

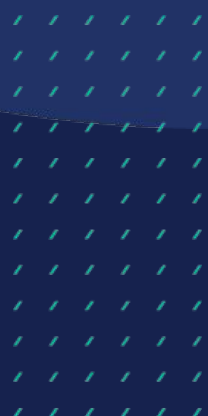
2022 GCSE Advance Information

Sparx Topics & Key Questions

We are always looking for ways to support maths teachers and students. In order to help you and your year 11s this year we've pulled together a list of key questions which may be useful to practise with your students based on the exam board topic lists.

These 24 key questions are all taken from our library of over 45,000 high-quality questions in Sparx Maths. If you are a Sparx Maths School then your students can use the Topic Codes provided to search the full content library directly within the independent learning section of Sparx Maths to help target their revision.

Please note this is not an exhaustive topic guide it is simply designed to help you pull together some key questions to use to check for understanding in lessons, starters, or as worksheets with your learners.



Statistics	Topics	Sparx Topic Codes
<u>Diagrams</u>	<u>Frequency polygon</u>	U840
	<u>Cumulative frequency graph</u>	U642
	<u>Box plot</u>	U837
	<u>Histogram</u>	U983, U267
<u>Measures</u>	<u>Mean</u>	U877, U569
	<u>Lower and upper quartiles</u>	U837, U642
	<u>Inter-quartile range</u>	U642
<u>Populations</u>	<u>Compare distributions</u>	U507

Diagrams - Frequency polygon

Drawing and interpreting frequency polygons

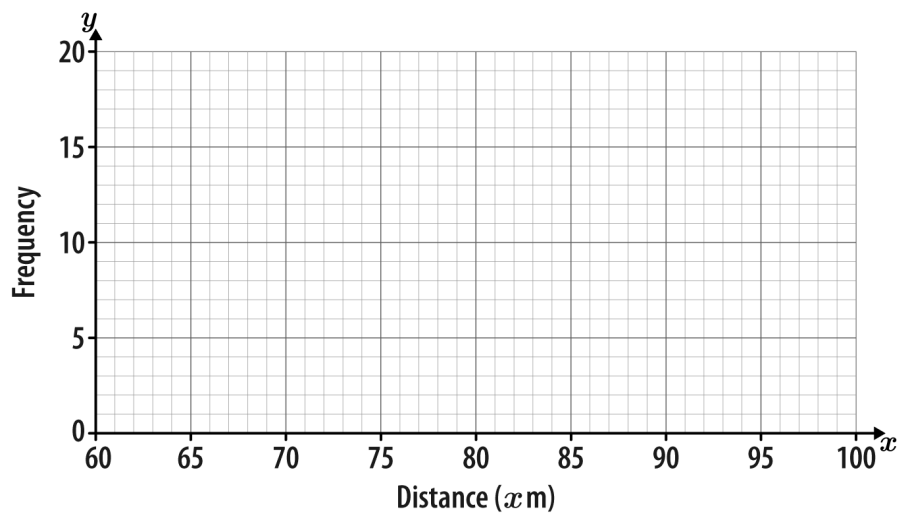
U840

This table shows information about the javelin throws in a competition.

Distance (x m)	Frequency
$60 < x \leq 70$	9
$70 < x \leq 80$	11
$80 < x \leq 90$	16
$90 < x \leq 100$	4

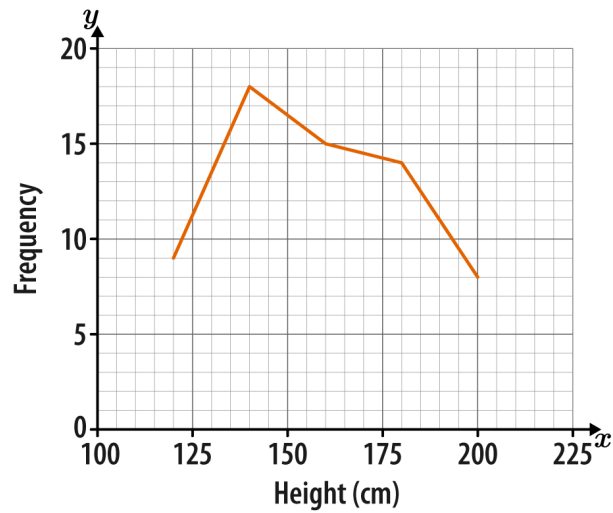
Copy the axes below.

