

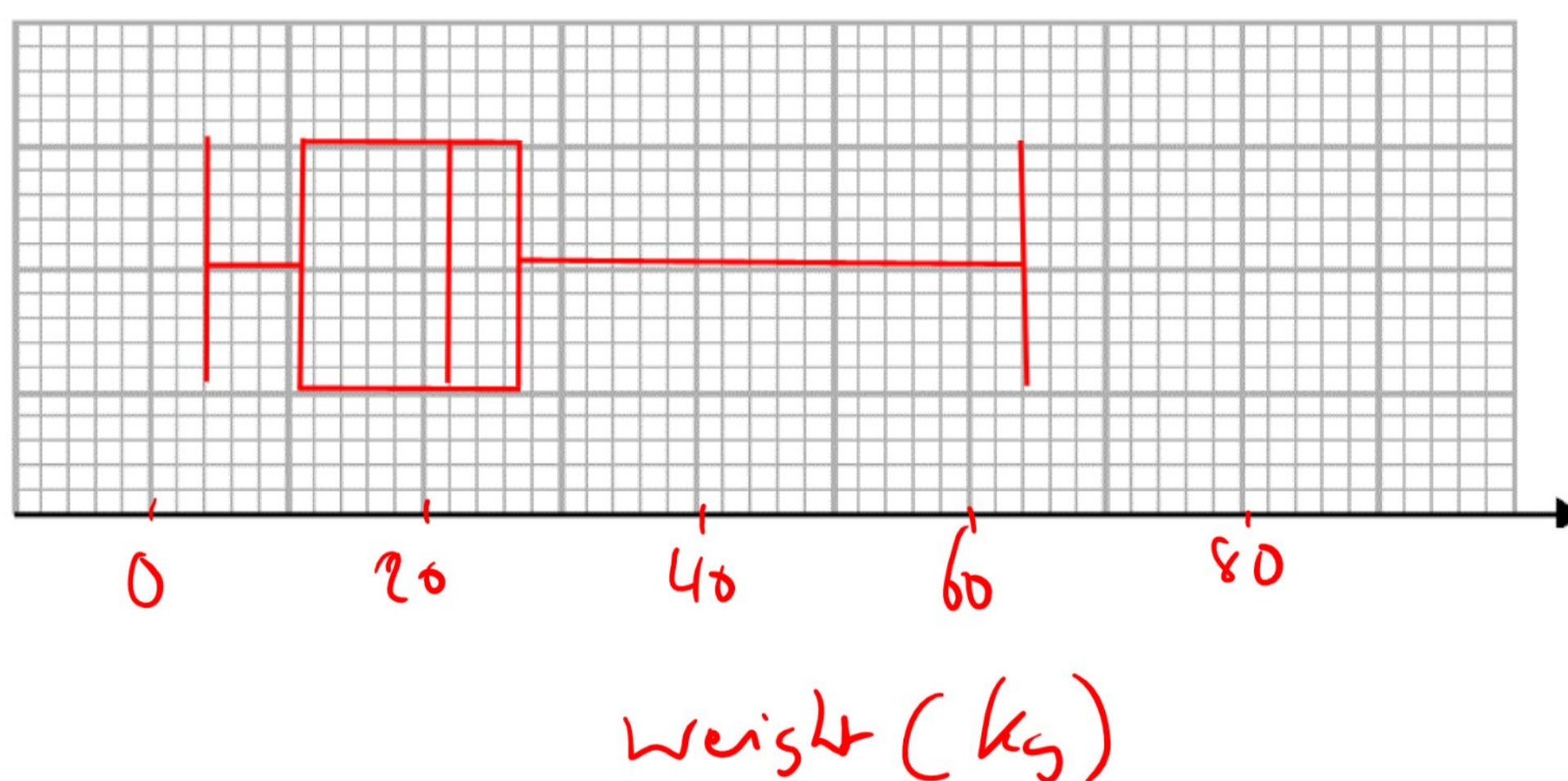


Box Plots Exam Practice

Q1. The table below shows some information about the weight of some dogs.

Use this information to draw a box-plot on the grid below.

