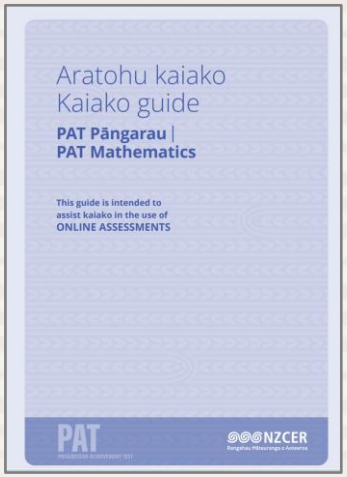
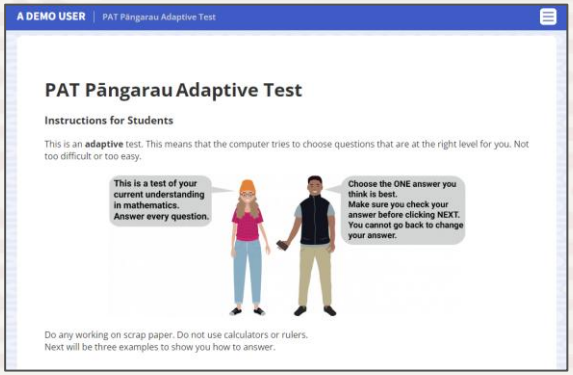
PATs

PROGRESSIVE ACHIEVEMENT TESTS

PAT Pāngarau | PAT Mathematics

NZAI conference





NZCER
Rangahau Mātauranga o Aotearoa

Session format

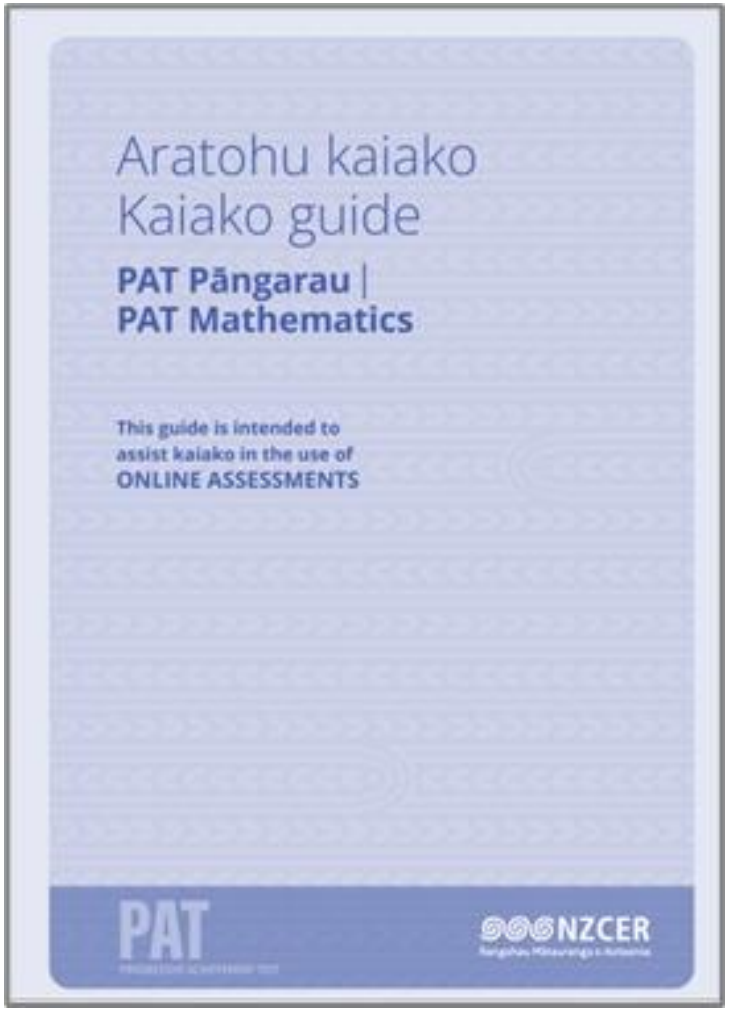
What's on top?

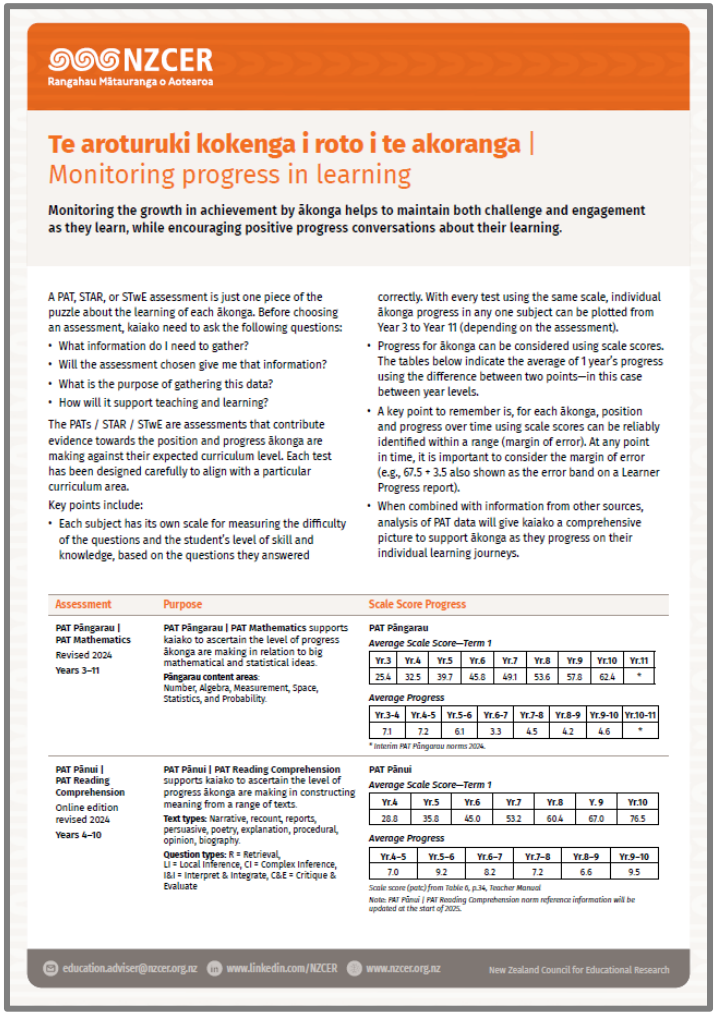
PAT Pāngarau | PAT Mathematics

- scale score
- question placement on the scale
- report analysis with focus on student, item report and individual item reports
- link to ARBs

Time to explore your reports and ask lots of questions.

