



# MOUNT ANNAN HIGH SCHOOL

## ASSESSMENT TASK NOTIFICATION

<b>FACULTY</b>	Science	<b>COURSE</b>	11 Physics	<b>YEAR</b>	2025
<b>TASK NUMBER</b>	1	<b>TASK NAME</b>	First- Hand Investigation		
<b>TASK WEIGHT</b>	30%	<b>MARKS AWARDED</b>	30		
<b>DATE OF NOTIFICATION</b>	Term 1 Week 5 (5 <sup>th</sup> March 2025)				
<b>DUE DATE</b>	Term 1 Week 7 (19 <sup>th</sup> March 2025: Period 5)				

### TASK DESCRIPTION / INSTRUCTIONS

#### **IQ: How is the motion of an object moving in a straight line described and predicted?**

Students are to conduct a first-hand investigation to test that object moving under the effect of gravity at the earth's surface, the acceleration always acts downwards and does not depend on whether the object is moving upwards or downwards.

During the investigation students will collect quantitative data relating to the motion of a pendulum to justify the acceleration due to gravity has a fixed value of  $9.8 \text{ m s}^{-2}$  at the earth's surface. Students will be required to individually discuss, analyse and reflect on the data collected.

**This assessment is an in- class task requiring students to work on the following components and submit on **19<sup>th</sup> March 2025**:**

#### **Part A – Planning an Investigation (7 Marks)**

Students will be required to plan a First-Hand Investigation relating to acceleration due to gravity using a list of equipment.

The equipment available for students will be as follows:

- Retort stand with clamp
- Mass (100g)
- stopwatch
- metre ruler
- String

#### **PART B - Data analysis (23 Marks)**

Students will work individually in the classroom to analyse and evaluate the data collected in Part A to demonstrate the concept of acceleration due to gravity equating to  $9.8 \text{ m/s}^2$  at Mount Annan high school.



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**NOTE:** The period  $T$  for a simple pendulum does not depend on the mass or the initial angular displacement, but depends only on the length  $L$  of the string and the value of the gravitational field strength  $g$ , according to;

$$T = 2 \pi \sqrt{\frac{l}{g}} \quad \text{which rearranges to} \quad g = \frac{4\pi^2 l}{T^2}$$

This is a theoretical written and practical examination of 55 min duration.

A marking criteria and extensive feedback will be provided to all students after the task.

## TASK SUBMISSION INSTRUCTIONS

Students will use their Working Scientifically skills to collect and interpret data. The task will be completed and submitted in class on Thursday 19<sup>th</sup> March 2025.

**NOTE:** All materials required will be supplied during the task.

## HOW DOES THIS TASK LINK TO MY LEARNING

Students will be demonstrating their understanding of the following outcomes from **Module 1 – Kinematics**

- Conduct practical investigations, selecting from a range of technologies, to record and analyse the motion of objects in a variety of situations in one dimension in order to measure or calculate acceleration.



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### OUTCOMES

#### Planning Investigations

**PH11-2** designs and evaluates investigations in order to obtain primary and secondary data and information.

#### Conducting investigations

**PH11-3** conducts investigations to collect valid and reliable primary and secondary data and information.

#### Processing data and information

**PH11-4** selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media.

#### Analysing data and information

**PH11-5** analyses and evaluates primary and secondary data and information.

#### Knowledge and understanding

**PH11-8** describes and analyses motion in terms of scalar and vector quantities in two dimensions and makes quantitative measurements and calculations for distance, displacement, speed velocity and acceleration.

### FAILURE TO COMPLETE OR SUBMIT AN ASSESSMENT TASK

If you do not attend school on the Due Date of an Assessment Task to submit or complete the task in person you will be given a zero mark unless you comply with the following Assessment Guidelines:

- For Assessment Task completed at home – you must submit the assessment task before school on the next day you attend.
- For Assessment Tasks completed at school – you must report to the relevant Head Teacher before school the next day you attend and discuss when you will complete task missed or a substitute task.
- Complete a 'Misadventure Form' and provide relevant information and evidence to appeal the **zero mark** awarded. Other circumstances are outlined in the MAHS Assessment Booklet for the particular year. Evidence may include an in person medical certificate for illness or a letter outlining extenuating circumstances or other deemed reasonable reasons. An outcome of your 'Misadventure Form' will be provided by the Deputy Principal.

Students found guilty of **malpractice** which includes plagiarism will be awarded a **zero mark**. If a piece of work is incomplete at the time of submission, it should be submitted as is, and you will be given a mark on what has been completed.

