



Te Tāhuhu o
te Mātauranga
Ministry of Education



Te Poutāhū
Curriculum Centre

Wāhanga Ako **Pāngarau**



Tohutohu mō ngā Poari o Ngā Kura e pā ana ki ngā herenga

Me mātua whakatinana ngā kura i te Wāhanga Ako Pāngarau Tau 0-8

Nā te Minita o te Mātauranga, te Hōnore Erica Stanford, i tuku atu te *Wāhanga Ako Pāngarau, Tau 0-8*, i raro i te Education and Training Act 2020, section 90(1), hei tauākī herenga marautanga taketake, hei tauākī marautanga ā motu hoki.

Ko ngā wehenga i waihangatia hei tauākī marautanga ā-motu ēnei – Whenu, Tohu Ako (hāunga Mā te Kaiako). Ka whakatakoto ēnei i ngā mea hei ako mā ngā ākonga i tā rātou wā ki te kura, tae rā anō ki ngā taumata e manakotia ana mō te mātauranga, te māramatanga, me ngā pūkenga ka tutuki ai.

Ko te toenga (tae atu ki Mā te Kaiako i roto i ngā Tohu Ako) i waihanga kē hei tauākī herenga marautanga taketake. Ka whakatakoto ēnei i ngā kawatau mō te whakaako, te ako, me te aromatawai hei tautoko i ngā tauākī marautanga ā-motu, ā, ka horipū hoki ēnei kia whaimana ngā hōtaka whakaako me ngā hōtaka akoako o Pāngarau.

Nō te **1 Hanuere 2025** ēnei tauākī i whakamana, i konei ka whakakapi i te marautanga Pāngarau 2010 mā **ngā ākonga tau 0-8**. Engari, ka mana tonu ērā atu tauākī marautanga o *Te Marautanga o Aotearoa (2010)*¹.

Ko ēnei ngā tauākī o ngā herenga ōkawa e pā ana ki ngā whakaakoranga o Pāngarau hei ahunga mō ngā haepapa marautanga, aromatawai hoki kei runga i ngā kura (Education and Training Act 2020, section 127), ngā hōtaka whakaako me ngā hōtaka akoako (section 164 of the Act), me ngā aroturuki, ngā pūrongorongo hoki o ngā mahi a ngā ākonga (section 165 of the Act and associated Regulations).

I raro i ēnei wāhanga o te Ture, ka noho here ngā Poari o Ngā Kura, nō reira mā rātou e here anō ki tā rātou tumuaki me ā rātou kaimahi o te kura kia whanake, kia puaki hoki i ngā hōtaka whakaako me ngā hōtaka akoako e whakamana ai i ēnei tauākī.

He aha ngā herenga?

Me mātua whakaatu mai ngā kura i tā rātou whakamahia i aua tauākī i ngā āhuratanga o te whakamahere i ngā aha me ngā pēhea o te whakaako Pāngarau mō ngā ākonga tau 0-8. Me pēnei rawa ngā kaiako:

- whakamahia te raupapa whakaako o ia tau, o ia tau i ngā Tohu Ako hei whaimōhio i ngā aha hei whakaako, mō āhea hoki ki runga i ngā akoranga o mua a ngā ākonga.
- arohia ngā aratohu tikanga whakaako me ngā rautaki whakaako ki raro i Mā te Kaiako me Te

Roanga o te Kōrero mō ngā kaiako i ā rātou ake mahi whakaako.

- aromatawaitia haeretia te kauneke me te tutuki o ngā ākonga mō Pāngarau e ai ki ngā hua kauneke o ngā Tohu Ako.

Me whakawā ngaio tonu ngā kaiako kia urutau ai ā rātou hōtaka whakaako, hōtaka akoako hoki ki ngā matea ako o ā rātou ākonga – tērā pea ka rerekē te ako a ētahi ākonga ki ngā raupapa whakaako o tā rātou tau kura. Mēnā ka hiahia ētahi ākonga i ngā mahi torohanga kei kō atu i ngā tau 8 o te wāhanga ako Pāngarau, me tahuri kē ngā kaiako ki te Pāngarau, taumata 5 piki ake o te tauākī marautanga 2010.

Ngā herenga wā² mō te whakaako pānui, tuhituhi, pāngarau hoki

Ko te whakaako me te ako i ngā mahi pānui, me te tuhituhi, me te pāngarau te whakaarotau matua mō ngā kura katoa. Kia rawaka ai ngā wā whakaako me ngā wā ako i ngā mahi pānui, me te tuhituhi, me te pāngarau. Ko ngā poari ā-kura kei a rātou ngā ākonga Tau 0 ki te 8 mā roto mai i ngā tumuaki me ngā kaiako e whakarite hōtaka me ngā wātaka whakaako me te ako i ngā Tauākī Marautanga ā-Motu, tae atu ki tēnei nā, mā te aha ki te whakarato:

- kia 10 hāora i ia wiki e aro ana ki ngā mahi whakaako me te ako ki te tautoko i te whanaketanga me tutukitanga i roto i ngā mahi pānui me te tuhituhi ka kitea i ngā rā o te kura i ia wiki, me te mōhio anō ki te mana o te kōrero, e pā ana ki ngā akoranga tau tōmua.
- kia 5 hāora i ia wiki e aro ana ki ngā mahi whakaako me te ako ki te tautoko i te whanaketanga me te tutukitanga i roto i ngā mahi pāngarau ka kitea i ngā rā o te kura i ia wiki.

Kei ngā wā ka whakahaeretia ngā mahi whakaako me ngā mahi ako i te pānui, i te tuhituhi, me te pāngarau ki te horopaki o ngā Tauākī Marautanga ā-Motu i tua atu i te reo Māori me te pāngarau. Me āta whakaritea, āta whakatinanatia, āta tautokotia te whanaketanga a ngā ākonga i roto i ā rātou mahi pānui, mahi tuhituhi, me te pāngarau hoki/rānei, ngā aronga, ngā mōhiohio me ngā pūkenga hāngai tika.

Ahako ko ngā kupu pānui me te tuhituhi e whakamahia ana, ka taka mai anō ko ngā momo whakawhitinga kōrero, tae atu ki te Reo Rotarota, ki ngā momo whakawhiti kōrero kē rānei me te Tuhi Matapō.

¹<https://gazette.govt.nz/notice/id/2009-go8814>

²<https://gazette.govt.nz/notice/id/2023-go5904>

Pāngarau

Tēnā koutou katoa,

He koanga ngākau nōku ki te whakamōhio atu i te wāhanga ako Pāngarau o Te Marautanga o Aotearoa kua whakahoungia mō ngā ākonga Tau 9-13. Ka tohua tuatahitia tēnei marautanga ā-motu kia mātauranga haumako, kia raupapatia i ia te tau, kia takoto hoki ki runga i te 'science of learning'. Mā reira, ka māmā ake te tautuhi i ngā marau o Pāngarau mō ngā ākonga Tau 11, 12, 13 hoki.