Key Documents





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Rangahau Mātauranga o Aotearoa

Te aroturuki kokenga i roto i te akoranga | Monitoring progress in learning

Monitoring the growth in achievement by ākonga helps to maintain both challenge and engagement as they learn, while encouraging positive progress conversations about their learning.

A PAT, STAR, or STwE assessment is just one piece of the puzzle about the learning of each ākonga. Before choosing an assessment, kaiako need to ask the following questions:

- What information do I need to gather?
- Will the assessment chosen give me that information?
- What is the purpose of gathering this data?
- How will it support teaching and learning?

The PATs / STAR / STwE are assessments that contribute evidence towards the position and progress ākonga are making against their expected curriculum level. Each test has been designed carefully to align with a particular curriculum area.

Key points include:

- Each subject has its own scale for measuring the difficulty of the questions and the student's level of skill and knowledge, based on the questions they answered correctly. With every test using the same scale, individual ākonga progress in any one subject can be plotted from Year 3 to Year 11 (depending on the assessment).
- Progress for ākonga can be considered using scale scores. The tables below indicate the average of 1 year's progress using the difference between two points—in this case between year levels.
- A key point to remember is, for each ākonga, position and progress over time using scale scores can be reliably identified within a range (margin of error). At any point in time, it is important to consider the margin of error (e.g., 67.5 ± 3.5 also shown as the error band on a Learner Progress report).
- When combined with information from other sources, analysis of PAT data will give kaiako a comprehensive picture to support ākonga as they progress on their individual learning journeys.

Assessment	Purpose	Scale Score Progress
PAT Pāngarau | PAT Mathematics Revised 2024 **Years 3–11**	**PAT Pāngarau | PAT Mathematics** supports kaiako to ascertain the level of progress ākonga are making in relation to big mathematical and statistical ideas. **Pāngarau content areas:** Number, Algebra, Measurement, Space, Statistics, and Probability.	**PAT Pāngarau** ***Average Scale Score—Term 1*** Yr.3: 25.4 · Yr.4: 32.5 · Yr.5: 39.7 · Yr.6: 45.8 · Yr.7: 49.1 · Yr.8: 53.6 · Yr.9: 57.8 · Yr.10: 62.4 · Yr.11: * ***Average Progress*** Yr.3–4: 7.1 · Yr.4–5: 7.2 · Yr.5–6: 6.1 · Yr.6–7: 3.3 · Yr.7–8: 4.5 · Yr.8–9: 4.2 · Yr.9–10: 4.6 · Yr.10–11: * * Interim PAT Pāngarau norms 2024.
PAT Pānui | PAT Reading Comprehension Online edition revised 2024 **Years 4–10**	**PAT Pānui | PAT Reading Comprehension** supports kaiako to ascertain the level of progress ākonga are making in constructing meaning from a range of texts. **Text types:** Narrative, recount, reports, persuasive, poetry, explanation, procedural, opinion, biography. **Question types:** R = Retrieval, LI = Local Inference, CI = Complex Inference, I&I = Interpret & Integrate, C&E = Critique & Evaluate	**PAT Pānui** ***Average Scale Score—Term 1*** Yr.4: 28.8 · Yr.5: 35.8 · Yr.6: 45.0 · Yr.7: 53.2 · Yr.8: 60.4 · Y. 9: 67.0 · Yr.10: 76.5 ***Average Progress*** Yr.4–5: 7.0 · Yr.5–6: 9.2 · Yr.6–7: 8.2 · Yr.7–8: 7.2 · Yr.8–9: 6.6 · Yr.9–10: 9.5 *Scale score (patc) from Table 6, p.34, Teacher Manual* *Note: PAT Pānui | PAT Reading Comprehension norm reference information will be updated at the start of 2025.*

