Collecting Data

Paper 1:   Cleaning Data
Paper 2:   Simulation (inc random response)
              Control Groups (inc types of experiment)

CLEANING DATA:
Why?
How?
Use of technology?

SIMULATION:
Uniform distributions:
Random numbers
Dice and coins
Non uniform distributions
Random response

CONTROL GROUPS:
Types of experiment:
Natural
Field
Laboratory
Control Groups

Tabitha collected data from her class about the number of siblings they had and their ages.

Below is an extract of her spreadsheet.

Give three reasons why she would need to clean this data:

Number of siblings	Your age	Age of sibling	Age of sibling	Age of sibling
2	13	8		
1	12	15		
0	12			
Three	12	9	14	16
1 brother, 1 sister	13	15	17	
2	1.2	5	8	
1	12			
1	13	16		

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Rhys has a database of information about weather in the UK at Heathrow.

Here is the information that the database contains about each day of the year in 2021.

Average temp	Max Temp	Min Temp	Max wind speed (gust)	Average wind speed	Dew point	Wind direction	Rainfall

Explain how Rhys can use technology to clean this data:

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Explain how you could use a random number table to simulate a set of data from each of the following distributions:

1. The following table shows the results of the last 30 games for Redford Rovers.
   You want to simulate the results of the next 15 games.

Result	won	lost	drawn
Number of games	21	4	5

2. A bag contains beads in the following proportions:
   You want to simulate drawing 20 beads (with replacement) from the bag using single digit random numbers.

red	blue	green	white
4	2	3	1

3. You want simulate the months of the year for a set of data.
   You want 5 random months of the year (repeats are allowed)

4. How could you simulate the months of the year using a dice and a coin instead?

Jayden wants to ask the following question in a survey:

Have you ever shoplifted? ☐ Yes ☐ No

Explain how they would use the random response technique to collect answers to the question:

Jayden thinks about 5% of people will have shoplifted at some point in their life.

Jayden gets the following data

Yes 132
No 98

Does this support his hypothesis?

A teacher believes that students who use flash cards learn definitions better.
She randomly splits her class into two groups A and B.
She asks group A to use flash cards to learn their definitions.
She asks group B to read the definitions from their book to learn the definitions.

She then gives the students a 50 question definition test.

1. Identify the control group in this experiment

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2. Identify whether this is a field, natural or laboratory experiment.

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3. State one disadvantage of this experiment

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4. State one advantage of this experiment

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5. Explain how the teacher could adjust this experiment to use matched pairs.

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