4 Statistics and probability

Activity: Statistical analysis project

Collect your own data based on a hypothesis of your choice. A hypothesis is a prediction that you make about a connection between two sets of data, for example:

Petrol prices are more expensive the closer you are to the centre of a city.

For this I would have to collect two sets of data:

* the price of petrol at garages
* the distance those garages are from the city centre.

Using the data analysing techniques that you have used in class, draw up an argument to determine whether or not your hypothesis is correct.

Develop your results into a written project that can be graded using the attached rubric.

If you need any ideas for your project, here is a list of prompts that may inspire you:

* shadows and height
* a comparative study of stocks and shares
* analysis of stock market changes
* a comparison between calorie intake and gender
* dine in or dine out?
* school lunches
* breakfast and school grades
* investigating reaction times
* perception of time
* the psychology of memory
* voter turnout
* alcohol consumption and teenagers
* girls sport and grades
* left-handed students
* performance of local students compared with foreign students
* sport and nationality
* how far tennis balls roll
* stoppage time in football games
* air travel – distance compared with price
* cost efficiency of vehicles
* petrol prices
* seat belt use
* colour of words
* counting weeds
* international phone call pricing
* memory
* predicting cooling times
* video games and response times.

Adapted criteria

**Criterion A: Presentation:** The ‘presentation’ criterion assesses the organization and coherence of the task.

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| --- | --- |
| Achievement level | Descriptor |
| 0 | No attempt has been made to structure the project. |
| 1 | The task has some coherence or some organization. |
| 2 | The task has some coherence and shows some organization. |
| 3 | The task is coherent and well organized. |

**Criterion B: Mathematical Communication:** The ‘mathematical communication’ criterion assesses use of appropriate mathematical language, key terms, multiple forms of representation and deductive method.

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| --- | --- |
| Achievement level | Descriptor |
| 0 | The task does not contain correct mathematical notation or terminology. |
| 1 | The task contains some relevant mathematical communication which is partially appropriate. |
| 2 | The mathematical communication is relevant, appropriate and is mostly consistent. |

**Criterion D: Reflection:** The ‘reflection’ criterion assesses how you review, analyse and evaluate the task. Although reflection may be seen in the conclusion to the task, it may also be found throughout the task.

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| Achievement level | Descriptor |
| 0 | The task does not show evidence of reflection. |
| 1 | There is evidence of limited reflection. |
| 2 | There is evidence of meaningful reflection. |
| 3 | There is substantial evidence of critical reflection. |

**Criterion E: Use of Mathematics:** The ‘use of mathematics’ criterion assesses the mathematics used and to what extent that it is relevant to the exploration.

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| --- | --- |
| Achievement level | Descriptor |
| 0 | The task does not use any relevant mathematics. |
| 1 | Some relevant mathematics has been used. |
| 2 | Relevant mathematics used. Limited understanding, with some errors. |
| 3 | Relevant mathematics is used. Mostly correct and good knowledge is demonstrated. |

**Overall writing task evaluation: Summary**

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| --- | --- |
| Points for Criterion A: Presentation | / 3 |
| Points for Criterion B: Mathematical Communication | / 2 |
| Points for Criterion D: Reflection | / 3 |
| Points for Criterion E: Use of Mathematics | / 3 |
| **Total** | / 11 |