GCSE Statistics FDN

Exam Board: Edexcel
Subject: Statistics
Papers: 2 Calculator papers
Marks available: 80 per paper
Length of paper: 1 hour 30 mins
Topics: Statistics

Exam Information, guidance and hints

Command words: A range of command words are used within the GCSE paper. Here are a few to help you get your revision started.

Explain: Write a sentence or mathematical statement to show how you got to your answer or researched your conclusion	**Show:** All workings needed to get to a given answer **or** complete a diagram to show given information.	**Draw:** Produce an accurate drawing (unless a sketch is being drawn).	**Sketch:** Produce a drawing that does not have to be drawn to scale or a graph that is drawn without working out each coordinate.	**Find:** Some workings will be needed to get to the final answer.
Expand: Remove brackets.	**Expand and simplify:** Remove brackets and then collect like terms.	**Describe:** Write a sentence that gives the features of the situation.	**Complete:** Fill in missing values.	**Justify:** Show all workings and/or give a written explanation.
Solve: Find the solution of an equation or inequality.	**Solve algebraically:** Find the solution of an equation or inequality; algebraic manipulation must be shown.	**Simply:** Make something smaller/shorter.	**Simplify fully:** Make something smaller/shorter (the answer must be in simplest form).	**Factorise:** Insert brackets by taking out a common factor.
Factorise fully: Insert brackets by taking out the highest common factor.	**Express:** Re-write in another form, some workings may be needed.	**Work out:** Some workings will be needed to get to the answer.	**Change:** Convert from one unit to another; either using known metric unit	**Give a reason:** Must be clear and accurate. If the reasons are geometrical

			conversion or the use of a conversion graph.	make sure you a) provide a reason for each stage of your working and b) use correct geometric terminology.
Write down: No workings are needed.	**Write:** no working is needed for a 1 mark question (this may not be the case for questions worth more than one mark).	**Calculate:** A calculator and some workings will be needed.	**Prove:** More formal than 'show', all steps must be present. In the case of a geometrical proof, reasons must be given.	**Prove algebraically:** Use algebraic notation throughout the proof.

Videos and markschemes:

Maths Genie
Maths Genie has lots of resources for Statistics (exam paper and exam style questions) whilst also offering video solutions, recap videos, mark schemes and model solutions. A great place to support your Statistics knowledge.
Website - https://www.mathsgenie.co.uk/

Keywords
We have populated online flashcards for all the keywords and concepts needed for both tiers on statistics.
Website - https://quizlet.com/ie/40544564/gcse-statistics-keywords-flash-cards/

Physics and Maths Tutor
Another online platform offering revision worksheets, notes, exam papers and markschemes.
Website - https://www.physicsandmathstutor.com/maths-revision/gcse-statistics/

Hints/tips:

- Show your workings - Every method mark counts!
- The paper is 80 marks, not just 25 or more questions - so try every question.
- 80 marks in 90 minutes - Aim for a minute a mark and it will leave you with 10 minutes to check your work.
- CHECK IT! Make sure you have read the question and check your response multiple times before the end of the exam.

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- Don’t scribble out your workings - a neat line through will allow the answer to see your method regardless if it is right or wrong.
- Make sure you attempt each question, if you can’t complete the question fully, can you try and start the question (this often gets you part marks!).
- Your exam is an excuse to show off your maths, so take the opportunity and show the examiner what we see in lessons every day.

Collection of data		How well do you understand this topic? RAG		
		Red	Amber	Green
Foundation and higher	- Correct terminology of different types of data and the differences between them - How to group rounded and unrounded data into class intervals/categories. Including the advantages and disadvantages of doing so. - Understand population, sample and sampling frame (and identify these for given data sets). - Know and describe different methods of random and non-random sampling. Including the advantages and disadvantages. - Select a sample stratified by one category. - The key features of interviews and questionnaires (including the planning aspect). - Write and identify suitable questions for investigations. - Hypothesis writing and how to collect data suitable for hypotheses. - Design data collection sheets and collect the data.			

	- Pilot surveys (know the advantages). - Know constraints of an investigation and how to deal with non responses. - Know potential problems with collected data and how to deal with them. - Know how and why to clean data.			
Just Higher	- Petersen capture-recapture to estimate the size of populations (and know the assumptions made when using this method). - Stratified sampling by more than one category. - Use the random response method for sensitive questions. - Understand and know when to use control groups and matched pairs.			
Processing and representing data		**How well do you understand this topic? RAG**		
		Red	**Amber**	**Green**
Foundation and higher	- Select appropriate representations 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 ● Pictograms ● Vertical line graphs ● Pie Charts ● Choropleth graphs ● Histograms ● Tally charts ● Bar charts ● Stem and leaf diagrams ● Population pyramids			

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	• Cumulative frequency graphs • Frequency polygons			
Just Higher	- Construct, draw, use and understand: • Comparative pie charts • Histograms with unequal class widths			
Summarising data		**How well do you understand this topic? RAG**		
		Red	**Amber**	**Green**
Foundation and higher	- Calculate: • Mean, mode, median (including by interpolation) and range from a list or discrete/continuous data in a table. • The minimum, lower quartile, median, upper quartile and maximum value of a list of numbers. • The interquartile range (IQR) and the percentiles for a set of data. - Understand the advantages and disadvantages of each of the three measurements 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, measure of central tendency and skewness. - Given the median and the interquartile range, make comparisons between different data samples to compare the sample and the population data.			

	- Identify simple properties of the shape of distributions of data including symmetry, positive and negative skew.			
Just Higher	N/A			
Scatter diagrams and correlation		**How well do you understand this topic? RAG**		
		Red	**Amber**	**Green**
Foundation and higher	- Draw a scatter diagram - Describe and make comparisons of correlation ● Positive, negative or zero ● Strong or weak - Understand what is meant by a causal relationship and that correlation doesn't imply causation. - Draw a line of best fit by eye and by drawing through a mean point. - Use a line of best fit to make predictions within and outside the data range. - Understand and comment on the reliability of values found through interpolation and extrapolation. - Interpret Spearman's rank correlation coefficient.			
Just Higher	- Find the equation of a line of best fit. - Draw a regression line on a scatter diagram, given the equation. - Interpret the value of the gradient of a regression line. - Calculator spearman's rank correlation coefficient. - Interpret PErason's product moment correlation coefficient. - Understand the distinction between Spearman's rank correlation coefficient and Pearson's product moment correlation coefficient.			

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Time series		How well do you understand this topic? RAG		
		Red	Amber	Green
Foundation and higher	- 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.			
Just Higher	- Calculate the estimated mean seasonal variation. Know that the predicted value = trend line + seasonal variation.			
Probability		**How well do you understand this topic? RAG**		
		Red	**Amber**	**Green**
Foundation and higher	- Understand the meaning of the words impossible, certain, very likely, likely, unlikely, possible and even. - Use fractions, decimals and percentages to represent probability. - 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 or B) = P(A) + P(B) for two mutually exclusive events. - 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)			
Just Higher	- Use the general addition law for events that are not mutually exclusive.			
Index numbers		**How well do you understand this topic? RAG**		
		Red	**Amber**	**Green**
Foundation and higher	- Calculate index numbers - Interpret index numbers, including retail price index (RPI) and consumer price index (CPI). - Interpret GDP values. - Calculator rates of change over time, include crude birth and death rates			
Just Higher	- Calculate standardised birth and death rates. - Calculate and interpret weighted index numbers. - Calculate chain base index numbers.			

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Probability distribution		How well do you understand this topic? RAG		
		Red	**Amber**	**Green**
Foundation and higher	N/A			
Just Higher	- Know the conditions for a binomial distribution to be a suitable model. - Understand the notation B(n,p). - Calculate probabilities using a binomial distribution. - Know that the mean of a binomial distribution is np. - Know the conditions for a normal distribution to be a suitable model. - Understand the notation $N(\mu,\sigma^2)$. - Know the shape of a normal distribution curve and how this occurs. - Know that 68% of data lies within one standard deviation of the mean, 95% of data lies within two standard deviations of the mean and 99.8% of the data lies within three standard deviations of the mean. - Draw normal distribution curves, including two curves on the same graph. - Use standardised scores to compare two samples of data. - Understand the process of quality assurance and why it is necessary in the real world. - Calculator warning limits and action limits for means. - Drawn warning limits and action limits on a control chart for means, medians and ranges. - Understand how warning limits and action limits are used in the manufacturing process.			