On your axes, draw a frequency polygon to show the information in this table.



This frequency polygon shows information about the heights of the members of a badminton club.

Calculate an estimate for the mean height.
Give your answer to 1 d.p.



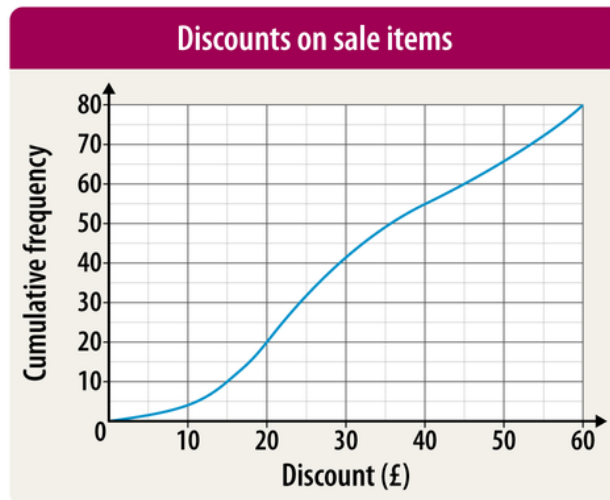
Diagrams - Cumulative frequency graph

Interpreting cumulative frequency graphs

U642

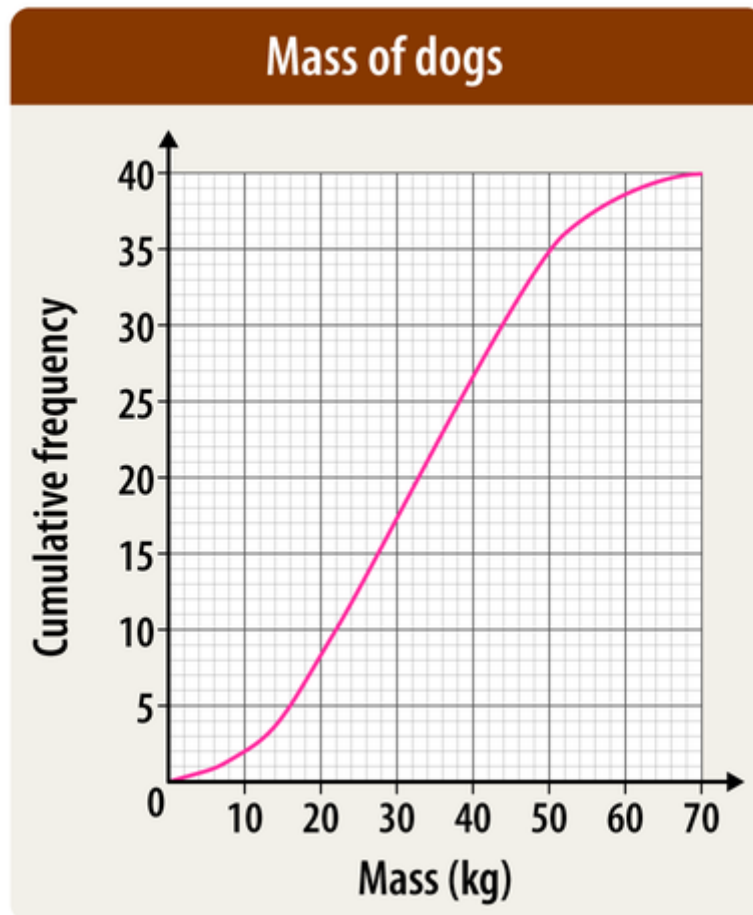
A shop has an event where 80 items are on sale. Each item is discounted by up to £60.