Mātua pūahoaho mai ana tēnei marautanga hou mō ngā ākonga me ngā kaupapa kia whai mārama, kia mātau, hei akoako hoki i ia tau. Ka pērā anō te whakarawe i ngā kaiako nā te mārama o te hanganga, ngā rauemi, me ngā hāpaitanga hei arataki i ngā mahi whakaako.

Ko tā mātou whai, he whakaiti i te rangiruatanga, he whakamana hoki i te hunga whakaako kia māia ā rātou mahi, me te whakapūmau kia whiwhi ai ngā ākonga katoa ki te kounga tiketike o te mātauranga, kia takatū anō rātou ki te angitu hei āmuri ake nei. E whaiwhakaaro ana tēnei marautanga i te ngākau titikaha o te takitini i mahi ngātahi ai ki te takoha i ngā tino āheinga o te mātauranga ki ō tātou taiohi.

Ko tā te Pāngarau he tūhono i te ao Māori ki te ao Pāngarau, ā, ko te mokopuna kei te pito mata o te ako e angitu ai ki tōna anamata. Ka whārikihia ngā tikanga pāngarau, ngā tukanga pāngarau e tū tangata ai, e tū Māori ai hoki te mokopuna ki te ao whānui.

Kei roto i ngā akoranga Pāngarau e whai wāhi ai tātou ki ngā tino take pāpori pērā i te tōtōpū me te tika o te kōhi raraunga, te whakamāori raraunga, me te whakawhiti whakaaro i ngā raraunga, ka tahi. Ka rua, ko te whakamahi i ngā raraunga pono me ngā raraunga tika hei whakatauiria i te mōhiotanga, te kaunekehanga, ngā tutukitanga, me ngā āheinga anō hoki e whaitake ana ki a rātou me ō rātou whānau, hapū, iwi, hāpori.

Ā tōna wā, ko te aronga o ēnei rārangi take hou, he whakapiki ake i ngā tutukitanga, he whakakapi hoki i te āputa ōritetanga. E tika ana kia whai wāhi atu ai ia mokopuna ki ngā āheinga o te whakaea i tōna pito mata, o te tupu matomato i tōna akomanga, i tōna ao anō hoki, ahakoa te āhuatanga o tōna noho, ahakoa kei hea kē ia e kura ana.

E whakatītina ana koe ki te kuhu ki roto i tēnei wāhanga ako me te urupare mai. Mā konā, ka āpiti mai ō pūkenga mōhio o te kaiako i tōna akomanga ki ngā pūkenga mātauranga pāngarau, ā, ka whakaaroaro ērā katoa i te tuhinga whakamutunga o tēnei wāhanga ako ka whakaterea atu hei te pito o tēnei tau. Ahakoa iti, ahakoa rahi, ka nui te whaipāinga o ngā urupare katoa.

E aro kau noa ahau ki tā tāua mahi ngātahi kia whakatutuki i tēnei marautanga hei tino o te ao, hei hāpai hoki i te hunga whakaako me ngā ākonga ki ngā taumata o angitu.

Ngā mihi nui,

Nāku, nā te Hōnore Erica Stanford (Minita o te Mātauranga).

Te Iho o
Pāngarau





'Kei hopu tāu ringa ki te aka tāepa,
engari kia mau ki te aka matua'

Te Iho

Ko tā te Pāngarau he tūhono i te ao Māori ki te ao Pāngarau, ā, ko te mokopuna kei te pito mata o te ako e angitu ai mō tōna anamata. Ka whārikihia ngā tikanga pāngarau, ngā tukanga pāngarau e tū tangata ai, e tū Māori ai hoki te mokopuna ki te ao whānui.

Te Whaitake o te Ako Pāngarau

Ka aro pū tēnei Wāhanga Ako Pāngarau ki te whakamana i te mokopuna, ā, kia torowhānui ōna ringa hāpai ki tōna hapori. Ka ako te mokopuna ki te raranga i te reo, ngā toi mokopuna, ngā tukanga, te mātauranga, me ngā pūkenga pāngarau ki te reo ake o te pāngarau, ki ngā wāhanga mātauranga pāngarau. Ka tautoko tēnei i te mokopuna ki te tūhura me te mahi ki tōna ao ā-takiwā, ā-motu, puta atu ki te ao whānui.

Kei roto i ngā akoranga Pāngarau e whai wāhi ai tātou ki ngā tino take pāpori pērā i te tōtōpū me te tika o te kohi raraunga, te whakamāori raraunga, me te whitiwhiti whakaaro i ngā raraunga, ka tahi. Ka rua, ko te whakamahī i ngā raraunga pono me ngā raraunga tika hei whakatauirā i te mōhiotanga, te kaunekehanga, ngā tutukitanga, me ngā āheinga anō hoki e whaitake ana ki a rātou me ō rātou whānau, hapū, iwi, hapori. Me mātua mahi tahi ngā kaiako, ngā whānau, ngā hapū, ngā iwi, me ngā hapori ki te tautoko i te mokopuna, kia whakatau hoki i ngā kōwhiringa whai hua mō tōna anamata, hei toko mō te mokopuna kia whai hononga ai ki te pāngarau e whai take ai, e whai hua ai; pērā i ērā atu wāhanga ako o te marautanga ā-motu, me ngā umanga.

He arotahinga mārika te ako kei roto i ngā whakaakoranga me ngā akoranga pāngarau hei pupuri i te mātauranga, ngā tikanga, me ngā tirohanga kaupapa Māori o te whānau, te hapū, te iwi me te hapori hoki. Ko te reo, te mātauranga Māori me ngā kaupapa ā-iwi ngā tūāpapa mō te whakawhanake mōhiotanga pāngarau, e whakatenatena ai hoki i ngā whakaakoranga me ngā akoranga pāngarau ki te whakawhanake mokopuna whakaaro arohaehae. Ko te mea nui, ko te whakatipu i te arohanui o te kaiako me te mokopuna ki te ao pāngarau.

Ngā Tukanga Pāngarau

Ka whakamahia ngā tukanga e te hunga pāngarau ki te whai māramatanga ki ngā pūāhua me te whakaoti rapanga. Ka tautokona te mokopuna e ngā kaiako me tōna whānau ki te tiki atu i ngā tukanga pāngarau e mārama ai ia ki te whakamahinga o te mātauranga pāngarau hei whakamahinga mōna ā te wā e heke mai ana. Ka tautokona hoki e rātou ngā mokopuna ki te whakahono i ngā mātauranga, i ngā reo, i ngā hātepe, me ngā ture o te pāngarau ki roto i tōna taiao me ngā hangarau hurihanganui, ki te arataki hoki i a ia ki ngā umanga me ngā ahumahi a te mātanga pāngarau. Otirā, ko te tūhura pūāhua, te whakaoti rapanga, me te whakawhitiwhiti whakaaro ka tūhono atu ki ērā atu tukanga pāngarau.

