomatoes grown inside have a median of 148, compared to 138 for those grown outside.
- Tomatoes grown inside have a range of 76, compared to 92 for those grown outside.
- Tomatoes grown inside have an interquartile range of 32, compared to 38 for those grown outside.

12.

Below is a box plot showing the number of runs scored by players at a cricket club last season.



What percentage of the players scored between 440 and 600 runs last season?

25%