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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** |
|  | **%** | |