Ka whakaata ngā tukanga pāngarau i te āhuatanga noho me ngā tuku ihotanga a ngā tīpuna. Mā te whakamahi i aua tukanga, ka whakaoti rapanga te mokopuna mō ngā pūāhua tātai me ngā pūāhua tūturu. Pērā i ōna tīpuna, ka whakawhanake te mokopuna i tōna āheinga ki te whakaputa whakataunga, kōrero hoki mō āna kitenga, ka whakamārama ai i te take o ērā kitenga, te whakatau me te arohaehae pūāhua o ngā tirohanga rerekē.

Ko te hua o te pāngarau mō te mokopuna, he whakarite ara ki te tautohu me te whakamahi i ngā rautaki ki te whakaoti rapanga. Nō te mokopuna e mahi ngātahi ana ki ōna hoa ako, e taea ana e te ia te huritao ōna anō whakaaro me ngā whakaaro o ētahi atu e pai ai tana panoni i ngā rautaki ki te whakapai ake i āna kitenga. E kore e noho wehe ngā tukanga pāngarau i te mātauranga me ngā pūkenga o te mokopuna. Mātua rā, me whakaoti rapanga, me whakaputa kōrero, me whai whakaaro, me huritao te mokopuna i te whanaketanga o tōna mātauranga, ōna māramatanga mō ngā huatau, me ngā pūkenga tika i ngā whenu katoa, kōhungahunga mai, tamariki mai, taiohi mai.¹

¹ *New Math Curriculum for Grades 1-8*. (June 2020). Government of Ontario.
<https://www.ontario.ca/page/new-math-curriculum-grades-1-8>

Tukanga Pāngarau

Tūhura Pūāhua	Whakaahuhanga Pūāhua	Tūhono Pūāhua	Whakatau Whānui i ngā Kitenga	Whakamārama, Parahau Hoki i ngā Kitenga
<ul style="list-style-type: none"> • Waihanga pātai tūhuratanga. • Kimi tomokanga kia aro pū ai ki tētahi pātai. • Tautohu mōhiotanga, ngā meka mōhio, me ngā tūhononga e hāngai ana. • Whakamahere ara tūhuratanga ki te whai hātepe. • Aroturuki, aromātai hoki i te kauneke me te whakahou i te ara tūhuratanga e tika ana. • Whai māramatanga ki ngā tūhuratanga. 	<ul style="list-style-type: none"> • Whakamahi whakaahuhanga ki te kite, te whakataurite, te tūhura, te whakarūnā, te whakatauirā, te hāpono, me te parahau tauira, taurangirangi hoki. • Whakamahi whakaahuhanga ki te ako i ngā whakaaro hou me te whakamārama hoki i ngā whakaaro hou ki ētahi atu. • Tūhura tāiringa kōrero me te tautoko i ngā tautohe. • Tipako, waihanga, me te urutau tika i ngā whakaahuhanga hoahoa ā-hinengaro, ā-waha, ā-tinana, ā-mariko, ā-kauwhata rānei. • Whakamahi ataatanga kia whakaahua ā-hinengaro, te raweke taonga, me te raweke whakaaro hoki. 	<ul style="list-style-type: none"> • Whakaara tūhononga i waenganui i ngā whakaaro me ngā ara ako. • Whakaara tūhononga i waenganui i ngā whakaahuhanga rerekē. • Tūhono i ngā whakaaro hou ki ngā āhuatanga e mōhiotia kētia ana. • Tūhono i ngā whakaaro ki ngā wāhanga ako me ngā horopaki ā-ahurea, ā-wetere, ā-hītori. 	<ul style="list-style-type: none"> • Tautohu, tūhura hoki i ngā tauira, ka whakaputa tāiringa kōrero ai, ka whakatau otinga ai hoki e whai pānga ana. • Tautohu hononga mō ngā ōritenga, mō ngā rerenga kētanga, me ngā tūhononga hou. • Rapu tauira, rapu ritenga hoki e taea ana te āpiti atu ki tētahi pūāhua kē atu, ki te noho pūmau tonu rānei. • Hanga, whakamātau hoki i ngā tāiringa kōrero mā te whai whakaaro me te taupaepae tauira kei tua atu hei whiriwhiri mēnā he tika, mēnā horihori rānei. • Whakamahi tohu e hāngai ana hei whakaatu whakataunga whānui. 	<ul style="list-style-type: none"> • Whakaatu kiānga, whakatakoto whakamāramatanga hoki e hāngai ana ki ngā kitenga, ki ngā raraunga rānei. • Whakaatu kiānga, whakatakoto whakamāramatanga hoki e hāngai ana ki te mātāuranga, ngā tautuhinga, me ngā tikanga. • Arohaehae i ngā whakaaro o ētahi atu, aromātaihia ō rātou arorau, uia hoki kia pūaho ai, kia mārama ai hoki. • Whakamahi taunaki, whai whakaaro, hāpono hoki hei whakamārama i te whakaaetanga, te whakahētanga rānei ki ētahi tauākī. • Whakawhanake māramatanga kiritōpū mā te tuari, te taurite, te tairite, te arohaehae, te waihanga hoki i ngā whakaaro o ētahi atu. • Whakaatu whakamāramatanga whai take, whakaatu tautohenga hoki ki tētahi whakaaro, ki tētahi otinga, ki tētahi tukanga rānei.

Ngā Tirohanga

Ko tā te wāhanga pāngarau, he whakatipu i te tirohanga motuhake a te mokopuna, ngā rautaki me ngā, tukanga ki te whakaaro arohaehae. Ka tautoko i te mokopuna ki te tāpae me te āwhina i tōna whānau me te hapori hei uri Māori mana motuhake, ā, hei tangata o te ao whānui hoki.

Ko tā te tirohanga pāngarau ki te ako pāngarau e whai ake nei:

Te Hanganga o Pāngarau



Whakapapa

E tūhono ana te pāngarau ki te whakapapa o te tangata, ā, e whakaata mai ana i te hōhonutanga o te mātauranga o ngā mātua tīpuna me ngā kōrero hītori kua tuku iho ki ngā uri whakaheke.



Tūrangawaewae

E rite ana te pāngarau ki tētahi arawhiti e tūhono ana i a tātou ki tō tātou tuakiri ahurea, ā, hei whakamahara hoki i a tātou, ka tiketike tō tātou mārāma ki te pāngarau ina tau ana ō tātou waewae ki ō tātou anō papakāinga me ngā tātai hono ki ō tātou tīpuna, ki ō tātou hapori hoki.



Mana Motuhake

Mā te pāngarau e āhei ai ngā mokopuna ki te tomo atu ki ngā tikanga pāngarau e whakaata ana i ō rātou uaratanga me ō rātou manako.



