MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

Mātai aho tāhūnui,
Mātai aho tāhūroa,
Hei takapau wānanga
E hora nei.

Lay the kaupapa down
And sustain it,
The learning here
Laid out before us.

Te Mātaiaho

THE REFRESHED NEW ZEALAND CURRICULUM

DRAFT FOR TESTING | September 2022

Contents

Introduction

Mātai aho tāhūnui,
Mātai aho tāhūroa,
Hei takapau wānanga
E hora nei.

Lay the kaupapa down
And sustain it,
The learning here
Laid out before us.

We begin with the karakia for *Te Mātaiaho*, as it signals the intent of the proposed refresh of the New Zealand Curriculum. 'Mātai' means to study deliberately, examine, and observe, and 'aho' describes the many strands and threads of learning. *Te Mātaiaho* intends to be a curriculum that is Te-Tiriti-honouring, inclusive, clear, and easy to use. We have developed this draft of *Te Mātaiaho* for schools to test, so that we can get a sense of what works well and what can be improved further.

In this draft, you'll see many of the current New Zealand Curriculum components in refreshed form. You'll also see several new sections, such as statements on Te Tiriti o Waitangi and theories and approaches. Not all components are fully developed yet, but we are keen to get your feedback on the pieces we have created so far, which follow on from the first initiative in the curriculum refresh, the development of *Aotearoa New Zealand's histories*.

Te Mātaiaho aligns with the priorities of the NELP (Statement of National Education and Learning Priorities) by responding to the uniqueness and diversity of all ākonga – their identities, languages, cultures, and strengths. Mātaitipu (the refreshed vision for young people) calls for all ākonga to experience a sense of belonging, to feel valued, and to understand that there are many ways to be successful. Mātairea (progression) focuses on the whole child and the learning environment schools need to develop to support the learning and progress of all ākonga.

Te Mātaiaho is designed to give effect to Te Tiriti o Waitangi and to be inclusive of all ākonga. The curriculum is framed within a whakapapa that connects all its components. This whakapapa and its karakia were gifted by Dr Wayne Ngata with the support of eminent experts in mātauranga Māori. The whakapapa flows from Mātairangi ('To focus on looking beyond the horizon') to Mātainuku ('To focus on creating a foundation') and on to the other curriculum components. Whakataukī bring to life and strengthen each component – from overarching statements through to each learning area and the big ideas within them. Each learning area draws on the components of the whakapapa and uses the same structure, so that the curriculum is coherent as a whole and easy for teachers to use. Learning that cannot be left to chance is described in five phases. The elements of Understand, Know, and Do for each learning area clearly lay out the big ideas, contexts, and practices for the area and enable increasingly rigorous and complex learning.

Te Mātaiaho is a curriculum designed for all ākonga and their right to belong and flourish through high-quality learning experiences.

Pauline Cleaver
Associate Deputy Secretary
Curriculum, Pathways & Progress
Ministry of Education

Mātairangi | Guiding kaupapa

Mātai ki te rangi, homai te kauhau wānanga ki uta, ka whiti he ora. | *Look beyond the horizon, and draw near the bodies of knowledge that will take us into the future.*

Te Tiriti o Waitangi

Te Tiriti o Waitangi I the Treaty of Waitangi[1] is a central pillar of *Te Mātaiaho*, the refreshed New Zealand Curriculum. Te Tiriti is recognised as a founding document of government in New Zealand and a fundamental component of our constitution. Important principles for realising the vision and aspirations of *Te Mātaiaho* derive from the preambles and texts of Te Tiriti. Te Tiriti sets out mutual obligations for the Crown and Māori that guide how tangata Tiriti[2] and tangata whenua can live together with mutual respect. It provides for the active protection of taonga, including te reo Māori, tikanga Māori, and mātauranga Māori, and enables fair and equitable educational processes and outcomes for Māori and for all ākonga.

Te Mātaiaho will help foster the next generation of Te Tiriti partners by moving beyond the rhetorical notion of 'honouring Te Tiriti' to giving effect to it. Transformation within and through education and schooling requires leadership that is courageous, resilient, and productively disruptive – leadership by educators who hold themselves accountable to the principles[3] of Te Tiriti, to their communities of interest, and to those ākonga who have historically been left behind or situated on the margins.

Te Tiriti provides the vision and mandate for New Zealand citizens to exercise their mutual responsibilities to each other. Giving effect to Te Tiriti through a refreshed school curriculum creates an inclusive learning platform for all ākonga to participate in and enjoy an education that extends every learner's potential, produces success in multiple forms, and enables the fulfilment of lifelong ambitions and dreams. Knowing who we are, where we come from, and what makes us unique as a country will enable a more confident international outlook that extends within and beyond our Pacific locality to the global opportunities offered across the world.

1 Throughout this document Te Tiriti is used to refer to both the Māori and English texts of Te Tiriti o Waitangi | the Treaty of Waitangi, as set out in the Treaty of Waitangi Act 1975.

2 People of Te Tiriti or New Zealanders of non-Māori origin

3 The principles of Te Tiriti are as expressed by the Courts and Waitangi Tribunal, fleshing out the spirit and intent of the partnership entered into and creating a new nation through Te Tiriti. For example, the key principles include tino rangatiratanga, partnership, participation, protection, equity, and options.
See He Tirohanga o Kawa ki te Tiriti o Waitangi (waitangitribunal.govt.nz).

Whakapapa of *Te Mātaiaho*

The image below represents the whakapapa for the refreshed New Zealand Curriculum framework.

MĀTAIRANGI | To focus on looking beyond the horizon

The whakapapa (key components) of the framework and the overarching guiding kaupapa

Mātai ki te rangi, homai te kauhau wānanga ki uta, ka whiti he ora. *| Look beyond the horizon, and draw near the bodies of knowledge that will take us into the future.*

MĀTAIAHIKĀ | To focus on local curriculum

Obligation to learning through relationships with mana whenua and local communities

Mātai kōrero ahiahi. *| Keep the hearth occupied, maintain the stories by firelight.*

MĀTAINUKU | To focus on creating a foundation

The central pou that states the purpose of the curriculum and calls us to action

Mātai ki te whenua, ka tiritiria, ka poupoua.
Ground and nurture the learnings.

MĀTAIOHO | To focus on taking action

The role national curriculum plays in local curriculum design and implementation, and decision making in which ākonga learning is paramount

Mātai oho, mātai ara, whītiki, whakatika.
Awaken, arise, and prepare for action.

MĀTAITIPU | To focus on young people

The central pou that expresses the vision for young people

Mātaitipu hei papa whenuakura.
Grow and nourish a thriving community.

MĀTAIAHO | To focus on the strands of learning

Eight learning areas, incorporating mātauranga Māori and integrating the key competencies, values, literacy, and numeracy

Mātai rangaranga te aho tū, te aho pae. *| Weave the learning strands together.*

MĀTAIREA | To focus on supporting progression

What thriving looks like for ākonga at each of the five phases of learning

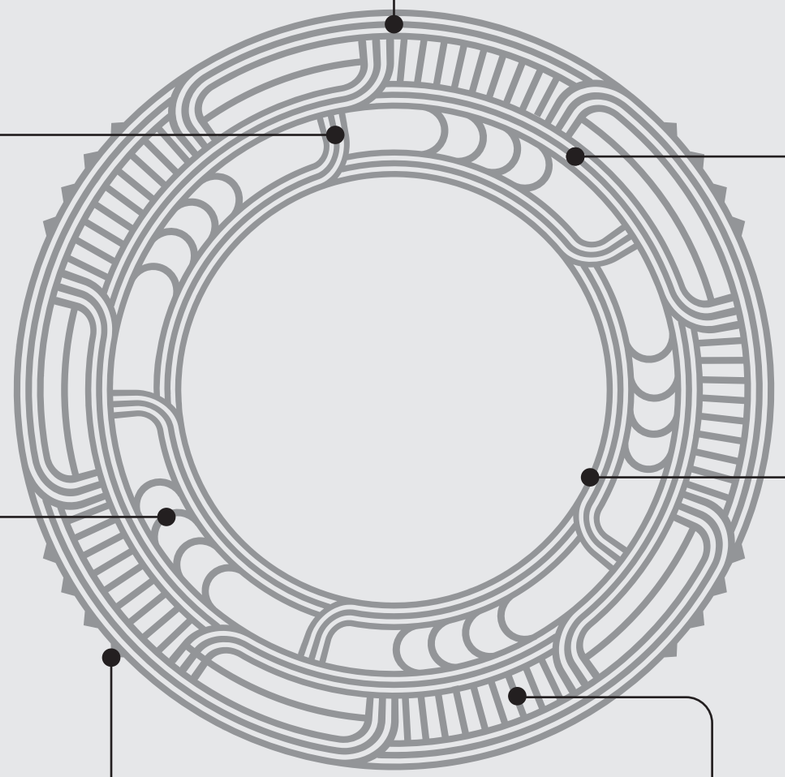
Mātai ka rea, ka pihi hei māhuri.
Build and support progression.

Design of *Te Mātaiaho* whakapapa

The design of the whakapapa of *Te Mātaiaho* centres around the tohu (signs) that help us navigate our way forward. The simple circular design is made up of whakarae (patterns) that breathe life into the whakapapa and reflect the ideas of observing, reading the signs, and navigating our way forward.

MĀTAIRANGI | To focus on looking beyond the horizon
The outer rings represent our guiding kaupapa.

MĀTAIAHIKĀ | To focus on local curriculum
Poutama curves represent relationships with mana whenua and local communities.



MĀTAINUKU | To focus on creating a foundation
The centre rings represent purpose and calls to action.

MĀTAIOHO | To focus on taking action
Unaunahi scales speak to the development and implementation of local curriculum.

MĀTAITIPU | To focus on young people
The inner rings and circle space represent the vision at the centre of all we do.

MĀTAIAHO | To focus on the strands of learning
Taratara-a-kae niho notches show the eight learning areas.

MĀTAIREA | To focus on supporting progression
Niho kuri lines speak to building and supporting the development of ākonga.

Official languages (from the 2007 NZ Curriculum)

Te reo Māori and New Zealand Sign Language (NZSL) are official languages of New Zealand. English, the medium for teaching and learning in most schools, is a de facto official language by virtue of its widespread use. For these reasons, these three languages have special mention in Te Mātaiaho. All three may be studied as first or additional languages. They may also be the medium of instruction across all learning areas. Guidelines specific to the learning of te reo Māori and NZSL (published separately) provide detailed information for schools that choose to offer them.

Te Reo Māori

Ko te reo te manawa pou o te Māori,
Ko te ihi te waimanawa o te tangata,
Ko te roimata, ko te hūpē te waiaroha.
Ko tōku nui, tōku wehi, tōku whakatiketike, tōku reo.

Te reo Māori is indigenous to Aotearoa New Zealand. It is a taonga recognised under Te Tiriti, a primary source of our nation's self-knowledge and identity, and an official language. By understanding and using te reo Māori, New Zealanders become more aware of the role played by the indigenous language and culture in defining and asserting our point of difference in the wider world.

Ko te reo Māori te kākahu o te whakaaro,
te huarahi i te ao tūroa.

By learning te reo and becoming increasingly familiar with tikanga, Māori students strengthen their identities, while non-Māori journey towards shared cultural understandings. All who learn te reo Māori help to secure its future as a living, dynamic, and rich language. As they learn, they come to appreciate that diversity is a key to unity.

Te reo Māori underpins Māori cultural development and supports Māori social and economic development in Aotearoa New Zealand and internationally. Understanding te reo Māori stretches learners cognitively, enabling them to think in different ways and preparing them for leadership.

By learning te reo Māori, students are able to:

- participate with understanding and confidence in situations where te reo and tikanga Māori predominate
- integrate language and cultural understandings into their lives
- strengthen Aotearoa New Zealand's identity in the world
- broaden their entrepreneurial and employment options to include work in an ever-increasing range of social, legal, educational, business, and professional settings.

Ko te manu e kai ana i te miro, nōna te ngahere.
Ko te manu e kai ana i te mātauranga, nōna te ao.
Ko te reo te mauri o te mana Māori.

New Zealand Sign Language

Unique to New Zealand, NZSL is a complete visual- gestural language with its own grammar, vocabulary, and syntax. Like other signed languages, it uses the hands, the body, and facial expressions (including lip patterns) to express meaning and the eyes to perceive meaning. Like any language, it is capable of communicating an infinite number of ideas. Face-to-face interaction is particularly important in NZSL because it has no written form. There are, however, notation systems that are used for recording signs on paper.

NZSL is primarily used by members of New Zealand's Deaf community and those affiliated in some way with this community, for example, hearing people who have Deaf relatives or people (such as interpreters) who work with Deaf people.

For many Deaf people, NZSL is essential for effective daily communication and interactions. New Zealand needs more people who are fluent users of the language and who have an appreciation of Deaf culture. By learning NZSL, hearing students are able to communicate with their Deaf peers and participate in the Deaf community. Skilled communicators may find career opportunities that involve working with Deaf people. As Deaf people come to have a wider circle to converse with, our society becomes more inclusive.

Learning NZSL can be a positive and enriching experience for both deaf and hearing people of any age. By learning NZSL, Deaf children and hearing children of Deaf parents gain a sense of belonging in the Deaf community.

For hearing students who wish to learn a second or subsequent language, NZSL may be offered as another option alongside the spoken languages offered by their school. In such cases, schools need to consult with their Deaf communities and ensure that, wherever possible, students have access to Deaf role models with NZSL as their first language. Learners need to have opportunities for sustained conversations with other users of NZSL, and they need to be exposed to language role models in a variety of situations.

Mātainuku | Creating a foundation

Mātai ki te whenua, ka tiritiria, ka poupoua. | *Ground and nurture the learnings.*

Aotearoa New Zealand has a rich whakapapa and history of knowledges, traditions, and cultures that reflect our unique story as a nation. Māori and tauiwi[4] accounts have shaped the stories of our past and continue to shape our present and future. These stories are important for describing our individual and collective worlds. They help us to understand who we are as a nation and our aspirations as tangata whenua and tangata Tiriti for a future in which differences are celebrated and diversity is embraced.

Refreshed purpose of the curriculum

Te Mātaiaho starts from the premise that learners are taonga. It sets out an obligation to nurture and care for every learner as an individual, as a member of a whānau, and as a citizen of the world.

Te Mātaiaho acknowledges and gives effect to the mutual obligations set out in Te Tiriti.

Te Mātaiaho supports every child to live individually, and collectively, in a society that promotes peace, dignity, tolerance, freedom, equity, and collectivism. It demands respect for their cultural backgrounds, their abilities and disabilities, their gender and sexual orientation, and their religion.

Te Mātaiaho is designed with every learner in mind, so that all are nurtured to be confident in who they are. In doing so, it helps enable success for every ākonga as a contributing citizen in Aotearoa New Zealand, and beyond.

Through the delivery of this curriculum, ‘Mātaitipu | Vision for young people’ will be realised.

This purpose statement is underpinned by the UN Declaration on the Rights of Indigenous Peoples, the UN Convention on the Rights of the Child, the UN Convention on the Rights of Persons with Disabilities, and the New Zealand Disability Strategy.

4 People of Te Tiriti or New Zealanders of non-Māori origin

Key shifts and calls to action

The intention of the 'calls to action' is to give effect to the purpose statement for *Te Mātaiaho* and the key shifts and actions that will honour Te Tiriti and ensure an inclusive curriculum that is clear and easy to use.

These are the actions for those in the education system who have the responsibility of driving the key shifts needed to ensure that equity and inclusivity for all ākonga are a priority. These shifts, therefore, aim to transform the inequities and experiences of schooling and education for Māori learners and their whānau. Their intent is to provide the basis for a more inclusive and diverse approach to curriculum design and delivery, to ensure all ākonga are present, participating, and enjoying success.

Key Shift 1

Realising the intent of Te Tiriti

This is a shift from acknowledgment to authentic understanding and valuing of Te Tiriti. This reflects our maturing nationhood, shaped and enabled by our mutual obligations to and through Te Tiriti. Beyond anchoring our nationhood, Te Tiriti enables positive policy interventions targeted at high and disproportionate levels of inequity experienced by Māori. The referencing of Te Tiriti also acknowledges and supports our shared responsibilities in supporting Māori language, knowledge, and culture.

Actions for school leaders

- Leading kaiako to give effect to our obligations to Te Tiriti, through genuine actions and the intent to build a more inclusive, bicultural sense of nationhood
- Leading kaiako to design local curriculum that includes content about Te Tiriti, covering local and national contexts and the significance of Te Tiriti in highlighting and responding to persistent inequities and disadvantages for Māori
- Leading kaiako to incorporate te reo Māori and mātauranga Māori in the co-design of localised curriculum with whānau, hapū, and iwi

Key Shift 2

Broadening our view of what success looks like

For ākonga to succeed, we need a curriculum centred around positive and inclusive relationships, connectedness, and a sense of belonging for all ākonga. This curriculum draws on local as well as broader knowledge and histories, contributes positively to wellbeing and success, and has the potential to address inequities for many ākonga. It also fits the strengths and interests of each ākonga and gives access to knowledge and resources that build on their educational, social, political, economic, and cultural capital.

Actions for school leaders

- Leading kaiako to use the curriculum to design and plan learning programmes that enable each ākonga to make informed decisions about themselves and others, and that provide access to knowledge, understandings, and practices that promote inclusion and equity for all peoples
- Leading kaiako to create welcoming and inclusive environments that value the contributions of every ākonga and that draw on their individual and collective strengths to foster the wellbeing of themselves and others in the classroom, in the wider school community, and beyond
- Leading kaiako to gain the trust and support of ākonga, whānau, and communities in order to draw on the richness of local knowledge, stories, and histories in shaping a broad, locally informed curriculum

Key Shift 3

Setting high expectations for all

Fulfilling our obligation to hold high expectations for ākonga learning and progress ensures ākonga feel cared for as people and as learners, and are supported and extended in ways that realise their potential and the aspirations of their whanau.