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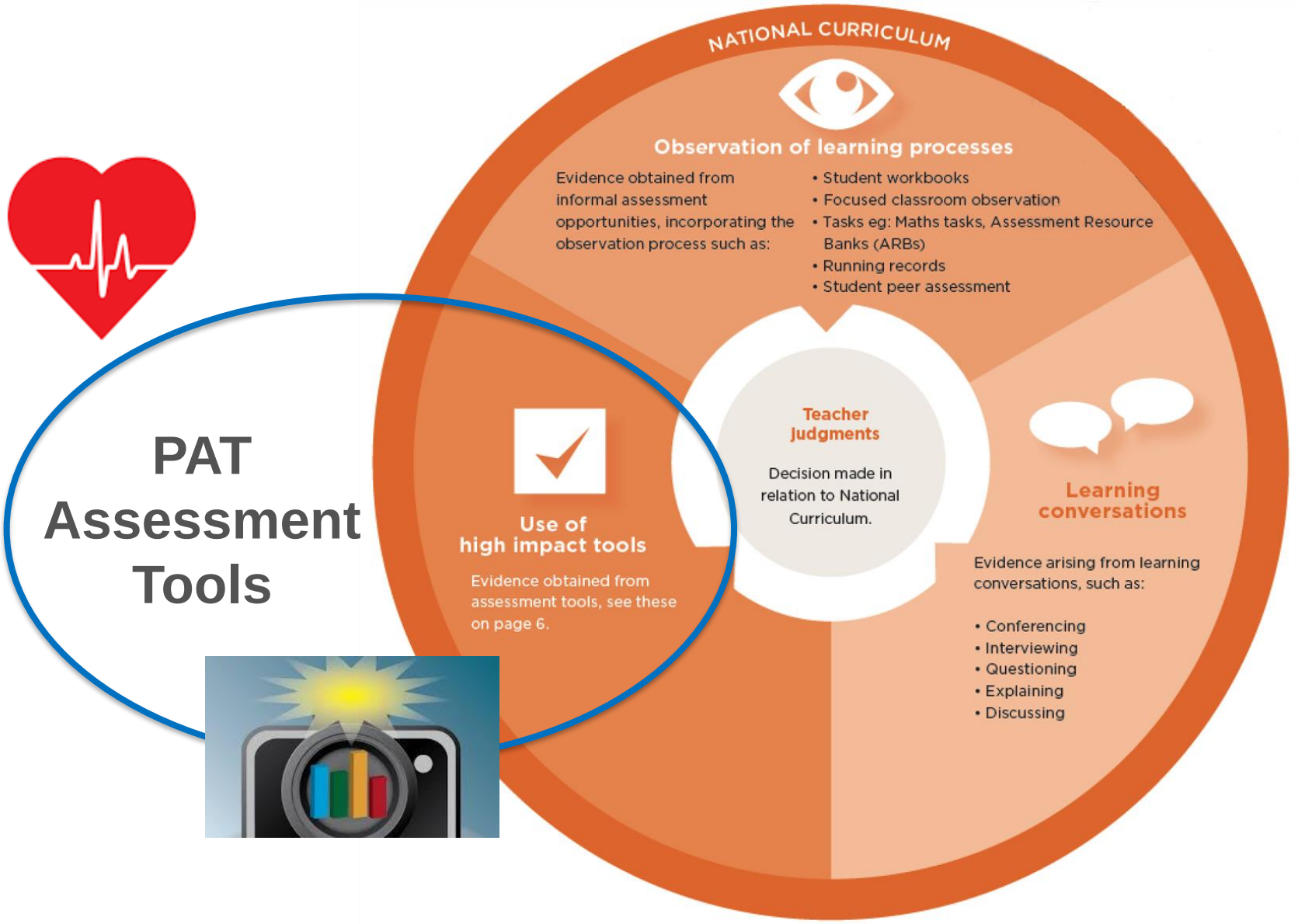
Mā whero mā pango
ka oti ai te mahi.

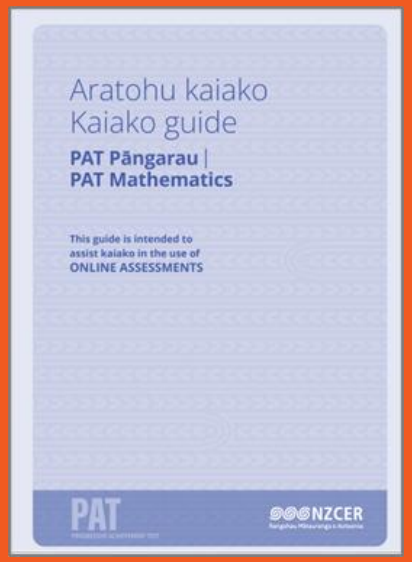
Each element has a role.



What other information do you have available?

PAT Pāngarau | PAT Mathematics

The value of the scale



What is your understanding of stanines and scale scores?

Stanine

Stanines are used to **compare an individual student's achievement** with the results obtained by a **national reference** sample chosen to represent a certain year level. Stanines divide the distribution of results from the trials for a year group, into nine categories. Most students, when compared with their own year level, achieve around stanines four, five, and six. Stanines seven, eight, and nine represent comparatively high achievement for a year group, while stanines one, two, and three indicate comparatively low achievement.

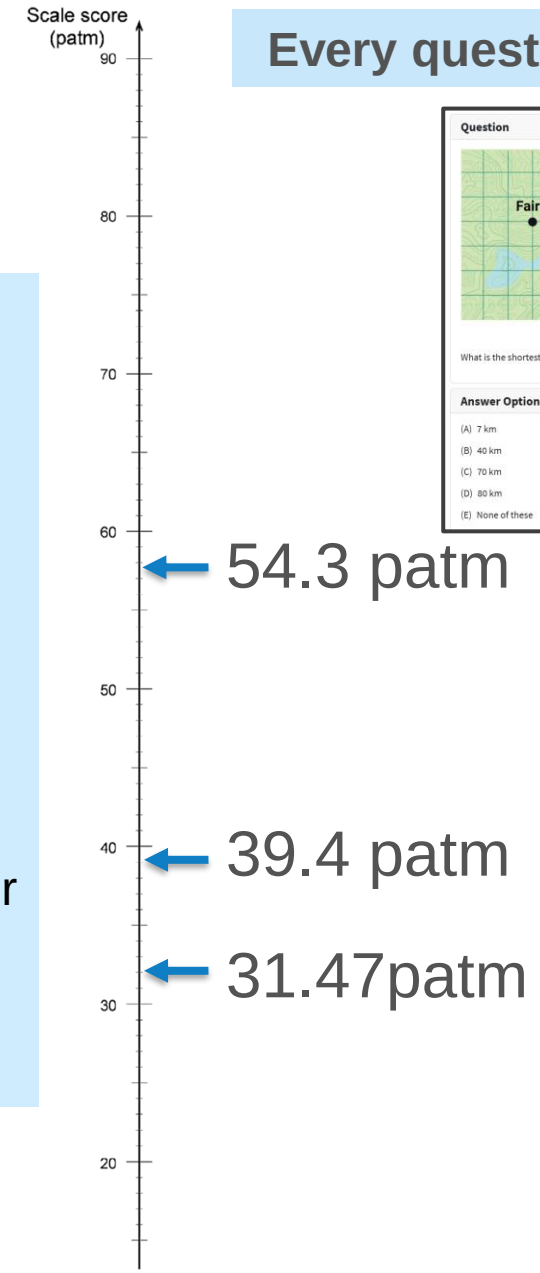
Stanine	1	2	3	4	5	6	7	8	9
Percentage**	0% (4%)	19% (19%)		68% (54%)			10% (19%)		3% (4%)
Number of students	0	1	5	11	5	5	2	1	1