Kaitiakitanga

E whakatenatena ana te pāngarau i a tātou ki te tū hei kaitiaki o te mātauranga, arā, hei taonga, hei rauemi matihiko otirā, ka whakapakari ake i ā tātou haepapa ki te tiaki, ki te whakapūmau ritenga e taea ai te mārāma, te whakahaere tika hoki i tō tātou ao.



Whanaungatanga

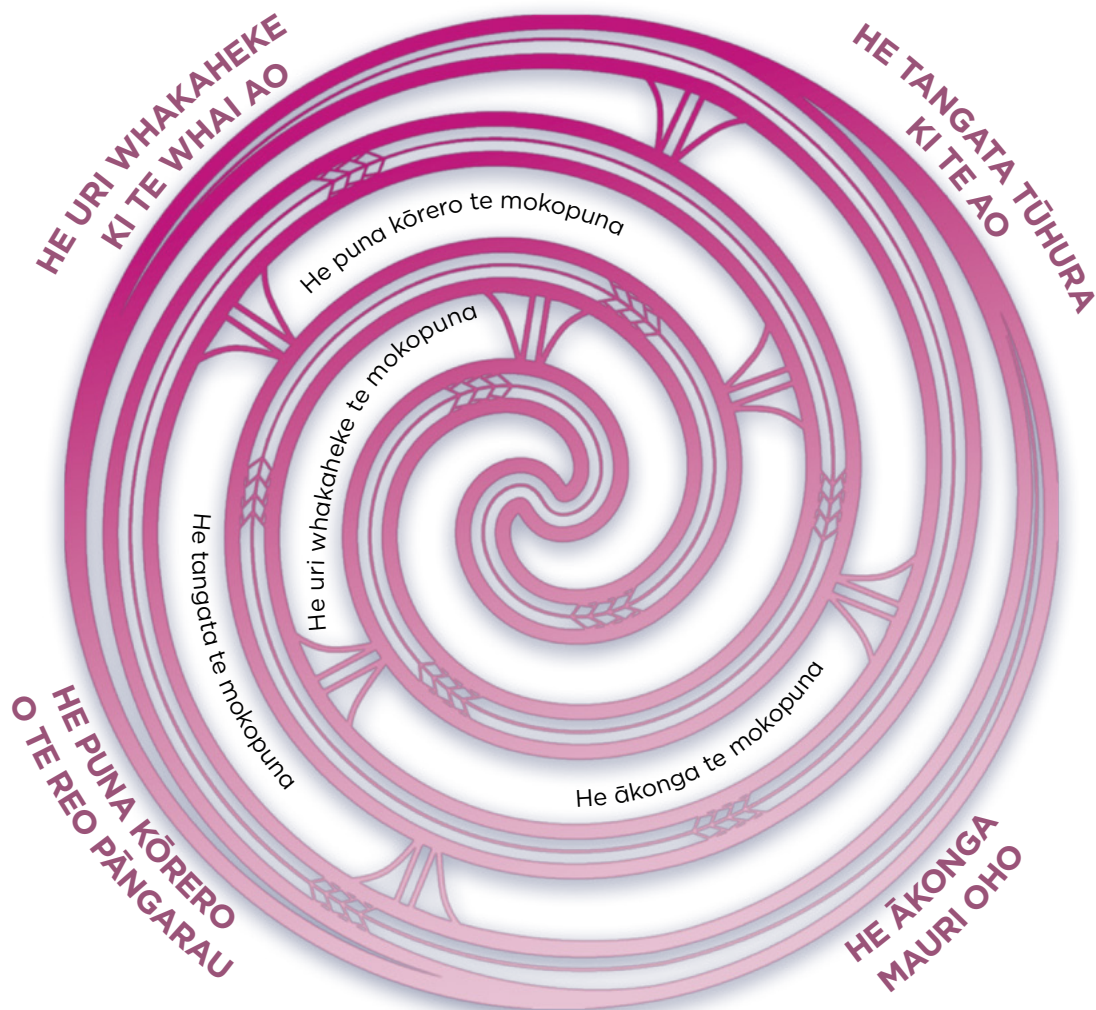
E whakatītina ana te pāngarau kia waihangatia tētahi anga mātauranga whai hua, kia whakaoti rapanga hei whakapakari i a tātou ki te mahi ngātahi.

Ko Ngā Whenu

E whā ngā whenu o Pāngarau:

- HE TANGATA tūhura ki te ao
- HE URI WHAKAHEKE ki te whai ao
- HE PUNA KŌRERO o te reo pāngarau
- HE ĀKONGA mauri oho

E hāpai ana ēnei whenu i ngā **Pou Matua** me ngā whāinga matua o te marautanga.



He Tangata Tūhura ki te Ao

Ka whakawhanake te mokopuna i āna rautaki me ōna pūkenga pāngarau mā te whakamahi i tētahi tukanga tūhura pāngarau ka pakari haere i a ia e whakawhanake ana i ōna toi ākonga me tōna mātauranga. Ka ako te mokopuna ki te tautohu pūāhua hei tautoko i a ia ki te whakamahere me te whakaoti rapanga tūhurangatanga pāngarau. Ka ako hoki ia ki te ui pātai pāngarau e whai take ana, ā, ka whakamahere ngātahi ki te kaiako. Nāwai, nāwai ka pakari ake, ā, ka rite ki te toro i ōna parirau ki te ao whānui, hei tangata ki te ao.

He Uri Whakaheke ki te Whai Ao

Ka aro te mokopuna ki ngā tikanga, te mātauranga me te reo pāngarau e tautoko i a ia ki te pupuri ki ngā tikanga, te mātauranga me te reo Māori i a rātou ka ako, ka whakamahi hoki i te pāngarau.

He Puna Kōrero o te Reo Pāngarau

Ka tūhura, ka whakaaroaro te mokopuna i tōna ake mātauranga hei āwhina i a ia ki te whakaatu, te kōrerorero, me te whakaatu hoki i āna mahi akoako pāngarau.

He Ākongā Mauri Oho

Ka whakamahi te mokopuna i ngā mātauranga pāngarau ki te tūhura me te whakaaroaro i ngā pūāhua me ngā rapanga pāngarau, e whai take ana, e whai hua ana mō ngā wawata o te mokopuna, tōna whānau, tōna hapū, me tōna iwi hoki.

Ko ngā Toi Mokopuna

E whakaahua ana ngā Toi Mokopuna i ngā āhua me ngā waiaro o te mokopuna pāngarau. Ka whakaata i ngā wawata o ngā whānau, ngā hapū, me ngā iwi, i ngā hua o te ako pāngarau, i te pūtake hoki o ia whenu. Ka noho mai a ngā Toi Mokopuna hei aronga mō te mahi akoako mō ia tūārere, ā, ka mārakerake tā te kaiako me tā te mokopuna kite i te tikanga o ngā mātauranga, ngā pūkenga, ngā māramatanga, me ngā wheako ako kei roto pū o ia whenu.