Actions for school leaders

- Leading kaiako to set high expectations of themselves and to be courageous in designing rich coherent pathways and local curriculum that disrupt the status quo and ongoing inequities for many ākonga
- Leading kaiako to set high expectations for each ākonga and to use effective teaching practices that give ākonga more advanced opportunities to learn, drawing upon their individual and collective strengths to achieve to their potential

Mātaitipu | Refreshed vision for young people

Mātaitipu hei papa whenuakura. | *Grow and nourish a thriving community.*

> ***"We are connected to community, curious about learning, and confident in ourselves."***

We, the ākonga of Aotearoa, know our world is connected, our wellbeing is collective, and that we have a shared responsibility to each other.

We understand our roles in activating Te Tiriti o Waitangi.

We are strong in our identities, languages, cultures, beliefs, and values. This means we can confidently carry who we are wherever we go.

We have a strong sense of belonging. This builds the foundation to be courageous, confident, compassionate, and curious. We understand that success can look different for us all. This means we can learn and grow from our experiences in a supportive environment.

We engage in learning that is meaningful to us and helps us in our lives. We can build and navigate knowledge, using our heads and our hearts to make our decisions.

We are kaitiaki of our environment.

We accept, acknowledge, and appreciate our differences and diverse backgrounds and viewpoints.

We positively contribute to our communities, Aotearoa, and the world.

Vision written by young people for young people

Mātairea | Supporting progression

Mātai ka rea, ka pihi hei māhuri. | *Build and support progression.*

Mātairea frames the types of mana-enhancing opportunities a school creates for ākonga, drawing attention to both the practices of kaiako and the experiences of ākonga. It is strengths-based and cumulative, laying out the whole schooling pathway and describing the overarching focus for kaiako and kaimahi at each phase. The descriptors are deliberately chosen to reflect what is critical for nurturing the social, emotional, and cognitive growth of ākonga at each each phase in their school journey, while recognising that success looks different for every ākonga.

Schools will use Mātairea as they design, implement, and review their overall curriculum provision to ensure the focus is always on high-level aspirations for ākonga throughout each phase of their schooling. At the same time, the descriptors will support conversations between kaiako, kaimahi, whānau, and ākonga about progress.

Phases of learning replace the curriculum levels of the 2007 New Zealand Curriculum. They are a natural way of 'chunking' progression, reflecting how schools typically structure learning.

Te tū māia hei ākonga pākiki

Being a confident, curious learner

Focus of provision in early childhood

Te tupu pāhautea i te taiao ako whakahihiko

Thriving in environments rich in literacy and numeracy

Focus of provision in years 0–3

Te tū māia hei ākonga pākiki
Being a confident, curious learner

Te kaingākaunui me te hiamo ki te ako

Expanding horizons of knowledge and collaboration

Focus of provision in years 4–6

Te tupu pāhautea i te taiao ako whakahihiko
Thriving in environments rich in literacy and numeracy

Te tū māia hei ākonga pākiki
Being a confident, curious learner

Te mōhio ki tōku tūrangawaewae me te kōkiri kaupapa

Knowing I belong and advocating for self and others

Focus of provision in years 7–8

Te kaingākaunui me te hiamo ki te ako
Expanding horizons of knowledge and collaboration

Te tupu pāhautea i te taiao ako whakahihiko
Thriving in environments rich in literacy and numeracy

Te tū māia hei ākonga pākiki
Being a confident, curious learner

Te whai ahunga, te manaaki i ētahi atu me te manawaroa

Having a purpose and being empathetic and resilient

Focus of provision in years 9–10

Te mōhio ki tōku tūrangawaewae me te kōkiri kaupapa
Knowing I belong and advocating for self and others

Te kaingākaunui me te hiamo ki te ako
Expanding horizons of knowledge and collaboration

Te tupu pāhautea i te taiao ako whakahihiko
Thriving in environments rich in literacy and numeracy

Te tū māia hei ākonga pākiki

Te whakatere me te waihanga i ngā arawātea me ngā ahunga whakamua mō anamata

Navigating a pathway and contributing to future possibilities

Focus of provision in years 11–13

Te whai ahunga, te manaaki i ētahi atu me te manawaroa
Having a purpose and being empathetic and resilient

Te mōhio ki tōku tūrangawaewae me te kōkiri kaupapa
Knowing I belong and advocating for self and others

Te kaingākaunui me te hiamo ki te ako
Expanding horizons of knowledge and collaboration

Te tupu pāhautea i te taiao ako whakahihiko
Thriving in environments rich in literacy and numeracy

Te tū māia hei ākonga pākiki
Being a confident, curious learner

Mātaiaho | Weaving learning strands together

Mātai rangaranga te aho tū, te aho pae. | *Weave the learning strands together.*

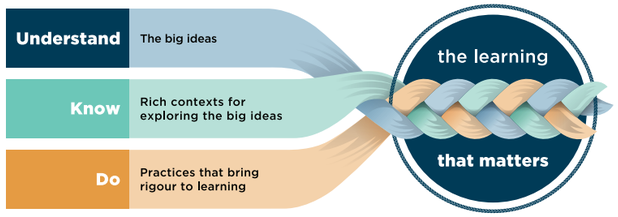
Introduction

The learning that matters: Understand, Know, and Do

For all learning areas, there are three elements: Understand, Know, and Do. These elements are not separate, and they are not in sequence. Weaving them together ensures that learning is deep and meaningful and supports ākonga to use their learning for informed decision making and action.

- ***Understand:*** At the heart of each learning area is a unique set of big enduring ideas that all ākonga can relate to and are entitled to access.
- ***Know:*** Contexts enable the illumination of these big ideas and bring them to life.
- ***Do:*** Ākonga develop practices that enable them to think and act as 'experts' within each learning area and across the learning areas (e.g., as an artist, a social scientist, or a storyteller).

This common Understand-Know-Do structure across the learning areas facilitates integration while retaining the integrity of each area. It is a future-focused approach that supports ākonga to take a critical view of information and make sense of it in an increasingly digital world.



The respectful inclusion of mātauranga Māori is a deliberate feature of the Understand-Know-Do structure that helps ākonga understand a dynamic and evolving knowledge system unique to Aotearoa.

Literacy, numeracy, key competencies, and values are explicitly integrated within each learning area.

- While English and mathematics and statistics anchor literacy and numeracy, each learning area describes the discipline-specific literacy and numeracy practices that enable ākonga to make connections, think critically, and communicate their ideas.
- The key competencies are used and developed within each learning area. They foreground social and emotional learning, the development of self-monitoring strategies that enable learning to be acted on, and ākonga use of the disciplinary practices within 'Do'.
- Values – those that are universal and those particular to each learning area – support ākonga to engage in responsible, ethical decision making and action and to deepen their understanding of the production, use, and impact of knowledge.

Each learning area is designed to be inclusive and mana-enhancing and to ensure each ākonga feels they are valued and can experience success. For example:

- The big ideas highlight the importance of different world views and do not have progress descriptors, meaning they can be explored at any level of learning and in multiple ways.
- Key knowledge statements use language that is inclusive and leaves open how knowledge can be developed and demonstrated.
- The practices under 'Do' support multiple ways of engaging in and demonstrating learning.

Kaiako support English language learners to access the curriculum at the same phase as their peers through language-rich experiences that draw from the home languages of ākonga.

Phases of learning and progress outcomes

Mātairea provides an anchor for more detailed progress outcomes and literacy and numeracy progress steps within Mātaiaho. Each learning area has a progress outcome for each phase of learning. These replace the achievement objectives of the current curriculum.

Mātairea and Mātaiaho make up the progression model for the refreshed New Zealand Curriculum. Together, they provide explicit signposts along the schooling pathway, while leaving space for local curriculum decision making and classroom teaching that is responsive to individual ākonga.

The progress outcome for each phase of learning describes the depth of learning that sets ākonga up for success in the next phase. The progress outcomes acknowledge that learning is cumulative. They help kaiako to design a range of learning experiences that weave Understand, Know, and Do together and that ensure ākonga learning will be deep and meaningful and personally relevant to them and their communities.

Progression in literacy and numeracy is foundational to all learning. It is expressed in detail as 'progress steps' within learning phases in English and mathematics and statistics. These steps and their exemplification are in development and will show what progression looks like across all learning areas. For examples of progress steps, see the six-month steps within the first phases of English and mathematics and statistics.

Progress outcomes are used by kaiako to understand the extent to which they are providing sufficient opportunities for all ākonga to progress, and to notice and build on ākonga strengths. Through this range of opportunities, ākonga develop greater:

- breadth and depth of understanding, through more complex and ambiguous contexts
- refinement and sophistication in their use of competencies, practices, and inquiry processes
- connections, transfer, and application between new learning and meaningful contexts
- knowledge and effectiveness of themselves as learners
- effectiveness in working with others.

Key competencies (from the 2007 NZ Curriculum)

Competencies are ways of being and acting in the world.
The New Zealand Curriculum identifies five key competencies:

- Thinking
- Using language, symbols, and texts
- Managing self
- Relating to others
- Participating and contributing.

All ākonga arrive at school with a rich set of competencies. They have already learned ways of thinking; of using language, symbols, and texts; of managing themselves; of relating to others; and of participating and contributing. These competencies continue to evolve over time, both within and beyond school. Learners use them in different ways and in different combinations, according to the context and purpose.

The five key competencies are the same as they were in The New Zealand Curriculum (2007). What is different is how the competencies are woven within Understand, Know, and Do for each learning area, for two purposes:

- firstly, to foreground the disciplinary practices associated with each learning area – that is, the discipline-specific ways of thinking; using language, symbols, and texts; managing oneself; relating to others; and participating and contributing. These practices are typically found in the statements for 'Do'

  Ākonga might be learning how to think like a scientist or historian – or as a member of kapa haka, the enviro-team, or the student council. Ākonga come to understand the similarities and differences between these different ways of thinking. They can use this understanding to make informed decisions when, for example, solving complex problems.

- secondly, to foreground social and emotional learning aspects within each learning area – that is, ways of using the key competencies to enhance learners' engagement in daily tasks and challenges, both within and beyond school.

  Ākonga might be learning to recognise and manage their emotions and to make responsible decisions; to develop concern for others, establish positive relationships, and handle challenging situations; to establish and negotiate learning relationships with people and places (the living and non-living world); manaakitanga, whanaungatanga, and mahi ngātahi; to value and recognise who stood before, who stands here now, and who is yet to be; to grow their sense of self as they progress towards mana motuhake. These examples encompass each learner's capabilities as part of a whānau (with whakapapa), a wide and diverse community, and te taiao, the natural world.

These two ways of weaving the key competencies into learning – to foreground disciplinary practices, and to foreground social and emotional learning – provide a model for schools. They can use this to design their own approaches to weaving the key competencies into the learning areas in ways that align with the values and goals of their communities and that meet their aspirations for their ākonga.

Thinking

Thinking is about using creative, critical, and metacognitive processes to make sense of information, experiences, and ideas. These processes can be applied to purposes such as developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency.

Ākonga who are competent thinkers and problem solvers actively seek, use, and create knowledge. They reflect on their own learning, draw on personal knowledge and intuitions, ask questions, and challenge the basis of assumptions and perceptions.

Using language, symbols, and texts

Using language, symbols, and texts is about working with and making meaning of the codes in which knowledge is expressed. Languages and symbols are systems for representing and communicating information, experiences, and ideas. People use languages and symbols to produce texts of all kinds: written, oral/aural, and visual; informative and imaginative; informal and formal; mathematical, scientific, and technological.

Ākonga who are competent users of language, symbols, and texts can interpret and use words, number, images, movement, metaphor, and technologies in a range of contexts. They recognise how choices of language, symbol, or text affect people's understanding and the ways in which they respond to communications. They confidently use ICT (including, where appropriate, assistive technologies) to access and provide information and to communicate with others.

Managing self

This competency is associated with self-motivation, a "can-do" attitude, and with ākonga seeing themselves as capable learners. It is integral to self-assessment.

Ākonga who manage themselves are enterprising, resourceful, reliable, and resilient. They establish personal goals, make plans, manage projects, and set high standards. They have strategies for meeting challenges. They know when to lead, when to follow, and when and how to act independently.

Relating to others

Relating to others is about interacting effectively with a diverse range of people in a variety of contexts. This competency includes the ability to listen actively, recognise different points of view, negotiate, and share ideas.

Ākonga who relate well to others are open to new learning and able to take different roles in different situations. They are aware of how their words and actions affect others. They know when it is appropriate to compete and when it is appropriate to co-operate. By working effectively together, they can come up with new approaches, ideas, and ways of thinking.

Participating and contributing

This competency is about being actively involved in communities. Communities include family, whānau, and school and those based, for example, on a common interest or culture. They may be drawn together for purposes such as learning, work, celebration, or recreation. They may be local, national, or global. This competency includes a capacity to contribute appropriately as a group member, to make connections with others, and to create opportunities for others in the group.

Ākonga who participate and contribute in communities have a sense of belonging and the confidence to participate within new contexts. They understand the importance of balancing rights, roles, and responsibilities and of contributing to the quality and sustainability of social, cultural, physical, and economic environments.

Values (from the 2007 NZ Curriculum)

Values are deeply held beliefs about what is important or desirable. They are expressed through the ways in which people think and act. Every decision relating to curriculum and every interaction that takes place in a school reflects the values of the individuals involved and the collective values of the institution.

The content of the New Zealand Curriculum learning areas is value-rich and demonstrates what the values look like in each discipline. The incorporation of mātauranga Māori in all learning areas supports the development of values that are Te Tiriti-honouring and inclusive.

The values on the list below enjoy widespread support because it is by holding these values and acting on them that we are able to live together and thrive. The list is neither exhaustive nor exclusive, but the values in it are to be encouraged, modelled, and explored.

Through the learning areas, ākonga are encouraged to value:

- ***excellence***, by aiming high and by persevering in the face of difficulties
- ***innovation***, ***inquiry***, and ***curiosity***, by thinking critically, creatively, and reflectively
- ***diversity***, as found in our different cultures, languages, and heritages
- ***equity***, through fairness and social justice
- ***community*** and ***participation*** for the common good
- ***ecological sustainability***, which includes care for the environment
- ***integrity***, which involves being honest, responsible, and accountable and acting ethically
- ***respect*** for themselves, others, and human rights.

As they explore the learning areas, ākonga learn about:

- their own values and those of others
- different kinds of values, such as moral, social, cultural, aesthetic, and economic values
- the values on which New Zealand's cultural and institutional traditions are based
- the values of other groups and cultures.

They also develop their ability to:

- express their own values
- explore, with empathy, the values of others
- critically analyse values and actions based on them
- discuss disagreements that arise from differences in values and negotiate solutions
- make ethical decisions and act on them.

Values should be evident in a school's philosophy, vision, strategic plan, structures, curriculum, classrooms, and relationships. When the school community has developed strongly held and clearly articulated values, they are likely to be expressed in everyday actions and interactions within the school.

The specific ways in which the above values find expression in an individual school are guided by dialogue between the school and its community. The learning areas provide a model of how values can be integrated in learning. Schools can use this model to plan how they weave values into the learning areas to align with their community's goals and aspirations for ākonga. (The local curriculum design section on pages 60–61 elaborates on the place of values when designing local curriculum with mana whenua.)

Learning areas

The learning areas remain the same as in the 2007 New Zealand Curriculum.

The learning areas of English, mathematics and statistics, and social sciences have been refreshed to reflect Mātainuku and Mātaitipu. Each has been structured around Mātairea, the refreshed progression model, and the elements of Understand, Know, and Do. Each draws on current research and on the corresponding learning area statements, strands, and achievement objectives in the 2007 curriculum.

Te Ao Tangata | Social Sciences	In draft, ready 2022
Mathematics and Statistics	In development, ready 2023
English	In development, ready 2023
Science	In development, ready 2024
Technology	In development, ready 2024
The Arts	In development, ready 2024
Health and Physical Education	In development, ready 2025
Learning Languages	In development, ready 2025

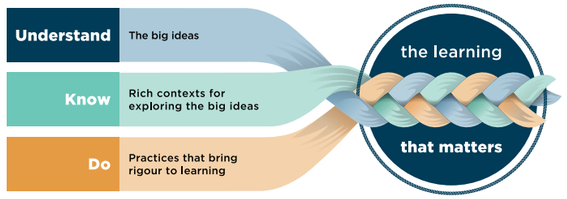
Purpose statement for Mathematics and Statistics in the New Zealand Curriculum

Ānō me he whare pūngāwerewere.

To say that something is like a whare pūngāwerewere – a spiderweb – is to recognise its intricacy, complexity, interconnectedness, and strength due to its many threads. The learning area of mathematics and statistics weaves together the effort and creativity of many cultures that over time have used mathematical and statistical ideas to understand their world.

Being numerate in Aotearoa New Zealand today relies upon understanding diverse cultural perspectives and privileging te ao Māori and Pacific world-views. Like mathematics and statistics, mātauranga Māori is a body of knowledge with a history and a future. When we afford mana ōrite to mātauranga mathematics and statistics and mātauranga Māori while retaining their distinctiveness, ākonga can draw from both in ways that are beneficial to both spheres of knowledge. For example, they will understand how ethical questions posed by measurement, quantification, and stories told about data take unique forms in Aotearoa New Zealand.

Learning in mathematics and statistics builds both literacy and numeracy. Mathematics and statistics contribute to ākonga literacy by developing their skills in oral and written communication, meaning-making, and the use of specific vocabulary and symbols. Statistics and probability, in particular, support the understanding of tables, graphs, and diagrams as well as critical thinking about the quality of data and stories told about it.