As per our school Assessment Procedures outlined in the MAHS Assessment Booklet for the particular year, you must see your teacher and Head Teacher on the **first day you return** back to school. Please access our school website to access our assessment procedures for each year group and a 'misadventure form' - <https://mountannan-h.schools.nsw.gov.au/community/assessment-scedules.html>



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## ASSESSMENT TASK NOTIFICATION

MARKING CRITERIA - PART A	Outcomes (PH11-2)
Performance Descriptors	Marks/Grade
Student can <ul style="list-style-type: none"> <li>Comprehensively develop a plan for a first-hand investigation to quantitatively demonstrate the concept of gravitational acceleration equating to <math>9.8 \text{ ms}^{-2}</math> at Mount Annan high school.</li> <li>Identify valid risks AND correctly explain how to minimise these risks.</li> </ul>	A 6-7
Student can <ul style="list-style-type: none"> <li>Effectively develop a plan for a first-hand investigation to quantitatively demonstrate the concept of gravitational acceleration equating to <math>9.8 \text{ ms}^{-2}</math> at Mount Annan high school.</li> <li>Identify valid risks AND explain how to minimise these with minor inconsistencies.</li> </ul>	B 4-5
Student can <ul style="list-style-type: none"> <li>Present a plan for a first-hand investigation to demonstrate the concept of gravitational acceleration equating to <math>9.8 \text{ ms}^{-2}</math> at Mount Annan high school.</li> <li>Identify risks WITH inconsistencies or how to minimise these.</li> </ul>	C 3
Student can <ul style="list-style-type: none"> <li>Present a plan for a first-hand investigation to demonstrate the concept of gravitational acceleration.</li> <li>Identify a risk from a first-hand investigation incorrectly and relate how to minimize it.</li> <li>Valid risk identified without relating to risk minimisation.</li> </ul>	D 2
Student can: <ul style="list-style-type: none"> <li>Present an outline for a first-hand investigation.</li> <li>Identify a risk from a first-hand investigation without relating to risk minimisation.</li> </ul>	E 1
Non Attempt – Non Submission – Non Serious Attempt	0



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MARKING CRITERIA - PART B	Outcomes (PH11-3, PH11-4, PH11-5, PH11-8)
Performance Descriptors	Marks/Grade
<p>Student can</p> <ul style="list-style-type: none"> <li>Comprehensively implement a first-hand investigation that provided and processed appropriate data, based on the concept of gravitational acceleration equating to <math>9.8 \text{ ms}^{-2}</math> at Mount Annan high school.</li> <li>Demonstrate accurately an investigation to collect repeatable valid and reliable primary and secondary data.</li> <li>Comprehensively evaluate the validity AND reliability of data gathered.</li> <li>Comprehensively describe, analyse and evaluate the motions of a pendulum to justify that acceleration due to gravity has a fixed value of <math>9.8 \text{ m s}^{-2}</math></li> </ul>	<p>A 19-23</p>
<p>Student can</p> <ul style="list-style-type: none"> <li>Effectively implement a first-hand investigation that provided and processed appropriate data, based on the concept of gravitational acceleration equating to <math>9.8 \text{ ms}^{-2}</math> at Mount Annan high school.</li> <li>Demonstrate accurately an investigation to collect repeatable valid and reliable primary and secondary data.</li> <li>Effectively evaluate the validity AND reliability of data gathered.</li> <li>Describe, analyse, and evaluate the motions of a pendulum to justify that acceleration due to gravity has a fixed value of <math>9.8 \text{ m s}^{-2}</math></li> </ul>	<p>B 14-18</p>
<p>Student can</p> <ul style="list-style-type: none"> <li>Carry out a first-hand investigation that provided and processed data, based on the concept of gravitational acceleration equating to <math>9.8 \text{ ms}^{-2}</math></li> <li>Demonstrate an investigation to collect repeatable and reliable primary and secondary data.</li> <li>Explain the validity AND reliability of data gathered.</li> <li>Describe, stated, and explain the motions of a pendulum to justify that acceleration due to gravity has a fixed value of <math>9.8 \text{ m s}^{-2}</math></li> </ul>	<p>C 9-13</p>
<p>Student can</p> <ul style="list-style-type: none"> <li>Present a first-hand investigation that provided a basic collection of processed data, based on the concept of gravitational acceleration.</li> <li>Demonstrate an investigation to collect reliable data.</li> <li>State reasoning for data gathered.</li> <li>Identify, state OR describe the motions of a pendulum relating acceleration</li> </ul>	<p>D 5-8</p>
<p>Student can:</p> <ul style="list-style-type: none"> <li>Present a first-hand investigation that provided a limited collection of data.</li> <li>Demonstrate an investigation that collected irrelevant data.</li> <li>Identify a reason for data gathered.</li> <li>Identify, state OR describe the motions of a pendulum.</li> </ul>	<p>E 1-4</p>
Non Attempt – Non Submission – Non Serious Attempt	0