Ngā Whenu	HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
Ngā Toi Mokopuna	He tāwariwari, he aro, he pākiki, he mahi ngātahi, he auaha, he huritao, he kaitūhura whakaata hoki te mokopuna, e ako ana ki te whakamahi tikanga pāngarau me te whakaoti rapanga mō te kura, te whānau, te hapū me te iwi, ā, mō rātou anō te take.	He koi te hinengaro o te mokopuna, rite ana ki ōna mātua tīpuna. Ko ngā whakaaro me te whakamahi pāngarau he mea tuku iho ki a ia, ā, ka tukuna ki ētahi atu.	He māia, he pūkōrero hoki te mokopuna ki te whakamārama me te whakaputa i ōna whakaaroaro me āna tukanga pāngarau ki te reo pāngarau. E ngākaunui ana ia ki te pāngarau me te motuhaketanga o taua reo.	He manawanui, he huritao, he aroturuki te mokopuna ki te panoni i ōna whakaaro me āna mahi, ā, ka tautohu tauira, hononga hoki hei hanga pāngarau me tōna anō ao.

He Whanaketanga Ako Pāngarau

E whakaatu ana te pāngarau i ngā kauneke o te ako ki ngā tūārere e rima mai i te Tau 0 ki te Tau 13. Kei ia tūārere, e takoto mai ana ngā tino whāinga e whā, ko tētahi mō ia Toi Mokopuna. E tohu ana ia whāinga i te aronga o te ako o taua tūārere, ā, kua āta whakatakotoria ki ngā akoranga tāpua mō ia tūārere.

He rerekē te āhuatanga ako o ia mokopuna, ā, he motuhake hoki. Nā reira, me mōhio te kaiako ki ngā akoranga mō te tau e whakaakona ana e ia me ngā akoranga mō ngā tau kei mua, me ngā tau kei te whai mai. Koinei tētahi o ngā painga o te noho tahi a ētahi tau ākongā ki tētahi tūārere i te mea he māmā te kite i ngā akoranga o mua, me ngā akoranga e heke mai ana. E whakaata ana hoki tēnei i te āhua tūturu o ngā akomanga taumata maha me te rerekē o ngā taumata ako a ngā mokopuna.

Ngā Whāinga Matua

E whā ngā whāinga matua i ia Tūārere:

	HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
Ka Aro Te Ako a te Mokopuna ki:				
Tūārere 1 (Tau 0-3)	te whakawhanake pūkenga ki te whakatutuki tūhuratanga pāngarau mā te whai māramatanga mō te whakamahinga o te pāngarau ki te whakaoti pūāhua i roto i tōna ia rā.	te whai māramatanga ki ngā kīanga māmā me ngā huatau pāngarau e hāngai ana ki a ia anō, me te whakaawenga ki tōna anō ao.	te whakawhanake i tōna reo ki te matapaki i ngā kīanga me ngā huatau māmā o te pāngarau.	te whakawhanake pūkenga ki te tautohu i ngā taurira me ngā hononga mā te tā, te tuhi, te waihanga me te tārua whakaahuahanga o ngā taurira kua whakaritea kētia.
Tūārere 2 (Tau 4-6)	te taki tūhuratanga pāngarau e hāngai ana ki tōna ao, ka ako rautaki ai hei whakamahinga māna ki tōna ia rā.	te whakamahi pāngarau hei taunaki ki te whakaoti rapanga, pūāhua o tōna ao hoki.	te whai māramatanga me te whakamahi i te huhua o ngā kīanga me ngā huatau pāngarau ki te tuku pūrongo mō āna kitenga.	te whai māramatanga, te waihanga, me te whakamārama i ngā pānga, ngā taurira, ngā whakataurira, me ngā whakaahuahanga e hāngai pū ana ki ngā tukanga me ngā mātauranga pāngarau.
Tūārere 3 (Tau 7-8)	te kōwhiri kaupapa tūhuratanga pāngarau me te whakatau he aha i kōwhiria ai ngā tikanga hei whakaoti rapanga me te aromātai pūāhua hoki.	te whakamahi pāngarau hei whakatutuki i ētahi kaupapa, māna anō, mā te kura, mā te hapori hoki.	te whakamārama i ngā putanga mā te whakamahi i ngā tikanga o te reo e hāngai ana ki ngā whenu pāngarau.	te waihanga me te whakaputa taurira, 'taurira me te pānga' e whakamārama ana i te mātauranga pāngarau e whakamahia ana.
Tūārere 4 (Tau 9-10)	te taki tūhuratanga kaupapa-mahi me te tūhura tikanga pāngarau ki te tātari me te whakaoti rapanga. Ka aromātai otinga me te pūrongo pūāhua mā te whakamahi mātauranga pāngarau.	te whai māramatanga ki te hua o te whakamahinga a te ao i ngā putanga o te pāngarau hei taunaki i ngā whakatau-kōwhiringa mā te mokopuna, te whānau, te hapū, te iwi, me te hapori. Koia tonu te tukanga e āwhina ai i te mokopuna ki te tūhura i ngā kōwhiringa mō tōna anō anamata, mō te anamata anō o ētahi atu, tae noa ki ōna hapori, me tōna oranga tonutanga.	te whakamārama i ngā putanga me ngā taunaki mā te whakamahi i te whānuitanga o te reo pāngarau o ngā wāhanga ako.	te aromātai i ngā whakataurira me ngā whakaahuahanga pāngarau ki te whai māramatanga mō ngā tāiringa kōrero, ngā hāpono, me ngā whakatau whānui.
Tūārere 5 (Tau 11-13)	te taki tūhuratanga kaupapa-mahi me te parahau i ngā tikanga pāngarau, kua kōwhirihia, ki te tātari me te whakaoti rapanga. Ka aromātai otinga me ngā pūrongo pūāhua mā te mātauranga pāngarau.	te mārama ki te whakamahinga a te ao i te pāngarau mō te oranga tonutanga o te whānau, te hapū, te iwi me te hapori mā te kōhi taunakitanga o ngā hua hei ārahi i ngā kōwhiringa mō te ara whakamua ā-rohe, ā-motu, ā-ao whānui hoki.	te whakamahi i te reo motuhake o te pāngarau ki te matapaki i ngā kitenga o te tūhuratanga i ngā wāhanga whai take, me te whakamārama i ngā taunaki ki ngā mātanga pāngarau ki te hunga e hiahia ana te whai māramatanga rānei.	te aromātai i ngā whakataurira me ngā whakaahuahanga pāngarau ki te ruku ki te rētōtanga o ngā tāiringa kōrero, ngā hāpono, me ngā whakatau whānui.

Te Wāwāhi i ngā Whāinga Matua

Kua wāwāhingia ngā whāinga Pāngarau kia kitea ai tōna kiko, arā, ngā mātauranga me ngā pūkenga hei whakaako mā te kaiako i ia tau o te tūārere.

