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DEMYSTIFYING QUANTITATIVE DATA ANALYSIS

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QUESTION 1.

Decide whether the description in the left hand column is best described as quantitative or qualitative data:

	Quantitative	Qualitative
Data which indicates 'how much'	yes/no	yes/no
Uses numbers as labels	yes/no	yes/no
Numbers used in a survey	yes/no	yes/no
Data which indicates 'how many'	yes/no	yes/no

QUESTION 2.

Decide which of the following could be used for collecting quantitative or qualitative data:

Data collection activity	Quantitative	Qualitative
(i) Transcripts from interviews	yes/no/maybe	yes/no/maybe
(ii) Scoring data from interviews	yes/no/maybe	yes/no/maybe
(iii) Yes/no answers from a questionnaire	yes/no/maybe	yes/no/maybe
(iv) Results from focus groups	yes/no/maybe	yes/no/maybe
(v) Video data	yes/no/maybe	yes/no/maybe

Briefly explain your answers to 2. For example, if you answered that transcripts from interviews were classed as quantitative, write down your reasons for this answer.

(i) Transcripts from interviews	
(ii) Scoring data from interviews	
(iii) Yes/no answers from a questionnaire	
(iv) Results from focus groups	
(v) Video data	

QUESTION 3.

You're doing a project based on the different attitudes of students and lecturers towards exams. What sort of scale would you use to classify the variables, student and lecturer? Write 'not appropriate' if the scale is inappropriate.

Type of scale	Variables
Ordinal	
Nominal	
Ratio	
Interval	

QUESTION 4.

In the box below explain the three components of a data set.

Entities
Variables
Observations

QUESTION 5.

Numbers are used a lot in statistics to represent, for example, the results of observations. In the box below give three examples of how numbers are used in statistics and state if they can be described as one of the following: ratio/nominal/interval/ordinal.

Example	Description
1.	
2.	
3.	

QUESTION 6.

After the thrill of your stats class you visit a local bar to have a few drinks to calm down. In there you start chatting about statistics with a group of nurses. They're doing a study related to weight gain and ask you what sort of scale would be appropriate if they had to show that a weight gain of 10 kg is twice that of 5 kg. What sort of scale would you recommend?

This is an example of a ratio/nominal/interval/ordinal (delete as appropriate).

Explain your choice

QUESTION 7.

You're doing some research on a project for your stats class. The project concerns the number of local companies who sold laptops in a week. There are 5 companies altogether. Company 1 sells 3, company 2 sells 1, company 3 sells 4, company 4 sells 5 and company 5 doesn't sell any. You decide to draw a graph with the company variable along the horizontal axis. You place a dot on the graph corresponding to the number of laptops sold. You are tempted to join the points to construct a line graph.

Would this be a meaningful thing to do?	yes	no
Would it provide any extra information about the sales of laptops?	yes	no

Give an explanation for each of your answers

QUESTION 8.

One mathematics construct you will be faced with throughout your studies is equations. In the box below give an explanation, in plain English, of what the following equation means:

$$f(x) = x^3 + 3x^2 + 10$$

QUESTION 9.

One way to think of equations is to use the analogy of inputs, outputs and the rule that transforms an input into an output. For example, the following equation has t as an input, the rule (in mathematics

we call these rules functions which in this case is written as $f(x)$) multiplies the input by 3 and therefore gives an output of $3t$.

$$f(t) = 3t$$

Translated into English, the above statement says: The rule (function) that transforms my input t into $3t$ is 'multiply the input by 3'.

Complete the following statement:

The output from the equation $f(x) = x^3 + 3x^2 + 10$ when the input has a value of 2 is _____

QUESTION 10.

Another term associated with functions is 'argument' (not a disagreement between friends!). This is the mathematics term for an input to an equation. As usual, there is a short hand notation to indicate something is an argument to a function. In question 9 the argument was 2 and we could have indicated this by writing $f(2)$.

What would be the value of the equation $f(x) = 3x + 1$ for the following arguments?

$$f(2) : 3x + 1 = \underline{\quad\quad}$$

$$f(-1) : 3x + 1 = \underline{\quad\quad}$$

$$f(6) : 3x = 1 = \underline{\quad\quad}$$

And finally...

If there is no argument, does that mean the equation has won?