- a) Find the upper and lower quartiles of the discounts.
- b) Find the interquartile range of the discounts.



A vet weighed 40 dogs and displayed the results in the cumulative frequency graph below.

Estimate the number of dogs that were between 10 kg and 36 kg.



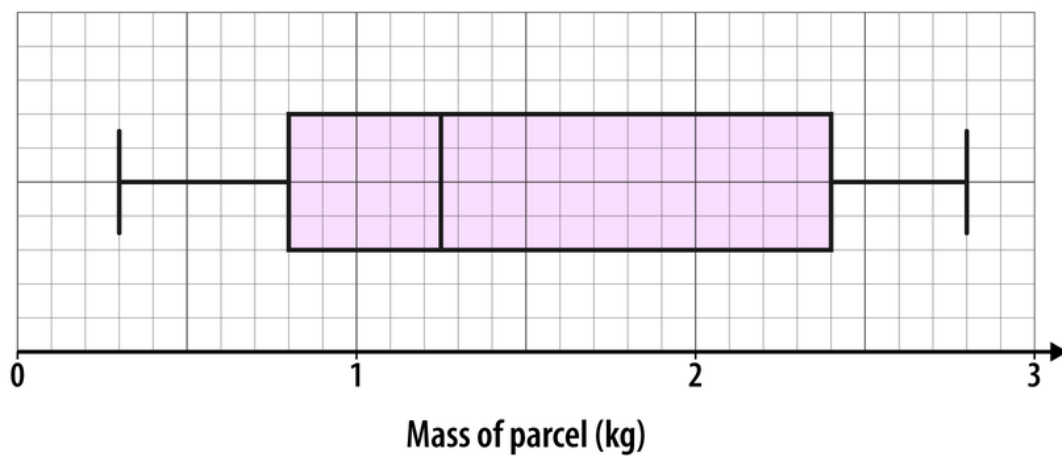
Diagrams - Box plot

Interpreting box plots

U837

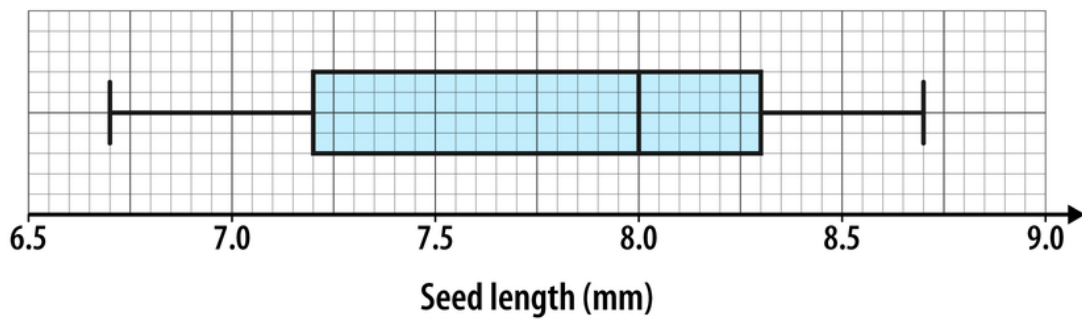
This box plot shows the distribution of the masses of some parcels.

Work out the interquartile range of the masses.



Bethan measured the lengths of 160 melon seeds.
She then drew this box plot for her results.

Work out an estimate for the number of seeds with lengths of more than 8.3 mm.