E whakaahua ana ngā **Tohu Ako** i ngā akoranga pāngarau. Kei te Tūārere 1, ka tīmata ngā akoranga pāngarau hei te mutunga o te 6 marama ki te kura, tae noa ki te 3 tau. Kei te Tūārere 2, ko ngā akoranga pāngarau mā ngā tau 4 ki ngā tau 6. Kei te Tūārere 3, ko ngā akoranga pāngarau mā ngā tau 7 ki ngā tau 8. Kei te Tūārere 4, ko ngā akoranga mā ngā tau 9 ki ngā tau 10. Kei te Tūārere 5, ko ngā akoranga pāngarau mā ngā tau 11 ki ngā tau 13. Kua whakatakotoria ngā akoranga pāngarau ki ngā kauneke mātauranga pāngarau mā ia tau, ā, kua whakatōpū ki ngā Toi Mokokopuna.

Ko te āhua o te ako pāngarau, he moroki, he tukanga hoki, ā, ka whanake haere te mātauranga pāngarau i ngā wā rerekē. E tika ana kia auau te ako, e whakaū ai ngā mokopuna i ngā pukengā hou, arā, kia tipu, kia waia, kātahi ka kaiaka. Nō reira, e whanake ana ngā tino akoranga kei ia tūārere. Heoi anō, me mataara ngā kaiako ki te mataaho i ō rātou aronga ki ngā pūkenga, te mātauranga, me ngā māramatanga e tautohua ana ki ia tau.

Kia tae atu ki tētahi tino akoranga me mātua aro e te kaiako, me āta titiro ki te wāhanga e kīia nei ko, **Kia Mataara**. Kāore e tohua ana ēnei momo akoranga i ia whenu, i ia tūārere rānei. Heoi, kia tohua, me aro atu te kaiako ki ēnei akoranga, kei raru te ako a te mokopuna me tōna whanaketanga i ngā tau whai muri.

Ko **Te Ngako o te Whāinga**, he whakarāpopototanga o ngā tino akoranga e tīaroaro ana ki ngā whāinga matua o ngā Toi Mokokopuna. I tēnei wāhanga, e whakaahua mai ana i ngā whakaakoranga me ngā mahi akoako o ia tau kia pūrangiaho ai te aronga o ia tau. He kōrero āwhina ēnei mā ngā kaiako mō ngā ariā matua o te pāngarau hei hāpai ake i ngā mahi ako a ngā mokopuna. Ka aro hoki ki te whakawhenumi i ngā Toi Mokokopuna me te pāngarau ki ngā pou matua e whā. Ahakoa kua whakaritea te mahi kia hāngai ki ia tau, me whakamahi tonu te kaiako i ōna ake mōhiotanga ki te kite, te mōhio, te urupare me te āhukahuka i ngā mahi o Te Ngako, e taea ana e rātou te whakaatu, ā, mēnā rānei kua ākona kētia aua mātauranga e ia, ka mutu, me toro atu ki ngā akoranga o tētahi atu whāinga e hirahira ana.

Ka noho ngā taipitopito kōrero o tētahi whāinga matua ki **Te Roanga o te Kōrero** (te whakamāramatanga whānui). Kei tēnei wāhanga nei ngā anganga rauangi hei ako me ngā whakamāramatanga mō te mahi whakaako. E arotahi ana tēnei wāhanga ki te tūārere e tika ai te whakaata i te whakatinanatanga o ngā whakaakoranga me ngā mahi akoako a ngā tamariki, i a rātou e ako ana i ētahi pāpātanga rerekē. Ka tīmata Te Roanga o te Kōrero ki tētahi whakaahuatanga whānui mō te mokopuna hei ākongā, ngā akoranga kawatau i tētahi tūārere, me ngā āhukatanga hei whakaaro ake mā ngā kaiako e pā ana ki te tipuranga o te reo o te mokopuna.

Kua whakawhānuitia ngā kōrero mō te **Whāinga**, kua whakatakotoria he kupu tohutohu mā ngā kaiako e pā ana ki te ako, ngā tini mata o te mokopuna, ngā mahi hei whakarite mā ngā ākongā pāngarau, tae atu ki ngā āhukatanga e poipoia ai, e tautokona ai te mokopuna kia tū māia, kia tū kaiaka hoki ia hei ākongā pāngarau.

He whakamāramatanga anō mō ngā huānga matua, arā, mō ngā rautaki me ngā pūkenga, te mātauranga, te reo, te tuakiri hoki e tohu ana i te whānuitanga o ngā mahi akoako e rarau mai ana i tētahi whāinga matua, me ngā āhukatanga e tika ana kia whakaakona. E whakaata mai ana ngā huānga o **Ngā Tini Mata o te Ako** i ngā ariā matua o te tikanga ako, ā, e tauāki ana ko ngā kaiako katoa, he kaiwhakaako o te ako, o te reo, o te mokopuna hoki.

E whakamārama ana te wāhanga **Hei Tautoko i te Ako** i ngā tikanga ako, ā, e āpiti ana i ngā whenu pāngarau mā ngā kaiako, ngā ākonga, me ngā whānau. Ka tautohu ērā i ngā mātauranga matua, ngā tukanga, me ngā pūkenga tae atu ki te tau 13, engari, kāore ērā e whakarōpūhia ana ki ngā **Toi Mokopuna**.

Te Kanorau i te Ako Pāngarau

Ko te mōhio ki ngā taera ako huhua o ngā mokopuna whai kaha tētahi āhuatanga hiranga e mārāma ai te āhua o te whakahaere i tāna ako i te pāngarau. Kia tīmata mā te kōrero ki ngā whānau ki te tautohu, ki te whai māramatanga hoki ki ngā pūkenga motuhake me ngā āhuatanga e uaua ana ki tā rātou mokopuna, tae noa atu ki ngā rautaki ka whai hua ki a ia. Whakamahia Te Ngako o te Whāinga hei tūāpapa mō tētahi matapakinga e pā ana ki ā rātou whakaarotau mō te whanaketanga o te pāngarau.

Me mōhio ki ngā rautaki ka whai hua ki ngā mokopuna whaikaha, me te āhua hoki o ēnei rautaki i tētahi horopaki ako pāngarau.

I ngā akoranga pāngarau, kia whai wāhi mai ngā mokopuna katoa ki te:

Pūmau o te Whakaako

- kia pūmau te anga e mōhio ai te mokopuna ki ngā whakahaerenga
- kia pūmau te koke me te rere o ngā mahi i te roanga o te akoranga
- whakaingoatia ngā rautaki ka whakamahia e koe e mōhio ai te mokopuna ki ngā mahi i ngā wā katoa.

Arotahi ki te Whakawhiti Kōrero

- kia mārāma, kia koi te kōrero – me poto ngā tohutohu
- kia waiho mā te mokopuna te nuinga o ngā kōrero – he arotahi ngā kōrero a te kaiako.