Ākonga become numerate as they "develop their ability to apply mathematical and statistical knowledge and skills purposefully across all learning areas and in their lives to achieve their goals" (Literacy & Communication and Maths Strategy).
As they progress, ākonga can use their mathematical and statistical knowledge and skills to contribute to their communities, Aotearoa, the Pacific, and beyond as informed citizens. Mathematical and statistical models can help identify misinformation and disinformation and are essential to resolving collective global challenges, including securing human rights and social justice, adapting to a changing climate, and building an equitable, sustainable future.

As the above whakatuakī tells us, connections between different concepts, knowledge, and practices are central to mathematics and statistics. Kaiako weave together the elements of Understand, Know, and Do to ensure ākonga learn mathematics and statistics as a connected body of knowledge.

Features of this draft	Their treatment in the 2007 NZ Curriculum
Understand: Big ideas	Although big ideas were described in the 2007 learning area statement, they were not clear in the achievement objectives.
Know: Contexts	In response to research and feedback, the six new 'contexts' have split the three 'combined' strands of the 2007 learning area, allowing for easier interweaving. Geometry has been renamed Space to make it more encompassing of what it explores.
Do: Practices	The new practices existed in different versions in older curricula. In response to research and feedback from the sector, they have been updated.
Progress steps	Progress steps are being developed based on current research and learning progression frameworks. See the progress step for 'During the first six months' as an example of what these will look like.

Important considerations for teaching mathematics and statistics

Effectively teaching mathematics and statistics requires a strengths-based approach in which all students have the opportunity to learn and progress at the curriculum learning phase of their peers. This means that it is important for our teaching to be ambitious, drawing on progress outcomes for an appropriate level of challenge while also providing opportunities for ākonga to demonstrate understanding beyond this.

When designing the scope and sequence of a mathematics and statistics programme, kaiako need to plan for providing multiple opportunities to progress. Learning happens best when mathematics and statistics are taught on a daily basis, using a series of purposeful contextualised and decontextualised tasks.

When thinking about these multiple opportunities, kaiako can ask: What opportunities do ākonga have to:

- learn new mathematics and statistics concepts and practices?
- understand the interrelated nature of concepts in mathematics and statistics?
- solve relevant, contextualised tasks?
- practise the mathematics and statistics that they have learned?

When planning contextualised tasks, kaiako can ask:

- What are the cultural contexts that will resonate with my ākonga?
- How can I support ākonga to engage with both the mathematical and statistical knowledge inherent in the context and the context's whakapapa, significance, and tikanga?

As they prepare, kaiako can work through the learning tasks themselves and ask:

- How can I help ākonga find the joy in this learning?
- How can I help them see its relevance to their lives?
- What routes might ākonga take when working through the tasks?
- What are the possible next steps for teaching?

Overview

Understand
Big ideas

> ***Kotahi te kōhao o te ngira e kuhuna ai te miro mā, te miro pango, te miro whero. (Pōtatau Te Wherowhero)***
>
> *There is but a single eye of the needle through which white, black, and red threads must pass together, yet each thread keeps its own colour and integrity while adding its strength and beauty to the others.*

Mātauranga Māori and mathematics and statistics help make sense of the world.

Mātauranga Māori and mātauranga mathematics and statistics consist of different systems for viewing, understanding, and organising the world and how we operate in it. The interfaces between them offer opportunities for meaningful inquiry and for mathematical and statistical insights that uphold the integrity of each.

> ***Nō ngā tūpuna, tuku iho, tuku iho.***
>
> *The human ideas that have been passed down from generation to generation over time can help people today develop their thinking.*

Mathematics and statistics have a continuous, evolving human history.

Mathematics and statistics have been constructed over thousands of years across the globe, as people have grappled with notions of quantity, numerical representation, measurement, dimension, and pattern. They continue to be constructed from ideas drawn from many cultures. In Aotearoa New Zealand, they are informed by their location in Te Moana Nui a Kiwa.

> ***Kei hopu tōu ringa ki te aka tāepa, engari kia mau ki te aka matua.***
>
> *Do not catch hold of the loose vine but lay hold of the main vine. You can use the strength of the aka matua (main vine) for the sure footing you will need to reach for new ideas and to climb to new heights.*

Mathematics and statistics are elegant, explorative, creative, and powerful.

Mathematics and statistics use quantification, transformation, prediction, data, patterns, and relationships to find out, design, and explain. They offer a unique system of symbols, terms, conventions, and interconnected ideas that can be used to explore and think about the world critically, logically, and creatively.

> ***Whiria te kaha tūātinitini, whiria te kaha tūāmanomano.***
>
> *Together we can use our strengths to achieve more. All learning contributes specific threads that people can use to weave a rope strong enough to get them where they want to go, do what they want to do, and be what they want to be.*

Mathematics and statistics help us in our everyday lives and decisions and are key to many areas of knowledge and practice.

The concepts, skills, and processes of mathematics and statistics are used in everyday life and activities, including in individual and collective decision making about health, community, work, and finance. Being able to use mathematics and statistics to evaluate claims and options and make decisions helps people to participate fully in society. Mathematics and statistics are fundamental to many endeavours across engineering, science and technology; sport and recreation; social sciences; and the arts.

> ***Ko te pae tawhiti whāia kia tata, ko te pae tata whakamaua kia tina.***
>
> *Seek to bring distant horizons closer and cherish those that you have attained. There will always be pae tawhiti, the 'not yet', but we can move ever closer to that for which we strive.*

Mathematics and statistics reward persistence and positivity.

The interconnected nature of mathematics and statistics offers multiple ways to approach and solve problems. This means that experimentation and making mistakes play an important role in learning mathematics and statistics for everyone. Mathematics and statistics are open to all, no matter their background or identity.

Know
Contexts

Mātauranga tau | Number
Number allows us to describe and compare quantities and to operate on these quantities, including using them to estimate, calculate, reason, and justify.

Taurangi | Algebra
Algebra allows us to generalise, to represent patterns, and to use symbols and graphs to express mathematical relationships.

Inenga | Measurement
Measurement provides the tools and concepts for quantifying phenomena in the physical world by estimating, measuring accurately, and using appropriate units.

Mokowā | Space
Space provides the tools and concepts for visualising, representing, and reasoning about the shape, position, orientation, and transformation of objects.

Tauanga | Statistics
Statistics provides the tools, concepts, and methods for understanding phenomena through data and for examining and evaluating data-based information. Mana whenua have rangatiratanga over their data. All data are taonga to be treated with respect and kept safe.

Tūponotanga | Probability
Probability provides the tools and concepts for quantifying chance, dealing with uncertainty and expectation, making predictions, and identifying how likely events are to occur.

Do
Mathematical and statistical practices

Te whakatauira me te tūhura | Modelling and investigating
Modelling and investigating processes are used to describe, explore, understand, and evaluate situations mathematically or statistically. They begin with a question or focus of interest and proceed in systematic but flexible ways, using mathematical and statistical concepts to make sense of solutions, stories about data, and conclusions in context.

Te whakaata | Representing
Representing enables a deeper and more flexible understanding of mathematical and statistical ideas. Representations can be used to compare, explore, simplify, illustrate, prove, and justify as well as to look for patterns, variations, and trends. Representations can use words or symbols and be physical, virtual, graphical, diagrammatic, mental, or abstract. They can be drawn from mātauranga Māori, Pacific cultures, various places, and different periods of history.

Te honohono | Connecting
The whakataukī for mathematics and statistics, Anō me he whare pūngāwerewere, expresses the intricacies and significance of connection in mathematics and statistics. There are important connections between ideas in mathematics and statistics, between mathematics and statistics and other learning areas, and between mathematics and statistics and a wide range of contexts within and beyond school. Connections can be made with mātauranga Māori and between different cultural, linguistic, and historical contexts. The more connected mathematics and statistics knowledge is for ākonga, the stronger it will be.

Te whakatau whānui | Generalising
Generalisations are the building blocks for exploring relationships and possibilities in mathematics or statistics. They enable more advanced mathematical or statistical thinking because they express ideas that are always mathematically and statistically true. They can be used to make and test conjectures, explain ideas and patterns, develop justifications and proofs, and predict outcomes.

Te whakaaro arorau | Reasoning
Working mathematically and statistically centres on logical reasoning. Reasoning can be inductive or deductive, drawing on evidence or on known rules and relationships. Reasoning is the way we make predictions, build arguments, unpack stories from data, make inferences, and quantify and accept uncertainty.

Te whakawhiti whakaaro | Communicating
Communicating in mathematics and statistics uses words, symbols, representations, visualisations, and conventions to explain thinking and share ideas and findings. Effective communication pays attention to the needs, capacities, and cultural context of its audience and promotes rigour, mathematical argumentation, shared understanding, participation, and working together.

Progress outcome, typically by the end of **year 3** (Foundation)

Te tupu pāhautea i te taiao ako whakahihiko | *Thriving in environments rich in literacy and numeracy*

Understand

Through building knowledge about contexts and drawing on mathematical and statistical practices, I am deepening my understanding that:

- Mātauranga Māori and mathematics and statistics help make sense of the world.
- Mathematics and statistics have a continuous, evolving human history.
- Mathematics and statistics are elegant, explorative, creative, and powerful.
- Mathematics and statistics help us in our everyday lives and decisions and are key to many areas of knowledge and practice.
- Mathematics and statistics reward persistence and positivity.

Know

Mātauranga tau | Number

Whole numbers

I know:

- Our number system is based on groups of ten, groups of 100, groups of 1000, and so on (base ten)
- Numbers can be put together and taken apart in different ways (composing and decomposing)
- Multiplication and division involve recognising and working with groups, the number of groups, and the total
- Numbers can include groups that I can use to find patterns, by, for example, skip counting or using pairs of numbers that add to 10
- Instead of counting I can use number patterns and an understanding of addition, subtraction, multiplication, and division to solve problems.

I know how to:

- estimate discrete and continuous quantities (i.e., separate items and amounts of something) and explain my estimate
- recognise, read, write, and order whole numbers up to 10 000
- group, partition, and recombine whole numbers up to 1 000
- solve addition and subtraction with two- and three-digit numbers
- solve multiplication problems involving two one-digit numbers, and a one- and a two-digit number
- solve division problems involving whole numbers, a one-digit divisor, and no remainders
- use the rules and patterns for operations that I have learned in algebra when working with numbers.

Rational numbers

I know:

- Fractions are a way to show pieces of a whole
- We need to know what the whole is to understand the size of a fraction
- The bottom number of a fraction (denominator) shows how many pieces a whole has been equally split into, and the top number (numerator) shows how many of those parts the fraction represents
- The bigger the bottom number (denominator) of a fraction, the smaller the pieces
- When fractions have the same denominator, I can add them together by seeing how many pieces I have in total and putting the total over the size of the pieces (the denominator)
- When a fraction has a 1 as the numerator, it is called a unit fraction (in the same way that we call 1 a ‘unit’)
- I can find a unit fraction by dividing a whole into the number of pieces in the denominator and taking one of those pieces
- A whole can be an area, a measurement, or a set of objects
- The same amount, like a half or a quarter, can be shown by different (equivalent) fractions because the relationship between the numerator and the denominator is the same.

I know how to:

- recognise, read, write, represent, and order halves, thirds, quarters, fifths, sixths, and eighths
- identify or find an equivalent fraction involving halves and quarters
- add unit fractions with like denominators
- find a unit fraction of a whole.

Know

Taurangi | Algebra

Patterns

I know:

- Patterns are made of numeric or spatial elements in a sequence governed by a rule; sometimes they repeat and sometimes they continue on
- I can describe a pattern using a rule; I can also start with a rule and create a pattern from it
- The same pattern structure can be found in many forms (e.g., numbers, shapes, colours, and rhythm)
- Identifying the rule of a pattern brings predictability and allows me to make generalisations
- To find the rule for a pattern, I need to work out what the unit of the pattern is (what is repeated or what changes)
- An algorithm is a sequence of rules that can be followed.

I know how to:

- find another element of a pattern, given part of it
- describe a rule that explains how a pattern works
- follow and create algorithms that sort numbers into categories such as odd and even, or multiples of 3.

Equations, expressions, and number properties

I know:

- Addition and subtraction, and multiplication and division, 'undo' or 'reverse' each other (inverse property)
- In addition and multiplication, I can change the order of the numbers and the answer stays the same (commutative property)
- If I add or subtract 0 from a number, or multiply or divide by 1, the answer will be the number I started with (identity property)
- Patterns in the way numbers are organised can help solve equations
- The equals sign is relational; it shows the two sides of an equation are balanced or the same
- I can keep things equal by doing the same operation to both sides of an equation.

I know how to:

- generalise the properties of addition and subtraction
- recall addition facts to 20 and related subtraction facts, and extend and apply these facts to computation with larger numbers
- recall multiplication and corresponding division facts for twos, fives, and tens
- solve open number sentences and true and false number sentences.

Inenga | Measurement

I know:

- We can measure the properties of things (length, area, volume, capacity, mass, duration, and turn)
- Measuring starts at the beginning of the object being measured
- The measurement unit size has to remain the same
- When measuring, measurement units are repeated with no gaps or overlaps
- The measurement is the total number of units used.

I know how to:

- estimate and then reliably measure length, area, volume, capacity, and mass, using standard metric units
- use rulers, scales, square grids, and cubes to measure
- choose the right type of measurement unit for the property I am measuring
- tell the time on an analogue and digital clock to hours, half hours, and quarter past or quarter to the hour
- find out how far something has been turned, using half and quarter turns as benchmarks.

Know

Mokowā| Space

I know:

- Two- and three-dimensional shapes have features that can be observed and described using geometric language
- Two-dimensional shapes can be joined or partitioned to form new shapes
- Flip (reflection), turn (rotation), and slide (translation) are found in objects and structures and can be used to create patterns
- Two-dimensional shapes can have both reflection and rotation symmetry or no symmetry at all
- There are patterns and regularities in shapes that can be used to compare, classify, and predict
- Maps are two-dimensional representations of locations and places in the real world
- Landmarks and other aspects of the real world are shown on maps using symbols; the relative position of something can be described in terms of the positions of other things on the map
- Things can be turned (rotated); they may then look different, but they are the same.

Shape

I know how to:

- visualise and recognise two- and three-dimensional shapes
- visualise partitioning shapes and recombining smaller shapes to make two-dimensional shapes
- identify horizontal and vertical lines of symmetry in two-dimensional shapes
- represent two- and three-dimensional shapes, using drawing, models, and digital tools
- compare and classify two- and three-dimensional shapes, and justify my classifications.

Position and orientation

I know how to:

- mentally rotate a two-dimensional shape and identify what the outcome of the rotation will be
- predict and justify what will happen to two-dimensional shapes if you rotate, reflect, or translate them
- represent the relative positions of objects by making a model or a simple map
- interpret simple maps to locate objects, and move position by following directions and pathways
- turn myself and other objects through quarter, half, and full turns, clockwise and anticlockwise
- create and follow an algorithm consisting of a set of step-by-step instructions for moving an object to a different location.

Tauanga | Statistics

I know:

- Data is information about the world and comes in many forms
- Primary data is data I collect; secondary data is data that has been provided by someone else
- Sorting and organising categorical variables (sorting objects into groups) helps to make sense of data and to answer investigative questions
- Data visualisations are visual representations of all possible values of one or more variables
- Displays of data can tell a story
- Summary investigative questions are questions about our class or another whole group
- Categorical variables are classified into groups.

Data-based investigations

Ākonga experience a kaiako-led statistical enquiry cycle (PPDAC – Problem, Plan, Data, Analysis, & Conclusion) to undertake data-based investigations.

I know how to:

Problem	• use kaiako-led summary investigative questions about a variable relevant to me and my class
Plan	• ask survey and data-collection questions, with support
Data	• collect, sort, and record categorical variables to support answering investigative questions
Analysis	• create kaiako-led data visualisations (picture graphs, pictographs, bar graphs, and tables) • describe what data visualisations show
Conclusion	• answer investigative questions with kaiako support, by choosing statements from my findings that best describe the data • share my findings with others.

Critical thinking in statistics

I know how to:

- identify relevant features in others' data visualisations
- explain and question statements about data visualisations, with reference to the data.

Know

Tūponotanga | Probability

I know:

- Probability is about the chance of outcomes occurring
- An event has more than one possible outcome
- I cannot predict the outcome of an event with certainty.

I know how to:

Problem and prediction	• recognise activities and everyday events in my own life that involve chance • anticipate what might happen using the language of probability and terms such as certain, likely, possible, unlikely, and impossible
Plan	• identify possible categorical outcomes of an event
Data	• categorise possible outcomes, using digital tools, and explain how and why I have done this
Analysis	• display outcomes of chance situations by making models or using lists, tally charts, or digital tools
Conclusion	• identify different outcomes in simple chance situations and explain my thinking • explain that different outcomes are possible in a chance situation.

Critical thinking in probability

I know how to:

- decide whether a simple statement about the likelihood of outcomes is true or false.

Progress step during the first six months

The indicators on the right are important. Make sure ākonga have many opportunities to learn in relation to them and to demonstrate them during their first six months at school. If they are not evident, this requires action.

I know how to:

- instantly recognise the total number in a group of up to six objects
- partition and recombine sets of up to 10 in different ways
- copy, continue, create, and describe a repeating pattern
- compare two objects by a property (e.g., length, weight, and volume)
- classify and sort objects by observable features (e.g., colour and shape)
- compose smaller shapes to complete a clearly outlined target shape, and decompose single shapes into smaller shapes, by trial and error.

