S1 Topic 12

Introduction to Statistics

Level: Key stage 3

Dimension: Data Handling
Module: Organization and Representation of data
Unit: Introduction to various stages of statistics

Student ability: Low to Average

Content Objectives:

After completing the activity, students should be able to distinguish between the three types of data, namely, continuous, discrete and nominal data.

Language Objectives:

After completing the activity, students should be able to

- recognize and understand the English technical terms related to the classification of data types (e.g., *data classification, characteristics, data type, obtained, measurement, value, continuous data, counting, integers, discrete, numbers, nominal*);
- understand the English expressions for explaining the characteristics of continuous, discrete and nominal data, e.g.,
  - *Continuous data are obtained by measurement. They can take any value within a range.*
  - *Discrete data are obtained by counting. They can only be integers.*
  - *Nominal data are not numbers. They are classifications.*
- state the correct types of data after reading examples of various data (e.g., *The data about the most popular TV stars for teenagers are nominal data. The data about the average monthly temperature in Hong Kong are continuous data. The data about the number of people who travel by different means of transport every day are discrete data.*);
- follow English instructions on solving problems concerning this topic and work on related problems written in English.

Prerequisite knowledge: Nil

Time: 1 single lesson (40 minutes)

Procedure:

1. The teacher should first ask the class to read the given examples of Type 1 data on the worksheet.

2. Then the class should be divided into group for discussion. As the students do not have any pre-requisite knowledge of how to identify the types of data, the teacher should provide some hints as to the characteristics of the data types, encourage students to discuss and then summarize the findings with the whole class after the group discussion.

3. The teacher should then assign the rest of the activity, relating to Type 2 and Type 3 data, to class for further discussion. After the discussion, the teacher should go through the answers with the whole class.

4. The teacher should then ask students to complete the exercise and invite individual students to provide the answers in English.

5. Finally, the teacher should consolidate what the students have learnt in this lesson by summarizing the key distinguishing features of continuous, discrete and nominal data in English.

Explanatory Notes for Teachers:

1. The topic should be taught in English. It is recommended that the teacher should articulate the vocabulary items, such as continuous data, discrete data and nominal data, clearly and slowly (for the first time) to help students to learn the pronunciation.

2. The group activity provides students with opportunities to practise their oral skills and express their ideas with classmates.

3. The suggested answers are enclosed.

Name: _____ Class: _____ ( )

Title: Introduction to Statistics - Classification of Data (數據分類)

Activity: Consider the following data carefully. Discuss with your teammates and mark down the characteristics of each data type.

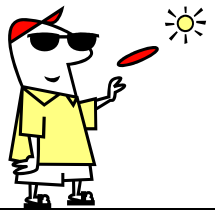
Type 1:

The rainfall in January of 2009 was 47.6 mm.

John weighs 60.6 kg.

The lifetime of this light bulb is 147.5 hours.

Jennifer spends 3.5 hours on the Internet every day.



The UV (Ultraviolet,紫外光) index was 6.7 yesterday.

The above data are obtained by measurement / obtained by counting / not numbers. *(Please delete the inappropriate items)*

The data can take _____ within a range.

We call this type of data _____.

Type 2:

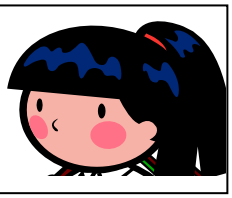
There were 1,720,000 visitors to Hong Kong in May 2009.

The number of cars using the Lion Rock Tunnel last year was 9,256,644.

The number of people passing the driving test in 2008 was 25,345.

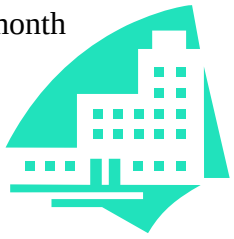
You can drive

PASS



798 tourists visited the lakeshore castle last month.

The number of new mortgages arranged by the Trust bank in the previous month was 192.



The data are obtained by measurement / obtained by counting / not numbers.

(Please delete the inappropriate items)

The data can only be _____.

We call this type of data _____.

Type 3:

Tracy is a Catholic (天主教徒).
Peter is a Muslim (回教徒).

The marital status of John is “married”.

The marital status of May is “single”.

The favourite singer of Class 1A is Kelly Chen.

The favourite singer of Class 2B is Lollipop.

The blood type of Joan is O.

The blood type of Jimmy is AB.

The data are obtained by measurement / obtained by counting / not numbers.

(Please delete the inappropriate items)

The data are _____.

We call this type of data _____.

Exercise:

Can you identify the types of the following data?

1. The most popular TV stars for teenagers. _____
2. The average monthly temperature in Hong Kong. _____
3. The number of people who travel by different means of transportation every day. _____
4. The smoking habits (smoking or non-smoking) of American people. _____
5. The numbers of people who visited restaurants and shopping malls on New Year's Eve. _____
6. Mary weighs 55 kg. _____
7. There are 25,000 new flats available for sale. _____
8. 64 people visited Jenny's client today. _____
9. Joan had a blood test and her blood type is A. _____
10. The marital status of Joseph is "divorced". _____
11. Tammy is 168 cm tall. _____
12. The lifetime of "Everyday" batteries is 45.6 hours. _____

Suggested answers:

Type 1:

obtained by measurement any value Continuous data (連續數據)

Type 2:

obtained by counting integers Discrete data (離散數據)

Type 3:

not numbers classifications Nominal data (名目數據)

Exercise:

1, 4, 9 and 10 are nominal data
2, 6, 11 and 12 are continuous data
3, 5, 7 and 8 are discrete data