

Tobacco Education For Senior Students™ Mathematics Exemplar



11 Applied or Pure Mathematics

Statistics & Working with Data – Comparing 2 Sets of Data

Suggested Weighting: 15%

A completed project should include:

- an introduction that outlines the problem to be explored, including its significance, its features, and the context;
- the method of solution in terms of the mathematical model or strategy to be used;
- the appropriate application of the mathematical model or strategy, including:
- the generation or collection of relevant data and/or information, with details of the process of collection;
- mathematical calculations and results, and appropriate representations;
- the analysis and interpretation of results;
- reference to the limitations of the original problem as well as appropriate refinements and/or extensions;
- a statement of the solution and outcome in the context of the original problem;
- appendixes and bibliography as appropriate.

Note: Your report should be written in the form “The analysis...”, rather than “When I analysed...” or “When you analyse...”

Performance will be assessed on the extent to which the following are demonstrated:

- mathematical skills and understandings (without electronic technology);
- mathematical skills and understandings (with electronic technology);
- analysis and interpretation of results and information;
- the communication of mathematical information;
- the organisation and presentation of material;
- the ability to work independently;
- the ability to work cooperatively.

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Achievement Level:

Criteria	0	1	2	3	4	5
Mathematical skills and understanding (without ET)						
Mathematical skills and understanding (with ET)						
Analysis and interpretation of results and information						
Communication of mathematical information						
Organisation and presentation						
Ability to work independently						
Ability to work cooperatively						

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Introduction

The World Health Organisation has described tobacco smoking as the single greatest preventable cause of disease in the developed world. In Australia, tobacco use causes more ill health and premature death than any other drug. Over 19,000 Australians die each year from smoking related diseases, more than the number of deaths from road accidents, suicide, murder, and illegal drug use combined.

Smoking is a major cause of a range of disease and disability, including many types of cancer, heart disease, stroke, debilitating respiratory illnesses, pregnancy complications, blindness and a wide variety of other health problems. 30% of all cancer deaths in Australia can be attributed to smoking.

Engaging young people with tobacco issues remains a challenge. Sadly, in 2004 almost 11% of young people aged 14-19 years were daily smokers, with a further 3% smoking occasionally. The average age of people starting to smoke is just 16 years old.

This investigation will involve you collecting and comparing two sets of numerical data. The data will be selected from one of the web-sites listed below and all sets of data will focus on tobacco use. You will need to use all of the skills learned in this topic to analyse and interpret the two sets of data, enabling you to come up with a brief report outlining your findings.

Your Task

Firstly you need to collect a set of data. Please select some of the following web-sites to collect your data:

www.quitsa.org.au
www.OxyGen.org.au
www.abs.gov.au
www.cancersa.org.au
www.tobacco.health.usyd.edu.au

The next task is to decide on what you would like to compare your data to. Some examples may include:

- Compare your data over time. For example, what percentage of males smoke now compared to 10, 20, 30,... years ago?
- Compare your data to other regions. For example, differences between states within Australia, differences from other countries,...
- Compare your data between genders.
- Compare your data between age groups.
- Compare your data after some sort of educational data or advertising campaign has been released.
- Or use any combination of the above. Please see me if you have any other ideas you would like to compare your data to.

You need to present your findings in a report, which includes many of the statistical calculations covered in this course. Please refer to the cover page for the format required for this assessment task.

Some suggested calculations/graphs:

- Frequency distribution table
- Histogram
- Box plot
- Line graph
- Stem & Leaf plot
- Mean, median and mode
- Range
- Standard deviation

Note: To ensure that you are able to display your mathematical skills in as many areas as possible, ensure that you carefully select your data.