Stanine Distribution (= 1 boy = 1 girl)

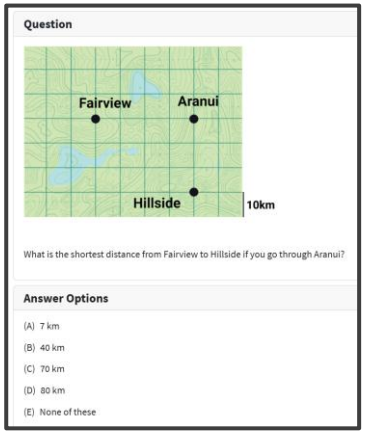
Scale score

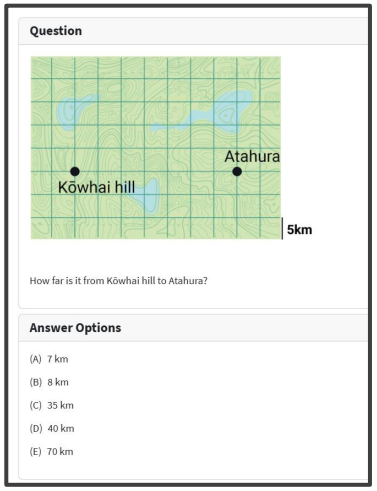
- The scores for an assessment are based on the number of questions that ākonga have answered correctly. This number is sometimes referred to as the raw score.
- The raw score is converted to a scale score on the relevant measurement scale. There are separate PAT scales for each assessment. (e.g., PATm, PATc)
- Every question has been located on the same scale. This provides a sense of their relative difficulty. A scale score can be interpreted in terms of the kind of questions ākonga are likely to answer successfully.
- This scale allows achievement to be compared and tracked over time regardless of which assessments were administered.

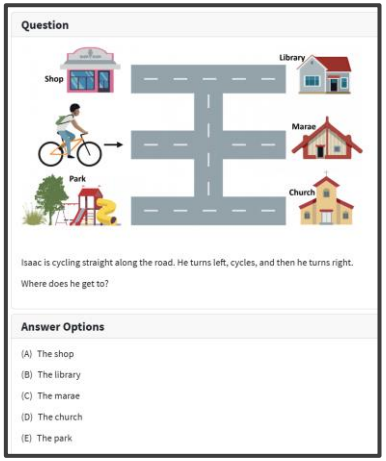
PAT:Mathematics scale



Every question is located on the scale.



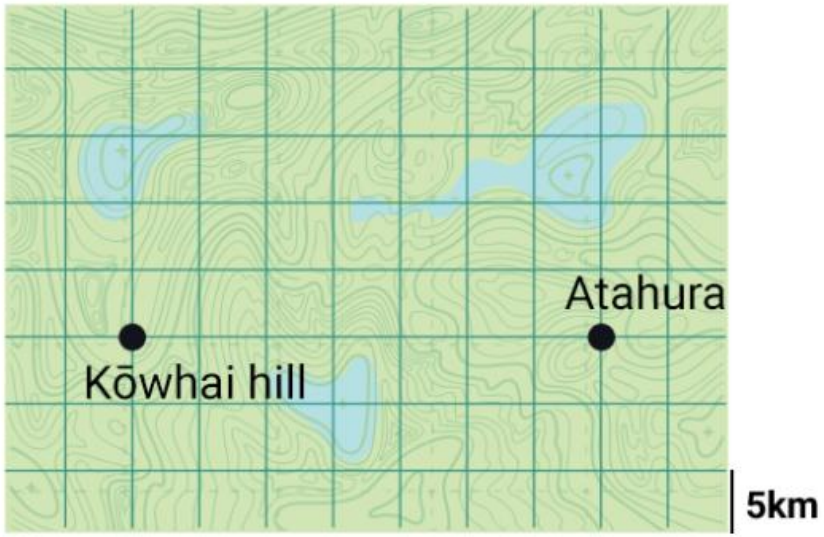




The relative difficulty of every question in each test is **described by its location on the scale**, based on the knowledge and skill associated with the question. A student's achievement can therefore be reported in terms of the knowledge and skill required to correctly answer questions that are located at or below the student's own scale score location.

Why would ākonga select each answer?

Question



How far is it from Kōwhai hill to Atahura?

Answer Options

(A) 7 km

(B) 8 km

(C) 35 km

(D) 40 km

(E) 70 km

Test 3

Level of difficulty

Misconceptions (Static)

Linked tasks (Static)

Ākonga responses

Strand

Geometry And Measurement

Question Scale Score

39.4

Year 6 average mean 45.8

Question Description

Calculate distance on a scale map

Possible Misconceptions

Distractor	Misconception
A	forgets to apply the scale
B	miscounts and forgets to apply the scale
D	miscounts but uses scale correctly

Assessment Resource

ARB's keyword: scale

Option Information (Number of Students: 17)

A (52.9%)	B (17.6%)	C (23.5%) ✓	D (5.9%)
Min Min H Ryder I Jacob K Jayde L Olivia P Elias S Emma T Awatea T Maya W	Ai'lani A Ian P Nadia V	Charlie F Jasmine S Ethan W Armani H	Arvana G
9 students	3 students	4 students	1 students

ARBs
ASSESSMENT RESOURCE BANKS

https://arbs.nzcer.org.nz/

PAT Item report

Strand
Geometry And Measurement

Question Scale Score
39.4

Question Description
Calculate distance on a scale map

Possible Misconceptions

Distractor	Misconception
A	forgets to apply the scale
B	miscounts and forgets to apply the scale
D	miscounts but uses scale correctly

