Queensland Curriculum and Assessment Authority

Specialist 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: Further complex numbers, proof, vectors and matrices

Topic/s   Topic 5: Further matrices

Duration   Students will use 3 hours of class time and their own time 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

Each week in the media, sports commentators give their 'expert tips' on the likely winners of upcoming games, but how accurate are these predictions? According to Daniel Colasimone, reporter and producer for *ABC Grandstand*, 'The world of sport never fails to surprise us, which is why trying to make predictions about it is a fool's game'.

Reference: Colasimone, D. (2015). 'Unreliable 2016 sporting predictions: Tim Cahill, cricketing Mitchells, Nat Fyfe and Sharni Layton star'. *ABC News*. www.abc.net.au/news/2015-12-31/2016-sporting-predictions/7060172

Task

You will be given a link to a website that contains data about every round of a completed sports competition. Use an appropriate sample of the data to develop a model that will enable you to 'predict' the winning teams in at least three subsequent rounds of the competition.

This task poses the challenge — can a mathematics student predict a set of sporting results more accurately than the so-called 'experts'?

Checkpoints

☐ One week after issue date: students email evidence of their progress to their teacher.

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

☐ Three weeks after issue date: students email a draft for feedback. General feedback on drafts is provided to the class, but no individual corrections are made.

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

Authentication strategies

• You will be provided class time for task completion.

• Your teacher will collect copies of your response and monitor at key junctures.

• You must acknowledge all sources.

• You must submit a declaration of authenticity.

• Your teacher will ensure class cross-marking occurs.

• You will each produce a unique response by using individualised data and producing a unique report.

• You will provide documentation of your progress at indicated checkpoints.

Instrument-specific marking guide (IA1): Problem-solving and modelling task (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 • statement about the reasonableness of the solution by considering an assumption or observation	2-3

Evaluate	Marks
• 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 decision using mathematical reasoning.	1-2
The student response does not satisfy any of the descriptors above.	0