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Queensland Curriculum and Assessment Authority

Aerospace Systems 2025 v1.2

IA3: Sample assessment instrument

This sample has been compiled by the QCAA to assist and support teachers in planning and developing assessment instruments for individual school settings.

Student name	sample only
Student number	sample only
Teacher	sample only
Issued	sample only
Due date	sample only

Marking summary

Criterion	Marks allocated	Provisional marks
Symbolising and Communicating	7	
Determining and Generating	9	
Synthesising and Evaluating	9	
Overall	**25**	

Conditions

Technique	Aerospace solution
Unit	Unit 4: Aircraft performance systems and human factors
Topic/s	Topic 1: Airspace management Topic 2: Aircraft performance Topic 4: Aircraft navigation and radio communication technologies Topic 5: Human performance and limitations
Duration	Approximately 10 hours of class time
Mode / length	• Written and visual: up to 10 A4 pages, including – up to 2000 words – images, graphs, calculations and diagram
Individual / group	Individual
Other	Students can develop their responses in class time and their own time.

Context

An Australian media company has been commissioned to film a documentary on unique Australian landmarks for the Asian market. The documentary must include landmarks from Queensland (Great Barrier Reef), Northern Territory (Kakadu National Park) and Western Australia (Bungle Bungle Range).

The media company has allocated two members of its media team to film the documentary, and they will use between 60 kg and 70 kg of various media equipment during filming, including lighting, cameras and sound equipment. The company has allocated ten days maximum to complete the operation and will require at least two days at each location. The company has requested that the operation be conducted as economically and efficiently as possible given their requirements. The operation is to originate and conclude at Brisbane's Archerfield Airport during the month of July.

Task

Your task is to use the problem-solving process in Aerospace Systems to:

- develop a solution to the documentary operation problem that cost-effectively and safely transports the media team and their equipment, to meet the media company's requirements
- document the problem-solving process used to propose the solution including:
  - human performance factors that may influence the documentary's operation
  - a navigational itinerary that considers aircraft type, flight performance parameters and route options, e.g. take-off, landing and loading charts, flight plans, aeronautical charts, ERSA's and other navigational aids
  - evaluations of the aircrafts, flight performance parameters and route options.

To complete this task, you must:

- symbolise and explain the incorporated aerospace systems, the development of ideas and the solution with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures
- determine success criteria considering the identified elements, components and features, and their relationship to the structure of the aircraft performance systems and/or human factors problem
- synthesise aerospace systems, technology, and research information, and ideas to propose a possible solution to the aircraft performance systems and/or human factors problem
- generate the proposed solution for the aircraft performance systems and/or human factors problem and testing, simulating or hypothesising to provide data (e.g. pictures, tables, surveys, interview recordings, audio-visual recording) for evaluation including (if applicable) annotated photographs or screen captures of the solution prior to and after testing, simulating or hypothesising
- evaluate and refine ideas and the solution for the aircraft performance systems and/or human factors problem in relation to success criteria
- recommend and justify future modifications or enhancements to ideas, and the solution to the aircraft performance systems and/or human factors problem
- communicate the development of ideas and the solution for an aircraft performance systems and/or human factors problem using written and visual features, e.g. PMI (plus, minus, interesting) charts, tables, pictures, bubble diagrams, feedback loops
- communicate data using diagrams, tables and/or spreadsheets.

Checkpoints

☐ Term 3 Week 7: Submit a draft demonstrating success criteria determined from the problem, the development of ideas and an indication of a proposed solution.

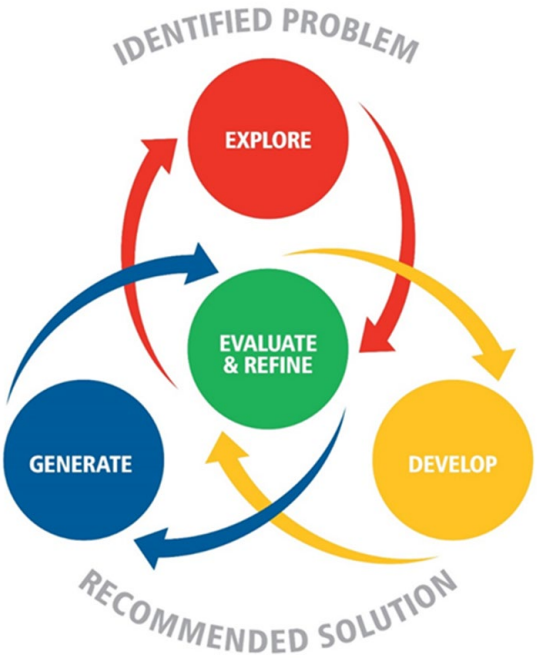
Authentication strategies

- Your teacher will provide class time for task completion.
- You will produce sections of the final response under supervised conditions.
- You will each produce a unique response, with the teacher monitoring how you identify the problem and solve the problem.
- You will provide documentation of progress at indicated checkpoints.
- Your teacher will conduct interviews or consultations with each student as you develop the response.
- You must acknowledge all sources.
- You must submit a declaration of authenticity.
- Your teacher will ensure class cross-marking occurs.
- Your teacher will compare the responses of students who have worked together in groups.
- Your teacher will ensure class cross-marking occurs.

