



Mathematics - Statistics at The Bridge

Aims and Objectives

All students at the Bridge are prepared for their final GCSE Mathematics examination in Year 11.

We follow The Bridge ethos of Hope and a Future and aim to inspire a positive attitude and confidence in all our pupils. Delivery of curriculum fulfils the [Unique Me characteristics](#) we wish every student to develop during their time with us, aiming to equip our students with life skills.

The statistics curriculum gives students the opportunity, should they desire, to explore in more detail an area of Mathematics. An area that has practical application to the world beyond education. We provide students with the necessary tools and conceptual foundations to analyse data, extract information intelligently from data given and be able to conclude and make decisions based on it. We also focus on them being able to critically assess the quality of analysis that others present to help in their decision-making process. It involves asking questions about the world and finding answers to them in a scientific way, helping to understand a subject more deeply. These skills acquired are intended to be transferable, opening up opportunities to enhance other studies or career progression.

STATISTICS

GCSE Statistics incorporates Statistics, Probability, Number and certain elements of Algebra. This covers many of the graphs, diagrams and tables used in business, scientific research and media. Students are encouraged to develop enquiring techniques enabling them to model sets of data, analyse them and justify their conclusions both statistically and in real terms.

Edexcel

Preparation for the Statistics exam will take place in addition to normal Mathematics lesson time, and the exam will be sat at the end of Year 11. GCSE Statistics will overlap with many techniques in GCSE Mathematics but will seek to bring a further breadth of understanding.

Mathematics planning

Statistics Mathematics has many cross-curricular links with other subjects taught at The Bridge in particular links to Mathematics, Science, Biology and Physics. ICT lessons overlap with various presentations of data. Statistics Mathematics lessons are delivered to students in parallel to the core Mathematics lessons once a week over Year 10 and Year 11. Lessons are in tandem to the Mathematics mainstream syllabus and students are assessed with an end of Year 10 exam as well as February mocks for Year 11.

TOPICS

- **COLLECTION OF DATA :**

Students will learn how to plan an investigation, recognise and interpret different types of data, learn about populations and sampling techniques, learn about data collection techniques from different sources and consider their reliability.

- **PROCESSING, REPRESENTING AND ANALYSING DATA :**

Students will learn about measures of central tendency (e.g. mean, median, mode, seasonal variation etc.) and measures of dispersion (e.g. interquartile range, standard deviation, calculate outliers etc.) as well as additional summary statistics (e.g. index numbers, interpret rates of change etc.) Students will analyse bi-variate data using scatter diagrams and measures of correlation (such as Spearman's rank correlation coefficient and Pearson's product moment correlation coefficient), interpreting their calculations in relation to the 'real-life' context. Students will analyse time series data, identifying trends and calculating moving averages.

- **PROBABILITY :**

Students will build on their existing knowledge regarding probability. Students will also learn about probability distributions (such as Binomial and Normal distributions) and know how to interpret characteristics of these. As part of the course, the students will study the ideas behind conducting a practical investigation. This will help to pull together the skills that the students will have developed from the topics above.

ASSESSMENT

The new Edexcel GCSE Statistics examination will consist of two exams of equal importance. Both papers are 1½ hours and both focus on the same content and assessment objectives. Calculators may be used in both examinations. This GCSE Statistics qualification no longer includes any Controlled Assessment.

Assessment and recording

In line with the Mathematics teaching at the Bridge students access direct teaching of Statistics principles which is thereafter followed by practice and consolidation exercises. The teacher assesses student's processes, applications of knowledge and understanding and provides feedback to the students within the lesson. Reviewing and assessing teaching and learning is done within each module as well as on a termly basis with the end-of-term tests. The teacher provides feedback with a What Went Well (WWW) and Even Better If (EBI) format and students improve the work or provide

corrections. Assessment may be self/peer or teacher-based. Achievements of pupils in Statistics are reported to parents twice yearly, in December and July.

GRADES

The higher tier exam will only allow outcomes from '4' – '9'

SKILLS DEVELOPED AND CAREER OPPORTUNITIES

A career in statistics is a rewarding and often exciting career. Statisticians work with the data that are all around us and the opportunities for work are endless.

Examples of Statistics Careers:

Medicine: The search for improved medical treatments rests on careful experiments that compare promising new treatments with the current state of the art. Statisticians work with medical teams to design experiments and analyse the complex data they produce.

Environment: Studies of the environment require data on the abundance and location of plants and animals, on the spread of pollution from its sources, and on the possible effects of changes in human activities. The data are often incomplete or uncertain, but statisticians can help uncover their meaning.

Industry: The future of many industries and their employees depends on improvement in the quality of goods and services and the efficiency with which they are produced and delivered. Improvement should be based on data, rather than guesswork. More companies are installing elaborate systems to collect and act on data to better serve their customers.

Government Surveys: How many people are unemployed this month? What do we export to China, and what do we import? Are rates of violent crime increasing or decreasing? The government wants data on issues such as these to guide policy, and government statistics agencies provide them by surveys of households and businesses.

Market Research: Are consumer tastes in television programs changing? What are promising locations for a new retail outlet? Market researchers use both government data and their own surveys to answer questions such as these. Statisticians design the elaborate surveys that gather data for both public and private use

Resources

We follow the GCSE Statistics scheme of work. Differentiated resources are taken from websites such as Twinkl, Maths Made Easy, Pixi Maths, Maths Genie and TES. The Bridge has access to Pearson workbooks for Higher Level GCSE Statistics.

Monitoring and review

The Bridge Teaching and Learning Co-ordinator Maris Jackson is responsible for monitoring the standard of student work and the quality of teaching. Sotiris Shangolis is responsible for the delivery of the Statistics curriculum. The development of the Statistics curriculum is reviewed annually by the Head of School and professional development needs are identified.

Teaching Mathematics to students with special needs

At The Bridge we provide learning opportunities matched to the individual needs of each student. We introduce Statistics to students who are confident in Mathematics and would like to gain an extra GCSE to complement their mathematics GCSE as well as possibly pursue careers where the study, use and interpretation of data plays a part.

Teaching and learning styles

We use a range of teaching and learning styles. The teacher explains, and models the topic that is being taught, addressing misconceptions and assessing for learning. All the gaps are acknowledged and individual interventions are planned.

Teaching Mathematics to students with special needs

At The Bridge, we teach Mathematics to all students, regardless of their ability. Statistics is an extension of this and incorporates a more detailed study of an area of Mathematics which student can find helpful and supports other cross curricular studies whilst at the same time providing for a further GCSE revisiting and extending some of the Mathematics core curriculum. When planning and delivering Mathematics and providing feedback to students, any EHCP (Educational, Health and Care Plan) IEP (Individual Educational Plan) and SEND (Special Educational Needs and Disabilities) are taken into account.