Progress outcome, typically by the end of **year 3**

Do

Te whakatauira me te tūhura | Modelling and investigating

In my learning in mathematics and statistics, I can:

- ask a question that can be investigated using mathematics or statistics
- understand and explain in my own words what a question means mathematically or statistically
- find entry points for addressing a question using mathematics or statistics, identifying relevant prior knowledge, givens, assumptions, constraints, and relationships
- formulate a mathematical or statistical solution pathway and carry it out
- monitor and evaluate progress, adjusting pathways if needed
- make sense of mathematical or statistical outcomes or conclusions in light of a given situation and context.

Te whakaahua | Representing

In my learning in mathematics and statistics, I can:

- use representations to compare, explore, simplify, illustrate, prove, justify, and find patterns, variations, and trends
- use representations to learn new ideas
- use representations to explain ideas to others
- use representations to investigate conjectures and support arguments
- select physical, virtual, graphical, or diagrammatic representations appropriate for what I am working on
- use visualisation to mentally represent and manipulate things and ideas.

Te honohono | Connecting

In my learning in mathematics and statistics, I can:

- recognise and explain connections between ideas and between different representations of ideas
- connect new ideas to things I already know
- recognise and explore mathematical and statistical ideas in a range of contexts, including matters that are important in my community
- use my mathematics and statistics learning to connect to ideas in other learning areas and to cultural, linguistic, and historical contexts.

Te whakatau whānui | Generalising

In my learning in mathematics and statistics, I can:

- recognise, explore, conjecture, and draw conclusions about mathematical or statistical patterns
- use mathematical or statistical relationships that I know to propose new relationships and to identify similarities, differences, and new connections across my learning
- look for patterns and regularities that might be applied in another situation or always be true as I work with mathematical and statistical ideas
- use mathematical and statistical symbols to express generalisations.

Te whakaaro arorau | Reasoning

In my learning in mathematics and statistics, I can:

- build statements and explanations inductively from observations or data, considering the context
- build statements and explanations deductively from mathematical and statistical knowledge, definitions, and rules
- make conjectures, using reasoning and counter examples to decide if they are true or not
- critically reflect on statements based on mathematical and statistical ideas, distinguishing correct logic from flawed logic and asking questions to clarify and understand
- use evidence, reasoning, and proofs to explain why I agree or disagree with statements or why something will always be true
- develop collective understandings with others by sharing ideas and comparing, contrasting, and building on them.

Te reo matatini o te pāngarau | Communicating

In my learning in mathematics and statistics, I can:

- use mathematical and statistical language to describe my thinking
- record, share, and explain my thinking
- communicate using representations that are appropriate for the idea I am talking about
- choose an effective format for communicating an idea or argument
- answer questions, engage in discussion, and respond to others' ideas in constructive ways
- present concise and coherent explanations and arguments for an idea, solution, or process.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 6**

Te kaingākaunui me te hiamo ki te ako | *Expanding horizons of knowledge and collaboration*

Understand

Through building knowledge about contexts and drawing on mathematical and statistical practices, I am deepening my understanding that:

- Mātauranga Māori and mathematics and statistics help make sense of the world.
- Mathematics and statistics have a continuous, evolving human history.
- Mathematics and statistics are elegant, explorative, creative, and powerful.
- Mathematics and statistics help us in our everyday lives and decisions and are key to many areas of knowledge and practice.
- Mathematics and statistics reward persistence and positivity.

Know

Mātauranga tau | Number

Whole numbers

I know:

- In our number system each place value is a power of 10, and this continues infinitely
- When I am multiplying two- or three-digit numbers, I can split one of the numbers into parts that add up to the number, then multiply each of the parts by the other number and add the results to get the answer (distributive property)
- In division, I might know how many shares I am making (partitive), or I might know the size of the shares (quotative); either way, to work out the answer I undo multiplication
- There are many different situations where the relationships between things are multiplicative and so problems can be solved with multiplication or division; these situations include equal groups, rates, comparisons, part-whole relationships, combinations, areas, and volumes.

I know how to:

- check if my answer is reasonable using estimation when working with whole numbers
- recognise, read, write, order, partition, recombine, and represent whole numbers up to 1 000 000
- add and subtract whole numbers
- multiply two- and three-digit whole numbers
- divide whole numbers by one- or two-digit divisors
- find factors and multiples of numbers to 100
- use the rules and patterns for operations that I have learned in algebra when working with numbers.

Rational numbers

I know:

- Fractions are numbers and can be put on a number line to show their relative size; one point on the number line can have different fraction 'names' that represent the same amount (equivalent fractions)
- Whole numbers are fractions with a denominator of 1
- Fractions can be a measure; when they are, they show parts of a measurement unit
- Fractions can describe a proportional relationship between two amounts
- Fractions can be an operator; when they are, they resize (enlarge or shrink) a number through multiplication
- Fractions with larger numerators than denominators are improper fractions; they can also be written as a mixed number (a whole number and a fraction)
- In simplified fractions, the numerator and denominator have no common factors; if the denominator of a simplified fraction is 1, then I should write it as a whole number
- The place-value system continues to the right, beyond units or ones, to create decimals (tenths, hundredths, thousandths); the decimal point is placed between the units (or ones) column and the tenths column, so we can read numbers as wholes and parts
- Decimals are a particular set of fractions that have powers of ten as their denominators
- Decimals make calculation with parts of numbers easier because the place-value system means we can add and subtract them in the same way as whole numbers
- A percentage is the number of hundredths of a whole
- Benchmark fractions (0, $\frac{1}{10}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1) are useful for estimating.

I know how to:

- compare and order fractions with the same or related denominators, including mixed numbers and improper fractions, and represent them on a number line
- recognise, read, write, represent, compare, and order decimals to three places
- convert between decimals (to two places), fractions, and percentages
- add and subtract decimal numbers to two places
- find a fraction or a percentage of a whole number
- multiply fractions by whole numbers
- represent a fraction in simplified form.

Know

Taurangi | Algebra

Patterns

I know:

- In a pattern, the relationship between the ordinal position (e.g., first, second, and third) and the corresponding element is more useful for finding the pattern's rule than the relationship between successive elements
- Tables and graphs provide a clear way to organise the positions and elements of a pattern to reveal a relationship or a rule for the general term
- In a pattern, when I know the relationship between a position and the corresponding element, I can find any element if I know the position, and any position if I know the element.

I know how to:

- connect elements of patterns that do not repeat to their ordinal position
- use tables, XY-graphs, and diagrams to find relationships between successive elements of patterns
- develop an explicit generalisation about a linear pattern using words
- create and use algorithms in digital tools to experiment with patterns in numbers
- use a rule to make predictions.

Equations, expressions, and number properties

I know:

- The equals sign and inequalities (greater than and less than) show relationships, and I can use these relationships to solve problems
- The distributive property says that multiplying a number by two numbers added together is the same as doing each multiplication separately and adding the results together
- In multiplication and addition, numbers can be grouped and combined in any way to solve problems (associative property)
- When I multiply or divide a number by 1, the number is unchanged (identity property)
- Multiplying a number by 0 is calculating that many 'lots of' 0, so the answer will always be 0
- Dividing by 0 is impossible because you cannot share out a number into 'lots of' 0 and you cannot split a number into 'lots of' 0.

I know how to:

- generalise properties of multiplication and division
- recall multiplication facts to 10 × 10 and corresponding division facts, and apply these facts to computation problems with larger numbers
- solve open number sentence and true and false number sentences using equality and inequality relationships.

Inenga | Measurement

I know:

- A measurement might contain wholes and parts of units
- Different measurement tools and scales use different-sized units
- When I use a scale, the point on the scale where the measurement ends tells me how much there is
- The metric measurement system is based on powers of ten, like our place-value number system
- When I record a measurement, I have to give the unit in order to be clear about what the measurement means
- Covering things gives area, filling things gives capacity or volume
- Two-dimensional shapes have a line around the outside, and this line is the perimeter
- Angles are a measure of turn and can be measured in degrees.

I know how to:

- estimate and then accurately measure length, area, volume, capacity, mass, and duration, using appropriate metric units or a combination of units
- read measurement tools and interpret scales accurately
- visualise a property of something so I can estimate and measure it
- visualise and find the perimeter and area of rectangles and the volume of rectangular prisms
- use analogue and digital clocks, twelve- and twenty-four-hour time measurements, and longer measures of duration (e.g., days, weeks, months, years, decades, centuries, and millennia)
- describe an angle using these benchmarks: 90 degrees is a quarter turn, 180 degrees is a half turn, and 360 degrees is a full turn.

Know

Mokowā | Space

I know:

- Two- and three-dimensional shapes can be defined by their geometric properties; there are rules for defining groups of shapes
- Properties of two- and three-dimensional shape can be used to compare, classify, predict, and identify relationships among shapes
- Two-dimensional shapes can be rotated around their centre or vertex to create an image
- Models of three-dimensional shapes can be created by combining two-dimensional shapes and surfaces; nets are used to create these models by folding connected two-dimensional shapes
- Three-dimensional shapes appear differently from different viewpoints; these viewpoints can be represented in models and diagrams
- Lines of symmetry can be horizontal, vertical, and diagonal
- Resizing a shape creates a bigger or smaller image of the shape (e.g., by doubling or halving)
- Locations can be described using a grid reference or coordinate system on a landscape represented as a map; the map involves scale, so the representations on it are proportional to the distances or lengths in reality.

Shape

I know how to:

- classify plane shapes and prisms using their properties
- visualise three-dimensional shapes and work out what they would look like from different directions
- visualise partitioning and combining of two- and three-dimensional shapes
- visualise the perimeter and area of two-dimensional shapes
- represent three-dimensional shapes from different viewpoints using drawings, models, and digital tools
- visualise and predict what cuboids would look like when they are opened out to make nets
- create nets and construct cuboids.

Position and orientation

I know how to:

- visualise and recognise line and rotational symmetry, and transformations in shapes and patterns
- mentally manipulate two- and three-dimensional shapes and identify the result of the manipulation
- describe relationships among two- and three-dimensional shapes in a construction or pattern
- use grid references and the language of direction (compass points), distance (m, km), and turn (degrees) to locate and describe positions and pathways
- use a single step to reflect, rotate, translate, or resize two-dimensional shapes, and represent the outcomes of the transformations using drawings, models, and digital tools
- compare the image of a transformed two-dimensional shape with the original and describe the transformation.

Tauanga | Statistics

I know:

- Investigative questions are questions we ask about data
- Numerical variables can be counted or measured; discrete variables are counted; continuous variables are measured
- Multivariate datasets have more than one variable
- A conjecture involves thinking about what data will show before it is analysed
- A variety of data visualisations for the same data can give different information
- A comparison investigation compares similarities and difference for a variable across two or more groups
- A time-series investigation considers a variable that changes over time
- Publishers of data provide information about data in a data dictionary.

Data-based investigations

Ākonga use the statistical enquiry cycle (PPDAC) with kaiako support to undertake data-based investigations.

I know how to:

Problem	• pose with kaiako support summary investigative questions for one variable • participate in forming investigative, comparison, or time-series questions about school-related matters • make conjectures about what I expect to find out
Plan	• make a plan to collect data for observational studies, including who to collect from, when and where to collect, what to measure, and how to measure • consider whether the data collection may affect the people from whom it is being collected
Data	• collect and systematically record categorical and numerical variables to support answering investigative questions • store data using methods such as data cards, recording tables, or spreadsheets • use information from data dictionaries to find out about variables in secondary datasets • check data collected for errors
Analysis	• use digital statistical-analysis tools to create data visualisations • describe features, patterns, or trends in context • Identify similarities and differences between my findings and those of other groups
Conclusion	• answer investigative questions choosing statements from findings that best describe the data • explain and make sense of findings • think beyond the data I have and reflect on my conjectures.

Know

Tauanga | Statistics *(continued)*

Critical thinking in statistics

I know how to:

- interrogate others' survey or data-collection questions
- identify and explain features and errors in others' data visualisations
- interrogate statements others make about data.

Tūponotanga | Probability

I know:

- A probability experiment is a repeated set of trials, each with a possible outcome; all the possible outcomes are called events
- It is not possible to know the exact probability of something occurring in most everyday situations; therefore results may vary in different trials
- Outcomes that are certain are described by 1 or 100%, and outcomes that are impossible are described by 0 or 0%
- The results of repeated trials can be used to determine the relative frequency of an event (a fraction in which the numerator is the number of times the event occurred and the denominator is the total number of trials).

I know how to:

Problem and prediction	• recognise a claim or investigative question that involves the likelihood or chance of an event happening
Plan	• list all the possible outcomes of simple experiments involving equally likely outcomes • conduct repeated trials in an experiment
Data	• gather and sort data, using lists, tables, and digital tools as appropriate
Analysis	• use frequency and visual displays to compare outcomes and estimate their likelihoods • consider what others say about probability in simple situations, referring to evidence
Conclusion	• identify which outcomes are always, the most, the least, and never likely to happen, by looking at the end results of repeated trials • use and explain the results of a game or situation to identify which outcomes are more likely to occur in future.

Critical thinking in probability

I know how to:

- agree or disagree with others' conclusions and provide reasons why.

Do

Te whakatauira me te tūhura | Modelling and investigating

In my learning in mathematics and statistics, I can:

- ask a question that can be investigated using mathematics or statistics
- understand and explain in my own words what a question means mathematically or statistically
- find entry points for addressing a question using mathematics or statistics, identifying relevant prior knowledge, givens, assumptions, constraints, and relationships
- formulate a mathematical or statistical solution pathway and carry it out
- monitor and evaluate progress, adjusting pathways if needed
- make sense of mathematical or statistical outcomes or conclusions in light of a given situation and context.

Te whakaahua | Representing

In my learning in mathematics and statistics, I can:

- use representations to compare, explore, simplify, illustrate, prove, justify, and find patterns, variations, and trends
- use representations to learn new ideas
- use representations to explain ideas to others
- use representations to investigate conjectures and support arguments
- select physical, virtual, graphical, or diagrammatic representations appropriate for what I am working on
- use visualisation to mentally represent and manipulate things and ideas.

Te honohono | Connecting

In my learning in mathematics and statistics, I can:

- recognise and explain connections between ideas and between different representations of ideas
- connect new ideas to things I already know
- recognise and explore mathematical and statistical ideas in a range of contexts, including matters that are important in my community
- use my mathematics and statistics learning to connect to ideas in other learning areas and to cultural, linguistic, and historical contexts.

Te whakatau whānui | Generalising

In my learning in mathematics and statistics, I can:

- recognise, explore, conjecture, and draw conclusions about mathematical or statistical patterns
- use mathematical or statistical relationships that I know to propose new relationships and to identify similarities, differences, and new connections across my learning
- look for patterns and regularities that might be applied in another situation or always be true as I work with mathematical and statistical ideas
- use mathematical and statistical symbols to express generalisations.

Te whakaaro arorau | Reasoning

In my learning in mathematics and statistics, I can:

- build statements and explanations inductively from observations or data, considering the context
- build statements and explanations deductively from mathematical and statistical knowledge, definitions, and rules
- make conjectures, using reasoning and counter examples to decide if they are true or not
- critically reflect on statements based on mathematical and statistical ideas, distinguishing correct logic from flawed logic and asking questions to clarify and understand
- use evidence, reasoning, and proofs to explain why I agree or disagree with statements or why something will always be true
- develop collective understandings with others by sharing ideas and comparing, contrasting, and building on them.

Te reo matatini o te pāngarau | Communicating

In my learning in mathematics and statistics, I can:

- use mathematical and statistical language to describe my thinking
- record, share, and explain my thinking
- communicate using representations that are appropriate for the idea I am talking about
- choose an effective format for communicating an idea or argument
- answer questions, engage in discussion, and respond to others' ideas in constructive ways
- present concise and coherent explanations and arguments for an idea, solution, or process.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 8**

Te mōhio ki tōku tūrangawaewae me te kōkiri kaupapa | *Knowing I belong and advocating for self and others*

Understand

Through building knowledge about contexts and drawing on mathematical and statistical practices, I am deepening my understanding that:

- Mātauranga Māori and mathematics and statistics help make sense of the world.
- Mathematics and statistics have a continuous, evolving human history.
- Mathematics and statistics are elegant, explorative, creative, and powerful.
- Mathematics and statistics help us in our everyday lives and decisions and are key to many areas of knowledge and practice.
- Mathematics and statistics reward persistence and positivity.

Know

Mātauranga tau | Number

Whole numbers

I know:

- There are real-life situations described by quantities less than zero, such as the temperature or being in debt
- Positive and negative numbers can be placed on a number line
- Positive and negative numbers are opposites; joining a pair of opposites results in zero
- Negative numbers can be added and subtracted; to do this, I need to extend my understanding of joining (adding) and taking away (subtracting) to amounts less than zero
- Negative numbers can be added and subtracted with positive numbers; this requires reasoning about the impact of joining and taking away, as well as separating amounts that are above and below zero
- A square root undoes squaring a number
- In equations where there is more than one operation, there are rules for the order in which to apply the operations.

I know how to:

- add and subtract integers
- find square roots of numbers that are the squares of whole numbers (perfect squares)
- use the order of operations to solve problems
- recognise when a mathematical situation involves integers and figure out the mathematical relationships in the situation.

