 Year 11 Mathematics Standard

Assessment task

MS-S1 Data Analysis

Driving question

How far would you go for fashion?

Outcomes

A student:

* represents information in symbolic, graphical and tabular form MS11-2
* develops and carries out simple statistical processes to answer questions posed MS11-7
* uses appropriate technology to investigate, organise and interpret information in a range of contexts MS11-9
* justifies a response to a given problem using appropriate mathematical terminology and/or calculations MS11-10

All outcomes referred to in this unit come from [Mathematics Standard Stage 6](https://syllabus.nesa.nsw.edu.au/mathematics-standard-stage6/) Syllabus
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Learning across the curriculum

Cross-curriculum priorities

* Sustainability

General capabilities

* Critical and creative thinking
* Ethical understanding
* Information and communication technology capability
* Intercultural understanding
* Literacy
* Numeracy
* Personal and social capability

Other areas of learning

* Civics and citizenship
* Difference and diversity

Task

What is fashion and what is fashionable? Brand names, designer clothes, fashion magazines, who is wearing what! Skinny jeans, boot leg, hipster, the list goes on, but who can keep up? Is fashion about conformity, is it about pushing the boundaries, is it about expressing your identity or is it about meeting a need?

Would you wear a fedora or a faja, or would you ever go out in your favourite old tracksuit? Would you refuse to wear a fur coat, but still wear leather shoes? Do you really care how much people in Bangladesh are paid if you find a good deal on a shirt you just love?

What are the attitudes of teenagers towards fashion and how far would they go for fashion?

You are to design and conduct an investigation, which is aimed at examining people’s attitudes to fashion. Your results are to be presented in a report which aims to answer the driving question.

Log Book

Throughout this task you will keep and submit a log book as a record of the processes used to design, create and share. The log book will:

* include information about the investigation
* include information about the methods used to collect data
* be reflective of the processes used during the collection and analysis of data
* reflect adjustments made to the investigation as student progresses through unit topic
* include evidence of feedback collected during the investigation and drafting of the final report
* be used as evidence that the project was the student’s own work

Part 1 – planning the investigation

The first step requires you to decide which of the essential questions you will focus on to answer the driving question. Take some time to decide which pathway to follow, using some preliminary research and reflect on your own personal views, before deciding.

1. Use the essential question to form at least five questions which will guide the research you conduct online. The online research should help you develop a better understanding of the types of information you wish to obtain through data collection.

Part 2 - collecting data

1. Create a survey, using an online tool such as Google or Microsoft Forms, based around one or more of the essential questions. You may use your own essential question with approval from your teacher.
2. Decide who you will survey, how many people and how to distribute your survey. You will need to justify these decisions in your report.

Essential questions:

* How important are brand names and designer clothes to teenagers?
* What influence does the fashion industry have on teenagers?
* How important is it to a teenager to be fashionable?
* What are the financial implications of being fashionable?
* What influences teenage fashion?
* Are ethical issues, such as child labour, low wages, health and safety risks, or environmental degradation, important considerations for teenagers when making decisions about fashion?
* Are the issues of animal cruelty or the consumption of animal based products important considerations for teenagers when making decisions about fashion?
* If you have another essential question, which you deem to be appropriate, it can be presented for consideration.

Part 3 – presenting data

1. Use a graphing program such as Microsoft Excel or Google Sheets to produce suitable graphs and tables to include in your report.

Part 4 – analysing data

1. Use statistical calculations such as mean, median, mode, interquartile range, standard deviation, and outliers to analyse the data you have collected. During this process you are looking for trends and answers to the questions you have selected and, ultimately, to the driving question.

Part 5 – communicating your results

You are to write a detailed report to clearly communicate your results.