Scaffolding

In this unit, you are required to document the development of a solution using the problem-solving process in Aerospace Systems in response to an identified real-world aerospace problem.

The problem-solving process in Aerospace Systems



Your response will include the following conventions:

- headings that organise and communicate your thinking through the iterative phases of the problem-solving process in Aerospace Systems
- a table of contents
- a reference list and a recognised system of in-text referencing.

Instrument-specific marking guide (IA1): Aerospace solution response (25%)

Symbolising and Communicating	Marks
The student response has the following characteristics:	
• adept symbolisation and discerning explanation of ideas, a solution and relationships in relation to aircraft performance systems and human factors with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures • discerning decision-making about, and proficient use of – written and visual features to communicate about a solution – language for a technical audience – grammatically accurate language structures – referencing conventions	6–7
• effective symbolisation and considered explanation of ideas, a solution and relationships in relation to aircraft performance systems and human factors with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures • effective decision-making about, and fluent use of – written and visual features to communicate about a solution – language for a technical audience – grammatically accurate language structures – referencing conventions	4–5
• competent symbolisation and appropriate explanation of some ideas, a solution and relationships in relation to aircraft performance systems and human factors with visual frameworks, causal and feedback loops, flow charts, diagrams, sketches and/or pictures • appropriate decision-making about, and use of – written and visual features to communicate about a solution – suitable language – grammatically accurate language structures – referencing conventions	2–3
• inconsistent symbolisation or superficial explanation of aspects of ideas, a solution or relationships in relation to aircraft performance systems and human factors • inconsistent decision-making about, and inconsistent use of – written and visual features – suitable language – grammar and language structures – referencing conventions.	1
The student response does not satisfy any of the descriptors above.	0

Determining and Generating	Marks
The student response has the following characteristics:	
• astute determination of essential success criteria for the aircraft performance systems and/or human factors problem • proficient generation of a solution, including – aircraft performance systems and/or human factors • provide valid data to critically determine the feasibility of a solution	8–9
• reasoned determination of effective success criteria for the aircraft performance systems and/or human factors problem • effective generation of a solution, including – aircraft performance systems and/or human factors • provide valid data to effectively determine the feasibility of a proposal	6–7
• logical determination of appropriate success criteria for the aircraft performance systems and/or human factors problem • adequate generation of a solution, including – aircraft performance systems and/or human factors • provide relevant data to determine the feasibility of a proposal	4–5
• reasonable determination of some success criteria for the aircraft performance systems and/or human factors problem • partial generation of a solution, including – aircraft performance systems and/or human factors • provide elements of data to partially determine the feasibility of a proposal	2–3
• statements about some success criteria for the aircraft performance systems and/or human factors problem • generation of elements of a solution.	1
The student response does not satisfy any of the descriptors above.	0

Synthesising and Evaluating	Marks
The student response has the following characteristics:	
• coherent and logical synthesis of relevant aerospace systems, technology, and research information and ideas to propose a possible solution, including – aircraft performance systems and/or human factors • critical evaluation of ideas and a solution using success criteria • discerning refinement of ideas and a solution using success criteria to make astute recommendations justified by data and research evidence	8–9
• logical synthesis of relevant aerospace systems, technology, and research information and ideas to propose a possible solution, including – aircraft performance systems and/or human factors • reasoned evaluation of ideas and a solution using success criteria • effective refinement of ideas and a solution using success criteria to make considered recommendations justified by data and research evidence	6–7
• simple synthesis of aerospace systems, technology, and research information and ideas to propose a solution, including – aircraft performance systems and/or human factors • feasible evaluation of ideas and a solution using success criteria • adequate refinement of ideas and a solution using some success criteria to make fundamental recommendations justified by data and research evidence	4–5
• rudimentary synthesis of partial aerospace systems, technology, or research information and/or ideas to propose an aircraft performance systems and/or human factors solution • superficial evaluation of ideas or a solution using some success criteria to make elementary recommendations	2–3
• unclear combinations of information or ideas • identification of a change about an idea or the solution.	1
The student response does not satisfy any of the descriptors above.	0