Rational numbers

I know:

- Decimals (tenths, hundredths, thousandths) result from continuing the place-value system using negative powers of ten
- Whole numbers and integers can be written as fractions
- Every fraction can be represented by an infinite set of equivalent fractions that occupy the same point on the number line
- There is no least or greatest fraction on the number line
- There is always another fraction between any two fractions on the number line
- A fraction can be a quotient, showing the result of one number being divided by another
- Fractions can be used to describe the likelihood of something happening
- The effect of adding or subtracting with decimals and fractions is the same as with whole numbers; the effect of multiplying with decimals smaller than 1 is different to multiplying with whole numbers
- When a number cannot be divided exactly by a divisor, the result includes a remainder; remainders can be interpreted as whole numbers, fractions, or decimals, depending on the context
- The product of two positive fractions or decimals each less than one is less than either of them
- To add and subtract, fractions with unlike denominators are expressed as equivalent fractions with like denominators
- Multiplying two fractions gives a fraction of a fraction; simplifying fractions and using models can help with this
- The commutative and associative properties of addition and multiplication work the same with fractions as with whole numbers
- The additive identity (0) and multiplicative identity (1) are the same with fractions and decimals as with whole numbers
- Benchmark fractions can be used to estimate calculations involving fractions and decimals.

I know how to:

- recognise, read, write, represent, compare, convert, and order fractions, decimals, and percentages
- add and subtract fractions and decimals
- divide by whole-number divisors
- multiply fractions and decimals
- convert fractions, decimals, and percentages and apply this when solving problems
- estimate the outcome of adding, subtracting, and multiplying familiar fractions and decimals by using an understanding of their structure and common benchmarks.

Know

Taurangi | Algebra

Patterns

I know:

- Functions are relationships or rules that uniquely associate members of one set with members of another set
- Linear patterns have rules that can be explicitly generalised as a function in which the two sets are the ordinal positions and the elements
- Linear relationships are represented by or form straight lines on XY-graphs
- When describing a rule, function, or generalisation, we can use letters as symbols to stand for any number (a variable)
- Some relationships in number patterns are not linear and do not correspond to straight lines on XY-graphs
- A function can be described as an algorithm that can be used to generate a pattern.

I know how to:

- form a generalisation about a linear pattern using variables, and use it to make predictions
- represent linear patterns using tables and XY-graphs
- use recursive methods (looking at the previous element) to predict further elements of a sequence in which the relationship is non-linear
- create and use algorithms in digital tools to generate patterns using integers
- identify and describe the properties of prime, composite (non-prime), and square numbers
- identify the divisibility rules for 2, 3, 5, 9, and 10.

Equations, expressions, and number properties

I know:

- Inequalities can also include equals (greater than or equal, and less than or equal) to show a relationship, and I can use this relationship to solve problems
- Operations have properties that can be generalised using variables
- A linear relationship can be shown by an XY-graph, a table, an equation, or in words
- When I do not know the number a variable stands for in an equation, I can work it out by thinking about what the equation says and using the relationships shown by the symbols in the equation
- I can use the inverse property to help work out missing numbers in equations.

I know how to:

- connect at least two different forms of linear relationships, such as an XY-graph of a line and the corresponding equation
- solve informally problems based on relationships and explain my reasoning
- find and justify a word formula to represent a practical situation
- use words and symbols to describe and apply all properties of operations as they apply to whole numbers (commutativity, distributivity, associativity, inverse, and identity)
- solve linear equations of the form $a = b + cx$ by trial and improvement and by applying inverse operations.

Inenga | Measurement

I know:

- When two line segments meet they form an angle, which can be thought of as a rotation of one of the line segments
- When two lines meet at right angles, they are perpendicular
- When I multiply lengths or divide an area or volume by a length, the result has a different unit (a derived unit)
- Shapes can be made up of other shapes or make up other shapes; this can help us find perimeters, areas, and volumes
- In the metric system, there are base measurements (metre, gram, litre) with prefixes added to show the size of units
- To make metric measurements easy to understand, I can either use decimals or change the unit so I am using whole numbers
- Measurements can involve wholes and parts or comparing parts to a measurement unit; so fractions and decimals are important in measurement.

I know how to:

- estimate and then measure length, area, volume, capacity, mass, temperature, data storage, time, and angle, using appropriate metric units
- read analogue and digital measurement tools, round appropriately, and interpret scales accurately
- visualise the amount of turn in angles and measure them using degrees
- find the perimeter and area of parallelograms, triangles, and shapes composed of quadrilaterals
- find the volume of triangular prisms and shapes composed of rectangular prisms
- use decimals to express parts of wholes in measurements
- convert between metric units, using whole numbers
- read, interpret, and use timetables and charts that present measurement information
- make connections between smaller and larger units of time, expressing parts of a unit of time using a smaller unit or fractions of the unit.

Know

Mokowā | Space

I know:

- Classes of two- and three-dimensional shapes can be identified by their geometric properties – in particular, polygons by their number of sides, three-dimensional shapes by the nature of their faces and surfaces, and two-dimensional closed curves by their symmetries
- Classes can be disjoint, such as scalene and isosceles triangles, and prisms and pyramids; or they can be sub-classes that are included within other classes, such as squares within rectangles
- Three-dimensional shapes can be modelled by a variety of two-dimensional representations, and vice versa
- Prisms are solids with a fixed cross-section; they are classified by their cross section
- The invariant properties of two- and three-dimensional shapes do not change under different transformations
- Position, direction, and pathways can be operated on using coordinate systems and maps
- Direction is plotted accurately by a clockwise angle measured from north; I need to understand the relationship between angle measures and compass points
- Distances on maps and grids are shown by a scale that can be written in three different ways: ratio, measurement, or a drawing
- Dynamic geometry software can be used to create and manipulate two-dimensional shapes.

Shape

I know how to:

- identify the features and properties of triangles, quadrilaterals, and other polygons
- classify types of two-dimensional shapes (e.g., triangles) based on their features and properties
- identify angle properties of straight lines, angles at point, and vertically opposite angles
- find unknown angles using angle properties
- design an algorithm to sort and classify two- and three-dimensional shapes according to their properties, and identify and reason about the classifications
- visualise missing parts from composite shapes
- visualise three-dimensional shapes from drawings and diagrams
- visualise what prisms would look like when they are opened out to make nets
- create nets and construct prisms
- create isometric drawings of objects from different perspectives.

Position and orientation

I know how to:

- mentally manipulate three-dimensional shapes, and draw or make the result of the manipulation
- recognise and use combinations of transformations to create tessellations and other geometric patterns
- resize two-dimensional shapes by a positive whole number or a unit fraction
- demonstrate that some properties of two-dimensional shapes do not change under different transformations
- use multi-steps to reflect, rotate, translate, or resize two-dimensional shapes, and represent the outcomes of the transformations using drawings, models, and digital tools
- use scale and compass points to interpret and describe location and direction
- read maps and interpret pictures, photographs, and diagrams spatially, finding pathways and directions, recognising different perspectives, and identifying where things are in relation to each other.

Know

Tauanga | Statistics

I know:

- New variables are created by combining and modifying existing data
- Data visualisations show patterns, trends, and variations
- A relationship investigation looks for a relationship between two variables
- In an investigation or experiment, the groups of interest are those from whom the data will be collected
- Conjectures have an element of uncertainty and statements should reflect this
- A distribution is all the possible values of a variable.

Data-based investigations

Ākonga use the statistical enquiry cycle (PPDAC) to conduct data-based investigations.

I know how to:

Problem	• pose summary, comparison, and relationship investigative questions about local rohe or community matters
Plan	• make a plan to collect data for observational studies • determine the groups of interest • determine the variables of interest and identify reliable measurements for them • pose survey and data-collection questions • decide when and where to collect the data • consider whether the data collection may affect the people from whom it is being collected
Data	• collect and systematically record data to support answering investigative questions • set up spreadsheets to store data • export data into statistical-analysis tools • source and use existing multivariate datasets, including data dictionaries, to find out about variables and data-collection methods • check data collected for errors
Analysis	• use statistical-analysis tools to make data visualisations • create data visualisations for summary, comparison, relationship, and time-series situations using categorical, numerical, and continuous variables • describe features, patterns, or trends of the distributions of variables, including the median and range • use a variety of data visualisations to show local and global information about variables • refer to the context in statements about data visualisations, including variables of interest, groups of interest, counts or proportions for categorical variables, and values and units for numerical variables • use my findings to make conjectures about whether related groups of interest would have similar or different findings from mine
Conclusion	• answer investigative questions using evidence from the analysis, connecting the evidence to the context • communicate findings in context • reflect on my conjectures and explore possible explanations.

Critical thinking in statistics

I know how to:

- examine the data-collection methods and findings of others' statistical investigations to see if their claims are believable and reasonable
- critically consider data visualisations.

Know

Tūponotanga | Probability

I know:

- Results of past trials in probability experiments do not impact on future events
- There is variation between expected outcomes from models and experimental outcomes from trials
- If all possible outcomes in a chance situation are equally likely, the probability of an event happening is a fraction in which the numerator is the number of ways the event can happen and the denominator is the total number of possible outcomes.

I know how to:

Problem and prediction	• recognise claims or misconceptions and pose investigative questions for single-stage events involving equally likely outcomes • consider how many trails should be conducted and what might happen if the number of trials is increased
Plan	• systematically list all possible outcomes of single-stage events with equally likely outcomes, using a table or tree diagram and assigning probabilities • conduct repeated single-stage chance experiments and run simulations with a large number of trials, using digital tools
Data	• gather and sort data systematically, using lists, tables, and digital tools
Analysis	• compare predictions about outcomes with observed results, and explain the differences • compare distributions from trialling with the expectations obtained from models
Conclusion	• explain and reason similarities and differences in results.

Critical thinking in probability

I know how to:

- question a conclusion by interrogating the way in which an investigation was conducted
- agree or disagree with others' conclusions and ask questions about their plan and analysis.

Do

Te whakatauira me te tūhura | Modelling and investigating

In my learning in mathematics and statistics, I can:

- ask a question that can be investigated using mathematics or statistics
- understand and explain in my own words what a question means mathematically or statistically
- find entry points for addressing a question using mathematics or statistics, identifying relevant prior knowledge, givens, assumptions, constraints, and relationships
- formulate a mathematical or statistical solution pathway and carry it out
- monitor and evaluate progress, adjusting pathways if needed
- make sense of mathematical or statistical outcomes or conclusions in light of a given situation and context.

Te whakaahua | Representing

In my learning in mathematics and statistics, I can:

- use representations to compare, explore, simplify, illustrate, prove, justify, and find patterns, variations, and trends
- use representations to learn new ideas
- use representations to explain ideas to others
- use representations to investigate conjectures and support arguments
- select physical, virtual, graphical, or diagrammatic representations appropriate for what I am working on
- use visualisation to mentally represent and manipulate things and ideas.

Te honohono | Connecting

In my learning in mathematics and statistics, I can:

- recognise and explain connections between ideas and between different representations of ideas
- connect new ideas to things I already know
- recognise and explore mathematical and statistical ideas in a range of contexts, including matters that are important in my community
- use my mathematics and statistics learning to connect to ideas in other learning areas and to cultural, linguistic, and historical contexts.

Te whakatau whānui | Generalising

In my learning in mathematics and statistics, I can:

- recognise, explore, conjecture, and draw conclusions about mathematical or statistical patterns
- use mathematical or statistical relationships that I know to propose new relationships and to identify similarities, differences, and new connections across my learning
- look for patterns and regularities that might be applied in another situation or always be true as I work with mathematical and statistical ideas
- use mathematical and statistical symbols to express generalisations.

Te whakaaro arorau | Reasoning

In my learning in mathematics and statistics, I can:

- build statements and explanations inductively from observations or data, considering the context
- build statements and explanations deductively from mathematical and statistical knowledge, definitions, and rules
- make conjectures, using reasoning and counter examples to decide if they are true or not
- critically reflect on statements based on mathematical and statistical ideas, distinguishing correct logic from flawed logic and asking questions to clarify and understand
- use evidence, reasoning, and proofs to explain why I agree or disagree with statements or why something will always be true
- develop collective understandings with others by sharing ideas and comparing, contrasting, and building on them.

Te reo matatini o te pāngarau | Communicating

In my learning in mathematics and statistics, I can:

- use mathematical and statistical language to describe my thinking
- record, share, and explain my thinking
- communicate using representations that are appropriate for the idea I am talking about
- choose an effective format for communicating an idea or argument
- answer questions, engage in discussion, and respond to others' ideas in constructive ways
- present concise and coherent explanations and arguments for an idea, solution, or process.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 10**

Te whai ahunga, te manaaki i ētahi atu me te manawaroa | *Having a purpose and being empathetic and resilient*

Understand

Through building knowledge about contexts and drawing on mathematical and statistical practices, I am deepening my understanding that:

- Mātauranga Māori and mathematics and statistics help make sense of the world.
- Mathematics and statistics have a continuous, evolving human history.
- Mathematics and statistics are elegant, explorative, creative, and powerful.
- Mathematics and statistics help us in our everyday lives and decisions and are key to many areas of knowledge and practice.
- Mathematics and statistics reward persistence and positivity.

Know

Mātauranga tau | Number

Rational numbers

I know:

- There are an infinite number of fractions between any two fractions on the number line
- When I multiply numbers and one of them is less than 1, the result will be smaller than the other number
- When I divide numbers and the divisor is less than 1, the result will be bigger than the dividend
- When I multiply a fraction by its reciprocal, I get 1
- I can rewrite division of one number by another as a fraction
- When I multiply a fraction by an equivalent form of 1, the result is an equivalent fraction
- A rate compares two different quantities that have different units of measure; the resulting unit often uses 'per'
- A ratio is a comparison of two like quantities.

I know how to:

- compare any two rational numbers
- estimate the outcome of operations with fractions and decimals by using an understanding of their structure and benchmarks
- make sense of the process of multiplying and dividing with parts of a whole
- multiply and divide fractions
- multiply and divide decimals
- find fractions, decimals, and percentages of any number
- explore concepts of change using rates
- explore the use of ratios in everyday contexts.

Real numbers

I know:

- Multiplying can be thought of as repeated addition, so multiplying negative numbers can start with adding them and then generalising
- Division can be thought of as repeated subtraction, so dividing negative numbers can start with subtracting them and then generalising
- Rational numbers are ratios of whole numbers
- Decimals can be terminating, repeating, or non-repeating and infinite (irrational numbers)
- There are an infinite number of numbers between any two numbers
- Some irrational numbers such as $\sqrt{2}$ and π are represented by special symbols
- Real numbers consist of positive and negative whole numbers, rational numbers, and irrational numbers.

I know how to:

- compare any two numbers
- multiply and divide positive and negative numbers
- round numbers appropriately considering the context
- express solutions involving irrational numbers in either rounded or exact form.

Know

Taurangi | Algebra

Patterns

I know:

- Functions can be expressed as an algebraic expression, an XY-graph, a table, or in words
- Patterns have rules that can be explicitly generalised as a function.

I know how to:

- find the relationship between a position and its corresponding element in a pattern, including linear and simple quadratic patterns
- find the other forms of a function of a pattern, when it is expressed in words, as an equation, in a table, or as a graph
- create and use algorithms in digital tools to generate patterns.

Equations, expressions, and number properties

I know:

- The commutative and associative properties of addition and multiplication work with all real numbers
- The additive identity (0) and multiplicative identity (1) are the same for all real numbers
- The distributive property works with all real numbers
- There are different forms of equations for expressing linear relationships
- Graphs may contain breaks; this can be useful for modelling practical situations
- Substitution means putting numbers or different variables in place of variables
- The exponent of a number says how many times the base (the number) is multiplied by itself; exponents are also called ‘powers’
- Like terms are terms whose variables and their corresponding exponents are the same
- Factorising is finding the numbers or terms that multiply together to get an expression.

I know how to:

- write equations to explore practical situations
- graph linear equations and interpret the gradient, x-intercept, and y-intercept in relation to the equation or the practical situation represented
- sketch and interpret XY-graphs to represent everyday dynamic situations
- use a formula, rule, or equation and solve for unknowns, evaluate by substitution, and check solutions
- operate on numbers with whole-number exponents and from this generalise the rule for multiplying or dividing numbers with exponents and the same base
- apply the distributive property to expand, rearrange, and simplify linear expressions
- apply an understanding of factors to determine the common factors of expressions
- combine like terms in algebraic expressions
- simplify algebraic expressions using the order of operations
- solve linear equations
- solve linear inequalities and graph solutions on a number line.

Inenga | Measurement

I know:

- The number of significant figures in a measurement is the number of digits that contribute to the degree of accuracy of the measurement
- Features of circles and polygons describe what they are and how they are can be constructed
- Features of prisms describe what they are and how they are formed
- Resizing a shape changes its perimeter, area, and volume
- In right-angled triangles, there is a fixed relationship between side lengths given by Pythagoras’ theorem
- Decimal measures are used for very small durations (milliseconds); the rest of time measurement uses a different system (based on 12 and 60).

I know how to:

- estimate and then measure length, area, volume, capacity, mass, temperature, time, and angle, selecting appropriate tools and units
- read analogue and digital measurement tools, round appropriately, and interpret scales accurately using significant figures
- convert between metric units, using decimals
- determine the perimeter, area, and volume of shapes when a length has been resized by multiplying or dividing by a whole number
- reason about the perimeter and area of polygons and circles, using their properties
- use generalisations to find the perimeter and area of polygons and circles
- find the surface area of prisms, including cylinders, by visualising the area and how it could be ‘covered’
- find the volume or capacity of prisms, including cylinders, by visualising the volume or capacity and how it could be filled
- use and apply Pythagoras’ theorem to find the side lengths of right-angled triangles
- reason about duration using different units of time, fractions of units of time, and decimal fractions (milliseconds) where appropriate.

Know

Mokowā | Space

I know:

- Geometric properties of two-dimensional shapes, including internal and external angles of polygons and angles on intersecting and parallel lines, can be used to calculate lengths and angles
- A point has zero dimensions, a line has one dimension, a plane is two-dimensional, and a solid is three-dimensional; in mathematics there are more dimensions, but we cannot draw them because we live in a three-dimensional world
- In similar shapes, corresponding angles are equal and lengths of corresponding sides are proportional.