It needs to reflect the results of your research and your data collection. Importantly, you need to communicate your thoughts and your analysis of the data and you need to use this analysis to draw conclusions which directly address the driving question. You can also include in your report any recommendations you would like to make as a result of your investigation

The report will include:

* a summary of your preliminary research findings
* a justification of the data collection process
* a detailed analysis of the results that will justify the conclusions you have drawn
* visual references, such as graphs and pictures, to support the information in their report
* a conclusion which answers the driving question

What to submit:

All components are due on the same day.

* Copy of survey
* Copy of the raw data collected
* Project report
* Reflection/log book

Success criteria

| Fluency, understanding and communication | Problem solving, reasoning and justification |
| --- | --- |

| Criteria | Working towards developing | Developing | Developed | Well developed | Highly developed |
| --- | --- | --- | --- | --- | --- |
| Parts 1 & 2:Collecting dataMS11-7 | Student designs a survey with a small number of questions and collects a small sample of results | Student designs a survey and uses a suitable statistical process to collect data | Student designs a survey that includes questions relevant to their essential questions and uses a suitable statistical process to collect data | Student designs a survey that includes insightful questions relevant to their essential question and based on preliminary research.Student is able to justify the statistical process used to collect data  |  |
| Part 3: Presenting dataMS11-2, MS11-9 | Attempts to represent some data or presents data in a manner that makes trends and findings unclear. | Represents some data appropriately and accurately so that trends and findings are clear. | Represents all data appropriately and accurately so that trends and findings are clear. |  |  |
| Part 4: Analysing dataMS11-7 | Student performs some appropriate statistical calculations Does not include an analysis statement | Student performs some appropriate statistical calculations Provides an unclear and inaccurate analysis of the data | Student performs accurate basic statistical calculations.Provides an analysis of some of the data | Student uses sophisticated statistical calculationsProvides an accurate analysis of some of the data | Provides an accurate and insightful analysis of the data which refers to appropriate sophisticated statistical calculations |
| Part 5:Communicating resultsMS11-10 | Student provides an answer to the driving question with an unclear or inaccurate attempt to justify their conclusion | Student provides an answer to the driving question and attempts to justify their conclusion by explaining each component of the task. | Student provides an answer to the driving question and attempts to supports their conclusions by quoting statistics which may not be relevant or accurate. | Student provides an answer to the driving question and supports their conclusions by accurately quoting suitable statistical findings | Student provides a sophisticated and convincing argument to support their stance on the driving question, incorporating their preliminary research and statistical findings. |

Note**s**

* Any non-attempt in a section will be deemed zero. Marks can only be attributed to attempted responses.
* Corresponding question numbers are shown in brackets.

Note to staff

The success criteria above has been designed for students and staff alike to use. Students should be presented the rubric as part of the assessment task package. Students and staff follow the process of the task downwards through the rubric and the depth of responses, for each element, across the rubric. Students should be encouraged to use the rubric to self-assess their progress as an assessment-as-learning strategy.

The aim of the assessment task is to develop students’ deep content knowledge. This is reflected in the descriptors, **working towards developing** through to **highly developed**. The level of skill and understanding required in each part of the task is different; some parts require **highly developed** or **well-developed** skills, other parts only capture a **developing** skill set.

None of the working mathematically elements are distinct and when demonstrating one element, you are invariably demonstrating another. As an example, communication runs concurrently through all the other working mathematically elements. Students cannot respond to this assessment without communicating in some form. However, it is envisaged that there is a general progression through the working mathematically elements, starting with fluency and leading to understanding, problem solving, reasoning and justification, with increasingly higher levels of communication accompanying each element. Careful consideration has been given to the position of the success criteria statements so they reflect the working mathematically elements demonstrated.

This assessment task has been designed to illuminate the style of questions and the types of responses needed to elicit deep content knowledge, however, staff are encouraged to use and adapt the assessment task and the success criteria to their school context. Staff may like to enhance or amend sections of the task. Staff may like to adapt the rubric to assign marks to the descriptors in order to differentiate between responses that address the same statement. All changes are the responsibility of the staff using the assessment.