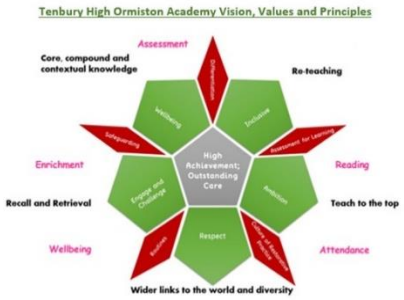
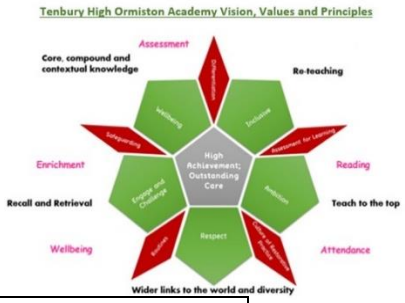
TENBURY HIGH
ORMISTON ACADEMY

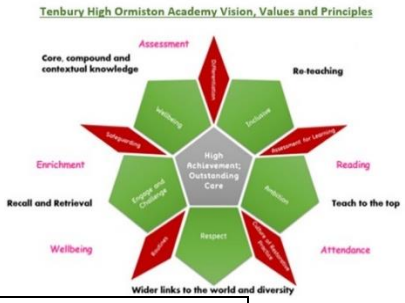


Curriculum Overview for Statistics
Year 10

Autumn Term: Collecting Data **Declarative knowledge:** • Recognise that data can be obtained from primary and secondary sources and the methods for collecting appropriate and accurate data • Recognise the definition of key vocabulary • Understand situations for grouped and ungrouped data; • Understand the meaning of the term sampling • Understand the reasons for sampling and that sample data is used to estimate values in a population; • Understand that sample size has an impact on reliability and replication; • Understand, design and use a sampling frame; • Understand the use of random numbers and some of the methods of generating these: random number tables; random number function on the calculator; picking random numbers from a hat; • Understand that data needs to be 'cleaned' before being used; • Understand the aspects of accuracy, reliability, relevance and bias as related to secondary data; • Know the purpose of pilot surveys • Know how random response is used for sensitive questions • Understand the techniques used to deal with possible problems associated with the collection of data (including issues of sensitivity); • Understand why control groups are used in questioning and testing and the system of matched pairs to avoid bias. • Be aware of factors involved with testing a hypothesis **Procedural knowledge:** • Use scales of measurement – categorical, rank, ordinal; • Use and define situations for grouped and ungrouped data;		Modelling reading of questions by the class teacher – teaching like a Mathematician / Statistician. Two key words each lesson defined with syllabification. Expectation of Mathematical vocabulary used in lessons.
		Random, raw data, grouped data, ungrouped data, investigation, factors, sample, sampling frame, population, census, stratified sampling, cluster sampling, systematic sampling, convenience sampling, quota sampling, random sampling, strata, quantitative, qualitative, categorical, ordinal, bivariate, multivariate, discrete, continuous, explanatory variables, response variables, primary data, secondary data, hypothesis, census, survey, pilot survey.
		A formal knowledge recall test will be completed during the unit to ensure knowledge is retained. A formal end of unit exam will take place at the end of the unit. The questions will be taken from the exam board bank of questions. Reteaching / relearning will be class dependent subject to the performance of the class.
		Practise Exam Questions based on the current unit or previous units to build recall. Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school)



• Categorise data through the use of well-defined, precise definitions or class boundaries; • Extract data from secondary sources, including those based on ICT; • Be able to select a random sample, or a stratified sample, by one category as a method of investigating a population; • Appreciate how bias in a sampling procedure might occur and how it might be minimised; • Form a hypothesis, and know the appropriate strategies to test this hypothesis; **Contextual knowledge:** • Argue the decision of using primary or secondary data • Apply and use Peterson's data capture technique to estimate population sizes and know the assumptions made. • Identify problems that may arise with the statistical enquiry cycle (e.g. non response of surveys, difficulty estimating the population or unexpected outcomes) and come up with strategies to help overcome these.		We expect Year 10 pupils to spend 40 minutes on Statistics homework per week (on average over the half-term – this may be higher nearer exams or lower at other times).
<u>Autumn Term: Processing, Representing and Analysing Data</u> **Declarative knowledge:** • Know the advantages and implications of merging data into more general categories, and of grouping numerical data into class intervals. **Procedural knowledge:** • Represent data sets pictorially using calculated key values as necessary, and interpret and compare data sets displayed pictorially: tabulation, tally, pictogram, pie charts, stem and leaf diagrams, Venn diagrams. • Represent data sets graphically using calculated key values as necessary, and interpret and compare data sets displayed graphically: bar charts, line graphs, time series, scatter diagrams, bar line (vertical line) charts, frequency polygons, cumulative frequency (discrete and		Modelling reading of questions by the class teacher – teaching like a Mathematician / Statistician. Two key words each lesson defined with syllabification. Expectation of Mathematical vocabulary used in lessons.
		Frequency, tally, total, pictogram, pie chart, stem and leaf diagram, Venn diagram, histogram, frequency density.
		A formal knowledge recall test will be completed during the unit to ensure knowledge is retained. A formal end of unit exam will take place at the end of the unit. The questions will be taken from



grouped) charts, histograms (equal class width), and box plots. • Calculate and use frequency density to draw histograms (unequal class width) and interpret and compare data sets displayed in histograms (unequal class width). • Extract and calculate corresponding values in order to compare data sets that have been presented in different formats and be able to present the same information in multiple formats. • Use calculated or given summary statistical data to make estimates of population data sets that have been presented in different formats and be able to present the same information in multiple formats. **Contextual knowledge:** • Interpret and compare data sets displayed pictorially: population pyramid, choropleth map, comparative pie chart, comparative 2D representations, comparative 3D representations. • Justify the appropriate format and produce accurate visualisation of data. • Recognise where errors in construction lead to graphical misrepresentation, including but not limited to incorrect scales, truncated axis, distorted sizing or the misuse of formula when calculating the frequency densities of histograms. • Select and justify appropriate form of representation with regard to the nature of data.		the exam board bank of questions. Reteaching / relearning will be class dependent subject to the performance of the class.
		Practise Exam Questions based on the current unit or previous units to build recall. Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school) We expect Year 10 pupils to spend 40 minutes on Statistics homework per week (on average over the half-term – this may be higher nearer exams or lower at other times).