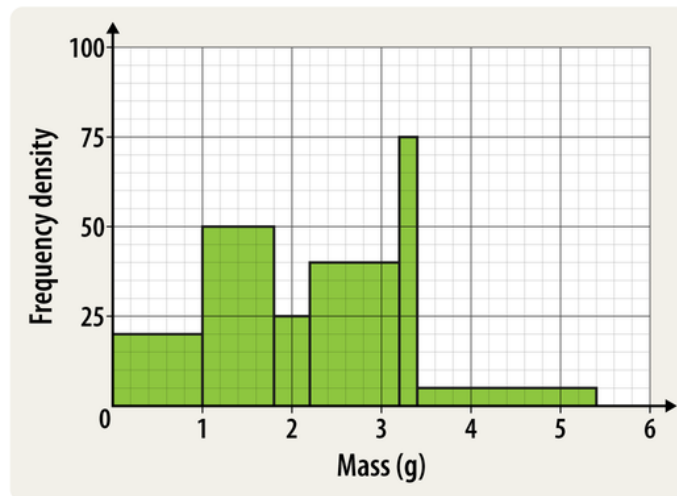
Diagrams - Histogram

Interpreting histograms

U983

The histogram below shows information about the masses of gold in the rings in a jewellery shop.

- a) Work out an estimate for the number of rings that contain between 1.4 g and 3 g of gold.
- b) Write a sentence to explain why the value you calculated in part a) is only an estimate.

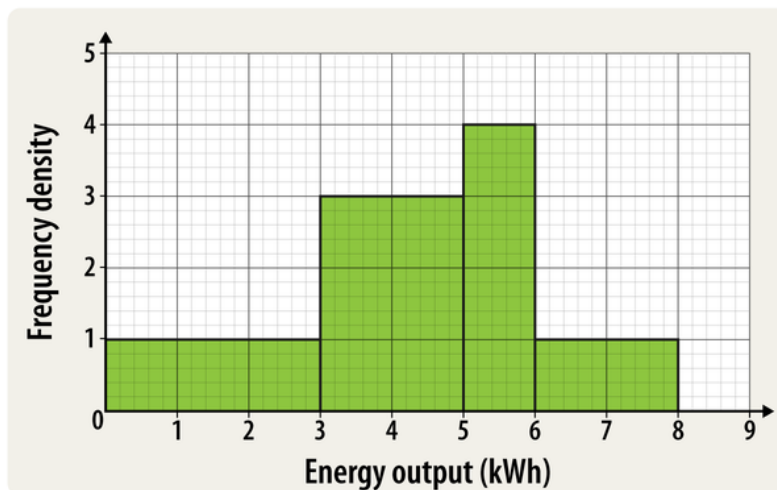


Calculating averages from histograms

U267

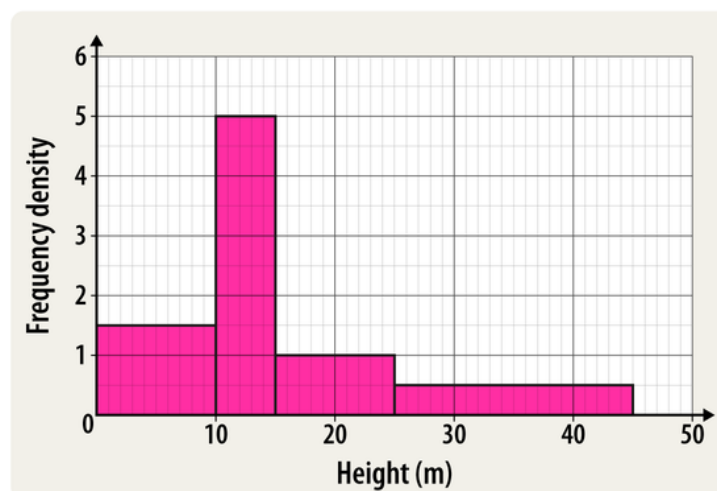
The histogram below shows information about the daily energy output of a solar panel for a number of days.

Calculate an estimate for the mean daily energy output.
If your answer is a decimal, give it to 1 d.p.



