



ORANGE HIGH SCHOOL

ASSESSMENT TASK NOTIFICATION

Subject	Engineering Studies Preliminary Course
Topic	Reverse Engineering Report
Class Teacher	Mr D Boundy
Head Teacher	Mr D Wait
Year	2023 Preliminary
Date Given	
Date Due	Term 1, Week 10 (Friday 31st March 2023, 9am)
Weighting	30%

Assessment Outline

The Engineered Fundamentals module is a 7-week unit of work that encompasses the history and development of various engineered inventions. The application and forming processes of materials are explored along with engineering mechanics principles that apply to everyday engineering solutions. This assessment task is a combination of these parts and the compilation of this information is to be presented in the form of an Engineering Research Report, which is a common task of Engineers.

What the Task Involves: (What to Do)

In this task students are to choose a household appliance or similar, which they are to reverse engineer and investigate the following criteria to compile into the required Engineering Report:

1. **Identify and describe the purpose of the Engineered appliance/Invention that you choose, how it works and some historical information. You should have an image to identify the appliance.**
2. **Research of materials and Forming processes:**
 - i. Choose at 4 different components/parts of different materials (2 metals and 2 non-metals)
 - ii. What are the atomic structures, bonding and material properties (mechanical, Thermal, chemical, electrical, physical etc) of the materials chosen?
 - iii. Why are the appliance components/parts you have chosen, manufactured from these materials? Why do you think they have been chosen and what engineering evidence for why. Use images to add to your response.
 - iv. What are the forming processes (forging, casting, fabrication, etc) used for each component/part? Use images to identify each process in addition to your explanation.
3. **Influence of Engineering in Design and Choice:**

Explain the influence that engineering has made to design and the development of technologies. Research and discuss historical evidence that explains the development of engineered appliances/inventions that demonstrate change in material use and forming process and its effect on people in relation to the use of engineered appliances/inventions.
4. **Engineering Drawing:**

Complete the following orthographic drawing that best demonstrates the design of the appliance you have chosen.

 - a. Dimensioned Orthogonal to AS1100 standards
5. **Ensure that the report you submit follows the following format:**
 - a. Title Page
 - b. Abstract/Summary
 - c. Contents page
 - d. Introduction
 - e. Body/research/data analysis
 - f. Conclusion
 - g. Bibliography/Reference list.
 - h. Appendix

Submission/Important Notes:

- **The Engineering Report will be presented in electronic format via the Google Classroom platform.**
- **The Engineering Report Drawings should be presented in a plastic sleeve only.**
- Should the assessment task be submitted after the delivery date the student will be awarded a zero (0) mark.
- To avoid conflicts of plagiarism all sources of research should be referenced.
- Refer to the assessment booklet for Assessment Guidelines.

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 teacher beforehand. If you are suddenly away on the day that the task is due, you must contact your teacher or Head Teacher on your return to school. Documentation will be required in both classes.

Plagiarism:

Plagiarism, the using of the work of others without acknowledgement will incur serious penalties and may result in zero award. Any cheating will also incur penalties.

Failure to follow the above procedures may result in a zero award.

The policies and procedures that are outlined on the ROSA booklet will be followed regarding the non-completion of assessment tasks.

Outcomes Assessed

P1.2 – explains the relationship between properties, structure, uses and applications of materials in engineering.

P2.2 – describes the nature of engineering in specific fields and its importance to society.

P3.2 – develops written, oral and presentation skills and applies these to engineering reports.

P3.3 – applies graphics as a communication tool.

P4.2 – describes the influence of technological change on engineering and its effect on people.

P6.1 – applies knowledge and skills in research and problem solving related to engineering

P6.2 – applies skills in analysis, synthesis and experimentation related to engineering.

Marking Rubric

This marking rubric is intended to assist students in identifying where the allocation of marks are aligned and what is required to gain the maximum mark.

Student:

Criteria for:	Mark Range	Mark
1. Choice of Household Appliance		
Clearly Identifies and clarifies the appliances purpose, how it works and its history to an outstanding level of achievement .	8-10	
Identifies and clarifies the appliances purpose, how it works and its history to a high/sound level of achievement.	4-7	
Identifies appliance and does not clarify its use. Completes section to a basic/limited level of achievement.	0-3	
2. Materials, Components & Processes		
Comprehensively describes the types and structure/bonding of materials, components and their manufacturing process in relation to an appliance. Complete 4 different materials as per requirements (2 metal. 2 non-metal) Completed to an outstanding level of achievement.	8-10	
Describes the types of materials, components and their manufacturing process in relation to a appliance. Completes some/or all the materials as per criteria. Completed to an high/sound level of achievement.	4-7	
Briefly describes the types of materials, components and their manufacturing process in relation to a appliance. Complete only some of the materials as per criteria.	0-3	
3. Engineering Influence on Technological Change		
Shows detailed knowledge on the technological and historical change in engineering and its effect on people in relation to appliances. Demonstrates completion to an outstanding level of achievement.	8-10	
Demonstrates a moderate level of knowledge on the technological and historical change in engineering and its effect on people in relation to household appliances. A completion level that displays high to sound levels of achievement.	4-7	
Briefly describes the technological and some historical change in engineering and its effect on people in relation to appliances. Achievement equates to basic to limited ability.	1-3	
4. Freehand Drawings		
Demonstrates excellent skills in drawing the appliance following AS 1100 standards. Drawing completed on A3 paper size. Minimal to no errors visible.	6-10	
Shows moderate skills in drawings to AS 1100 standards, all or some drawing components have been completed. Several errors and omissions.	0-5	
Engineering Report Structure		
Demonstrates a precise and clear understanding of the engineering report format, covers all heading clearly.	4-5	
Covers all or some of the engineering report format headings to a moderate standard.	1-3	
Assessment Total:	45	

Feedback: