Y9 Mathematics

Data Representation and Interpretation: Assignment

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| Australian Curriculum Achievement Standards | Students compare techniques for collecting data from primary and secondary sources. They make sense of the position of the mean and median in skewed, symmetric and bi-modal displays to describe and interpret data. They construct histograms and back-to-back stem-and-leaf plots. |
| Australian Curriculum Content Descriptors | ACMSP228, ACMSP282, ACMSP283, ACMMSP227 |

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| **year 9 mathematics** StatisticsInvestigation | | | | |
| Student Name: PIATH MAPER | | Teacher: | | Grade: 9 |
| **Assessment Conditions:** | Time given  Supervision  Calculators  Reference sheet  Page limit | | 2 weeks**During and outside of class time****Permitted****Not applicable** 6 pages | |
| Purpose | | | | |
| * To understand how to collect and process data using primary and secondary methods * Compare the location (mean, median and the spread of data (range) * Represent data in appropriate ways * Analyse and describe data to say what it means, **connecting** to real life   **This task will require you to collaborate with others to collect and collate research, show curiosity by posing questions and be driven to work independently to meet assessment criteria.** | | | | |
| Task Description | | | | |
| -Ask a question involving a categorical or numerical variable.  -Collect data, processing to find the location and spread of the data  -Represent the data in appropriate ways, including back to back steam and leaf lots and histograms.  -Describe and interpret the data  -Collect and analyse secondary data, comparing to primary data collected in class/school. | | | | |
| **To Be Successful** | | | | |
| -Ask appropriate questions that can be researched, including numerical and categorical variables  -Find the location and spread of the data collected using mathematical methods.  -Explain how the data was process, outline thinking  -represent the data I appropriate ways  -Describe the data, interpreting what it means  -Collect secondary data and process, represent, describe and interpret as above.  -Compare primary and secondary data collection methods. This task will require you to collaborate with others to collect and collate research, show curiosity by posing questions and be driven to work independently to meet assessment criteria. | | | | |
| **Other Information** | | | | |
| Scaffolding  Different entry points  Source material  Teacher support | | | | |

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| **Achievement Standard** | **Proficiency Strand** | **A  Excellent Achievement** | **B  Good Achievement** | **C  Satisfactory Achievement** | **D  Partial Achievement** |
| **Students compare techniques for collecting data from primary and secondary sources.** | Problem-Solving | Applies relevant and effective problem-solving approaches to investigate **unfamiliar** situations.  Offers unique or creative solutions | Applies relevant and effective problem-solving approaches to investigate **complex** familiar situations. | Applies problem-solving approaches to investigate simple familiar situations. | **Somewhat** selects and applies problem-solving approaches in **simple** familiar situations. |
| Reasoning | **Clearly** explains mathematical thinking including choices made, strategies used and conclusions reached. Comments on how accurate or reliable solutions are considering the context or information available. | **Explains** mathematical thinking including reasons for choices made, strategies used and conclusions reached.  Makes predictions. Responses are appropriate for context. | Describes mathematical thinking including discussion of choices made, strategies used and conclusions reached. Provides responses but may not make clear connection to context. | **States** choices made, strategies used and conclusions reached.  Includes **unnecessary** or **inaccurate** information. Reasoning is **inconsistently** applied. |
| Understanding | Connects and describes mathematical concepts and relationships in **unfamiliar** situations. Finds multiple solutions, approximates answers recognises validity of solutions. Makes generalisations. | **Connects** and **describes** mathematical concepts and relationships in **complex** familiar situations. **Consistently** shows working. Makes clear connections with context. | Recognises and identifies mathematical concepts and relationships in simple familiar situations. May not show all working or respond in context. | **Somewhat** idenitifies simple mathematical concepts. Little or no working shown. Numerous errors that affect meaning. |
| Fluency | Connects and describes mathematical concepts and procedures to find solutions in **unfamiliar** situations. **Effectively** and **clearly** uses appropriate mathematical terminology, diagrams, conventions and symbols. | **Consistently r**ecalls and uses facts, definitions, technologies and procedures to find solutions to **complex** familiar situations. **Consistently** uses appropriate conventions, formats, units, terminology etc | Recalls and uses facts, definitions, technologies and procedures to find solutions to simple familiar situations. Generally uses appropriate mathematical terminology, diagrams, conventions and symbols. Some errors that do not affect meaning. | **Somewhat** recalls and uses facts, definitions, technologies and simple procedures.  Uses **aspects** of appropriate mathematical terminology, diagrams, conventions and symbols. |

Introduction

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| Explain  - what this task is investigating  - who was involved  - how did you conduct the experiment  - what materials were used |

Part A: Collecting primary data and comparing Height of Y9 Students.