Shape

I know how to:

- visualise how polygons fit together to form a model of a three-dimensional shape
- recognise similar two-dimensional shapes and their features
- create accurate nets for platonic solids, cuboids, right-angled prisms, and pyramids
- connect three-dimensional shapes with two-dimensional drawings, including plan views, isometric projections, and nets
- identify in diagrams and two-dimensional shapes identical angles formed by a transversal crossing parallel lines
- generalise and use angle properties of parallel lines and a transversal to reason about unknown angles
- generalise and use interior and exterior angle properties of polygons to reason about unknown angles
- decide which polygons can fit together to form a model of a three-dimensional shape, and why
- use the properties of similarity in two-dimensional shapes, including right-angled triangles, to find unknown lengths.

Position and orientation

I know how to:

- fit two-dimensional shapes together, because the interior angles of each shape at their vertex add to 360
- justify and reason how similar two-dimensional shapes have corresponding sides that are in proportion
- interpret and describe location on a map by calculating distances using map scales and directions using one or more compass bearings
- define and accurately describe the transformation a two-dimensional shape has undergone, and identify the invariant properties
- describe transformations of a set of points using coordinates in the XY-plane, translations and reflections on an axis, and rotations about a given point by 90 or 180 degrees.

Tauanga | Statistics

I know:

- It is not always possible to get data about everything, or from everyone (the entire population); there are ways of addressing this
- In experiments, the experimental units are the persons or objects that are the subject of the experiment
- Data is not always accurate and may need ‘cleaning’
- Features of same-size sample distributions of a variable from a population vary from sample to sample
- Uncertainty should be taken into account when making claims.

Data-based investigations

Ākonga use the statistical enquiry cycle (PPDAC) to conduct data-based investigations.

I know how to:

Problem	• pose summary and comparison investigative questions about populations • pose time-series and relationship investigative questions • pose investigative questions that can be answered through experiments
Plan	• make a plan to collect or source data for observational studies and to collect data for experiments • decide whether to take a sample from the population of interest or use the group of interest, depending on the investigative question • determine the experimental units when undertaking an experiment • determine the variables of interest needed to answer investigative questions • identify valid and reliable measurements for variables when posing survey and data-collection questions • decide when and where to collect data • examine data-collection plans from an ethical viewpoint, considering the variables and how the data will be collected, stored, used, and reported
Data	• collect, record, store, and import data into statistical-analysis tools to support answering investigative questions • clean the data by editing and, where appropriate, deleting data • create new variables by combining and modifying existing data • source, interrogate and use existing multivariate datasets
Analysis	• use statistical-analysis tools to make data visualisations • describe features, patterns, or trends within and between distributions of variables, in context • investigate features, patterns, and trends – including, where appropriate, clusters, gaps, outliers, measures of centre and spread, the shape of distributions, the context, and the position of data – and look for relevant reasons and possible explanations

Know

Tauanga | Statistics *(continued)*

Conclusion	• answer investigative questions using evidence from the analysis • link my statements to the context, reflect on my conjectures, and provide possible explanations for findings • make claims about populations from samples, for summary and comparison situations • communicate my findings with appropriate displays and in ways that non-specialist audiences will understand.

Critical thinking in statistics

I know how to:

- evaluate the findings and claims of others by interrogating all phases of the statistical enquiry cycle
- propose reasons why particular data visualisations were used to support others' claims.

Tūponotanga | Probability

I know:

- Some variation between theoretical probabilities and estimates from experiments is normal
- A simulation is a way to model random events, generally using digital tools
- Elements of chance affect the certainty of results from surveys or experiments.

I know how to:

Problem and prediction	• recognise and pose investigative questions for two-stage, equally likely events
Plan	• design and conduct repeated experiments and simulations for two-stage events • systematically list the sample space (all possible outcomes) of two-stage events with equally likely outcomes, using a table and tree diagram and assigning probabilities
Data	• gather and sort data systematically, using lists, tables, and digital tools as appropriate
Analysis	• use digital tools to compare probabilities of one or two events, and describe observed results • link an experiment to a theoretical model • compare distributions from trialling with the expectations obtained from models
Conclusion	• use data to back up statements I or others have made.

Critical thinking in probability

I know how to:

- identify why claims might not be valid and suggest suitable improvements to them
- use findings to evaluate the reasonableness of others' claims
- explain whether an advertising claim is misleading and why probability might have been used in a particular way to arrive at the claim
- recognise potential issues in the match between the real world, in which additional factors might influence the chance of something occurring, and a theoretical model.

Progress outcome, typically by the end of **year 10**

Do

Te whakatauira me te tūhura | Modelling and investigating

In my learning in mathematics and statistics, I can:

- ask a question that can be investigated using mathematics or statistics
- understand and explain in my own words what a question means mathematically or statistically
- find entry points for addressing a question using mathematics or statistics, identifying relevant prior knowledge, givens, assumptions, constraints, and relationships
- formulate a mathematical or statistical solution pathway and carry it out
- monitor and evaluate progress, adjusting pathways if needed
- make sense of mathematical or statistical outcomes or conclusions in light of a given situation and context.

Te whakaahua | Representing

In my learning in mathematics and statistics, I can:

- use representations to compare, explore, simplify, illustrate, prove, justify, and find patterns, variations, and trends
- use representations to learn new ideas
- use representations to explain ideas to others
- use representations to investigate conjectures and support arguments
- select physical, virtual, graphical, or diagrammatic representations appropriate for what I am working on
- use visualisation to mentally represent and manipulate things and ideas.

Te honohono | Connecting

In my learning in mathematics and statistics, I can:

- recognise and explain connections between ideas and between different representations of ideas
- connect new ideas to things I already know
- recognise and explore mathematical and statistical ideas in a range of contexts, including matters that are important in my community
- use my mathematics and statistics learning to connect to ideas in other learning areas and to cultural, linguistic, and historical contexts.

Te whakatau whānui | Generalising

In my learning in mathematics and statistics, I can:

- recognise, explore, conjecture, and draw conclusions about mathematical or statistical patterns
- use mathematical or statistical relationships that I know to propose new relationships and to identify similarities, differences, and new connections across my learning
- look for patterns and regularities that might be applied in another situation or always be true as I work with mathematical and statistical ideas
- use mathematical and statistical symbols to express generalisations.

Te whakaaro arorau | Reasoning

In my learning in mathematics and statistics, I can:

- build statements and explanations inductively from observations or data, considering the context
- build statements and explanations deductively from mathematical and statistical knowledge, definitions, and rules
- make conjectures, using reasoning and counter examples to decide if they are true or not
- critically reflect on statements based on mathematical and statistical ideas, distinguishing correct logic from flawed logic and asking questions to clarify and understand
- use evidence, reasoning, and proofs to explain why I agree or disagree with statements or why something will always be true
- develop collective understandings with others by sharing ideas and comparing, contrasting, and building on them.

Te reo matatini o te pāngarau | Communicating

In my learning in mathematics and statistics, I can:

- use mathematical and statistical language to describe my thinking
- record, share, and explain my thinking
- communicate using representations that are appropriate for the idea I am talking about
- choose an effective format for communicating an idea or argument
- answer questions, engage in discussion, and respond to others' ideas in constructive ways
- present concise and coherent explanations and arguments for an idea, solution, or process.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 13**

Te whakatere me te waihanga i ngā arawātea me ngā ahunga whakamua mō anamata
Navigating a pathway and contributing to future possibilities

Understand

Through building knowledge about contexts and drawing on mathematical and statistical practices, I am deepening my understanding that:

- Mātauranga Māori and mathematics and statistics help make sense of the world.
- Mathematics and statistics have a continuous, evolving human history.
- Mathematics and statistics are elegant, explorative, creative, and powerful.
- Mathematics and statistics help us in our everyday lives and decisions and are key to many areas of knowledge and practice.
- Mathematics and statistics reward persistence and positivity.

Know

Mātauranga tau | Number

I know:

- Proportional reasoning involves thinking about relationships and comparing quantities
- Geometric sequences can be generated using recursion, and they can help model exponential growth and decay in discrete situations
- Reciprocal, square roots, cube roots, and other roots can be written using exponents
- A logarithm is the power to which a number must be raised, to yield another specific number
- Exponents and logarithms are inversely related
- The two commonly used bases for logarithms are 10 and e
- Sums or series can be represented using sigma notation
- The Counting Principle is used to count the total number of possible outcomes
- The square root of negative one ($\sqrt{(-1)}$) is represented by the symbol *i*.

I know how to:

- use rounding and estimating as appropriate
- fluently operate with whole numbers, decimals, fractions, percentages, rates, and ratios
- evaluate and determine the reasonableness of numeric solutions
- use proportional reasoning to investigate situations involving percentages, rates, and ratios
- operate on very large and on very small numbers using scientific notation, in both written and digital forms
- add, subtract, multiply, divide, find powers, and find roots of fractions
- create and follow algorithms that find prime factorisation of positive integers, including greatest common factors and least common multiples
- operate on numbers with real number exponents by applying exponent rules, including evaluating integer and rational exponents
- evaluate, simplify, and operate on logarithmic expressions
- apply arithmetic sequences and their sums to increasing and decreasing linear patterns
- apply geometric sequences and their sums to geometric growth and decay (e.g., as in compound interest)
- apply and interpret interest compounded continuously
- describe continuous sets of numbers using interval notation and inequalities
- operate on irrational numbers, expressing them in exact forms as appropriate – for example, by using simplifying (e.g., $\sqrt{20} = 2\sqrt{5}$) or adding (e.g., $\frac{\pi}{3} + \frac{5\pi}{6} = \frac{7\pi}{6}$)
- find square roots of negative numbers
- calculate the number of possible arrangements in a set, both when the order of the arrangements does matter (permutations) and when the order does not matter (combinations).

Taurangi | Algebra

Equations, expressions, and formulae

I know:

- Formulae can appear in different, but equivalent, forms
- The distributive property is limited to expanding multiplication over addition; it does not hold for expressions with powers and square roots
- In a polynomial, x = a is only a root if (x–a) is a factor of the polynomial, and vice versa
- The zero-product property says that if two expressions multiply to be zero, then one or the other is zero; this property is useful for solving equations
- Logarithm laws provide the means to solve exponential equations.

Know

Taurangi | Algebra *(continued)*

I know how to:

- rearrange and use formulae
- expand and factorise polynomials
- determine the nature of the roots of a quadratic equation
- operate on algebraic fractions
- solve equations
- expand expressions, using the distributive property
- algebraically solve systems of two linear equations in two-dimensional space, and of three linear equations in three-dimensional space, and geometrically interpret the solutions.

Functions

I know:

- Representing functions in different forms allows for deeper understanding and reveals alternative approaches
- Equivalent representations of quadratic functions can reveal different characteristics of the same relationship
- Functions can be combined to create new functions by operating on them, including through function composition
- Composition of a function and its inverse function results in the identity function
- Exponential functions are used to model growth and decay
- Logarithmic and exponential functions with the same base are inverse functions
- The derivative can be represented as a rate of change
- The chain rule helps differentiate composite functions
- The indefinite integral is the antiderivative; the derivative of the indefinite integral is the original function
- Initial-value problems include both a value of, and the derivative of, the original function
- Calculus can be used to work with continuous variables in statistics and probability.

I know how to:

- find the inverse function of a function, restricting the domain if required
- find limits of functions using equations and graphs
- use first principles to find the derivatives of simple functions
- differentiate polynomial, rational-power, sine, cosine, natural-logarithm, and exponential (with base e) functions, including using the product, quotient, or chain rule
- integrate polynomial, rational-power, sine, cosine, reciprocal and exponential (with base e) functions
- solve initial-value problems, including kinematic problems and exponential growth or decay.

Inenga | Measurement

I know:

- Measurements involve variation and uncertainty
- Quantities calculated from two or more measures are derived measures (e.g., square metres and metres per second)
- A right-angled triangle has a fixed relationship between its side lengths and its angles, given by the trigonometric ratios
- In any triangle, the relationships between side lengths and angles are given by the trigonometric formulae involving sine and cosine
- The standard unit of angular measurement is a radian, which is geometrically related to the length of the radius of a unit circle
- A point on a unit circle at an angle of θ with the positive x-axis (in standard position) is represented by the coordinates ($\cos\theta$, $\sin\theta$); through this relationship, I can visually and algebraically represent the periodic and symmetric nature of the sine and cosine functions
- Trigonometric ratios and functions can model contextual situations
- The area under a curve between two points can be calculated by finding the definite integral between the two points
- Derivatives and integrals describe kinematic problems in two- and three-dimensional space by examining displacement, velocity, and acceleration.

I know how to:

- estimate, accurately measure, and calculate quantities using appropriate tools and formulae
- estimate the area or volume of regular, irregular, and compound shapes
- recognise the complexity of the attribute being measured and use correct units with appropriate precision
- determine how length, area, or volume change when resizing similar shapes
- preserve units in calculations, including those involving derived measures and metric conversions
- find the side lengths, angle sizes, and area of any triangle when given appropriate information
- convert between radians and degrees in appropriate situations
- connect the sine and cosine functions to the unit circle
- use simple trigonometric identities such as $\sin^2(\theta)+\cos^2(\theta) = 1$ to simplify calculations
- apply calculus to trigonometric functions
- approximate the area under a curve using rectangles or trapeziums, and improve the approximation.

Know

Mokowā | Space

I know:

- The rate of change for a linear function is the gradient
- Parameters are the non-variable letters used in some algebraic formulae (e.g., m and b in y = m*x* + b); when a parameter is changed in a formula, an aspect of the corresponding graph will change in response
- Function transformations change both the algebraic formula and the graph
- The solution of a system of equations can be interpreted geometrically as intersections of the corresponding graphs
- A tangent line is a line that just touches a curve at a point and matches the curve's gradient at that point
- At a single point, the derivative of a function equals the gradient of the tangent line
- The derivative may be represented as the gradient function
- Tangent lines are local approximations of a function; near a specific point, the tangent line and the function have approximately the same graph
- The gradient of the tangent line at a maxima and minima of a function is 0 or undefined
- Examining rates of change close to turning points helps to identify intervals where the function increases or decreases, and helps to identify the concavity of the function.

I know how to:

- approximate irregular shapes with triangles, rectangles, and circles
- find the equation for the line between two points, as well as the distance between them and the midpoint
- find equations for parallel and perpendicular lines, including horizontal and vertical lines
- graph linear, quadratic, polynomial, exponential, logarithmic, trigonometric, and absolute-value functions and interpret *x*-intercepts, the *y*-intercept, and key features in relation to the equation or the situation
- transform graphs of functions
- graph a function and its inverse function by restricting the domain if required
- graph the solutions of an inequality in two variables
- find and graph tangents of a function
- find a function that explains paired data (empirical models) and use this to make predictions
- describe curves and circles using parametric equations.

Tauanga | Statistics

I know:

- Contexts are integral to all statistical investigations; this includes considering diverse perspectives
- Data can be extracted from a wide range of sources, including text, images, sounds, and experiences
- Decisions made to collect and generate data (including what questions are asked and how measures are defined) will affect the quality, diversity, and quantity of data, as well as the conclusions
- Data-based information can be used to influence decisions, behaviours, policies, and opinions; the consequences for affected communities must be considered
- Predictive modelling involves labelling variables to determine what may happen in a new occurrence (forecasting)
- Data can be used to develop algorithmic models; the predictions and recommendations generated by these models may be harmful
- In statistical inference, the data is sometimes observed in a way that we have no control over (sample-to-population inferences) and is sometimes from experiments that we design (experiment-to-causation inferences); the two situations are handled differently
- Simulation-based methods such as randomisation tests can assess the strength of evidence
- Intervals can communicate the uncertainty associated with estimates or predictions
- Proportions and counts of categorical variables need to be considered along with the groups of interest
- Findings are tentative and subject to revision while more evidence and insights accumulate.

I know how to:

- create, manipulate, and restructure data from a variety of sources using non-automated and computational methods
- use ethical and responsible data practices when designing and evaluating studies involving questionnaires and experiments
- evaluate a wide range of data-based information from sources including the media
- recognise when statistical claims are made and critique the statistical information behind the claim
- identify likely and unlikely outcomes within distributions when making predictions, and explore the impact of conditioning on other variables
- evaluate poll-based reports by interpreting the informal margin of error for proportions
- explore data by merging data sources, developing new variables, and creating a wide range of data visualisations
- make informal sample-to-population inferences by visually comparing medians and proportions
- make formal sample-to-population inferences by using a resampling method to construct confidence intervals for means, medians, or proportions
- make experiment-to-causation inferences based on a single proportion-based experiment and assess the strength of evidence with a simulation-based randomisation test
- make experiment-to-causation inferences involving a comparison of two independent groups by considering the study design and by using a simulation-based randomisation test to assess the strength of evidence
- select, use, and evaluate appropriate statistical models to make predictions (including linear-regression, additive-time-series, and classification models).

Know

Tūponotanga | Probability

I know:

- Probability models can be derived from gathered (empirical) data or from theories
- Expected values can be calculated for discrete random variables
- Uniform, binomial, Poisson, and normal probability distributions have key features
- Generating data from a probability model through simulation can demonstrate what outcomes are likely or unlikely under certain conditions, as well as the variability of the proportions for the outcomes.

I know how to:

- use representations, such as tree diagrams and two-way tables, to determine probabilities of events
- determine probabilities of independent, combined, and conditional events using probability-distribution models
- calculate and interpret expected values for simple models, and, when necessary, apply expected-value rules
- estimate probability using probability-distribution models selected by recognising the underlying structure and conditions of the data-generating process
- explain effects caused by changing the parameters of probability distributions
- conduct large-scale, technology-supported simulations to model probabilities
- calculate, interpret, and evaluate risk situations (e.g., relative risk, increased or decreased risk, and recurrence intervals)
- use informal tests to determine how well a probability-distribution model fits a set of observations (goodness-of-fit).

