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| **Core Knowledge Map** |
| Subject: Mathematics | Year: 10 | Term: Autumn 1 |
| What are we learning? |
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| **Unit 1. Collection of Data** |
| Unit 1c. Planning and Collecting Data | * To understand that data can be collected by experiment, simulation, reference, census and sampling.
* To be able to design a simple data collection sheet.
* To be able to recognise the suitability of questions.
* To understand the advantages of a pilot survey.
* To be able to use the random response method for sensitive questions.
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| How will I be assessed? |
| Retrieval Tasks, Exit Tickets, Topic Test at the end of the half term. |
| Big questions: |
| Can You….?* If you wanted to investigate the average temperature per year against the change in sea level, what would be a good hypothesis?
* Discuss whether or not this would be an appropriate question for a questionnaire:
* Here are the weights of 8 cats:

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| 3.9 | 4.2 | 2.9 | 8.6 | 4.4 | 3.9 | 3.6 | 4.0 |

Identify the outlier.* An economist wants to investigate how many people avoid paying taxes. They use a random response question to collect data. Explain why this is a suitable technique to use,
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| How does this build on previous learning? | How will this link to my future learning? |
| * In both Key Stage 3 and 4 (GCSE Maths), students will have encountered types of data and should be familiar with specific types such as qualitative/quantitative data as well as recognising the difference between discrete and continuous data.
 | * Understanding the different types of data, how to collect them, their advantages and disadvantages is an essential part of the Data Handling Cycle.
* Statistical enquiry, including data collection is essential in some sciences including Psychology, Biology, Chemistry and Physics as well as having an important role in Geography and Business Studies. It is also a core topic in A-Level Maths.
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| Core knowledge: | Key vocabulary: |
| * ***Experiments*** aim to measure the effect one variable has on another. They can be ***laboratory*** experiments (where the observer aims to control all ***extraneous variables***), ***field*** experiments (carried out in everyday environments where some measures of control may be implemented), or **natural** experiments (carried out in natural environments, such as an erupting volcano).
* ***Simulations*** are a way to model random events in order to collect data.
* ***Questionnaires and interviews*** are typical sources of primary data that aim to collect data over the phone, by post or in person. It is important to consider questions carefully to avoid ***bias*** and ensure subjects that the ability to give an accurate response.
* The ***Random response method*** uses a random event, such as a coin flip to ensure people answering sensitive questions remain anonymous.
* A ***Pilot study*** is often used as a small scale study used to test the suitability of a questionnaire.
* Once data has been collected, it often needs ***cleaning*** to ensure all answers are in the same format (15 vs fifteen) as well as potentially ignoring ***outliers***.
 | **Types of Experiment:** Experiment, Explanatory, Response, Extraneous, Simulation. **Types of Questionnaires:** Random Response, Pilot Study, Outliers, Cleaning Data, Control Group, Matched Pairs. **Hypotheses and Investigations:** Hypothesis |
| Need more help? Refer to the knowledge organiser uploaded to Class Charts at the start of the year. |