Assessment Resource Banks
ARB's keyword: scale AND maps

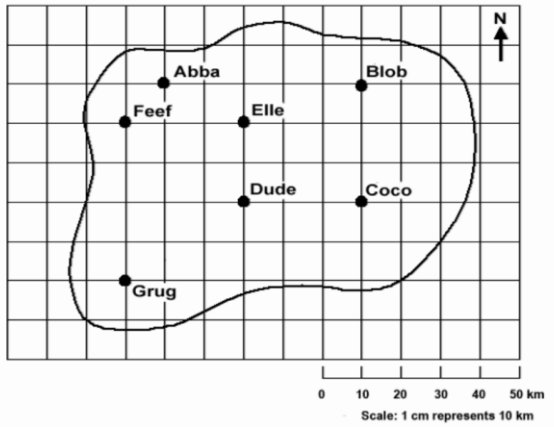
All Banks | English | Maths | Science

Strand	Objective	L1	L2	L3	L4	L5	L6
Geometry and Measurement	Measurement	5	43	67	70	45	
	Position and orientation	4	13	9	15	5	
	Shape	4	29	56	44	32	7
	Transformation	3	17	34	33	22	
Number and Algebra	Equations and expressions		31	24	36	52	1
	Number Knowledge	4	38	47	36	14	
	Number Strategies	9	65	96	132	68	
	Patterns and relationships	5	30	46	48	36	
Statistics	Probability	2	11	27	38	23	
	Statistical investigations	5	25	41	76	36	
	Statistical literacy	2	2	9	11	8	

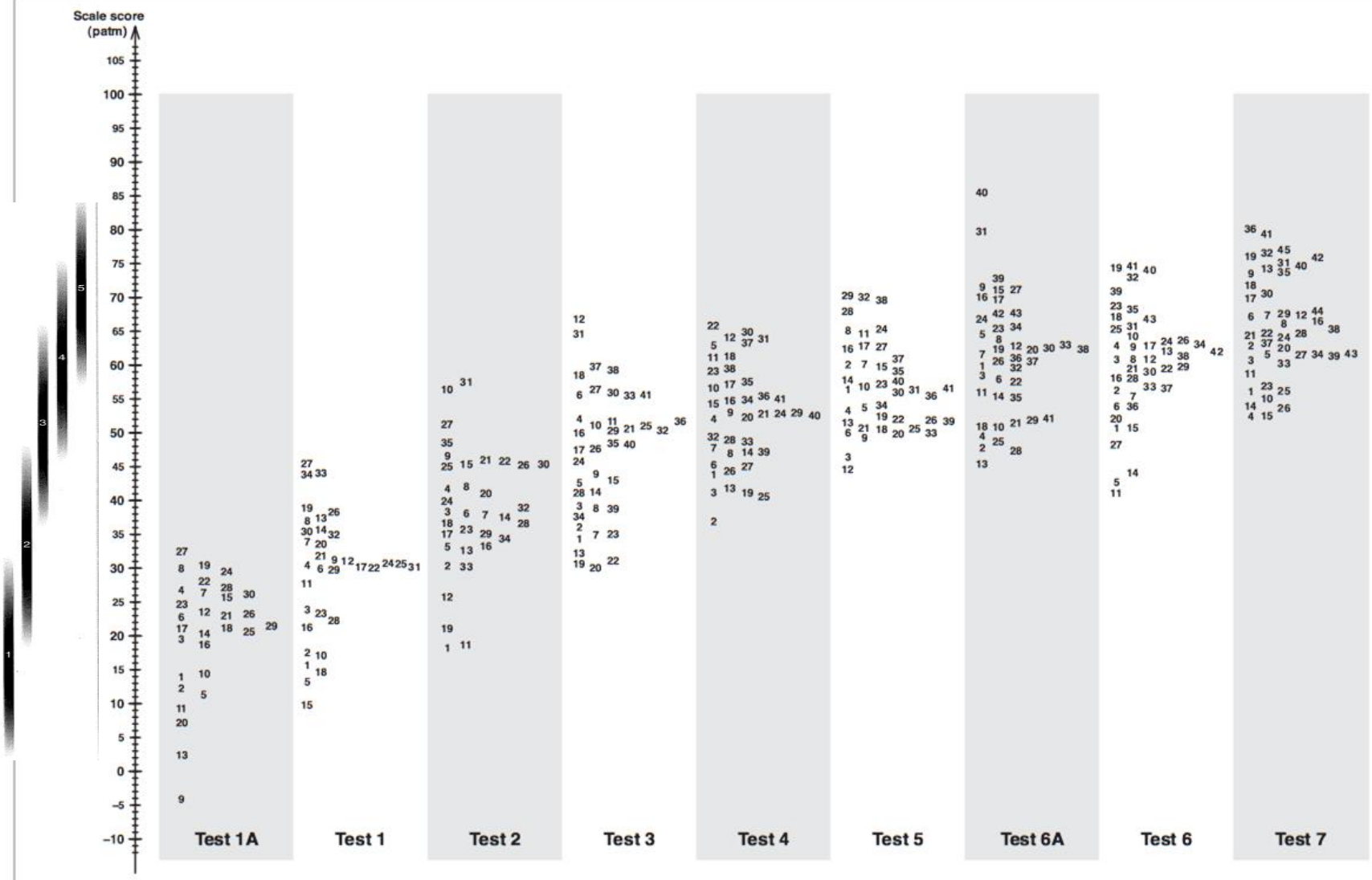
Island of Zazz

ARB Task

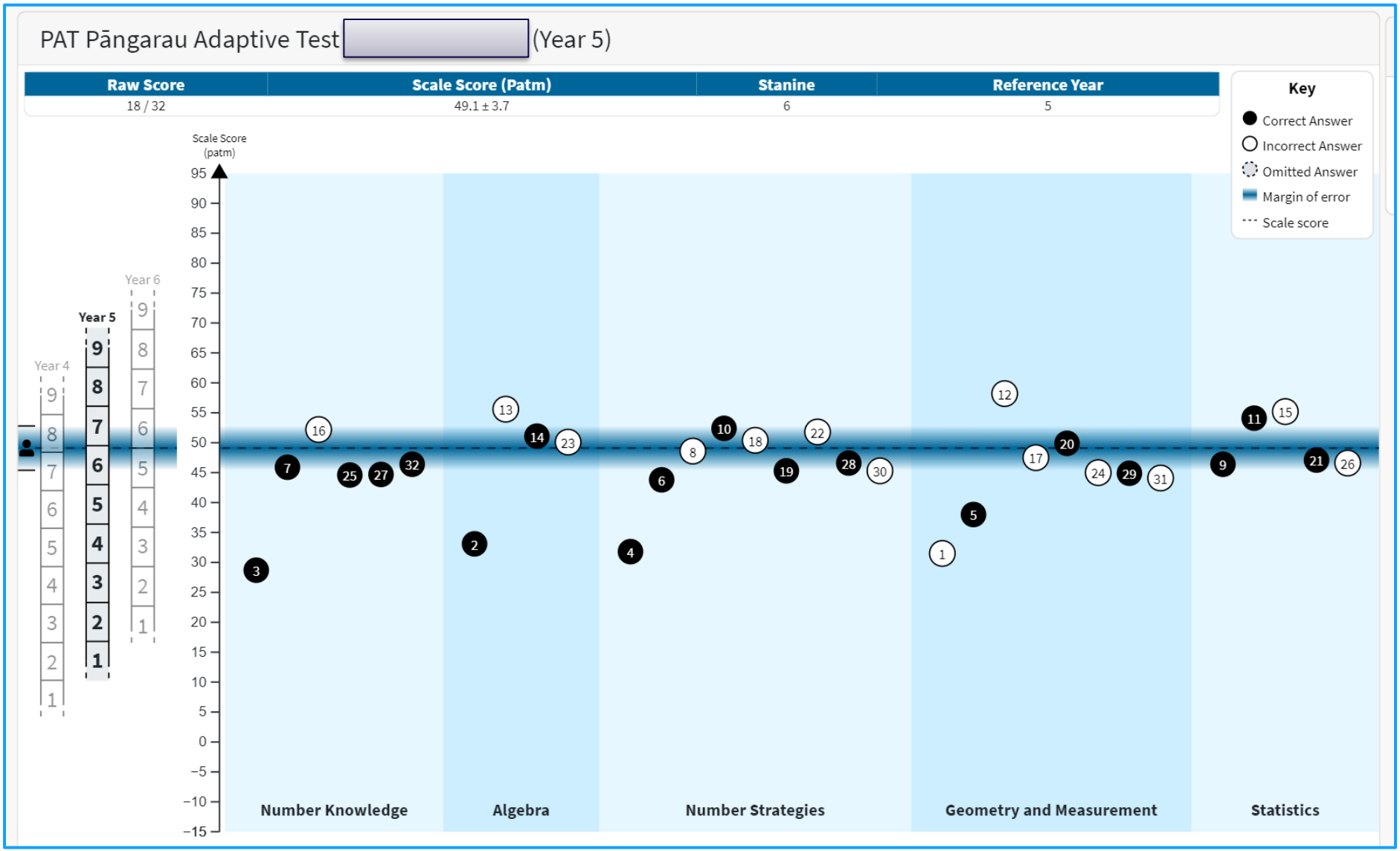
This task is about using and map with a scale.



Rasch Scale (Pāngarau)



Question level of difficulty



Scale scores - Progress over time

Average mean scale score

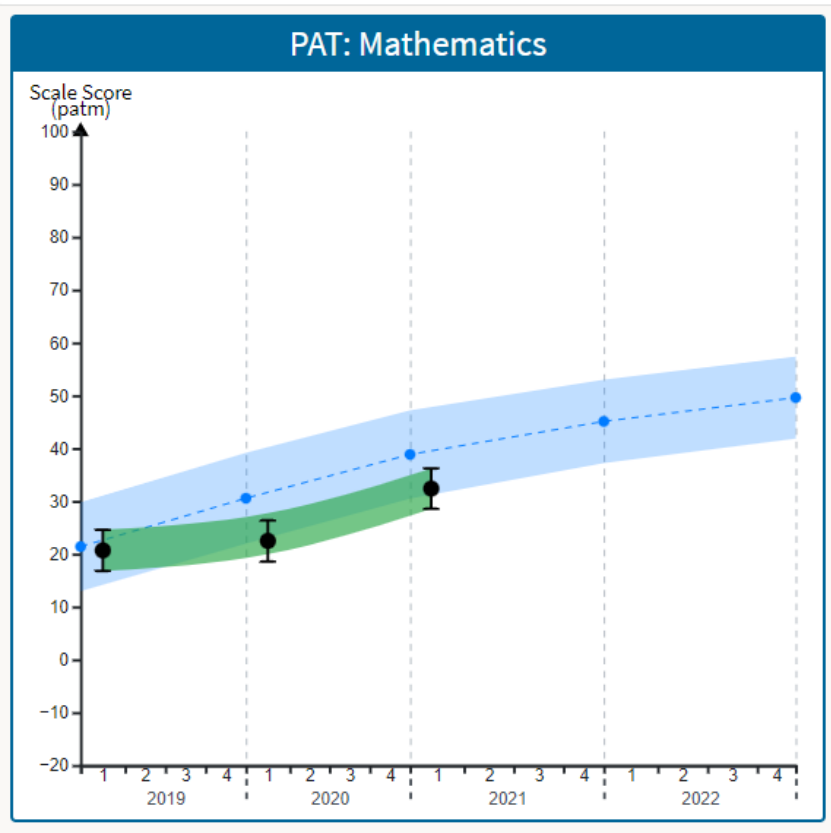
	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
NEW	32.5	39.7	45.8	49.1	53.6	57.8	62.4

