Data Collection, Processing and Representative

1 Types of data

Categorial/Qualitative data – descriptive
Numerical/ Quantitative data

Categorial/Qualitative data
Pie Charts
Bar charts (with spaces between the bars)
Compound/Multiple Bar charts
Dot charts
Pictograms

Numerical/ Quantitative data
Frequency diagrams
Histograms
Cumulative Frequency diagrams
Box and Whisker Plots

2 Sampling Techniques

Simple random Sampling - each member of the population has an equal chance of being selected for the sample

Systematic – choosing from a **sampling frame** - if the data is numbered 1, 2, 3, 4….randomly select the starting point and then select every nth item in the list

Stratified - A stratified sample is one that ensures that subgroups (strata) of a given population are each adequately represented within the whole sample population of a research study.

Sample size from each subgroup = $\frac{size\ of\ whole\ sample}{size\ of\ whole\ population} \times population\ of\ the\ subgroup$

Quota Sampling - sample selected based on specific criteria e.g age group

Convenience / opportunity sampling – e.g the first 5 people who enter a Leisure Centre or teachers in single primary school surveyed to find information about working in primary education across the UK

Self Selecting Sample – people volunteer to take part in a survey either remotely (internet) or in person
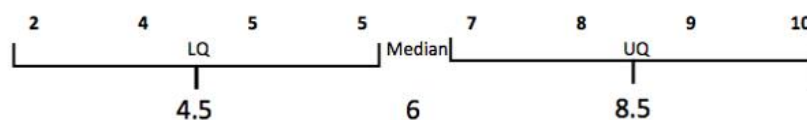
---

n is odd Data : 2, 4, 5, 7, 8, 9, 9

| 2 | 4 | 5 | | 7 | | 8 | 9 | 9 |
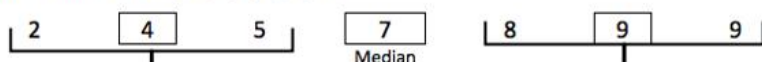
Median

Lower Quartile : middle value of data less than the median

Upper Quartile : middle value of data greater than the median

n is even Data : 2, 4, 5, 5, 7, 8, 9, 10

| 2 | 4 | 5 | 5 | 7 | 8 | 9 | 10 |

LQ Median UQ

4.5   6   8.5

Lower Quartile : middle value of the lower half of the data

Upper Quartile : middle value of the upper half of the data

3

Standard deviation $s = \sqrt{\frac{S_{xx}}{n-1}}$ where $S_{xx} = \sum(x - \bar{x})^2$ or $S_{xx} = \sum x^2 - n\bar{x}^2$

Variance $= \frac{S_{xx}}{n-1}$ or $S_{xx} = \sum f x^2 - n\bar{x}^2$

4

BIVARIATE DATA – investigating the 'association/ correlation' between 2 variables
- The explanatory/control/independent variable is usually plotted on the horizonal axis
- A numerical measure of correlation can be calculated (Spearman's Rank, Product Moment correlation coefficient) $-1 < r < 1$

5

'CLEANING THE DATA' removing 'Outliers or Anomaly's'

Remove values which are $1.5 \times$ **Inter Quartile range** above or below the U/L Quartile

Remove values which are $2 \times$ **Standard Deviation** above or below the mean.

How do we use Knowledge Organisers in Mathematics?

How can you use knowledge organisers at home to help us?

- **Retrieval Practice**: Read over a section of the knowledge organiser, cover it up and then write down everything you can remember. Repeat until you remember everything.

- **Flash Cards**: Using the Knowledge Organisers to help on one side of a piece of paper write a question, on the other side write an answer. Ask someone to test you by asking a question and seeing if you know the answer.

- **Mind Maps**: Turn the information from the knowledge organiser into a mind map. Then reread the mind map and on a piece of paper half the size try and recreate the key phrases of the mind map from memory.

- **Sketch it**: Draw an image to represent each fact; this can be done in isolation or as part of the mind map/flash card.

- **Teach it**: Teach someone the information on your knowledge organiser, let them ask you questions and see if you know the answers.

How will we use knowledge organisers in Mathematics?

Knowledge organisers will be used before I complete a Learning Check or Common Assessment. I will spend part of the lesson looking over each of the key topics of the half term before completing the Learning Check or Common Assessment.

I will also use these at home to complete my own independent learning and revision of these key topics.

GLUE HERE