ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	Physics
Year	11
ask	Assessment 1 (First-Hand Investigation Practical Report)
Weighting	30%
Teacher	Mr Rose
Head Teacher	Ms Huggett
Date given	Thursday the 16th of February 2023 – Week 4A Term 1
Date and school week	Thursday the 2nd of March 2023 – Week 6A Term 1

Assessment Outline

PART 1 – (At home and bring completed on 2/3/23)

- Write a formal report style plan for the scientific experiment outlined on the next page. Including: Aim, Background research, Hypothesis, Equipment list, Variables, Risk assessment, Method and References.

PART 2 – (In Class on 2/2/23)

- Students will then be required to conduct the experiment in groups using the equipment provided.
- Make appropriate updates to their scientific report (equipment list and method) to account for the actual experiment completed.
- Record results as a group.
- Individually present the analysed results graphically.
- Individually analyse and interpret the data collected from the scientific investigation.
- Students will be required to answer a series of unseen questions on linear motion in class on the due date as part of their analysis.
- Students will be able to refer to their formal investigation report during the in-class component of the task.

Non-completion of Task

If you know you are going to be away on the day that the task is due, you must make alternative arrangements with your classroom teacher. If you are away on the day of the examination, you must catch up with your classroom teacher on the first day you return to make alternate arrangements to catch up on this task.
Failure to follow the above procedures may result in a zero award.

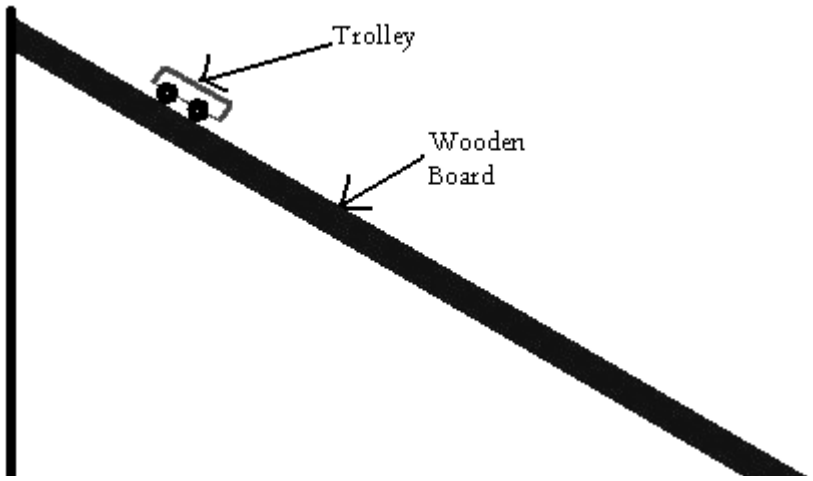
Outcomes Assessed

PH11 – 1 Develops and evaluates questions and hypotheses for scientific investigation
PH11 – 2 Designs and evaluates investigations in order to obtain primary and secondary data and information
PH11 – 3 Conducts investigations to collect valid and reliable primary and secondary data and information
PH11 – 4 Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
PH11 – 5 Analyses and evaluates primary and secondary data and information
PH11 – 7 Communicates scientific understanding using suitable language and terminology for a specific audience or purpose
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

The Experiment

Conduct an experiment on changing the **angle of a ramp** to determine the **speed of a ball** rolling down the ramp at **different angles**.

Similar to:



Note you will **NOT** be allowed to use a protractor. Angles must be calculated.

Scientific Report Writing Guide

PART 1 – (At home and bring completed on 2/3/23)

Inquiry Question/Aim – A clear question that the investigation aims to answer. What was the purpose of the investigation?

Background information – (250-350 words) that informs the reader of the science behind the investigation you are undertaking. For example, if you were to conduct an investigation to prove that any two objects inside the Earths gravitational field, regardless of their mass, will accelerate towards the Earth's surface at the same rate, you would conduct research into Galileo and Newton's previous investigations and understanding of gravity. You would include any information relevant to your investigation in this section, such as the effect that air resistance would have on your investigation and include any information that would influence your experimental design (method).

Hypothesis - A tentative explanation for an observed phenomenon, expressed as a precise and clear statement that can be supported or refuted by the investigation. A hypothesis is based on prior knowledge and clearly identifies how the independent variable will affect the dependent variable.

Equipment list – a detailed list of all equipment used to perform the investigation.

Variables Identified – Correctly identify the variables in the experiment including; independent, dependent and controlled variables.

Risk Assessment – Students are to conduct a risk assessment of the investigation. At least 3 risks should be included, and three control measures. The risk assessment should be presented as a table. (See below)

Risk/Hazard:	**Control Measure:**
Risk 1	
Risk 2	
Risk 3	

Method – Students are to write a draft method to conduct the experiment. Your method will need to include any changes that were made to the way the investigation was conducted. It should be in step form, provide clear logical instructions, include how/what equipment is used to collect the data, and include repetition.