Min	Lower Quartile	Median	Upper Quartile	Max
4	11	22	27	64



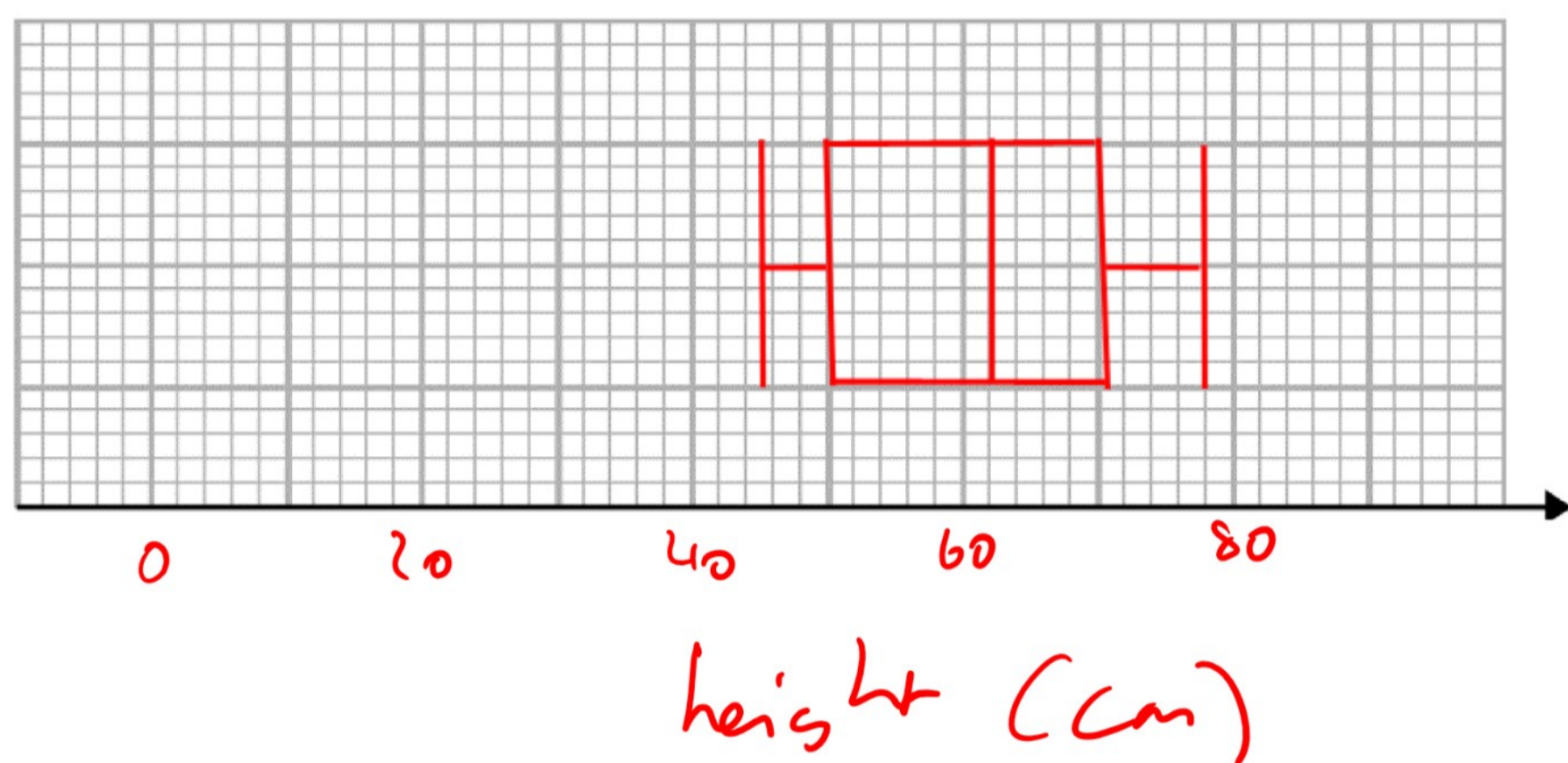
Answer: _____

(3 marks)



Q2. The heights of some plants is shown below in cm. Draw a box-plot on the grid below to show the distribution of the heights of the plants.

45, 48, 48, 50, 50, 55, 59, 59,
62, 62, 66, 66, 66, 66, 70, 71,
76, 78, 78



$$\begin{aligned} \text{Median} &= \left(\frac{19+1}{2}\right)^{\text{th}} & \text{LQ} &= \left(\frac{19+1}{4}\right)^{\text{th}} & \text{UQ} &= 3\left(\frac{19+1}{4}\right)^{\text{th}} \\ &= 10^{\text{th}} & &= 5^{\text{th}} & &= 15^{\text{th}} \\ &= 62 & &= 50 & &= 70 \end{aligned}$$

$$\text{Min} = 45, \quad \text{max} = 78$$

Answer: _____

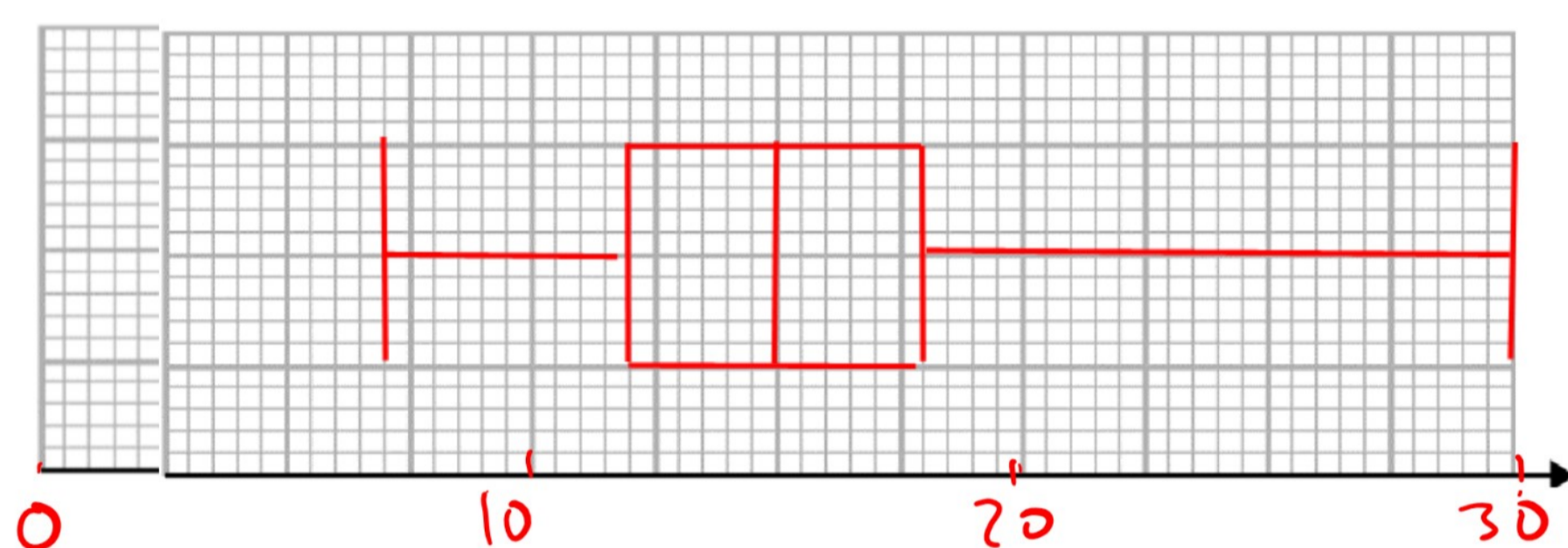
(4 marks)