The histogram below shows information about the heights of 60 trees in a forest.

Work out an estimate for the median height of these trees.
If your answer is a decimal, give it to 1 d.p.



Measures - Mean

Estimating the mean from grouped data

U877

Jordan measured the mass of each of the elephants at a sanctuary.

Calculate an estimate of the **mean** mass of the elephants at this sanctuary.

Give your answer in tonnes to 1 d.p.

Mass, m (tonnes)	$1 < m \leq 2$	$2 < m \leq 3$	$3 < m \leq 4$
Frequency	6	13	4

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Frequency	6	13	4

The table below shows how much time some people spent exercising yesterday.

a) What is the **modal class** of time spent exercising?

b) In which class does the **median** lie?

Time spent, x (minutes)	Frequency
$0 < x \leq 10$	8
$10 < x \leq 20$	23
$20 < x \leq 30$	11
$30 < x \leq 40$	9
$40 < x \leq 50$	13
$50 < x \leq 60$	15

Finding averages from frequency tables

U569

William rolled a dice 25 times and recorded how many times it landed on each number in the frequency table below. What was the modal score?

Score	Frequency
1	4
2	1
3	8
4	3
5	4
6	5

Harvey asked some of his friends how old they were. His results are shown in the table below.

What was the **median** age?

Age (years)	Frequency
11	2
12	5
13	4
14	3
15	2
16	4

Grace recorded the number of items bought by each customer in a clothes shop over two days. Her results are shown in the table below.

Work out the **mean** number of items bought by each customer.
Give your answer as a decimal.

		Day	
		Saturday	Sunday
Items bought	1	4	6
	2	1	5
	3	7	2
	4	2	3

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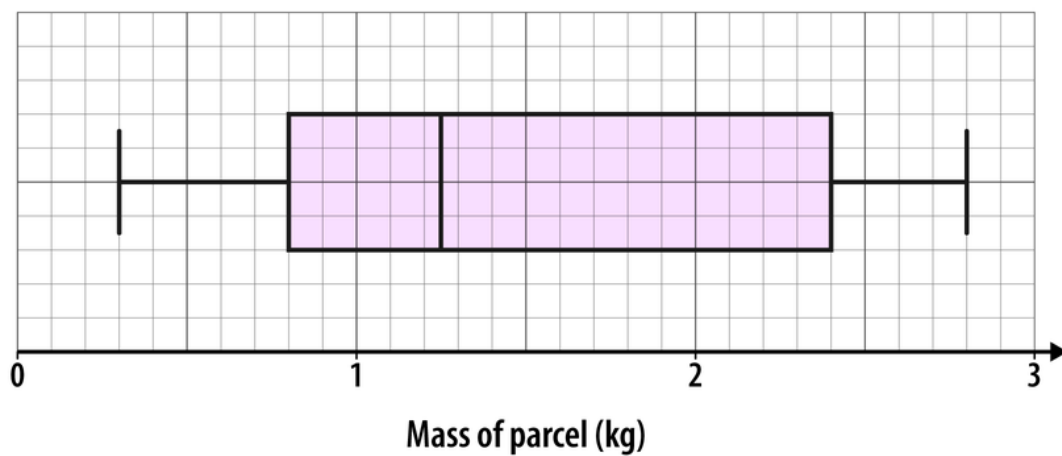
Measures - Lower and upper quartiles