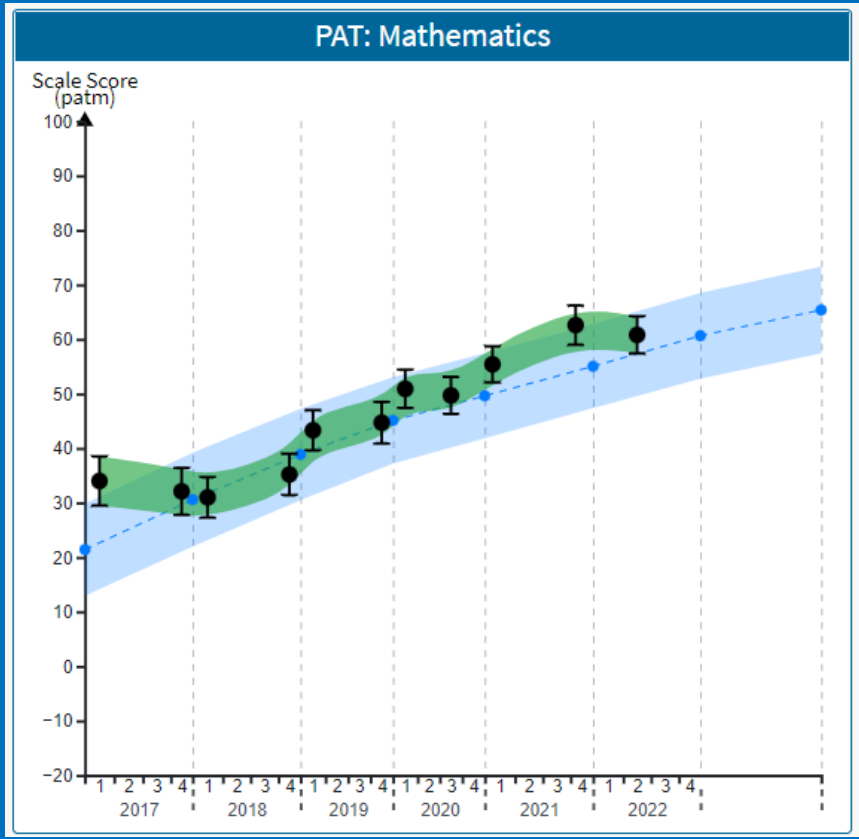
Average progress

	Year 3-4	Year 4-5	Year 5-6	Year 6-7	Year 7-8	Year 8-9	Year 9-10
NEW		7.2	6.1	3.3	4.5	4.2	4.6

- average one year scale score progress
- a guide to compare progress for an individual student between multiple assessment time points
- snapshot of progress and achievement that is one piece of the puzzle that you know about your ākonga

