Maths – Year 10 Higher – Unit 5

SAMPLING

Stratified
A random sample selected from different groups, eg. Age groups – numbers sampled from each group is proportional to group size – eg. 1 from a group of 10, 2 from a group of 20, etc

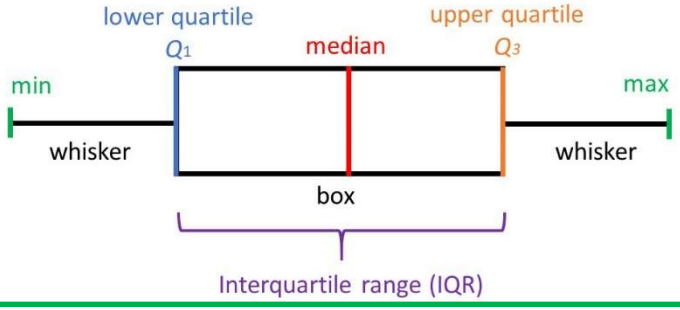
Quota
A random sample of a fixed number taken from each group – eg. 10 20-year-olds, 10 50-year-olds

Systematic
Selection every nth person – eg. Every 10th person to pass a shop

Random
Population are sampled randomly – may be determined using random number generators – if 3, 9, and 21 are generated then the 3rd, 9th and 21st people, for example, walk past a shop are sampled

Convenience
The sample taken is chosen at one place at one time – therefore those people present at that time are sampled

Box Plots



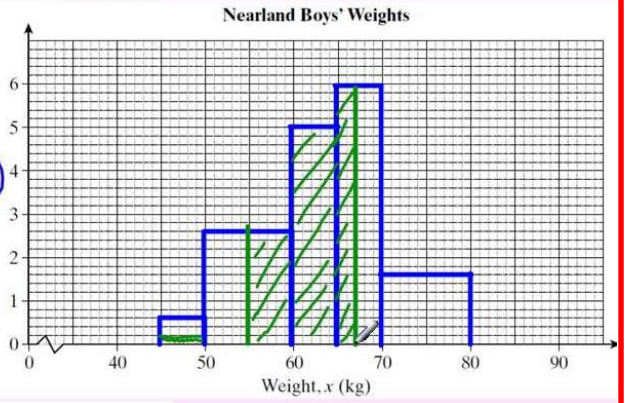
Histograms

- Frequency density goes on the y axis (frequency ÷ class width)
- To find the frequency 'how many', calculate the area of each rectangle required

(a) Draw a histogram to represent the weights of the Nearland boys. *(3 marks)*

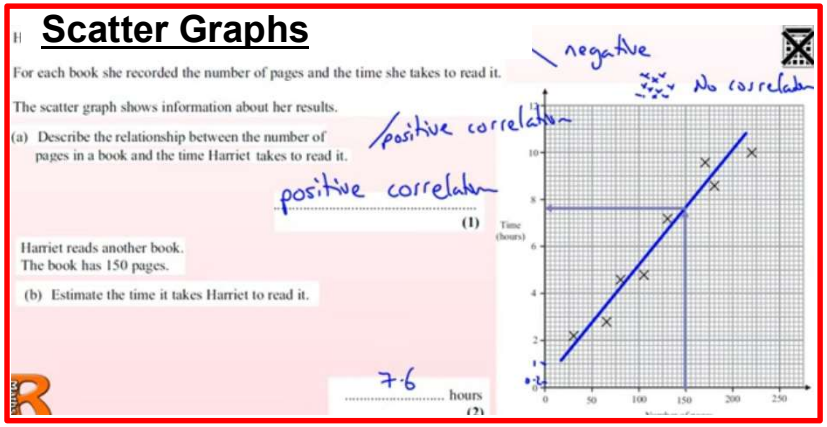
Weight, x (kg)		Frequency
$45 \leqslant x < 50$	5	3
$50 \leqslant x < 60$	10	26
$60 \leqslant x < 65$	5	25
$65 \leqslant x < 70$	5	30
$70 \leqslant x < 80$	10	16

Fd = F/w
0·6
2·6
5
6
1·6



(b) Estimate how many Nearland boys weighed between 55 kg and 67 kg. *(2 marks)*

Scatter Graphs



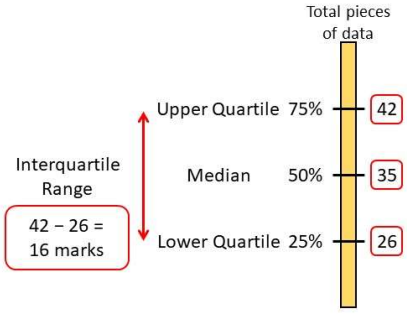
Cumulative Frequency Graphs

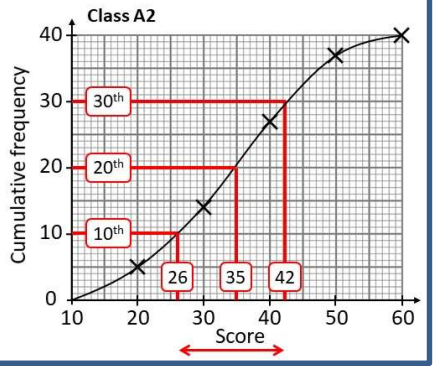
A cumulative frequency graph allows us to **measure the spread** of data.

By finding the value at each **quartile** (quarter) of the data, we can find the **median** and the spread of the **middle 50%**.

This measure eliminates extreme values.

Score	Students (Frequency)	Cumulative Frequency
11-20	5	5
21-30	9	14
31-40	13	27
41-50	10	37
51-60	3	40





Comparing Data

When asked to compare the data always mention:

1)The average (median or mean). Which one is higher? What does that mean? (always link it to the scenario in the question).

2)The spread (range or IQR). Which one is lower? State which is lower and explain this means the results for that group are more consistent.