Name: _____ Date: _____

Year 11 Mathematics: Applications

Investigation 3, 2016

Topic – Univariate data analysis and the statistical investigation process

Preparation Activities

Important Information:
Although the take-home component is not worth any marks, it is essential in preparation for the in-class component. Knowledge and skills gained will be extended in the in-class validation component. This in-class validation will be completed under test conditions on the day in which this take-home component is due. The take-home component may be used when completing the in-class component. Contact may be made to parent(s) if the take-home component is not available for submission (at the start of the lesson).

Date out:	*Week* ____	*Date* _____	**Date Due:**	*Week* ____	*Date* _____
Take home component weighting:	*0% of the year*		**In-class component weighting:**	*10% of the Semester, 5% of the Year*	

AIM: *In this assessment, you will be investigating the statistical investigation*

Task conditions
Students can bring a page of notes summarising the findings of the class investigations to the in-class validation.
For all of these activities students are expected to work collaboratively to;

- Identify all data displays appropriate for the data collected
- Present their findings in at least one appropriate data display
- Identify which statistics are not appropriate in the situation
- Share their findings with the other students in the class

For Activity 1 and Activity 2, students will also need to:

- Sample the population indicated
- Choose and calculate relevant statistics

Activity 1

Plan and carry out an investigation to answer one of the following questions.

1. What are the most popular drinks sold at the canteen during lunchtime?
2. What is the least popular subject chosen by Year 11 students at our school?
3. By what means of transport do our Year 11 students arrive at school?
4. What is the most popular holiday destination for staff in our school?
5. What is the most popular Saturday morning activity for students in Year 11?

Investigating categorical data is the focus for this activity. You will need to decide which data to collect and determine the categories in which the data belong. The numbers in each category are to be compared during this investigation.

Activity 2

Select one of the following questions and once you have clarified the question, collect data from a random sample of 50 Year 11 students. Prepare a summary of your data by calculating relevant statistics and preparing two different data displays.

1. On how many days did you watch television last week?
2. How many texts did you receive yesterday?
3. On how many days did you buy food from the canteen in the last fortnight?
4. How many hours of paid work have you done in the past week? [to the nearest hour]
5. How many different sporting grounds have you been to in Perth?

What type of data will be collected in each of these situations?
The data collected could be used to suggest answers to simple problems
e.g., *How many different sporting grounds have been visited by students in Year 11*?

Identify <u>three</u> such problems for which your data could indicate the solution.

Activity 3
Some students were given a selection of problems to solve. Five groups each chose a different problem and then in each group the students devised one question to clarify their problem. The questions from each of the five groups are given below.

1. What was the total rainfall in Sydney for each month of the last four years?
2. What was the relative humidity in Brisbane at 9 am each day of the last two months?
3. What were the wind-gust speeds every half hour in Adelaide yesterday?
4. What were the minimum temperatures in Melbourne each month for last four years?
5. What were the maximum temperatures each day in January and February in Hobart last year?

Select one of the questions and use the internet to collect the data indicated.
The Australian Bureau of Meteorology website would have the data for each question.

What type of data have you collected?
Calculate the mean, range and standard deviation.
Draw a histogram to represent the data.
What conclusions can you draw from the data display?

Summary

After investigating students should:

1. Know and be able to use the following terms:

   categorical ordinal nominal discrete continuous
   modality bimodal unimodal multimodal outlier
   skew (positive and negative)
   symmetric distribution
   statistical investigation process

2. Construct and interpret the following data displays:

   bar charts tables dot plots stem plots histograms

3. Calculate and interpret the following statistics:

   mean mode median range standard deviation