Progress outcome, typically by the end of **year 13**

Do

Te whakatauira me te tūhura | Modelling and investigating

In my learning in mathematics and statistics, I can:

- ask a question that can be investigated using mathematics or statistics
- understand and explain in my own words what a question means mathematically or statistically
- find entry points for addressing a question using mathematics or statistics, identifying relevant prior knowledge, givens, assumptions, constraints, and relationships
- formulate a mathematical or statistical solution pathway and carry it out
- monitor and evaluate progress, adjusting pathways if needed
- make sense of mathematical or statistical outcomes or conclusions in light of a given situation and context.

Te whakaahua | Representing

In my learning in mathematics and statistics, I can:

- use representations to compare, explore, simplify, illustrate, prove, justify, and find patterns, variations, and trends
- use representations to learn new ideas
- use representations to explain ideas to others
- use representations to investigate conjectures and support arguments
- select physical, virtual, graphical, or diagrammatic representations appropriate for what I am working on
- use visualisation to mentally represent and manipulate things and ideas.

Te honohono | Connecting

In my learning in mathematics and statistics, I can:

- recognise and explain connections between ideas and between different representations of ideas
- connect new ideas to things I already know
- recognise and explore mathematical and statistical ideas in a range of contexts, including matters that are important in my community
- use my mathematics and statistics learning to connect to ideas in other learning areas and to cultural, linguistic, and historical contexts.

Te whakatau whānui | Generalising

In my learning in mathematics and statistics, I can:

- recognise, explore, conjecture, and draw conclusions about mathematical or statistical patterns
- use mathematical or statistical relationships that I know to propose new relationships and to identify similarities, differences, and new connections across my learning
- look for patterns and regularities that might be applied in another situation or always be true as I work with mathematical and statistical ideas
- use mathematical and statistical symbols to express generalisations.

Te whakaaro arorau | Reasoning

In my learning in mathematics and statistics, I can:

- build statements and explanations inductively from observations or data, considering the context
- build statements and explanations deductively from mathematical and statistical knowledge, definitions, and rules
- make conjectures, using reasoning and counter examples to decide if they are true or not
- critically reflect on statements based on mathematical and statistical ideas, distinguishing correct logic from flawed logic and asking questions to clarify and understand
- use evidence, reasoning, and proofs to explain why I agree or disagree with statements or why something will always be true
- develop collective understandings with others by sharing ideas and comparing, contrasting, and building on them.

Te reo matatini o te pāngarau | Communicating

In my learning in mathematics and statistics, I can:

- use mathematical and statistical language to describe my thinking
- record, share, and explain my thinking
- communicate using representations that are appropriate for the idea I am talking about
- choose an effective format for communicating an idea or argument
- answer questions, engage in discussion, and respond to others' ideas in constructive ways
- present concise and coherent explanations and arguments for an idea, solution, or process.

At years 11–13, learning in mathematics and statistics becomes increasingly specialised. In addition, all ākonga have opportunities to further develop and use what they have learnt in years 1–10 in a range of approved NCEA subjects.

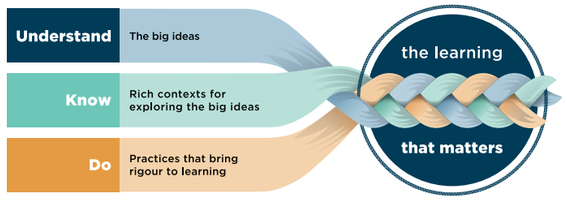
Purpose statement for English in the New Zealand Curriculum

Ko te reo te tuakiri, ko te reo tōku ahurei, ko te reo te ora.
Language is my identity, language is my uniqueness, language is life.

Literature, language, and literacy enrich lives and help form connections. The study, use, and enjoyment of language and literature in a variety of text forms enables us to access the thoughts and perspectives of others, to walk in different worlds, to develop empathy, and to make linguistic and cultural connections.

Through the English learning area, ākonga understand, enjoy, and celebrate the beauty and richness of stories (fiction and non-fiction) from around the world and from Aotearoa New Zealand. They see themselves in the stories they encounter and connect with the stories of tangata whenua and other communities, including those from around Te Moana Nui a Kiwa. Ākonga take part in literary communities themselves, contributing their own stories as well as their interpretations of others' stories.

Learning in the English learning area is crucial for all learning across the curriculum and for life. Ākonga learn skills that are essential to communication, helping them to better understand others and to make themselves understood in multiple worlds. They apply the disciplinary tools of the learning area to the analysis of texts and language, produce their own texts, and participate in and positively contribute to their communities, Aotearoa, and the world.



Learning literacy in the context of language and literature is a key component of English and complements the disciplinary literacies learners develop in other learning areas. The tools and practices of literacy that ākonga develop build on their existing ways of interpreting and expressing meaning. As they bring their linguistic and cultural resources to their learning, ākonga strengthen their identities, experiencing success in who they are and carrying a strong sense of self wherever they go. Understanding how language and texts work gives ākonga the power to interpret and challenge texts and to create their own powerful texts.

Features of this draft	Their treatment in the 2007 NZ Curriculum
Understand: Big ideas	Although big ideas were described in the 2007 learning area statement, they were not clear in the achievement objectives.
Know: Contexts	The new contexts are equivalent to the 'aspects' of the 2007 learning area. The aspects of Language features and Structure have been combined for greater clarity.
Do: Practices	The new practices draw on the processes and strategies in the 2007 learning area and on other frameworks such as the Learning Progression Frameworks.
Literacy progress steps	Progress steps are being developed based on current research and learning progression frameworks. See the progress step for 'During the first six months' as an example of what these will look like.

Important considerations for teaching English

Working with texts is at the core of English. Texts can be in a range of modes (e.g., written, spoken, visual, and multimodal) and use a range of technologies (e.g., print and digital). Multimodal texts (e.g., film and digital media) combine language with other means of communication, such as images or a soundtrack. The term 'text' also encompasses augmentative and alternative communication – for example, via gesture, signing, real objects, photographs, pictographs, pictograms, and braille. How texts are used as well as how they are chosen are important considerations for teaching in English.

Different texts make different demands on their creators and users. Typically, as ākonga progress in their learning, they work with a broader range of text types and engage with increasingly complex texts. This is not to say that, for instance, fluent readers will no longer work with simple texts; rather, they will have a broader range of texts to work with.

Selecting texts requires kaiako to consider ākonga as learners across all the modes. It involves the kaiako drawing on their knowledge of the capabilities and needs of each ākonga, as a listener and speaker, reader and writer, presenter and viewer, and user or composer of multi-modal texts.

When choosing texts for ākonga, kaiako can ask whether the texts:

- reflect the identities and cultures of ākonga
- provide windows into different places, times, and cultures
- use and mix different modes (e.g., visual storytelling, tukutuku patterns, and graphic novels)
- include enough depth and length to allow for in-depth exploration over time
- demonstrate sufficient complexity to allow learners to build their understanding of the big ideas as they explore the Know statements and Do practices.

Ākonga develop their understanding of the big ideas of English through multiple, cumulative encounters with language and texts. Therefore, kaiako should plan purposeful activities that allow varied ways of engaging with texts. They can ask if they have provided multiple opportunities for ākonga to:

- use their cultural, linguistic, and personal knowledge to interpret and create texts with varied levels of support (e.g., through listening, reading, or viewing in one language, and speaking, writing, or presenting in another)
- negotiate, evaluate, and critically consider texts through extended dialogue
- revisit the same text multiple times and in increasing depth
- explore complex texts in simple ways and simple texts in complex ways
- interpret and create texts to explore a common theme, topic, or idea.

Overview

Understand
Big ideas

> ***Ko pohewa, ko auaha ngā ara ki ao hou.***
>
> *Creativity and imagination transport us to new worlds.*

Sharing stories is a source of joy and nourishment.

Enjoying the stories of others and crafting our own stories provide us with opportunities to experience different worlds through creativity, imagination, and interaction.

> ***Mā te reo, ka mōhio; mā te reo ka mārama; mā te reo ka ora.***
>
> *Through language comes knowledge; through language comes insight; through language comes wellbeing.*

Language and literature give us insights into ourselves and others.

Our linguistic and cultural resources are part of our whakapapa; they help us to understand ourselves and others, and they enable others to understand us. As we understand more about ourselves through our encounters with literature and other texts, we also come to understand and appreciate more about other people and their perspectives.

> ***Kia mau ki tō ūkaipō.***
>
> *Don't forget your roots.*

The stories of Aotearoa New Zealand are unique taonga tuku iho.

Literature and language represent knowledge and experience shared across time and place. Through the literatures of tangata whenua, tangata Tiriti, and those who have come from around Te Moana Nui a Kiwa, we understand where we have come from, who we are, and what it means to live in the Pacific nation of Aotearoa New Zealand. The literatures and languages of Aotearoa have mana and hononga (connections) beyond our shores and connect us globally.

> ***Ko te manu e kai i te miro nōna te ngahere; ko te manu e kai i te mātauranga nōna te ao.***
>
> *We are empowered through knowledge and understanding.*

Literature, language, and texts are powerful.

Throughout history, literature, language, and texts have been used to uplift and share, and to dominate and exclude. Recognising and using the power and influence of literature, language, and texts gives us tools to advocate for ourselves and others. Exploring the effects of colonisation on our languages and literatures is an important part of understanding power relations in Aotearoa New Zealand.

Know
Contexts

Ngā whāinga me ngā hunga mā rātou ngā tuhinga | Text purposes and audiences

Texts are shaped for particular purposes and with particular audiences in mind. *Text purposes and audiences* considers both *why* texts are shaped the way they are (the purposes) and *who* texts are shaped for (the audiences), equipping ākonga to explore these questions. All other aspects of a text are in service of the text's purpose.

Ngā ariā | Ideas within, across, and beyond texts

All texts carry ideas and help us to form our ideas about the world. *Ideas within, across, and beyond texts* focuses on the knowledge needed to identify, respond to, and create ideas across all forms of texts. It also considers the frameworks and theories used to interpret and create texts across different forms.

Ngā āhuatanga reo | Features and structures of language

Features and structures of language is about the codes and conventions used to make meaning in texts and to structure texts, particularly literary texts. It also considers the effects of language on how we see the world, ourselves, and each other.

Do
Practices

Te whakamahi rautaki ki te whai māramatanga | Comprehending and creating texts

Comprehending and creating texts focusses on the processes and strategies required to use the codes and conventions of all the modes. It supports ākonga to interpret and construct texts.

Te tātari arohaehae | Critical analysis

Critical analysis involves close 'reading' of texts to develop interpretations. It focuses on the relationships between language, ideas, and power. It helps ākonga to make connections within, across, and beyond texts and to consider different viewpoints of a text in appropriate ways. Seeing things from different perspectives allows us to develop new insights.

Te pānui hei whakangahau, hei whakapārekareka | Reading for pleasure

Reading for pleasure involves ākonga choosing a variety of texts (featuring, but not limited to, written language) based on their own preferences and interests.

Te tūhono mā te whakawhiti kōrero | Connecting through storytelling

Connecting through storytelling is about learning to craft and use story together. It involves the use of creative processes to explore ideas and produce something to be proud of. Storytelling can be collaborative or individual. It can be for sharing with others or for expressing oneself. It is used to persuade, inform, entertain, or satisfy an impulse. Stories can include non-fiction and non-narrative texts.

Progress outcome, typically by the end of **year 3** (Foundation)

Te tupu pāhautea i te taiao ako whakahihiko | *Thriving in environments rich in literacy and numeracy*

Understand

Through building knowledge about language and texts and drawing on the practices of English, I am deepening my understanding that:

- Sharing stories is a source of joy and nourishment.
- Language and literature give us insights into ourselves and others.
- The stories of Aotearoa New Zealand are unique taonga tuku iho.
- Literature, language, and texts are powerful.

Know

Ngā whāinga me ngā hunga mā rātou ngā tuhinga | Text purposes and audiences

I know that:

- I bring my identity, language, and culture to my interactions with texts, and others do as well. This influences how we see texts
- texts are designed for a specific audience and from a particular point of view.

Ngā ariā | Ideas within, across, and beyond texts

I know that:

- there are texts from Aotearoa that are special to me
- there are ideas in texts that I can make connections with
- I have my own ideas and stories that are worth sharing.

Ngā āhuatanga reo | Features and structures of language

I know that:

- different modes work together to contribute to the meaning of a text. The choices made for each mode (e.g., of vocabulary in written language) impact on meaning, emotion, and imagery in the text
- words, sentences, paragraphs, and images are used differently in different types of texts; their order and organisation affect the meaning of a text
- people use language in different ways in different situations. There are similarities and differences between the language I use at home and at school.

Do

Te whakamahi rautaki ki te whai māramatanga | Comprehending and creating texts

In my learning in English, I can:

- draw on my knowledge of how words work to decode words accurately. I can use decoding strategies to make meaning with written language texts. I can use my decoding strategies in oral language, written language, the visual mode, and multimodal texts
- read familiar texts accurately, fluently, and automatically, drawing on my oral language and showing awareness of phrasing and punctuation
- use a variety of comprehension and self-monitoring strategies to make meaning of texts in a range of modes. I can use strategies such as using the context and the morphology to work out what words mean
- draw on my oral language and my knowledge of how words work to encode words accurately. I can use encoding strategies with my prior knowledge to design written, oral, visual, and multimodal texts
- create texts that make sense using simple and compound sentences and accurate punctuation and spelling
- use a process of planning, drafting, redrafting and revising to compose written, oral, and multimodal texts using features of language (e.g., vocabulary) that are appropriate for my audience and purpose.

Te tātari arohaehae | Critical analysis

In my learning in English, I can:

- form and share opinions and interpretations about texts based on evidence from them and my experiences. I can also listen to other people's opinions and interpretations respectfully
- identify the features of language used to craft a text for a purpose and discuss how these influence my feelings, thoughts, and actions
- discuss how people and things are represented in a text, who or what is missing, and why.

Te pānui hei whakangahau, hei whakapārekareka | Reading for pleasure

In my learning in English, I:

- take pleasure in reading and read for pleasure most days
- enjoy sharing the texts I choose with others; many of these are read to me, and some I look at or read myself.

Te tūhono mā te whakawhiti kōrero | Connecting through storytelling

In my learning in English, I can:

- use my imagination to make sense of the world through telling stories inspired by what is familiar in my life. These stories may be true or fictional (or somewhere in-between) and spontaneous or crafted
- select from a variety of modes to enrich my storytelling
- work with others to create rich, collaborative stories
- share stories with others, treating theirs with respect.

Progress outcome, typically by the end of **year 3**

Literacy progress step during the first six months

The indicators on the right are important. Make sure ākonga have many opportunities to learn in relation to them and to demonstrate them during their first six months at school. If they are not evident, this requires action.

I can:

- show sustained interest in books or print
- recognise important features of books and print, including orientation, directionality, and the concepts of ‘letter’ and ‘word’
- identify the beginning or final phoneme in simple, familiar words and match it with the appropriate grapheme
- use a growing range of everyday words, including simple adjectives, words for simple directional and spatial concepts, and simple pronouns
- respond to requests that require me to focus on key relevant information (e.g., to select key content in a picture, photo, video, or story)
- use language to interact with others in everyday activities, to ask and answer simple questions, and to express my feelings
- write recognisable words to communicate meaning
- retell (with prompting if necessary) simple narratives with a focus, limited detail, simple connectives to indicate time sequence, and sequencing that may be out of order.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 6**

Te kaingākaunui me te hiamo ki te ako | *Expanding horizons of knowledge and collaboration*

Understand

Through building knowledge about language and texts and drawing on the practices of English, I am deepening my understanding that:

- Sharing stories is a source of joy and nourishment.
- Language and literature give us insights into ourselves and others.
- The stories of Aotearoa New Zealand are unique taonga tuku iho.
- Literature, language, and texts are powerful.

Know

Ngā whāinga me ngā hunga mā rātou ngā tuhinga | Text purposes and audiences

I know that:

- texts are created for a response, and users can agree or disagree with what texts say and how texts position them.

Ngā ariā | Ideas within, across, and beyond texts

I know that:

- indigenous stories provide a unique insight into Aotearoa New Zealand. Local stories, from mana whenua and others, provide insights into my rohe and community
- sometimes ideas in texts are implicit (not directly stated)
- I am part of a storytelling community. My stories can affect others, making them laugh, cry, or agree with my ideas. Stories also have the power to hurt, which means I have to be careful with what I say and how I say it.

Ngā āhuatanga reo | Features and structures of language

I know that:

- creators structure texts and use the codes and conventions of each mode for effect
- literature has features (such as characterisation and rhythm) used to develop ideas and create effects
- te reo Māori is a taonga, unique to Aotearoa New Zealand; its influence is part of what makes our texts and language unique.

Do

Te whakamahi rautaki ki te whai māramatanga | Comprehending and creating texts

In my learning in English, I can:

- use decoding strategies, comprehension strategies, and vocabulary strategies to make, maintain, and restore meaning
- read familiar texts silently, monitoring my understanding
- independently use a range of encoding and composing strategies to create texts with a variety of sentence structures and forms of punctuation (e.g., punctuation for dialogue)
- recognise how meaning is expressed in different modes and select modes purposefully to express my meaning.

Te tātari arohaehae | Critical analysis

In my learning in English, I can:

- discuss different views of a text and justify a position using personal knowledge, evidence from the text, and knowledge of similar texts. Sometimes I will change my mind in response to new evidence or another perspective
- discuss the effects of features of language used in literature (e.g., to create humour, imagery, and mood)
- critically consider and discuss how people or topics are represented in a text and how I might construct the text differently to change these representations.

