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| A blue and white logo  Description automatically generated with low confidence | **Harrisdale Senior High School****Science Department** |

**ATAR Physics Units 1 and 2**

**Task 11: Linear Motion Investigation 2022**

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| --- | --- |
| **Student name:** |  |
| **Teacher name:** |  |
| **Date:** |  |

**Part 1: In-Class Investigation (30 marks)**

Conduct and report on an investigation to find the relationship between the length of a pendulum and its period of oscillation. Plot an *ℓ*-*T* graph for six different lengths of the pendulum, then linearise the graph. Finally, use your linearised graph to calculate the acceleration of the pendulum due to gravity.

*Lab report (hard copy) due 14/10/22. Please attach this page to the front of your report.*

**Part 2: Validation Test (14 October 2022)**

**Marking Key**

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| --- | --- | --- |
| **Description** | **Marks achieved** | **Marks available** |
| *Background** Physics concepts relevant to the context of the investigation defined and discussed qualitatively
* Necessary physics relationships / formulae identified and described
* Appropriately labelled diagrams / images / graphs included
 |  | 3 |
| *Aim** Specific purpose of each part of the experimental investigation explicitly stated
* Major variables (independent, dependent, and controlled) described
* Other relevant variables identified, and reasonable assumptions discussed
 |  | 3 |
| *Equipment** Equipment individually listed
* Equipment purposes (including utilities) explicitly stated
* Measuring equipment described (including precision)
 |  | 3 |
| *Method** Detailed descriptions of all experimental procedures in numbered steps
* Clear descriptions of how independent variables are determined and how dependent variables are measured
* Strategies included to minimize experimental uncertainties / error and avoid potential difficulties
 |  | 3 |
| *Results** Appropriate tabulation of quantitative data and/or presentation of images / other data
* Detailed descriptions of other non-quantitative observations recorded
 |  | 2 |
| *Graph** Appropriate graphical representation of data
* Linearised graph
 |  | 8 |
| *Evaluation** Reasonable qualitative evaluation of results made by comparison with theory or independent data for each part of the investigation
* Percentage error calculated
 |  | 4 |
| *Errors** Experimental discrepancy / errors identified, within quantitative uncertainty limits, and reasonable physical explanations suggested for errors
* Reasonable suggestions for improvement of the experimental investigation provided
 |  | 2 |
| *References** Reference material (including ICT resources) identified
 |  | 2 |
| ***TOTAL*** |  | **30** |
|  |  **%** |