Interpreting box plots

U837

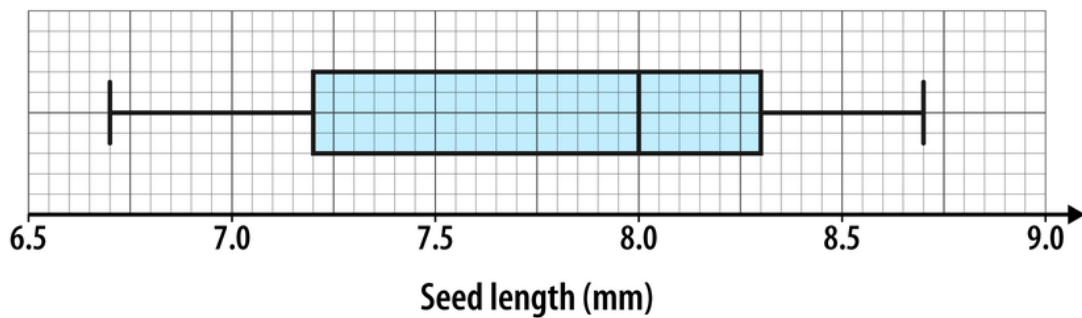
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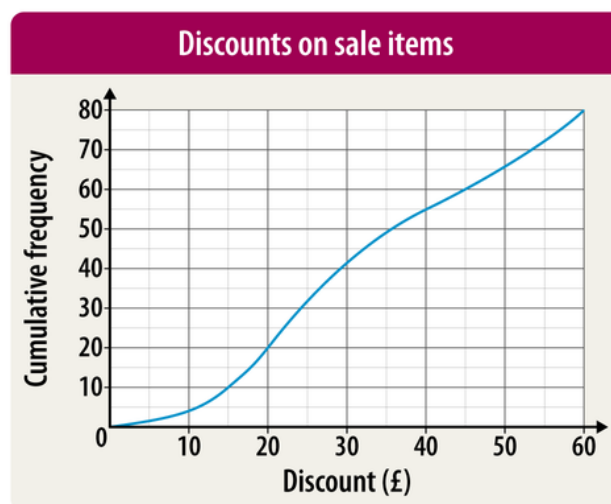


Interpreting cumulative frequency graphs

U642

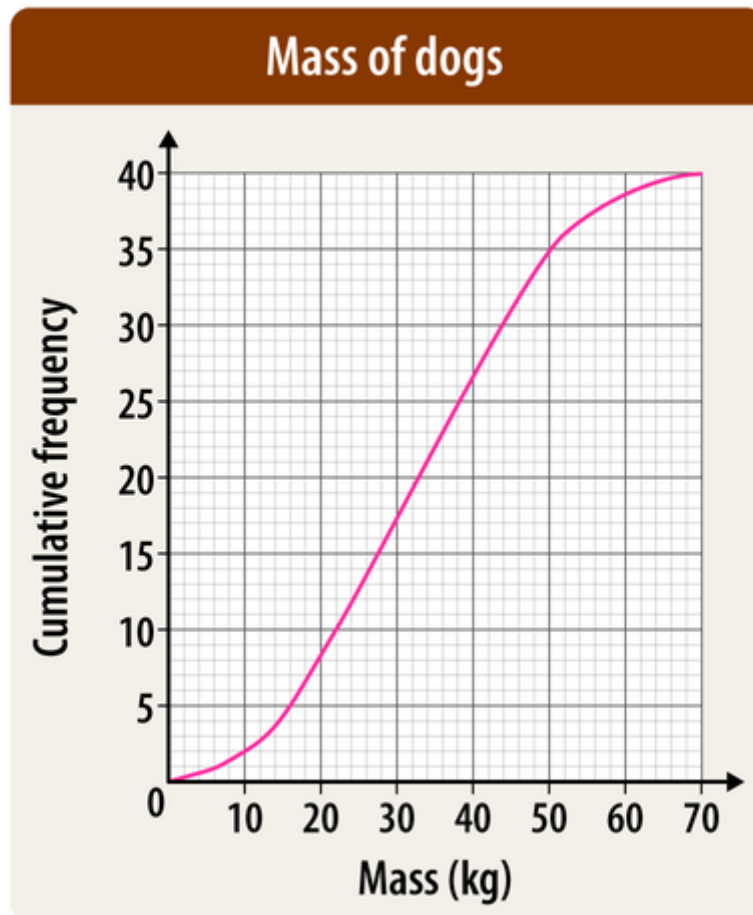
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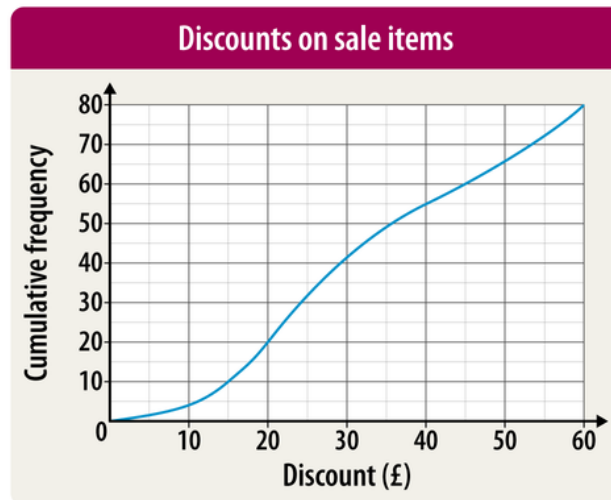
Measures - Inter-quartile range

