Condobolin High School

Notification of an Assessment Task

Name and Type of Task: Research Task	
Subject: Year 9 Science	**Task Number: 2**
Date Issued: Term 2 Week 9. Thursday, 27th June 2024.	**Date Due: Term 3 Week 2. Friday, 2nd August 2024.**
Total Marks: 35	**Weighting: 35%**
Class Teacher/s: Judith Pousini, Adam Quinn.	**Head Teacher: Judith Davis**

Submission Instructions: Students are to submit their research reports to their teacher in their Science class on **Friday, 2nd August 2024**

Task Context:

In this unit, you have learned about the physics of motion, including Newton's laws of motion, force, mass, acceleration, speed, distance, and time, as well as motion graphing. You have learned how these fundamental principles are crucial for understanding how objects move and interact in the world around us.

In this task, you will apply your knowledge of motion to the real-world, showing how the principles of motion are used in everyday life. You will identify, describe and investigate real world scenarios to explain how motion is involved using your scientific understanding.

Course Outcomes:

SC5-10PW	applies models, theories and laws to explain situations involving energy, force and motion
SC5-5WS	produces a plan to investigate identified questions, hypotheses or problems, individually and collaboratively
SC5-6WS	undertakes first-hand investigations to collect valid and reliable data and information, individually and collaboratively
SC5-7WS	processes, analyses and evaluates data from first-hand investigations and secondary sources to develop evidence-based arguments and conclusions
SC5-8WS	applies scientific understanding and critical thinking skills to suggest possible solutions to identified problems
SC5-9WS	presents science ideas and evidence for a particular purpose and to a specific audience, using appropriate scientific language, conventions and representations

Task Description:

Total Marks: 35

In this task, you will reflect on your understanding of motion and relate this to the real-world, incorporating aspects of Newton's laws, calculations involving mass, force, acceleration, distance, and time, and interpreting distance/time graphs.

Your task is to construct a report that includes the following sections:

Scenario Investigation (30 marks)

- Select a real-world scenario where the speed of an object changes at different points in time (e.g., a moving car)
    - Design and conduct an investigation, collect data about the object's distance, time and speed.
    - Describe the setup of your investigation, including the variables involved and the method used to gather data.
- Construct a distance/time graph for the scenario. Analyse the graph and describe its trends.
- Explain how each of Newton's laws apply to the scenario you have chosen
    - Include diagrams where necessary to illustrate how the laws apply

Conclusion (5 marks)

- Summarise the key points you have learned from this research task.
- Evaluate how your investigations could be improved and how your findings about motion can be applied in everyday life or future studies.

Tips:

- Use diagrams and graphs where appropriate to support your explanations.
- Ensure your work is well-organised, with clear headings for each section.
- Your report can be hand-written or typed.

Criteria for Assessing Learning:

You will be assessed on your ability to:

- Design and conduct valid investigations to collect first-hand data.
- Analyse data obtained from a first-hand investigation and secondary information.
- Apply critical thinking and knowledge of motion to explain real-world situations.
- Communicate knowledge of motion using appropriate scientific terminology and calculations.

Key Verbs:

Analyse
Identify components and the relationship between them; Draw out and relate implications.

Describe
Provide characteristics and features.

Design
to create, fashion, execute, or construct according to plan.

Explain
Relate cause and effect; make the relationships between things evident; provide why and/or how.

Conduct
Organise and direct a particular activity.

Evaluate
Make a judgement based on criteria; Determine the value of.

Summarise
Express, concisely, the relevant details.

Construct
Make or form by combining or arranging parts.

Collect
gather together or be gathered together

Process
a series of actions or steps taken in order to achieve a task

Description	Grade
• Designs and conducts an extensive scientific investigation to collect detailed data and analyses this data to explain how motion is involved. • Applies extensive scientific knowledge of motion to thoroughly explain real-world situations. • Uses precise scientific terminology and accurate calculations to effectively communicate an extensive understanding of motion.	A 31-35
• Designs and conducts a comprehensive scientific investigation to collect substantial data and processes this data to describe how motion is involved. • Applies comprehensive scientific knowledge of motion to explain real-world situations • Uses mostly precise scientific terminology and mostly accurate calculations to communicate a strong understanding of motion.	B 24-30
• Designs and conducts a satisfactory scientific investigation to collect adequate data and processes this data to identify how motion is involved. • Demonstrates satisfactory scientific knowledge of motion to describe real-world situations • Uses some appropriate scientific terminology and calculations to communicate a sound understanding of motion.	C 14-23
• Conducts, with some assistance, a basic scientific investigation with limited assistance to collect minimal data and processes this data to identify how motion is involved. • Demonstrates basic scientific knowledge of motion to identify a real-world situation where motion is used. • Uses some scientific terminology or calculations to communicate a basic understanding of motion.	D 7-13
• Participates in, with assistance, a scientific investigation to collect limited data and attempts to process this data to identify how motion is involved. • Demonstrates minimal scientific knowledge of motion with assistance to identify a situation where motion is used. • Uses minimal scientific terminology and calculations to communicate a limited understanding of motion.	E 0-6