Poipoi i te Ngākau Hihiri

- kia whai wāhi te mokopuna ki ngā ngohe whakawhitiwhiti me ngā rautaki e pārekareka ana
- ākina tā te mokopuna whakamahi i te katoa o te reo e mōhio ana e ia hei whakaoti i ngā ngohe ako pāngarau
- ākina te mahinga ngātahitanga i waenganui i ngā mokopuna
- ākina, whakanuia hoki “te whakamātau” i te whakamahinga huatau pāngarau e hou ana.

Whakatairanga i te Ako

- whakamahia ngā tikanga arotahi huhua e tika ana mō te tau o te mokopuna, te raupapatanga ako, me te taumata ako hei tautohu i ērā ka whai hua ki ia mokopuna
- kia tīrewa te tuku tautoko hei arataki i te mokopuna matea ako rau
- kia tīmata ki ngā mea e mōhio kētia ana e te mokopuna hei tūāpapa mō te ako huatau hou
- whakamahia ngā horopaki me ngā rautaki e taunga ana ka whakaakona ana he huatau pāngarau hou
- whakaakona ngā mokopuna ki ngā rautaki mō te ako i te reo pāngarau me ngā huatau pāngarau hou
- whakamahia ngā ara whakaako ā-ataata, ā-rongo, ā-ringapā hoki e whai wāhi atu ai ngā taera ako huhua
- kia rite tonu te kuhu atu i te wā huritao hei āwhina i te mokopuna ki te tautohu i ngā rautaki ka whai hua ki a ia me ngā pātai pea kei a ia
- whāngaihia he taiao akoranga kauawhi, e whakanui ana i ngā rerekētanga ako katoa.

E kanorau ai te ako, me kanorau te whakaako!

Te Aroturuki me te Aromatawai

Ka whakarato ngā raraunga ā-motu mō ngā mahi aromatawai me ngā tohu i tētahi tirohanga matawhānui ki te mātau o te pāngarau, puta noa i ngā Tau 0-13.

I ngā kura, ka whakamahia ngā mahi aromatawai hei aroturuki i te koke whakamua a te mokopuna, e āhei ai te kaiako ki te whakanui i ngā whakatutukinga a tēnā mokopuna, a tēnā mokopuna. Mā te whakarite i ngā whakaarotau e mārama ana me ngā whāinga whāiti, ka mārama ake, ka kaha ake hoki te tautoko a te kaiako i ngā kaunake o ngā mokopuna katoa.

Ko te tikanga, ko ngā pārongo ka kohia mā roto i ngā mahi aromatawai, ka whakamōhio i ngā kura, i ngā kaiako, me ngā whānau e pā ana ki te whai hua rānei o te hōtaka pāngarau. Ko te tikanga anō hoki, ka pūrangiaho te māramatanga o te mokopuna me te kaiako ki ngā whakatutukinga me ngā kokenga whakamuatanga.

Ko te Ako te Tūāpapa o te Aromatawai

Kāore e tino rerekē ana te āhua o te aroturuki me te aromatawai i te whanaketanga o te pāngarau i te ako pū i te pāngarau. Kei ngā mea ka kitea e te kaiako me te āhua o tana mātai i ngā mahi a te mokopuna te rerekētanga. Ko te mātai hihiri tētahi o ngā rautaki matua mō te whai i ngā kokenga:

1. Me āta aro ki ngā mahi, ki ngā whakawhitinga kōrero rānei a te mokopuna – te mātai, te whakarongo, te kite, me te huritao.
2. Me tautohu ngā mōhiotanga whāiti, ngā pūkenga, ngā waiaro, me ngā whanonga e whakaaturia ana e te mokopuna.
3. Me āta huritao, me āta whakaaro hoki ki ngā mahi e taea ana e te mokopuna me te āhua o te kōkiri atu i tērā.

He Whakapiki Mana te Aromatawai

Me arotahi te aromatawai me te aroturuki i te reo ki te tautohu i ngā mōhiotanga, i ngā pūkenga me ngā aronga reo pāngarau e mātau kē ana mokopuna, e mōhio ai ki te whai hua rānei o te whakaako ā mohoa, me te huarahi me whai ā haere ake nei.

E mihia ai te whānuitanga me te kanorau o te ako, me kohi te kaiako me te kura i ngā taunakitanga o ngā kokenga, puta noa i ngā whenu me ngā wāhanga katoa o Pāngarau, tae noa atu ki:

- ngā mōhiotanga pāngarau (ngā tini mata o te mātauranga)
- ngā pūkenga pāngarau (ngā tini mata o te ako)
- ngā aronga pāngarau (ngā tini mata o te tuakiri)
- te reo pāngarau (ngā tini mata o te reo pāngarau).

He Taunakitanga te Aromatawai

Kei te kaiako me te kura te haepapa mō ngā whakataunga ka puta i a rātou e pā ana ki te mokopuna me tōna whanaketanga pāngarau. Nā konā tonu e whai take ana tō te kaiako, tō te kura, tō te whānau, me tō te mokopuna whakapono ki ngā taunaki i whakamahia rā hei tautoko i ēnei whiriwhiringa. Hei whakapūmau i te tika me te pono o ngā whakataunga e pā ana ki te ako pāngarau, ka whakamahia ngā tukanga tūturu me ērā kāore e tūturu ana.

Ka whai wāhi atu ki ngā tukanga tūturu ko ngā pāhekoheko ako, ngā aromatawai ōkawa, me ngā aromatawai ōpaki. Ka whai wāhi atu ki ngā tukanga kāore e tūturu ana ko ngā ara e hōhonu ake ana, pēnei i te whakamahi tairongo me te mārama pū ki te mokopuna hei tangata – ōna hiahia, ōna pūkenga, ōna uauatanga, me ōna aronga.

Kei te rauemi, **Te Poutama Tau he anga kōhura** me ngā momo tukanga ka taea e te kaiako te whakamahi hei tautohu i ngā mōhiotanga o te mokopuna, ā rātou whakamāramatanga me ā rātou whakaaturanga mō ō rātou mōhiotanga.

E rua atu anō ngā rauemi aromatawai, arā, ko:

- [He Pūkete Aromatawai Pāngarau](#)
- [He Tauaromahi Pāngarau](#)

Tūārere 1
Tau 0-3

Tūārere 2
Tau 4-6

Tūārere 3
Tau 7-8

Tūārere 4
Tau 9-10

Tūārere 5
Tau 11-13



Tūārere 4 Tau 9-10



Whenu			
HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho

Toi Mokopuna			
He tāwariwari, he aro, he pākiki, he mahi ngātahi, he auaha, he huritao, he kaitūhura whakaata hoki te mokopuna, e ako ana ki te whakamahi tikanga pāngarau me te whakaoti rapanga mō te kura, te whānau, te hapū me te iwi, ā, mō rātou anō te take.	He koi te hinengaro o te mokopuna, rite ana ki ōna mātua tīpuna. Ko ngā whakaaro me te whakamahi pāngarau he mea tuku iho ki a ia, ā, ka tukuna ki ētahi atu.	He māia, he pūkōrero hoki te mokopuna ki te whakamārama me te whakaputa i ōna whakaaro me āna tukanga pāngarau ki te reo pāngarau. E ngākaunui ana ia ki te pāngarau me te motuhaketanga o taua reo.	He manawanui, he huritao, he aroturuki te mokopuna ki te panoni i ōna whakaaro me āna mahi, ā, ka tautohu tauira, hononga hoki hei hanga pāngarau me tōna anō ao.