Q3. The table below shows some information about the weight of some rocks in a garden in Kg.

Use this information to draw a box-plot on the grid below.

Min	Median	Upper Quartile	Range	Inter-Quartile Range
7	15	18	23	6



$$\begin{aligned} \text{Max} &= \text{Min} + \text{Range} \\ &= 7 + 23 \\ &= 30 \end{aligned}$$

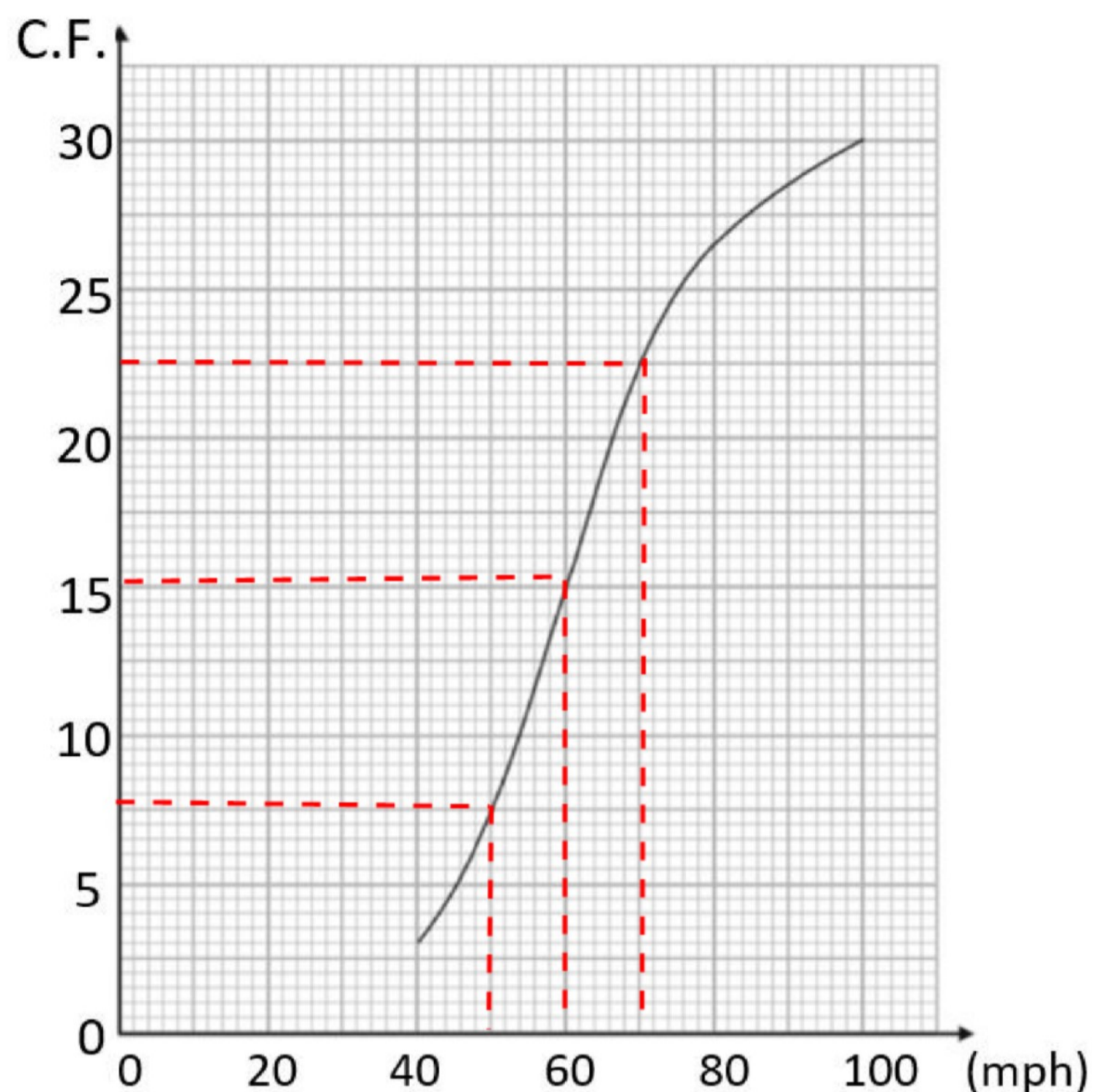
$$\begin{aligned} \text{LQ} &= \text{UQ} - \text{IQR} \\ &= 18 - 6 \\ &= 12 \end{aligned}$$