Te pānui hei whakangahau, hei whakapārekareka | Reading for pleasure

In my learning in English, I:

- take pleasure in reading and read for pleasure most days, selecting texts based on my preferences and interests
- participate in reading communities where we listen, read, and make text recommendations with increasing confidence.

Te tūhono mā te whakawhiti kōrero | Connecting through storytelling

In my learning in English, I can:

- use a creative process to craft stories in multiple ways. With support, to enrich my storytelling I can make deliberate choices about the text type I use, considering my purpose, audience, and intended effect
- use my personal voice (e.g., via my home language or stories of my family) to evoke an emotional response from a reader
- improve the quality of my stories by changing how I use the features of language, based on the responses of my audience
- use my passion for story to craft stories for unfamiliar audiences
- create stories in collaboration with others, respecting their contributions.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 8**

Te mōhio ki tōku tūrangawaewae me te kōkiri kaupapa | *Knowing I belong and advocating for self and others*

Understand

Through building knowledge about language and texts and drawing on the practices of English, I am deepening my understanding that:

- Sharing stories is a source of joy and nourishment.
- Language and literature give us insights into ourselves and others.
- The stories of Aotearoa New Zealand are unique taonga tuku iho.
- Literature, language, and texts are powerful.

Know

Ngā whāinga me ngā hunga mā rātou ngā tuhinga | Text purposes and audiences

I know that:

- texts include ideas and information organised to position the audience according to the creator's purpose (e.g., to persuade, inform, or entertain). Texts may have multiple purposes
- the social, political, cultural, ideological, and environmental contexts for the creator of a text influence how it is crafted. The contexts of the audience influence how it is interpreted.

Ngā ariā | Ideas within, across, and beyond texts

I know that:

- texts unique to Aotearoa New Zealand provide insights into local events, ways of thinking, and relationships that shape how we make sense of ourselves and our communities
- texts can be morally ambiguous and interpreted in conflicting ways. The ideas and information in texts are not always reliable
- I am a valuable participant in the storytelling community of Aotearoa, creating a portfolio of stories that are meaningful to me and to Aotearoa.

Ngā āhuatanga reo | Features and structures of language

I know that:

- literary elements are in service of ideas. Unpacking individual literary elements (e.g., sub-plots and character development) gives me a deeper understanding of a text's ideas
- structural features support the meaning of texts and may include paragraphs, introductions, and stanzas
- how language is used varies across time, place, and social contexts. Examining this variation gives insights into social roles and relationships.

Do

Te whakamahi rautaki ki te whai māramatanga | Comprehending and creating texts

In my learning in English, I can:

- combine a range of strategies to comprehend and create texts
- use the codes and conventions of different modes for effect.

Te tātari arohaehae | Critical analysis

In my learning in English, I can:

- identify the world view presented in a text and consider the text's impact
- form an interpretation of a text, individually or with others, by evaluating different perspectives and using evidence from the text and my knowledge of literature and the world. I can explain how my thinking has changed in response to new evidence or perspectives
- compare and contrast how different modes work together to reinforce or subvert the message of a text
- evaluate how language features have been combined to craft a text for a specific purpose.

Te pānui hei whakangahau, hei whakapārekareka | Reading for pleasure

In my learning in English, I:

- take pleasure in reading and read for pleasure most days. Sometimes I select texts based on my own preferences and interests, and sometimes I explore new authors and texts outside my comfort zone
- participate enthusiastically in reading communities, reading and discussing different kinds of texts, listening to others, and making informed text recommendations for them.

Te tūhono mā te whakawhiti kōrero | Connecting through storytelling

In my learning in English, I can:

- use a creative process to experiment and to make pragmatic decisions that reinforce, extend, or elevate my ideas
- make independent, deliberate choices about the text type I use, enriching my storytelling by considering my purpose, audience, and intended effect
- anticipate the reaction of my audience and evaluate my success
- take part in a collaborative crafting process, supporting others' contributions with considered responses.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 10**

Te whai ahunga, te manaaki i ētahi atu me te manawaroa | *Having a purpose and being empathetic and resilient*

Understand

Through building knowledge about language and texts and drawing on the practices of English, I am deepening my understanding that:

- Sharing stories is a source of joy and nourishment.
- Language and literature give us insights into ourselves and others.
- The stories of Aotearoa New Zealand are unique taonga tuku iho.
- Literature, language, and texts are powerful.

Know

Ngā whāinga me ngā hunga mā rātou ngā tuhinga | Text purposes and audiences

I know that:

- people in the past, in the future, and in different contexts might interpret a text differently from one another and from me
- texts position readers, and their reliability can vary. All text creators have biases which may not be immediately apparent to them or their audiences. We can use critical frameworks to make these apparent.

Ngā ariā | Ideas within, across, and beyond texts

I know that:

- the text creators of Aotearoa participate in national and global communities and take part in ongoing conversations with other creators. I am a participant in such communities, creating a portfolio of texts that contributes productively and purposefully to them
- ideas can be expressed in simple or complex ways. For example, moral dilemmas can be interwoven in texts in engaging, thought-provoking, and original ways
- interpreting and producing literary texts helps us to grapple with the great questions of life.

Ngā āhuatanga reo | Features and structures of language

I know that:

- there are multiple ways to express ideas or to say the same thing. Language can work at a denotative or connotative level, and is used differently in different contexts. Our language choices reveal our values and beliefs
- literature has specific features often combined in complex and subtle ways for aesthetic effect. Literary and non-literary techniques can interact (e.g., in the use of anecdotes in speeches or characteristation in advertising)
- different structures are used for different purposes in texts.

Do

Te whakamahi rautaki ki te whai māramatanga | Comprehending and creating texts

In my learning in English, I can:

- deliberately select from a range of strategies to decode and make meaning from texts that have some use of complex language, structure, content, layout, or vocabulary.

Te tātari arohaehae | Critical analysis

In my learning in English, I can:

- structure an interpretation that recognises my own positionality and the context in which the text was created and that draws on evidence from the text, my knowledge of literary texts, and my experience
- recognise patterns in how features of language and literary elements and techniques are used to craft texts
- reflect on the ways in which I interpret and create texts
- affirm or resist how a text positions me or others.

Te pānui hei whakangahau, hei whakapārekareka | Reading for pleasure

In my learning in English, I:

- take pleasure in reading, regularly reading for pleasure texts based on my own preferences and texts based on other criteria (e.g., award-winning or popular)
- actively engage in reading communities, listening to others and reading, recommending, critically discussing, and debating a variety of texts.

Te tūhono mā te whakawhiti kōrero | Connecting through storytelling

In my learning in English, I can:

- select from a range of creative processes, depending on my audience and purpose, to tell stories that may be big and complex or small and subtle and that have depth, authenticity, and achieve my purpose
- use complex language features and text structures to support and enrich my storytelling.

Learning experiences

In the digital version of the refreshed New Zealand Curriculum, there will be classroom resources and kaiako support linked to each progress outcome.

Progress outcome, typically by the end of **year 13**

Te whakatere me te waihanga i ngā arawātea me ngā ahunga whakamua mō anamata |
Navigating a pathway and contributing to future possibilities

Understand

Through building knowledge about language and texts and drawing on the practices of English, I am deepening my understanding that:

- Sharing stories is a source of joy and nourishment.
- Language and literature give us insights into ourselves and others.
- The stories of Aotearoa New Zealand are unique taonga tuku iho.
- Literature, language, and texts are powerful.

Know

Ngā whāinga me ngā hunga mā rātou ngā tuhinga | Text purposes and audiences

I know that:

- there are a range of literary theories that provide frameworks for critically analysing texts and for reading with and against their creators' intentions.

Ngā ariā | Ideas within, across, and beyond texts

I know that:

- how people engage with, enjoy, and talk about literature is socially constructed and changes over time. There are gaps and omissions in how literature has been discussed in Aotearoa; I can take part in extending the conversation
- complex ideas can be interwoven in texts in engaging, thought-provoking, and original ways
- interpreting and producing literary texts helps us understand what it means to be human and to empathise with others.

Ngā āhuatanga reo | Features and structures of language

I know that:

- language is not neutral. How people use language changes over time, as a result of many influences (e.g., shifting social and cultural conditions). The use of language features can be critically compared and contrasted
- literature has specific features that interact in sophisticated, surprising, delightful, and challenging ways across modes and forms. Text creators often subvert expectations and conventions
- literary structure can both clarify and complicate meaning. There are a range of literary and information structures, all of which can be subverted or reinvented (e.g., enjambement and non-continuous narrative).

Do

Te whakamahi rautaki ki te whai māramatanga | Comprehending and creating texts

In my learning in English, I can:

- decode and make meaning from texts with complex and abstract language, structures, content, layouts, and vocabulary.

Te tātari arohaehae | Critical analysis

In my learning in English, I can:

- identify, discuss, and debate how texts present particular versions of the world and form an opinion supported by evidence. I can use critical theories to evaluate complex, competing interpretations of a text, including my own, and to make judgments about the text, its purpose, and its audience
- use the outcomes of my critical analysis to reconstruct and redesign texts
- compare and contrast how literary elements and techniques are used in particular texts and across different texts.

Te pānui hei whakangahau, hei whakapārekareka | Reading for pleasure

In my learning in English, I:

- regularly read for pleasure. I am confident in my reading identity and so can readily explain why certain authors and texts are my favourites
- constructively participate in reading communities, listening to others, reading and critically discussing a broad range of texts, and making and seeking considered recommendations.

Te tūhono mā te whakawhiti kōrero | Connecting through storytelling

In my learning in English, I can:

- use my own creative process critically to experiment, explore ideas, and make decisions about my storytelling
- compose varied stories in which I interweave literary elements and techniques to make connections and enrich my storytelling. These stories have depth, authenticity, and achieve my purpose.

At years 11–13, learning in English becomes increasingly specialised. In addition, all ākonga have opportunities to further develop and use what they have learnt in years 1–10 in a range of approved NCEA subjects.

Mātaioho | National and local curriculum

Mātai oho, mātai ara, whītiki, whakatika. | *Awaken, arise, and prepare for action.*

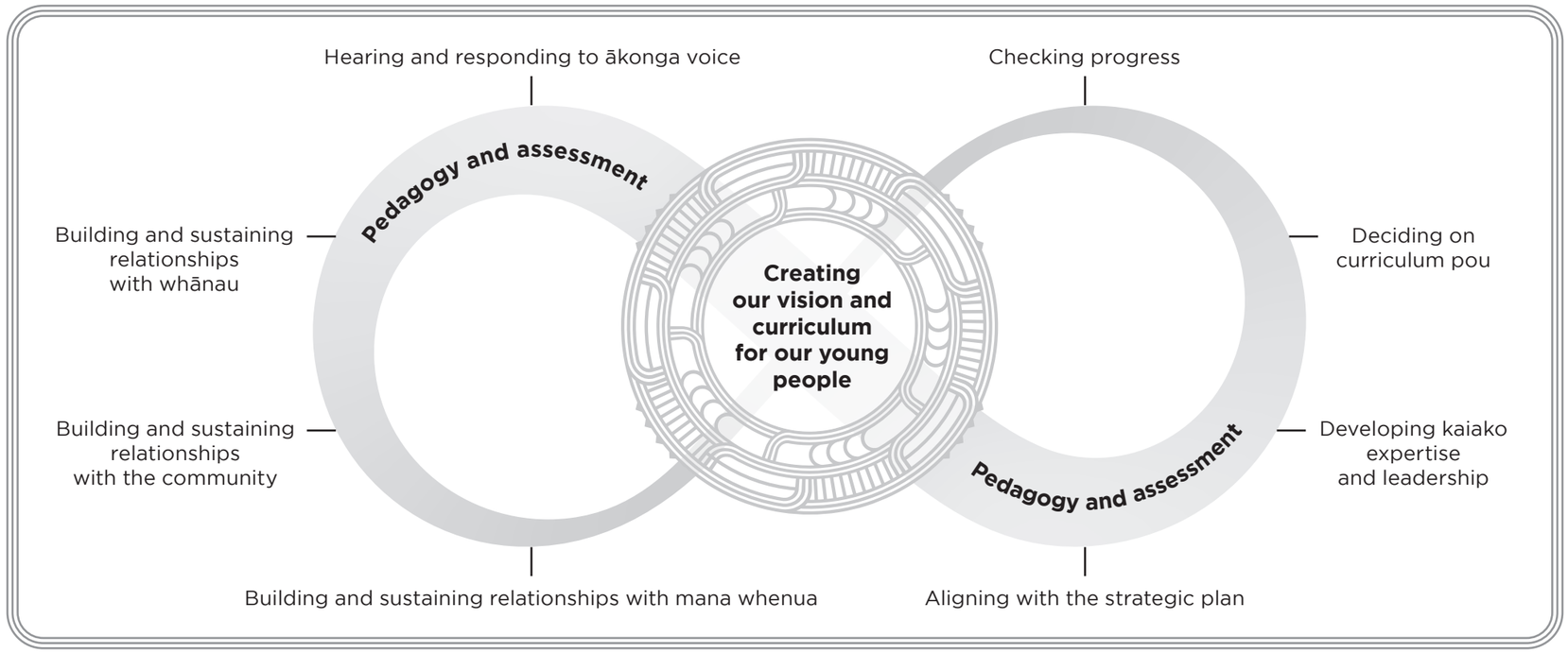
Mātaioho brings the national curriculum to life and supports every akonga to flourish and grow. It guides each school to design and implement a unique curriculum that reflects their vision for the ākonga for whom they are responsible.

This curriculum draws from:

- Mātaiahikā: mana whenua guardianship of learning, wellbeing, and success, and knowledge of ākonga, whānau, place, and community
- Mātaiaho: learning, wellbeing, and success expectations expressed in the learning areas of the national curriculum.

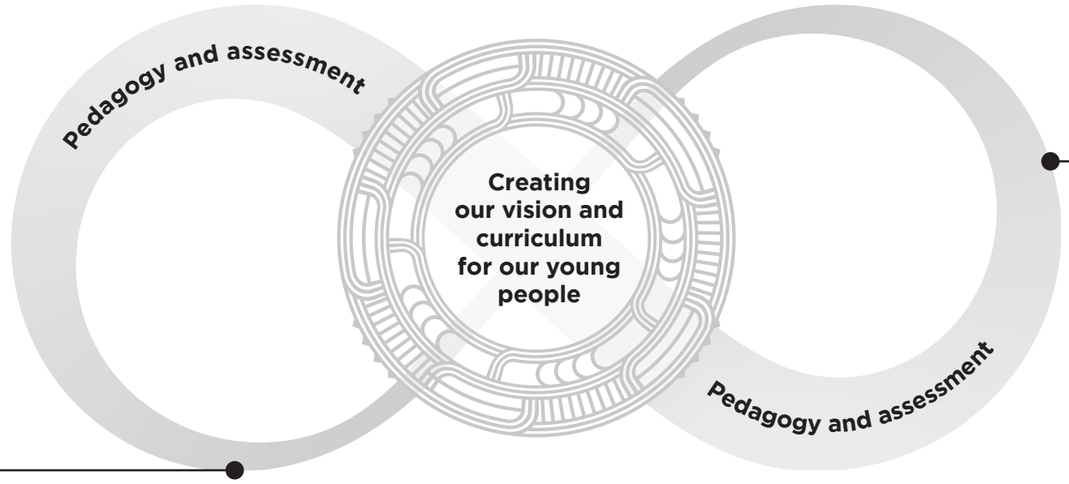
Building on the 2007 New Zealand Curriculum, Mātaioho activates a principled approach to the continuous process of curriculum design and review. It will include a tool designed to support leaders and to bring to life the three calls to action of Mātainuku.

Below is an initial overview of this tool and its key features, which are based on the cyclical nature of the process for school curriculum design and implementation.



Key features and critical questions

Two key features of the tool are unpacked below.



Building and sustaining relationships with mana whenua

A curriculum that gives effect to Te Tiriti needs to embed Māori ways of thinking and being. It values, validates, and practises mātauranga Māori, while acknowledging that each iwi and hapū has their own evolving kete of mātauranga Māori.

Critical questions

- How can we establish and build a nurturing and reciprocal relationship with mana whenua?
- How are we inviting mana whenua to share their thinking and ideas and their values and aspirations for tamariki in their rohe?
- How can we make engagement and dialogue sustainable for mana whenua?
- How do we acknowledge the contributions of local expertise?
- How willing are we to challenge ourselves? How far are we willing to go?
- How are we involved in the life of the marae? Have we visited? How frequently? Have we stayed?

Deciding on curriculum pou

Curriculum pou express a school's organisation of national curriculum components and local content and priorities in ways that disrupt ongoing educational inequities and create rich meaningful experiences and pathways for ākonga.

Critical questions

- How does our curriculum reflect Aotearoa New Zealand's rich whakapapa and history?
- How well does our curriculum provide opportunities for deep and meaningful learning across the full range of learning areas in the New Zealand Curriculum?
- Are there learning areas where our knowledge needs to be strengthened to improve learning for ākonga?
- How clear is our curriculum about our expectations of progress for ākonga?
- How are our curriculum pou reflected in our school's culture and practice?
- How can we make mātauranga Māori and te reo me ona tikanga prominent throughout the whole curriculum?
- How can we access the learning we need to be more knowledgeable and skilled in mātauranga Māori and te reo me ona tikanga?

Further work

When complete, this section on Mātaioho will include:

- a refined diagram for the cyclical process of school curriculum development
- full integration of pedagogy and assessment into the process
- a full set of reflective critical questions for all features of the process, aligned with similar sets of questions from other agencies in order to reduce confusion and duplication.

MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA