

Statistics Revision topic list

Mathsgenie has some excellent materials to support your GCSE Statistics revision. Scroll down below the past papers where you will find exam questions sorted by topic, some of which have videos too.

<https://www.mathsgenie.co.uk/statistics.html>

Here's a set of revision notes that you might also find useful when reviewing topics but remember that to revise Statistics, you need to do Statistics:

[GCSE Statistics full course revision notes](#)

Here's a topic list of everything covered so far:

Unit 1 - The collection of data

- Use correct terminology to describe different types of data and know the differences between them.
- Know how to group rounded and unrounded data into class intervals or categories and the advantages and disadvantages of doing so.
- Understand population, sample and sample frame, and identify these for given data.
- Use the Petersen capture–recapture formula to estimate the size of a population and know the assumptions made when using this method.
- Know and be able to describe different methods of random and non-random sampling, including the advantages and disadvantages of each.
- Select a sample stratified by one category and by more than one category.
- Know the key features to consider when planning interviews and questionnaires.
- Write and identify suitable questions for investigations.
- Write a hypothesis and decide on suitable data to collect to test it.
- Design a data collection sheet, and collect data from different sources.
- Know the advantages of using a pilot survey.
- Use the random response method for sensitive questions.
- Know possible constraints on an investigation and how to deal with difficulties such as non-response.
- Know potential problems with collected data and how to deal with them.
- Know how and why to clean data. Identify and control extraneous variables.
- Understand and know when to use control groups and matched pairs.

Unit 2: Processing, representing and analysing data

- Select the appropriate representation to use.
- Decide whether to group data into class intervals.
- Recognise well-presented and poorly presented data.
- Construct, draw, use and understand:
 - two-way tables
 - tally charts
 - pictograms
 - bar charts
 - vertical line graphs
 - stem and leaf diagrams
 - pie charts
 - population pyramids
 - choropleth maps
 - cumulative frequency graphs
 - histograms
 - frequency polygons
 - comparative pie charts
 - histograms with unequal class widths

Unit 3: Summarising data: measures of central tendency and dispersion

- Calculate:
 - The mean, mode, median (including by interpolation) and range for a list of numbers and discrete and/or continuous data listed in a table
 - The minimum, lower quartile, median, upper quartile and maximum value for a list of numbers
 - The interquartile range and the percentiles for a set of data.
- Understand the advantages and disadvantages of each of the three measures of central tendency, and which is appropriate to use in different situations.
- Understand the effect of transformations on the mean, mode and median.
- Construct, use and interpret box plots from summary statistics and cumulative frequency graphs.
- Identify and interpret outliers by inspection and show them on box plots.
- Use box plots as a method to compare sets of data for dispersion, measures of central tendency and skewness.
- Given the median and interquartile range, make comparisons between different data samples to compare the sample and population data.
- Identify simple properties of the shape of distributions of data including symmetry, positive and negative skew.

Unit 4: Scatter diagrams and correlation

- Plot points as points on a scatter diagram;
- Recognise positive, negative and zero correlation by inspection;
- Understand the distinction between correlation and causality;
- Draw a line of best fit through the mean point to the points on a scatter diagram and to find the equation of the regression line;
- Understand the pitfalls of interpolation and extrapolation;
- Interpret data presented in the form of a scatter diagram;
- Calculate and interpret Spearman's rank correlation coefficient;

- Interpret Pearson's product moment correlation coefficient;
- Understand the distinction between Spearman's and Pearson's correlation coefficients
- Know and apply the following words: positive, negative, zero, causation, association, interpolation, extrapolation, independent variable, explanatory variable, response variable, dependent variable;
- Describe and make comparisons of the strength of correlation.

Unit 5: Time Series

- Draw and interpret line graphs and time series.
- Draw trend lines on time series graphs and use inspection to identify trends.
- Know that a trend line shows the general trend of data.
- Interpret rising, falling and level trends on a time series graph.
- Identify seasonal variation on a time series graph.
- Calculate a four-point moving average.
- Draw a trend line through moving averages by eye.
- Calculate the estimated mean seasonal variation.
- Know that the predicted value = trend line + seasonal variation.

Unit 6: Probability

- Understand the meaning of the words impossible, certain, very likely, likely, unlikely, possible and evens.
- Use fractions, decimals and percentages to represent probabilities.
- Use probability values to calculate expected frequencies and compare them with actual frequencies.
- Use probability to assess risk.
- Use sample space diagrams, Venn diagrams and tree diagrams to represent all
 - The different outcomes possible for up to three events.
 - Understand the terms mutually exclusive and exhaustive.
 - Use the addition law $P(A \text{ or } B) = P(A) + P(B)$ for two mutually exclusive events.
 - Use the general addition law for events that are not mutually exclusive.
 - Understand what it means for two events to be independent.
 - Use the multiplication laws for independent events.
 - Understand what it means for two events to be conditional.
 - Calculate conditional probability using a tree diagram, two-way table or Venn diagram.
 - Use the formula for conditional probability.
 - Know that for independent events A and B, $P(A) = P(A|B)$.