Answer: _____

(3 marks)



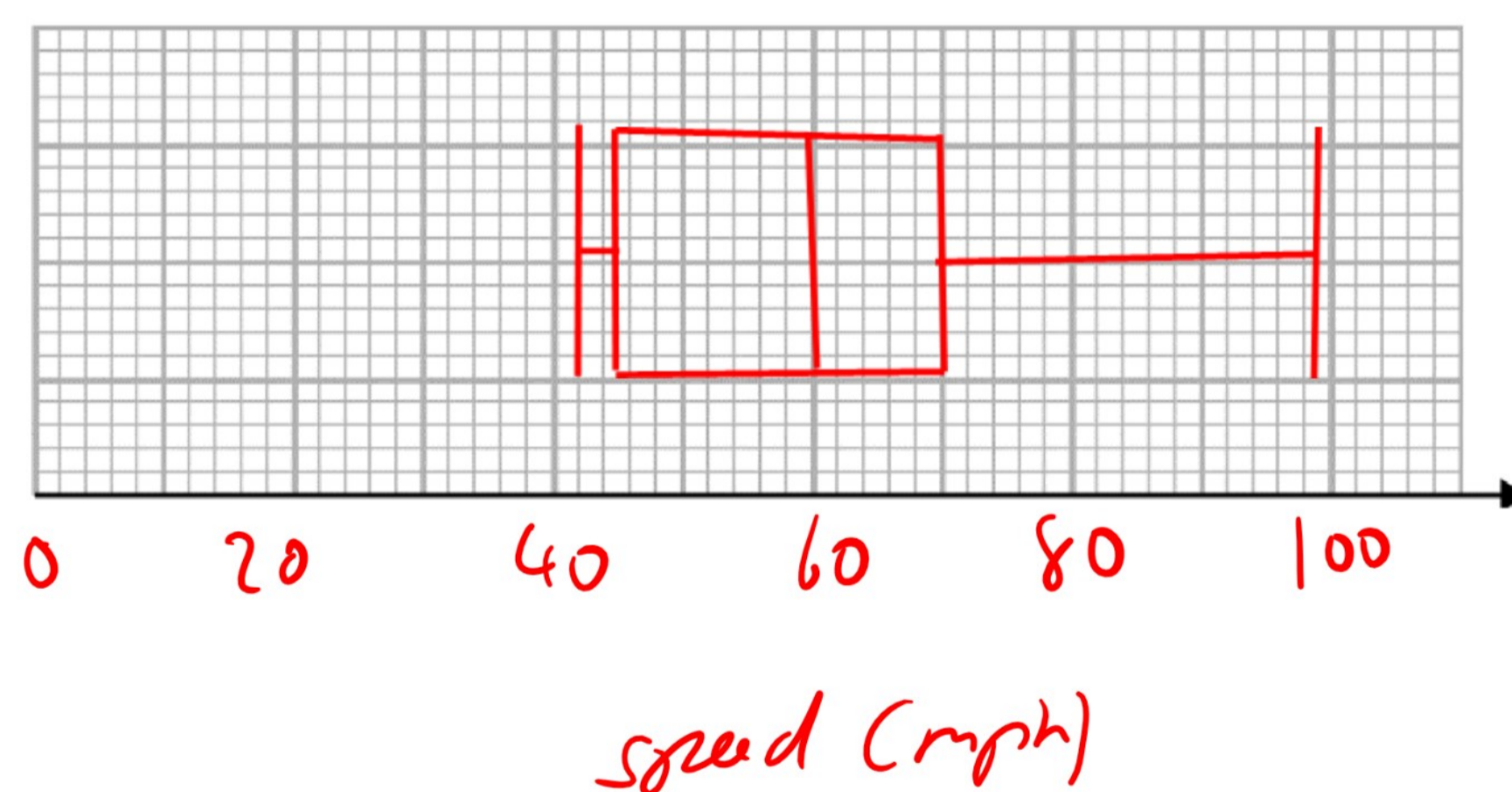
Q4. The cumulative frequency graph below shows the speeds of 30 cars



U.Q. = 70
Median = 60
L.Q. = 45

The slowest and fastest cars were travelling at 42mph and 99 mph.

Draw a box-plot below for the distribution of the speeds of cars.



