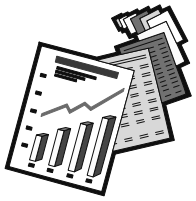

Exemplar 10 :

Misleading Graphs and Misinterpreting of Statistical Data

Objectives : (1) To identify sources of deception in misleading graphs
(2) To recognize the dangers of misinterpreting statistical data

Learning Unit : Measures of Central Tendency

Key Stage : 3

Materials Required : Calculators

Prerequisite Knowledge : Basic knowledge on different statistical graphs

Description of the Activity :

1. The teacher distributes the worksheet to students.

2. Students are grouped in pairs to do the problems in the worksheet so that they can discuss with each other as most of the questions are open-ended.

3. Sufficient time should be given to students to discuss the problems.

4. After students completed Part I, some representatives from the groups are invited to give the answers and explanations to the class.

5. The teacher makes comments when appropriate.

6. Students go on to complete Part II. Discussion among students and reporting from representatives are then carried out.

7. The teacher can help students consolidate their concepts by asking them to bring daily life examples of misleading graphs and misinterpreting statistical data to the class in the next lesson for discussion.

Worksheet

Part I

A survey is carried out by the student union of a secondary school on the popularity of five clubs: Social Service Society, Junior Police Call, Community Youth Club, Road Safety Patrol and Girl Guide. The results of the survey are posted on the notice broad of the student union by means of a bar chart. See Figure 1.

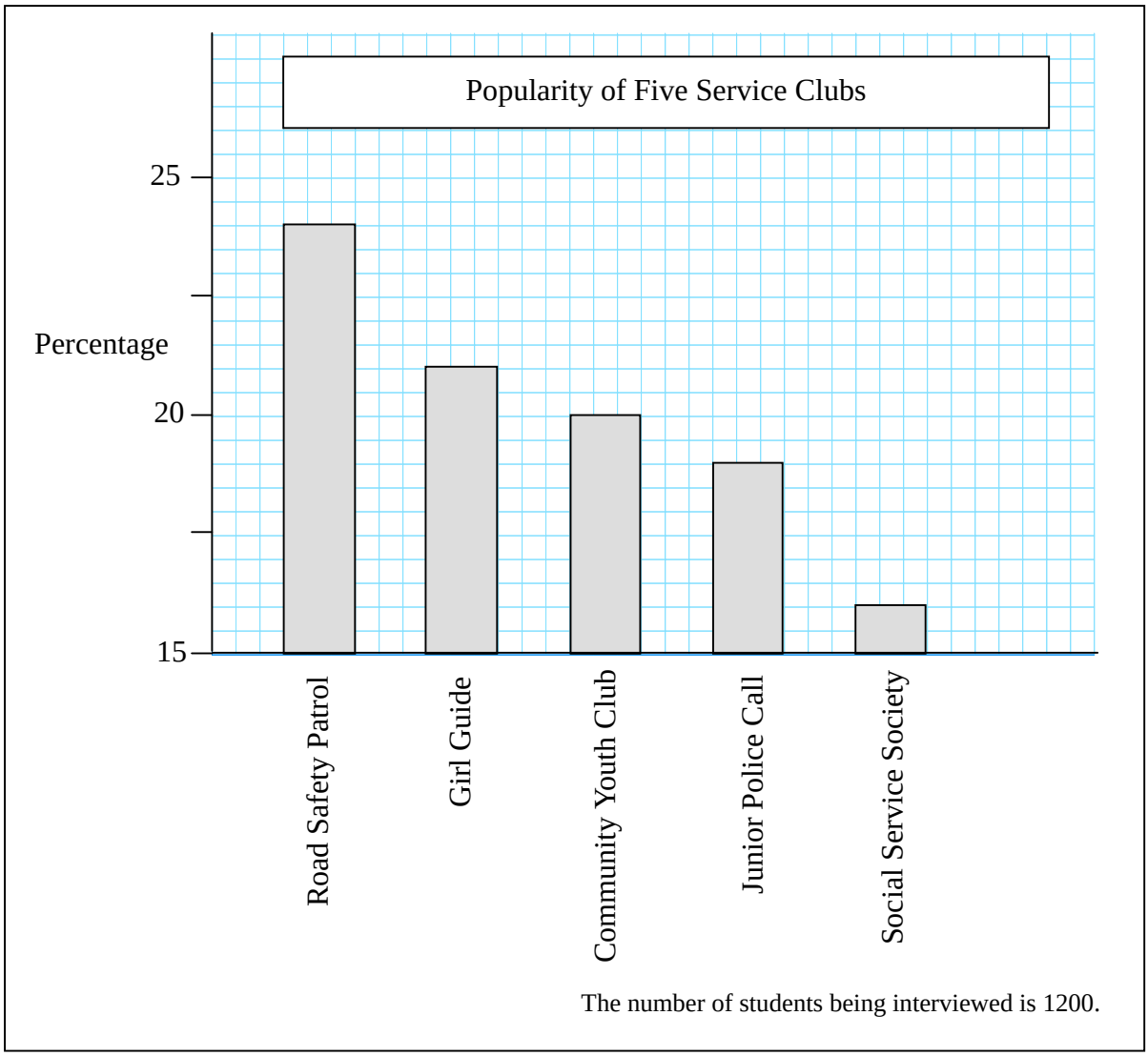

Figure 1

1. Take a glance at the bar chart. What is your impression on the popularity of the clubs?

   _____

   _____

   _____

   _____

2. Give reasons to explain why you have such an impression in Question 1.

   _____

   _____

3. What is the difference between the percentage of popularity of the most popular club and that of the least popular club? Does the result change your view in Question 1?

   _____

   _____

4. Is a bar chart a suitable statistical graph for illustrating the percentage of popularity of the five service clubs? If not, which statistical graph is more appropriate?

   _____

   _____

Part II

A survey is carried out by a magazine by asking some Hong Kong people on the most favourable places to visit during Easter Holiday. The results are published in one of the volumes of the magazine as follows:

More than 60% of Hong Kong people will visit Thailand during Easter Holiday.

Place to visit	Percentage of interviewees
Thailand	65
Taiwan	15
Philippines	10
Singapore	5
Other	5

** Number of people being interviewed is 20 **

1. Do you agree to the results of the survey conducted by this magazine?

   _____

2. Give reasons for your opinion in Question 1.

   _____

   _____

   _____

3. In what way can you suggest improving the survey?

   _____

   _____

   _____

Notes for Teachers:

1. The problems in this exemplar are modified real-life examples found in a newspaper and a magazine.

2. As most questions are open-ended, the teachers should guide students to start the discussion if necessary.

3. The teacher should avoid giving students a “model answer”. Their answers should be accepted as long as these answers are reasonable and justified.

4. If possible, the teacher can use real-life examples found in the newspaper or magazines as a follow-up exercise for students to feel the impact of influence of the misleading graphs and misinterpreting statistical data.

5. Sufficient time for discussion is important. Students should give not only answers of “yes” or “no” but also the explanations.