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Queensland Curriculum and Assessment Authority

General Mathematics 2025 v1.2

IA1: 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
Formulate	4	
Solve	7	
Evaluate	5	
Communicate	4	
Overall	**20**	

Conditions

Technique	Problem-solving and modelling task
Unit	Unit 3: Bivariate data and time series analysis, sequences and Earth geometry
Topic/s	Topic 1: Bivariate data analysis 1 Topic 2: Bivariate data analysis 2
Duration	Students will use 3 hours of class time and their own time out of class to develop their response.
Mode / length	Written: Up to 10 A4 pages, up to 2000 words
Individual / group	Individual
Other	Appendixes can include raw data, repeated calculations, evidence of authentication and student notes (appendixes are not marked). Students must use technology, e.g. scientific calculator, graphics calculator, spreadsheet program and/or other mathematical software; use of technology must go beyond simple computation or word processing.

Context

The term ‘regression’ was first used in the late 1800s by Sir Francis Galton, who was interested in the study of biometrics (the application of statistical analysis to biological data). Galton’s law of ancestral heredity was concerned with comparing measurable characteristics of children and their parents.

In 1903, Karl Pearson, assisted by Alice Lee, further investigated Galton’s findings and developed conclusions relating to the stature of fathers and their adult sons, and mothers and their adult daughters.

While it could be simply argued that it is obvious from life experience that tall parents generally have tall children, the power of mathematics is that it can be used to quantify and test such relationships.

References

- Bulmer, M. G. (2003). *Francis Galton: pioneer of heredity and biometry*. JHU Press.
- Pearson, K., & Lee, A. (1903). On the laws of inheritance in man: I. Inheritance of physical characters. *Biometrika*, 2(4), 357–462.

Task

Investigate the phenomenon of ancestral heredity by focusing on the height of a parent and the height of their child, using data from students at your school.

Determine if gender is an influencing factor for whether a person’s height can be reliably predicted from their parent’s height.

To complete this task, you must:

- respond with a range of understanding and skills, such as using mathematical language, appropriate calculations, tables of data, graphs and diagrams
- provide a response to the context that highlights the real-life application of mathematics
- respond using a written report format that can be read and interpreted independently of the instrument task sheet
- develop a unique response.

Checkpoints

☐ One week after issue date: Students email an assessment plan to the teacher.

☐ Two weeks after issue date: Students email evidence of their progress to their teacher.

☐ Three weeks after issue date: Students email a draft report to their teacher for feedback.

☐ Four weeks after issue date: Students submit their final response.

Authentication strategies

- You will be provided class time for task completion.
- Your teacher will observe you completing work in class.
- You will provide documentation of your progress at indicated checkpoints.

- You will each produce a unique response by using individualised datasets and producing individual reports.
- You must acknowledge all sources.
- You will use plagiarism-detection software to submit your response.
- Your teacher will ensure class cross-marking occurs.

Instrument-specific marking guide (IA1): Problem-solving and mathematical modelling response (20%)

Formulate	Marks
The student response has the following characteristics:	
• justified statements of important assumptions • justified statements of important observations • justified mathematical translation of important aspects of the task	3–4
• statement of a relevant assumption • statement of a relevant observation • mathematical translation of an aspect of the task.	1–2
The student response does not satisfy any of the descriptors above.	0

Solve	Marks
The student response has the following characteristics:	
• accurate use of mathematical knowledge for important aspects of the task • efficient use of technology • a complete solution	6–7
• use of mathematical knowledge for an important aspect of the task • use of technology • substantial progress towards a solution	4–5
• simplistic use of mathematical knowledge relevant to the task • simplistic use of technology • progress towards a solution	2–3
• inappropriate use of mathematical knowledge or technology.	1
The student response does not satisfy any of the descriptors above.	0

Evaluate	Marks
The student response has the following characteristics:	
• verified results • justified statements about the reasonableness of the solution by considering the assumptions • justified statements about the reasonableness of the solution by considering the observations • justified statements of relevant strengths of the solution • justified statements of relevant limitations of the solution	4–5
• a verified result	2–3

Evaluate	Marks
• statement about the reasonableness of the solution by considering an assumption or observation • statement of a relevant strength or relevant limitation of the solution	
• statement about the reasonableness of a result or the solution • statement of a strength or limitation.	1
The student response does not satisfy any of the descriptors above.	0

Communicate	Marks
The student response has the following characteristics:	
• correct use of appropriate mathematical language • logical organisation of the response, which can be read independently of the task sheet • justification of decisions using mathematical reasoning	3–4
• use of some appropriate mathematical language • adequate organisation of the response • statement of a relevant decision.	1–2
The student response does not satisfy any of the descriptors above.	0