Answer: _____

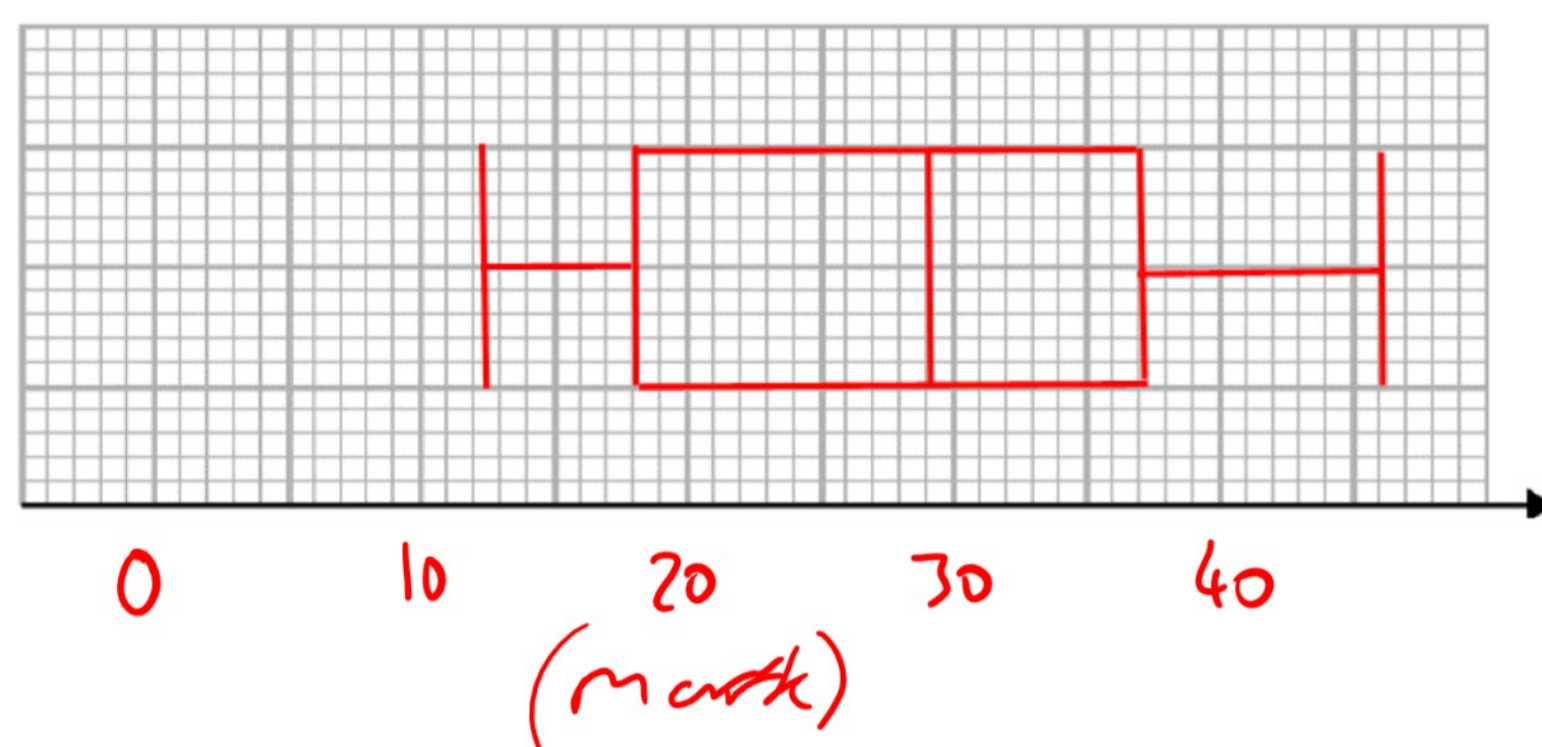
(4 marks)



Q5. The table below describes the marks of the boys in a class test.

a) Use this information to draw a box-plot on the grid below.

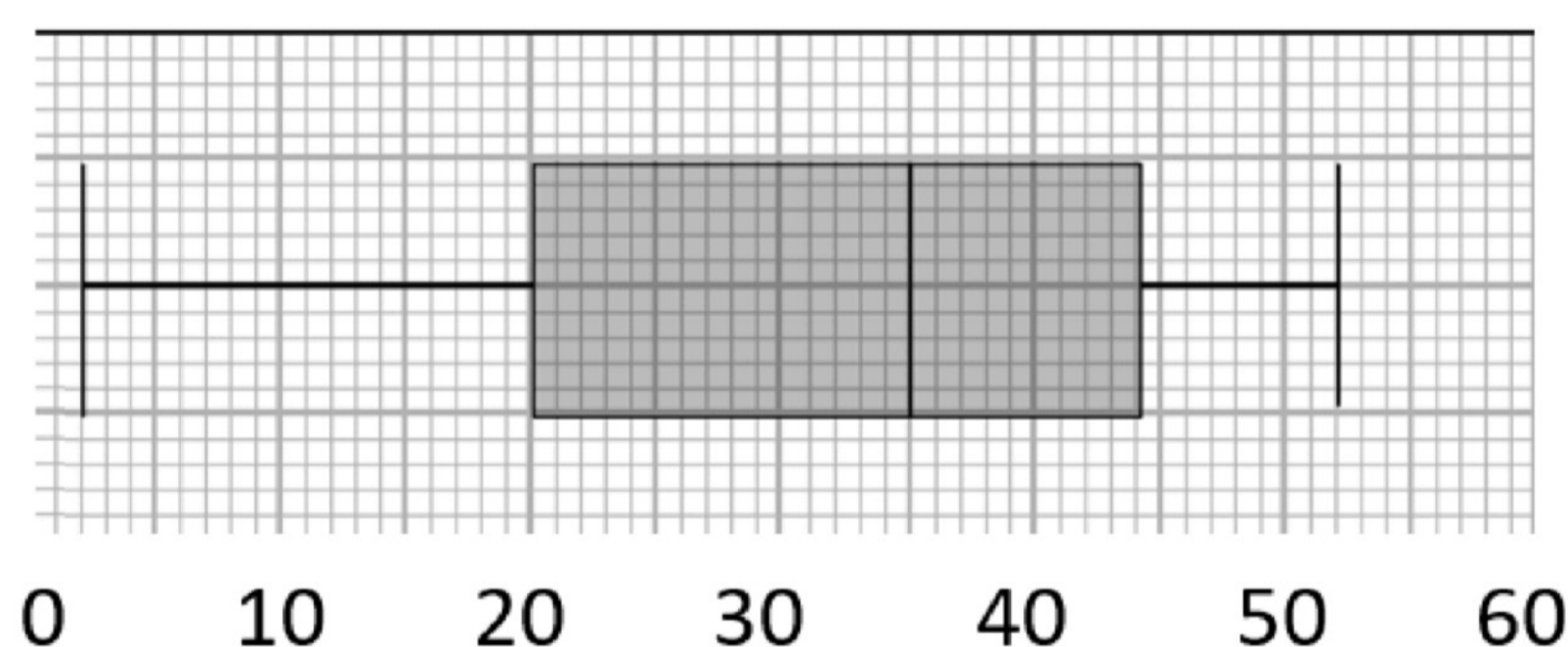
Min	Median	Lower Quartile	Range	Upper Quartile
15	29	18	31	37