Individual student progress report





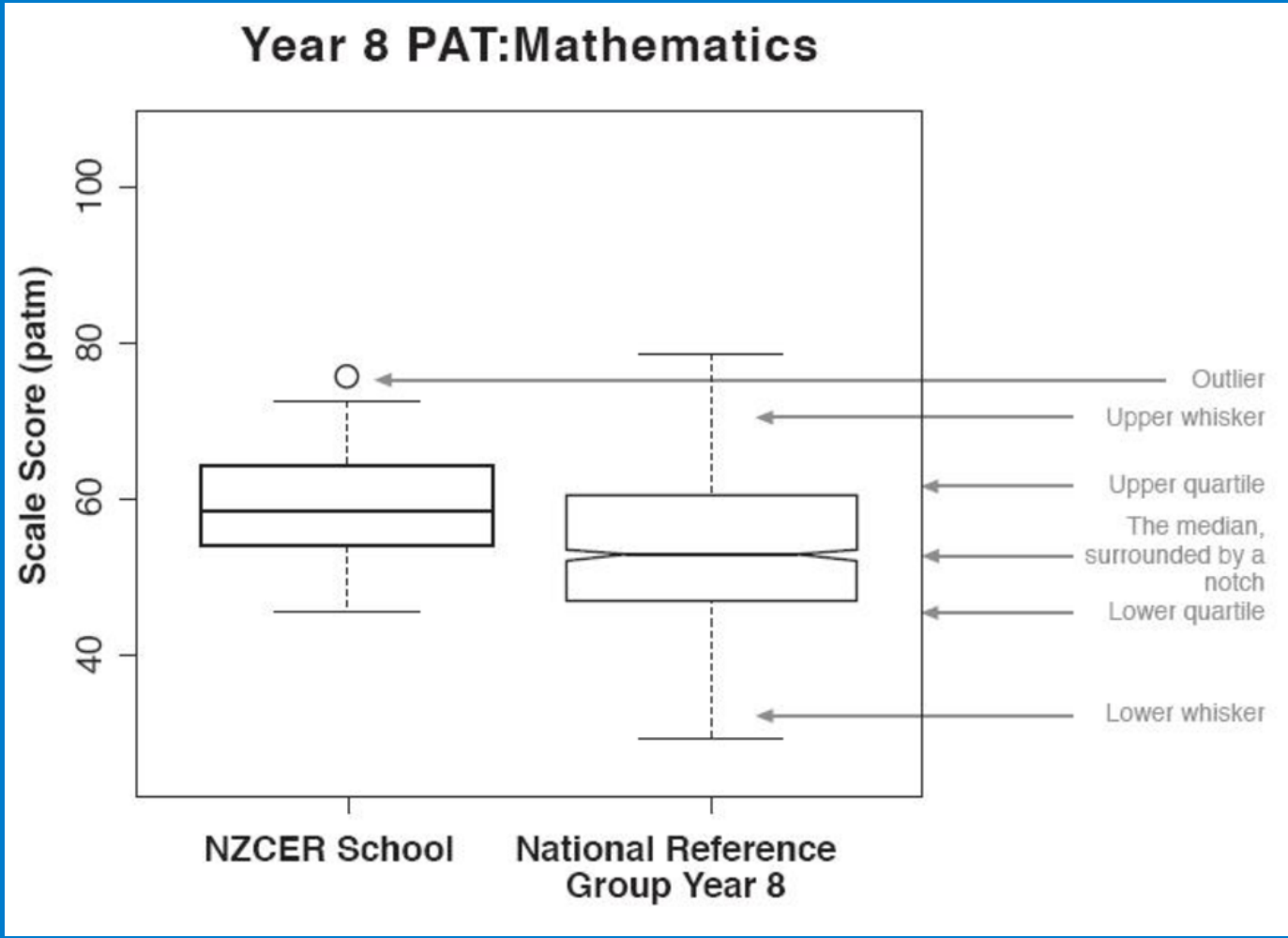
Scale scores

Question level of difficulty

Ākonga skills and knowledge in relation to questions answered are reported as a scale score

Progress over time

NZCER Assist reports - Box plot graphs



Demo site to explore

www.nzcerassist.org.nz

Username: TempDemo1
TempDemo2
TempDemo3
TempDemo4
TempDemo5

Password: Monday2025

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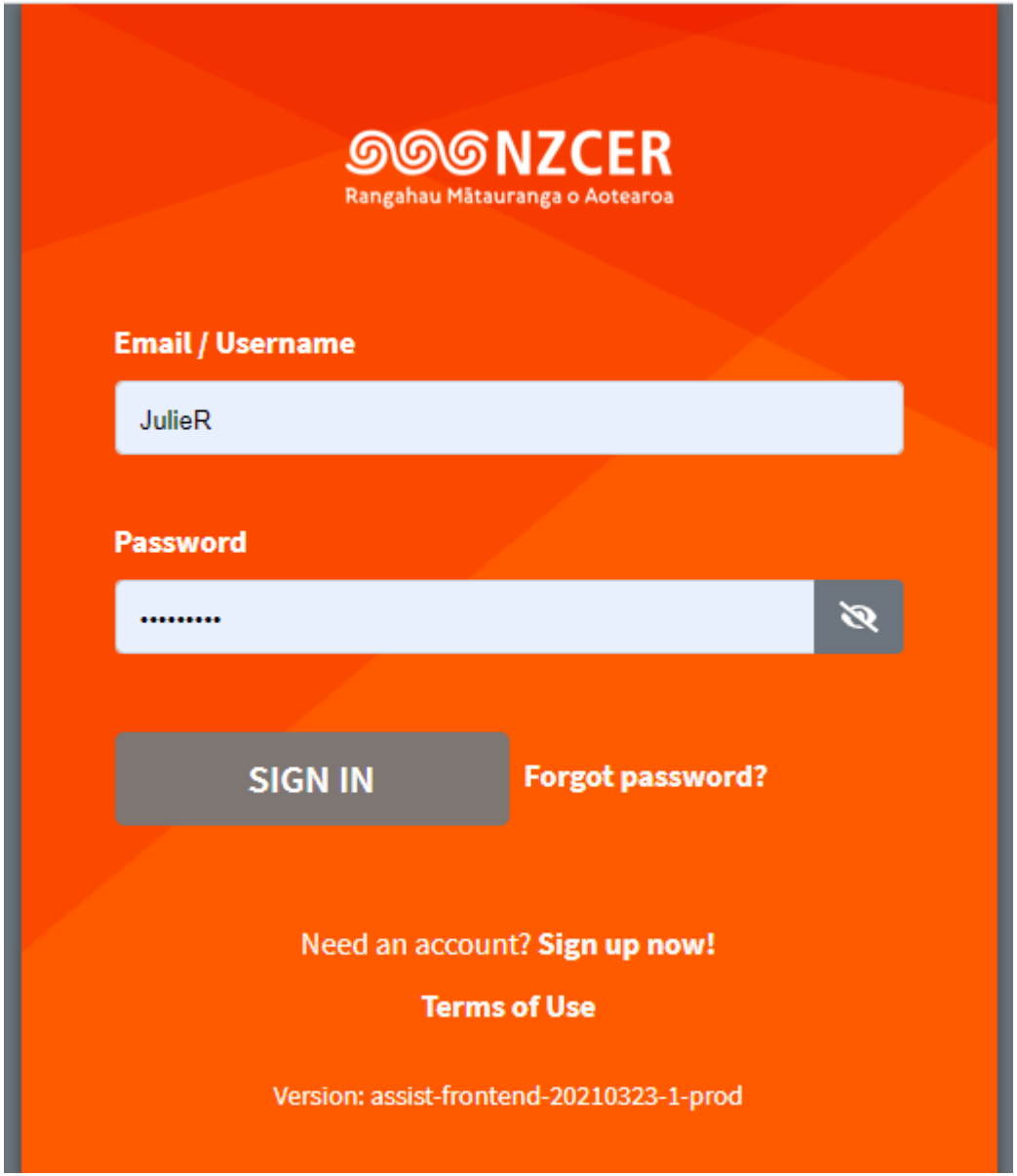
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JulieR
Password
SIGN IN
Forgot password?
Need an account? Sign up now!
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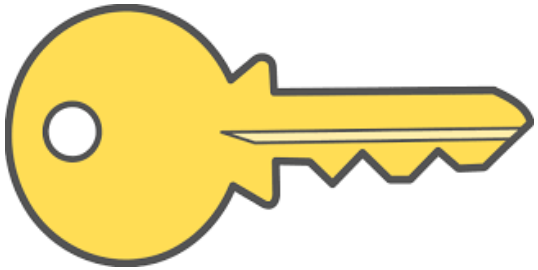

Akoranga hou

(new learning)

Kaupae i muri

(next steps)

Kei te mīharo au

(wondering, thinking about)