

## Year 9 Enrichment Module – Statistics

In this module students will learn about the statistical enquiry cycle by planning and undertaking an investigation. Each student/class will do a slightly different investigation based on ability. The following criteria are expected from every pupil.

- Hypothesis
- Plan, including what sampling method was used, what diagrams are going to be drawn and what calculations are going to be made
- Statistical diagrams
- Statistical calculations
- Interpretations and conclusions
- Limitation of the investigation.

### Lesson 1

#### Collection of data

The students will collect data and place into a spreadsheet for the whole year group. There are data collection sheets to help students collect the data and this really need to be completed on time so that other classes can use the data.

Data to be collected

- Height in cm
- Hand span in cm
- Head circumference in cm
- Number of siblings
- Eye colour
- reaction time- ruler drop test
- Flexibility test
- Grip test

We will discuss how these all will be measured beforehand so that it is consistent through the department.

## Lesson 2

The students will plan what they are going to do. Come up with an individual or class hypothesis and state what statistics they are going to calculate and what diagrams they are going to draw.

- Hypothesis - discussion needed and several hypotheses come up with, then decide on one they are going to use
- Plan investigation, what sampling are you going to use including what graphs and calculations are going to be made

### Sampling

- Simple random sample
- Systematic sample
- Stratified sample

### Types of graph

- Bar charts
- Pictograms
- Dual bar charts
- Pie charts
- Box plots
- Scatter diagrams

### Types of calculations

- Mode
- Median
- Mean
- Mean of grouped frequency
- Range
- IQR
- Outliers and skew (top sets may want to look at these)
- Spearman Rank

Make sure that sets are completing statistics that are relevant for their ability, for example 9P2 should not be doing bar charts etc. and likewise would not expect 9q3 to complete box plots.

### **Lesson 3 and 4**

- Put data into frequency tables, including sampling
- Draw graphs and calculations

### **Lesson 5 and 6**

Interpret results and draw conclusions. There will need to be guidance and explanations needed to help with this. Complete a display piece of work from every student.

All the work will be completed on paper and kept in a plastic wallet, it will then be used to make a display poster on A3 paper.

How the students work on this will be down to individual teachers and the group you teach, the students can work in groups but it is expected that every student at the end of this has produced their own investigation and have completed all of the steps mentioned before.

There will be a PP available to help with the discussion of the different techniques and a writing frame to help weaker students.