

Faculty: TAS	Subject: Industrial Technology Engineering	Topic: Task 2: Research Report - Race Car
Teacher: Mr. Boundy		Student:
Outcomes/Content Assessed: 5.3.1 - Justifies the use of a range of relevant and associated materials. 5.4.1 – Selects, applies and interprets a range of communication techniques in the development, planning, production and presentation of ideas and projects. 5.5.1 - Applies and transfers acquired knowledge and skills to subsequent learning experiences in variety of contexts and projects. 5.7.1 - Describes, analyses and uses a range of current, new and emerging technologies and their various applications.		
Weighting(s): 20%		
Date Given: Term 2, Week 1		Date of Completion: Term 2, Week 3 – Friday 17 th May 2019 or next lesson
DESCRIPTION OF TASK		
<ul style="list-style-type: none"> F1 racing is at the pinnacle of the racing world. The technologies and engineering developments are the first of their kind in the automobile environment and generally get passed down into everyday vehicles to add safety, performance and reliability. This assessment task will delve into the materials and aerodynamics that make F1 cars competitive and the top of the manufacturers ladder. 		
Task Guidelines: (steps/marking scale/grid)		
<ul style="list-style-type: none"> This assessment requires each student to research the following categories of F1 car development: <ol style="list-style-type: none"> Materials – Carbon Fibre & Kevlar. <ul style="list-style-type: none"> Analyse each material’s atomic structure and their mechanical property characteristics. (What mechanical properties are evident? Why is the material able to be made? What combination of constituents make up each material?) Describe the manufacture process for each material. (How does the material get made? Document and diagram the process.) Identify and Explain the use for each material when used in a F1 car. (i.e. What components are made from each material?) Aerodynamics – Lift, drag and Bernoulli’s principle. <ul style="list-style-type: none"> Identify and describe Lift and Drag in relation to a F1 car. (what are each of these effects of external wind resistance? How do they affect a F1 cars performance?) Analyse and describe Bernoulli’s Principle and how it is applied to F1 cars. (What is Bernoulli’s Principle and how is it applied to F1 race cars?) Explain the importance of the following components of a F1 car for airflow and car control. <ol style="list-style-type: none"> The Front/Back wings The Diffuser The Side pods A student will be required to research and produce an Engineering report format as demonstrated by the classroom teacher using Microsoft Word. The following headings and page titles are required: <ol style="list-style-type: none"> Title page Table of Contents Introduction Body Conclusion Bibliography (Must be completed or you will be required to resubmit the report) Students must use as much photographic evidence to supplement their research to add depth to the report for greater understanding. Students must complete the report maintaining that this is “All their own work”, meaning NO PLAGIARISM! Report font formatting must be Calibri/Time New Roman in 11/12-point font. Submitted on OneNote, demonstrated by the teacher. There will be a specific page for submission. 		

Marking Criteria

Student Name:	Marks
<p>Materials</p> <ul style="list-style-type: none"> The student completes the analysis of the atomic structure and mechanical properties to an outstanding level. Identifying and detailing the Atom of the materials and the property effects on the construction of the constituents that combine to make Carbon Fibre and Kevlar. The student completes an outstanding description of the manufacturing processes of each material, that identifies how the atomic structure is manipulated to make a usable product. A student must identify and explain the use of 3 components of an F1 car for Carbon Fibre and 1 for Kevlar, this should demonstrate an outstanding level of understanding and ability to format into a report. Student must use images, diagram or sketches to a comprehensive level. 	11-15
<ul style="list-style-type: none"> The student completes the analysis of the atomic structure and mechanical properties to a Sound level. Identifying and detailing the Atom of the materials and the property effects on the construction of the constituents that combine to make Carbon Fibre and Kevlar. The student completes a Sound description of the manufacturing processes of each material, that identifies how the atomic structure is manipulated to make a usable product. A student must identify and explain the use of 2/3 components of an F1 car for Carbon Fibre and 1 for Kevlar, this should demonstrate a sound level of understanding and ability to format into a report. Student should use images, diagram or sketches that complement the report. 	6-10
<ul style="list-style-type: none"> The student completes the analysis of the atomic structure and mechanical properties to a Basic level. Identifying and detailing the Atom of the materials and the property effects on the construction of the constituents that combine to make Carbon Fibre and Kevlar. The student completes a Sound description of the manufacturing processes of each material, that identifies how the atomic structure is manipulated to make a usable product. A student must identify and explain the use of 1/3 components of an F1 car for Carbon Fibre and 0/1 for Kevlar, this should demonstrate a sound level of understanding and ability to format into a report. Student uses some images, diagram or sketches. 	0-5
<p>Aerodynamics</p> <ul style="list-style-type: none"> The student comprehensively identifies and describes the effects of Drag and lift in relation to F1 cars that demonstrates an outstanding level of understanding. The student analyses and describes Bernoulli's principle in relation to F1 cars and how it effects the performance and handling throughout a race. The student should show an outstanding level of understanding in their analysis and description. The student explains the use of the 3 components (Front/rear wings, the diffuser & Side pods) to allow the airflow to produce less resistance during racing. The student must explain the purpose of these components and the method of their effectiveness for their use. This explanation should identify a clear understanding to an outstanding level. Student must use images, diagram or sketches to a comprehensive level. 	11-15
<ul style="list-style-type: none"> The student satisfactorily identifies and describes the effects of Drag and lift in relation to F1 cars that demonstrates a Sound level of understanding. The student briefly analyses and describes Bernoulli's principle in relation to F1 cars and how it effects the performance and handling throughout a race. The student demonstrated 	6-10