$$\begin{aligned} \text{Max} &= \text{Min} + \text{Range} \\ &= 15 + 31 \\ &= 46 \end{aligned}$$

Answer: _____
(3 marks)

b) The box-plot below show the marks of the girls in the same test.
Compare the two distributions.

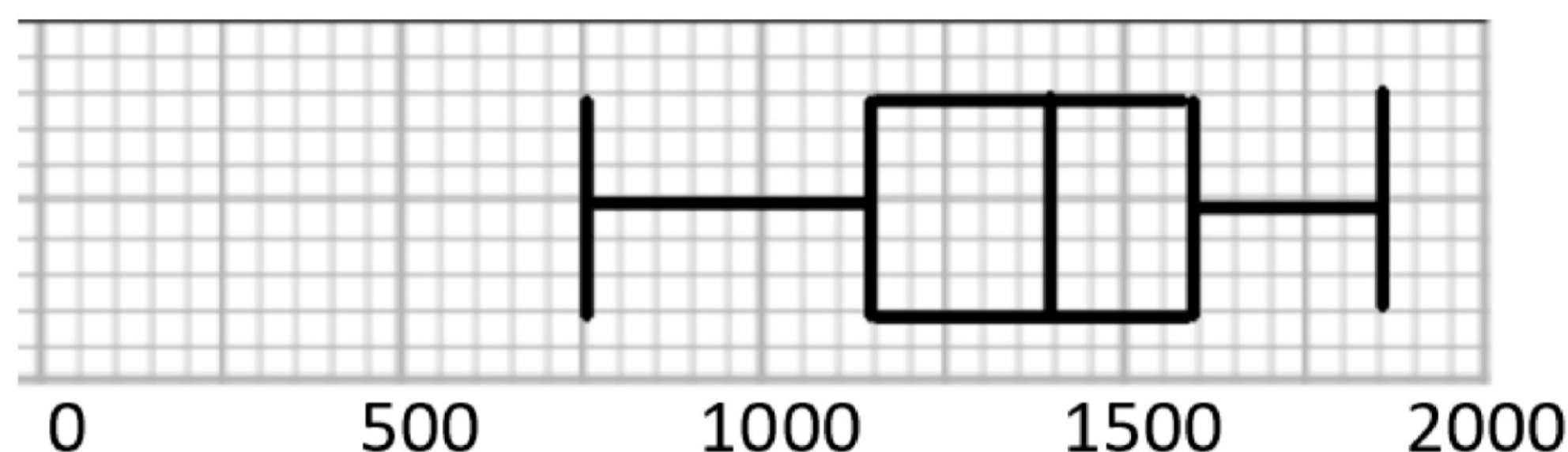


- Median of the girls is 35, which is higher than the boys (29) so the girls scores were better on average
- The IQR of the boys was 19 whereas the girls IQR is 24 (44-20) so the boys scores were more consistent.

Answer: _____
(3 marks)



Q6. Below is the distribution of the weights of some marrows in grams.



a) Find the weight over which 75% of the marrows weigh.

need the lower Q quartile

⇒ 1150g

Answer: 1150g
(1 mark)

b) Find the range and the inter-quartile range

$$\begin{aligned} \text{Range} &= \text{Max} - \text{Min} \\ &= 1850 - 750 \\ &= 1100g \end{aligned}$$

$$\begin{aligned} \text{IQR} &= \text{UQ} - \text{LQ} \\ &= 1600 - 1150 \\ &= 450g \end{aligned}$$

Answer: 1100g, 450g
(3 marks)

c) The farmer claims that there will be some marrows between 900g and 1100g in weight. Do you agree? Explain your choice.

not necessarily as this information is not visible from a box-plot.

Answer: _____
(1 mark)

d) Ray also farms marrows. The inter-quartile range for his crop is 300g. How do the two crops compare?

Ray's marrows are more consistent in size than the farmer's.