Reference list – This is where you include any references that you used/referred to in your investigation. You should use references in your background information section and in your discussion.

Number	Author	URL / Title of Book	Date Accessed
1	EXAMPLE	www.EXAMPLE.COM.AU	01/01/0001

Example of required in text citation:

Newtons second law of motion state that the force and object experiences is directly proportional to the mass of the object (1-EXAMPLE). This means in our experiment …

PART 2 – (In Class on 2/2/23)

Results (table) - first-hand data should be presented in an appropriate table with heading and units of measurement.

Results (calculations) – calculate averages and convert raw information in data required by the aim of the experiment.

Results (graphs) – The first-hand data should be averaged and calculated before being converted into an appropriate graph. Make sure that your graph has appropriate headings, labels on the axis, even scales, and appropriate units.

Discussion – Answer a series of questions designed to help you reflect on the accuracy, reliability and validity of the experiment you conducted and interpret the results.

Conclusion – A paragraph summarising the main findings of the investigation. A concluding paragraph should refer to the aim of the investigation and state whether the hypothesis was proven or disproved and the consequences/implications of this. Your conclusion may identify an area of potential future research based on your investigation. Your conclusion should always be based on evidence and refer directly to key evidence from your investigation.

Linear motion questions - You will be required to answer a series of unseen questions on linear motion in class.

<u>Marking Rubric:</u> PART 1 – (At home and bring completed on 2/3/23)

Outcome	Section	1 Mark	2 Marks	3 Marks	4 Marks	5 Marks
PH11-1	**Inquiry Question /Aim**	Simple aim of investigation included	Scientific aim given, includes **either** the independent or dependent variable	**Detailed** scientific aim given, includes the independent **and** dependent variable		
PH11-5	**Background information**	Presents a **basic** summary using **1-2** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study.	Presents a **sound** summary using **3-4** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study.	Presents a **detailed** summary using **3-4** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study.	Presents a **sound** summary using **5** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study.	Presents a **detailed and sophisticated** summary using **5** different sources of information clearly explain the ideas behind the project and relevant information to the topic of study.
PH11-1	**Hypothesis**	Hypothesis is **unclear**	Clear hypothesis that reflects the **purpose of the investigation**	Clear hypothesis that reflects the **background information**	Sophisticated hypothesis that reflects the **purpose of the investigation and** reflects the **background information**	
PH11-2	**Equipment list**	**Lists some** appropriate equipment	**Updates** list to include all appropriate equipment to complete the practical investigation	**Lists all** appropriate equipment to complete the practical investigation		
PH11-2	**Variables Identified**	Identifies any **ONE** variable correctly.	Identifies any **TWO** variables correctly.	Correctly identifies: • Controlled variables (3 or more). • Independent variable. • Dependent variable.	Correctly identifies: • Controlled variables (3 or more). **and explain why they need to be controlled.** • Independent variable. • Dependent variable.	

Outcome	Section	1 Mark	2 Marks	3 Marks	4 Marks	5 Marks
PH11-2	**Risk Assessment**	Identifies **some** hazard/safety issue.	Identifies **some** hazards/safety issues with conducting the investigation. **Attempts an explanation** of how at least ONE issue can be reduced.	Identifies **all** hazards/safety issues (3 or more) with conducting the investigation. **Sound explanation** of how each issue can be reduced.	Identifies **all** hazards/safety issues (3 or more) with conducting the investigation. **Detailed explanation** of how each issue can be reduced.	
PH11-2	**Method**	• Method **generally** tests the aim. • Is in numbered steps.	• Method **generally** tests the aim. • Is in numbered steps. • Method **updated** during experiment	• Method **clear and logical** tests the aim. • Is in numbered steps, **correct order & detailed.**	• Method **clear and logical** tests the aim. • Is in numbered steps, **correct order & detailed.** • Method **updated** to reflect actual process completed during experiment	• Method **clear and logical** tests the aim. • Is in numbered steps, **correct order & detailed.** • Method **updated** to reflect actual process completed during experiment • Method allows for the **reliably** collection of data
PH11-7	**Reference List**	Secondary sources are referenced appropriately	Secondary sources are referenced appropriately including **in text citations**.			

<u>Marking Rubric:</u> PART 2 – (In Class on 2/2/23)

Outcome	Descriptor	Marks
11PH-3	Conducts investigations to collect valid and reliable primary and secondary data and information. • Amount of support required by group to conduct the experiment	/2
PH11-4	Selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media. • Gathered data is presented clearly in appropriate tables and graphs • Qualitative and quantitative data is described and processed • Calculations	/11
PH11-5	Analyses and evaluates primary and secondary data and information. • Explains trends, patterns and relationships in data and information • Assesses errors and limitations in data • Sophisticated and thorough evaluation of the accuracy, reliability and validity of the investigation • Suggests improvements to the investigation	/7
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.	/10

Total Marks /60

Comments: _____

_____

_____

_____