In class, you will measure and record the height of each student in your class. This data will be saved into an excel workbook by your teacher and shared with you.

1. Show a screenclip or copy and paste the raw data for your class here:

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| Insert raw data for your class in this space.    This is in CM. |

2. Use this data to create a back-to-back, ordered stem and leaf plot to compare the data for the male and female students in your class. Show any working and processing.

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| Insert back to back stem and leaf plot in this space.    Female Stem Male |

3. Calculate the mean height for both males and females here. Show any working and processing you carry out.

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| Insert mean calculation and processing for both males and females here. |

4. Calculate the median height for both males and females here. Show any working and processing you carry out.

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| Insert median calculation and processing for both males and females here. |

5. Calculate the range of heights for both the males and females in the class. Show any working and processing and identify any outliers in the results.

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| Insert range calculation and processing for both males and females here. |

6. Comment on the height or males and females in your year 9 class. This should be detailed and in depth and include some of the key measures of the middle and the range. It should comprise at least 2 paragraphs and be approximately 250-400 words.

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| Include analysis of heights of both males and females in your Y9 class here. It should refer to the mean, median, spread and range of results for both males and females. It may also include identifying outliers. |

Part B: Comparing primary and secondary data (number of people in a household)

In class, you will conduct a survey of each class member to find out ‘how many people live in your household?’ This data will be saved so the whole class can access it.

1. Calculate the mean number of people in a household for your class. Show any working and processing you carry out.

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| Insert mean calculation and processing for number of people in a household from your class. |

1. Calculate the median number of people in a household for your class. Show any working and processing you carry out.

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| Insert median calculation and processing for number of people in a household from your class. |

1. Identify the mode for the number of people in a household for your class.

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| Show how you identified the mode from the dataset. |

1. Calculate the range for number of people in a household from your class. Show any working and processing and identify any outliers in the results.

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| Insert range calculation and processing for number of people in a household.  Identify how you found the outlier if present. |

1. Once you have collected and calculated the measures for the primary data, you are required to click on the following link:

<https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/POA5108>

This link will send you to a webpage that provides you with statistics from the postcode area of 5108 (which is the area that the school is located).

Make some informed statements comparing the measures of the middle of the data from the primary data (class survey) and the secondary data (website link). This should be completed in 2 paragraphs comprising of 250-300 words in total. This should be a detailed and in-depth analysis between the two sets of data.

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| Paragraph 1: Compare the measures of the middle of the data (e.g. mean & median).  Paragraph 2: Comment on the sample size, limitations and the potential for misleading data. |

Part C: Investigating a categorical variable.

In Part C, you will be required to pick a categorical variable of your interest to investigate. The overall goal is to compare your categorical variable between males and female.

1. Conduct your own survey within your class in regard to your categorical variable. Show any working and processing you carry out.

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| Show the process that you undertook to collect the data.  Display the data that you collected in a table format (clearly labelled with males/females & your categorical variable). |

1. Display your categorical data findings between males and females by using the appropriate representations. Acceptable data representations for categorical comparisons include a side-by-side column graph or a back-to-back bar chart. Show any working and processing you carry out.

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| Display an acceptable data representation of your choice here. |

1. What does this data tell you about your categorical variable? Comment on the patterns of data between males and females. Discuss and compare the patterns of data concisely using 150-200 words.

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| Write a paragraph here about the patterns of data between males and females for your categorical variable of interest. |

Conclusion

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| - What did the task?  - How reliable are your conclusions  - What are the limitations of your conclusion?  - How could the investigation be improved? |