Answer: _____
(1 mark)

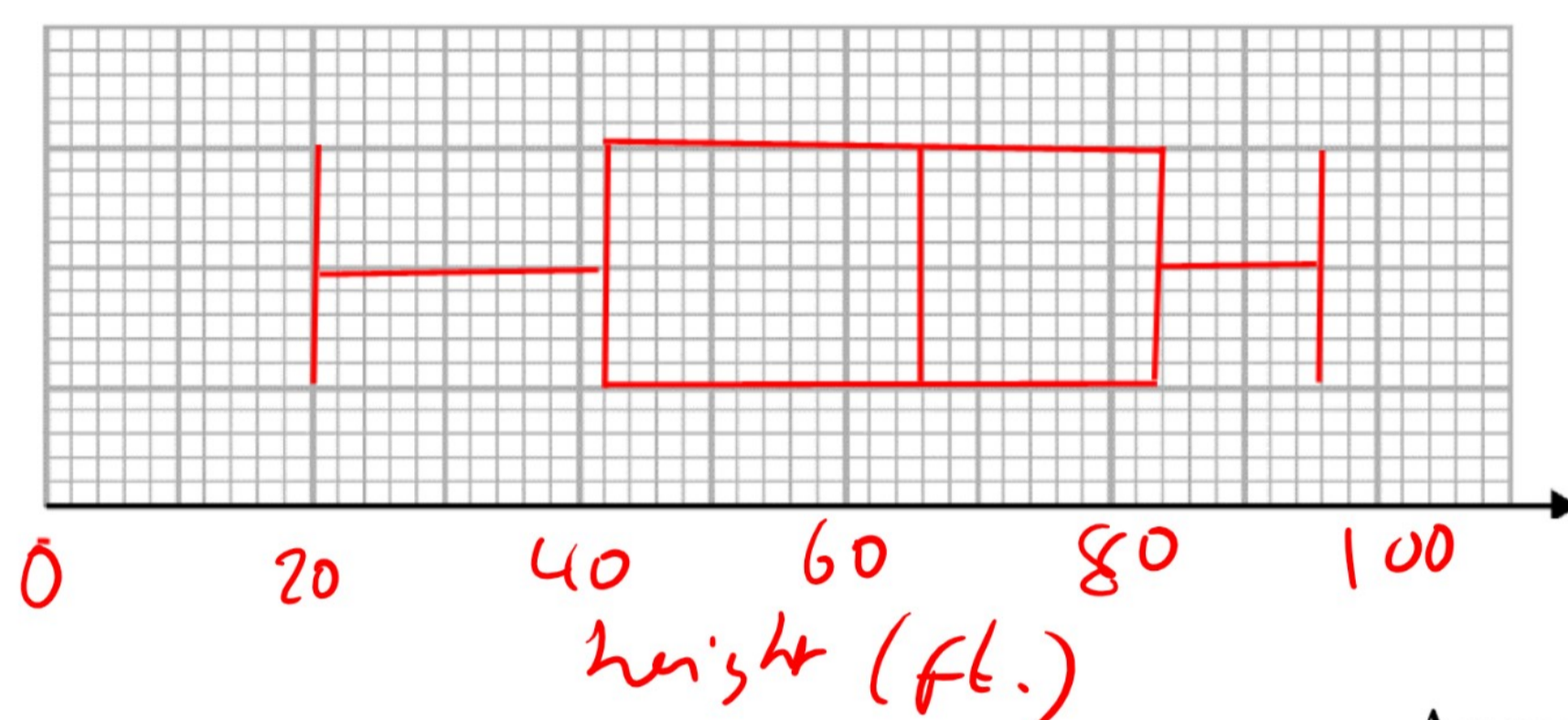


Q7. The table describes in feet the heights of trees in Oakley woods.

Lower Quartile	Median	Upper Quartile	Range	Max
42	66	84	76	96

$$\begin{aligned} \cdot \text{Min} &= \text{Max} - \text{Range} \\ &= 96 - 76 \\ &= 20 \end{aligned}$$