Interpreting cumulative frequency graphs

U642

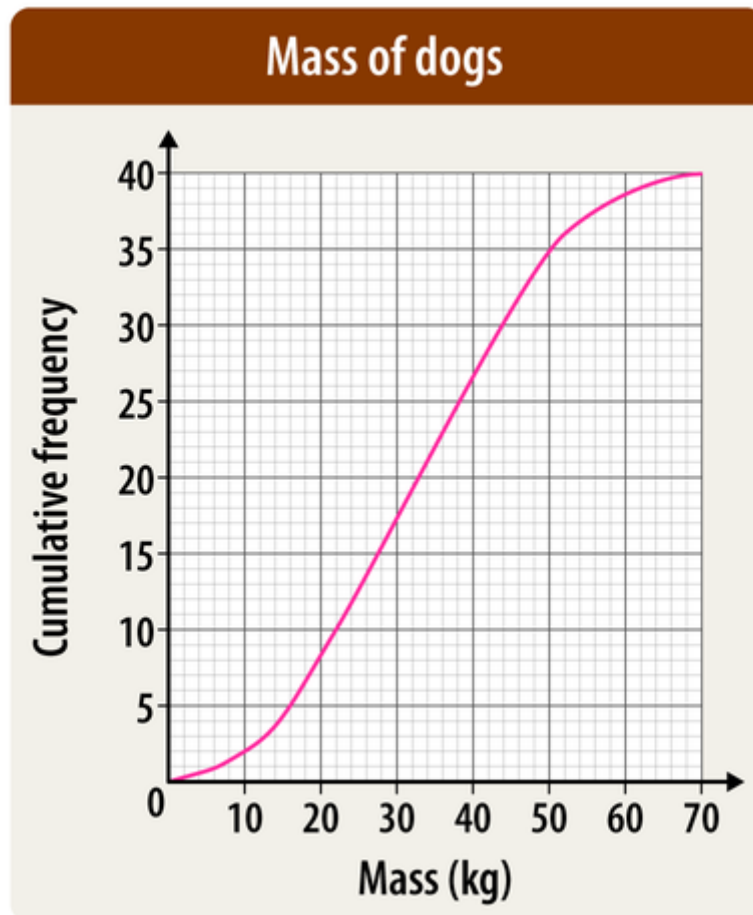
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Populations - Compare distributions

Comparing populations using box plots and cumulative frequency graphs

U507

Information about the masses of two types of penguin in a wildlife park is shown below.

- a) The median mass of the emperor penguins is 24 kg. Estimate the interquartile range for the masses of the emperor penguins.
- b) The interquartile range for the masses of the king penguins is 6 kg. Estimate the median mass of the king penguins.
- c) Give **two** comparisons between the masses of the emperor and king penguins.