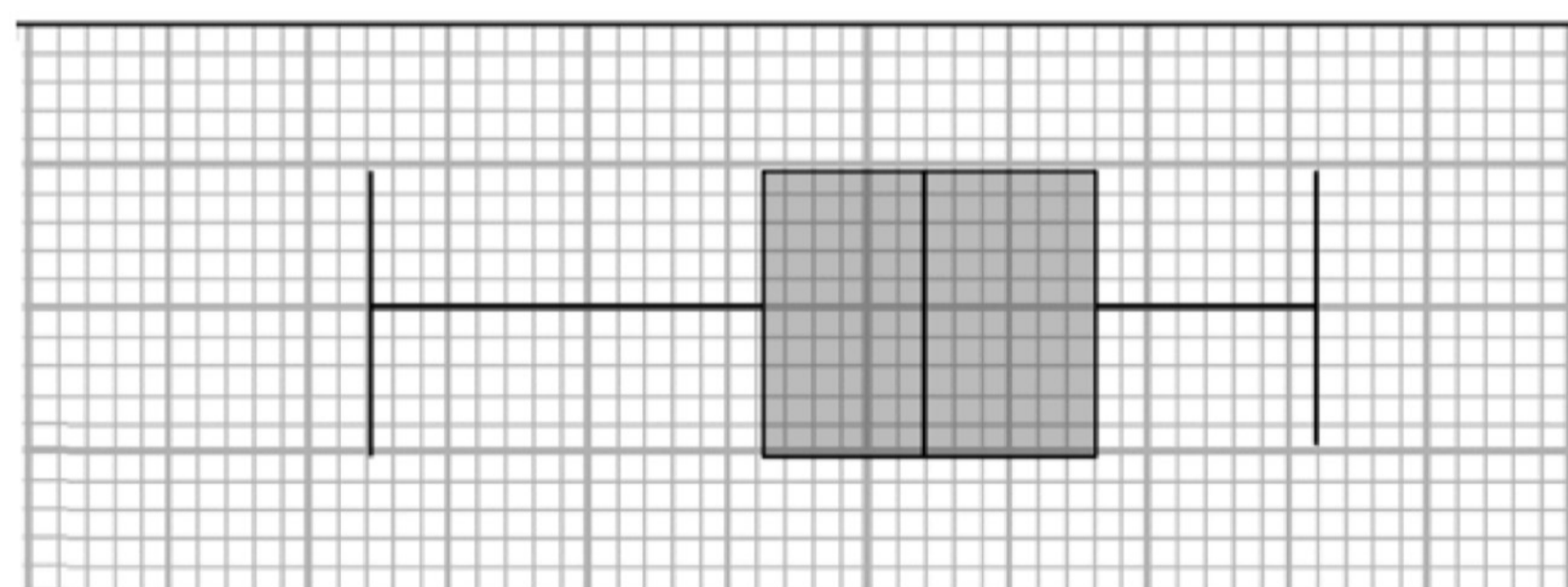
a) Use this information to draw a box-plot on the grid below.



Answer: _____

(3 marks)

b) This box-plot shows the heights of trees in Greenham forest. Compare the two distributions.



• The trees in Oakham have median 66 whilst the trees in Greenham are 64 so the trees are on average of similar height (slightly taller in Oakham)

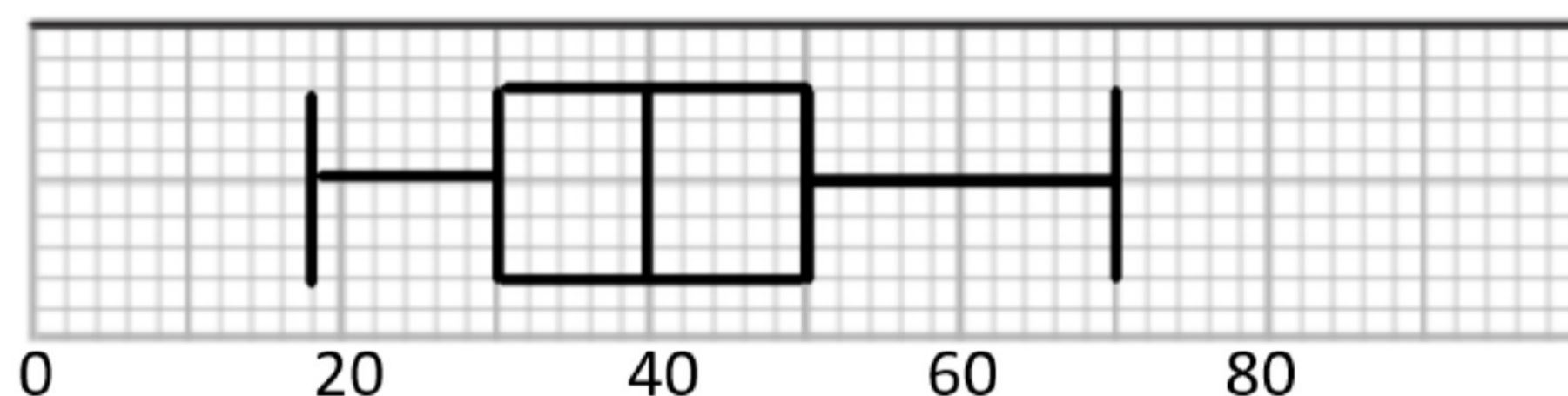
• The IQR of trees in Oakham is 42 whereas for Greenham it is 24 so the trees in Greenham are of a more consistent height.

Answer: _____

(3 marks)



Q8. The box plot shows the distribution of the times taken to run a race to the nearest minute. The number of competitors in the race was very large.



2 runners are chosen at random from the list of those taking part. Find:

a) the probability that they both took between 30 and 50 mins

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4} \quad \text{as } \frac{1}{2} \text{ of the runners take between 30 and 50 mins}$$

Answer: $\frac{1}{4}$
(2 marks)

b) the probability that only one of them took more than 50 mins

$$\begin{aligned} & \frac{1}{4} \times \frac{3}{4} + \frac{3}{4} \times \frac{1}{4} \\ &= \frac{3}{16} + \frac{3}{16} \\ &= \frac{6}{16} \end{aligned}$$

Answer: $\frac{3}{8}$
(3 marks)

c) an estimate for the probability that neither of them took less than 24 minutes

$$\text{Min} = 18, \text{ LQ} = 30$$

$$\frac{24-18}{12} = \frac{1}{2} \Rightarrow \text{approx } \frac{1}{2} \text{ of } \frac{1}{4} \text{ of people took } \leq 24 \text{ m}$$

$\Rightarrow \frac{1}{8}$ took < 24 mins, so $\frac{7}{8} \times \frac{7}{8} = \frac{49}{64}$

Answer: $\frac{49}{64}$
(3 marks)