Tohu Ako: Tūārere 4: Tau 9-10

Whāinga			
Ka aro te ako a te mokopuna ki te taki tūhuratanga kaupapa-mahi me te tūhura tikanga pāngarau ki te tātari me te whakaoti rapanga. Ka aromātai otinga me te pūrongo pūāhua mā te whakamahi mātauranga pāngarau.	Ka aro te ako a te mokopuna ki te whai māramatanga ki te hua o te whakamahinga a te ao i ngā putanga o te pāngarau hei taunaki i ngā whakataukōwhiringa mā te mokopuna, te whānau, te hapū me te iwi. Ka āwhina tēnei tukanga i te mokopuna ki te tūhura kōwhiringa mō tōna anamata me tōna oranga tonutanga.	Ka aro te ako a te mokopuna ki te whakamārama i ngā putanga me ngā taunaki mā te whakamahi i te whānuitanga o te reo pāngarau o ngā wāhanga ako.	Ka aro te ako a te mokopuna ki te aromātai i ngā whakatauirā me ngā whakaahuhanga pāngarau ki te whai māramatanga mō ngā tāiringa kōrero, ngā hāpono, me ngā whakataukōwhiringa.

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūāreere 4: Tau 9-10

Kia Mataara

<p>Hei te mutunga o te tau 9 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • kimi taurangirangi kei tētahi āhuetanga ka panoni, ka taea rānei te panoni, ka tūhura ai mā te kōhi raraunga mō tētahi, ētahi taurangirangi rānei i tētahi kaupapa e tūhuratia ana. 	<p>Hei te mutunga o te tau 9 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • whakamahere i te whakamahinga o ōna mātauranga pāngarau hei whakatutuki i ngā tūmahi e hirahira ana ki te whānau • whakamahere i tana tūhonohono i ōna mātauranga pāngarau me te mātauranga Māori. 	<p>Hei te mutunga o te tau 9 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • arohaehae i tētahi whakaaturanga raraunga, e whakatau ai i te pono me te tika o ngā whakataunga ka puta. 	<p>Hei te mutunga o te tau 9 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • ine me te wāwāhi i ngā tau huhua ka mārama ai ko te otinga o ngā wehenga e ōrite ana ki te inenga • whakamahi i ngā rautaki huhua ki te whakaoti rapanga me ngā tauoti, hautau, hautau ā-ira, ōrau, taipū me ngā tau tōpū (tōrunga, tōraro) • whakamahi waeine rerekē me te whakatairite i aua waeine.
<p>Hei te mutunga o te tau 10 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • waihanga pātai tūhuratanga mō tētahi taupori whānui • āta arohaehaetia ngā tūhuratanga tauanga me ngā raraunga matatini • whakamahi i ngā whakamātau tauanga me te whakaatu kua rawaka ngā raraunga mai i ngā putanga whakamātau • whakaatu i te māramatanga o ngā pānga kei waenganui i ngā putanga whakamātautau me ngā tauira ariā. 	<p>Hei te mutunga o te tau 10 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • whakaatu i tāna whakamahi i ōna mātauranga pāngarau hei whakaoti i ngā tūmahi nui a te whānau, a ngā hāpori whānui ake • whakaatu i tōna āhei ki te whakaaro arohaehae mō te hononga o ōna mātauranga pāngarau ki te mātauranga Māori. 	<p>Hei te mutunga o te tau 10 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • whakamārama, te āpiti, me te whakawhānui tauira i ngā wāhanga katoa o te pāngarau • matapaki kitenga ki ngā whakaari whai take me te whakatau whānui ki taua horopaki. 	<p>Hei te mutunga o te tau 10 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • tuhi kauwhata pānga rārangi, ka waihanga whārite ai e whakaahua ana i ngā whakaahuahanga whai pānga • āhukahuka i te whānuitanga o ngā āhuetanga e inea ana me te whakamahi i ngā waeine tika • whakaoti rapanga ine mā te wāwāhi āhua ki ōna wāhanga, mā te whakahāngai ture me te whakamahi ōwehe ine me ngā ara ako pākoki e whai take ana • whakaahua me te rāwekeweke pere • whakamahi i ngā āhuetanga o ngā kōki kua waihangatia e ngā rārangi pūtahi (pēnei i ngā kōki roto) hei whakatau pānga ki waenganui i ngā rārangi • whakaatu i te panonitanga o ngā āhua me te mau tonu ki ōna anō āhuetanga pērā i te ōrite me te rite o te hanga • whakamahi i te ture Pythagoras ki ngā pūāhua ahu-2 me te ahu-3, me te whakaū i te hononga o te taurangi me te āhuahanga.

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūārere 4: Tau 9-10

Te Ngako o te Whāinga

Mā te Kaiako

Tau 9 E tautoko ana te mokopuna kia:	Tau 9 E tautoko ana te mokopuna kia:	Tau 9 E tautoko ana te mokopuna kia:	Tau 9 E tautoko ana te mokopuna kia:
<ul style="list-style-type: none"> whakamahi i ngā āhuatanga o te tau ā-ira, inarā kia mutu, kia auau, kia mutunga kore hoki; ka mutu, e āhei ana kia auau kore, kia mutunga kore ngā tau (he tau kewha) whakaoti rapanga hautau mā te whakamahi i ngā āhuatanga o te hautau tautuhi i ngā āhuatanga o ngā poro, ka whakaahua ai i te momo, he pēhea hoki te hanga whakamahi i te pakirehua ā-tauanga hei kawē i tētahi tūhuratanga ā-raraunga nō ngā tipakonga taupori. 	<ul style="list-style-type: none"> whakaatu i te mōhiotanga ki ngā mōtika me ngā herenga o te tangata e pā ana ki ōna ake raraunga, ki ngā raraunga o tangata kē hoki āhukahuka i te rangatiratanga o te tangata ki ōna anō raraunga, ki ōna anō mōtika me ōna whai pānga mō te kohikohi, te whakamahi, te pātengi, me te kokoraho āhukahuka i te rerekētanga o ngā ture me te tūmataiti o ngā raraunga ki whenua kē. 	<ul style="list-style-type: none"> whakamahi i ngā tauira ariā tūponotanga me ngā tūponotanga whakamātau e whakatau tata ana ki te whakaatu i ngā tūponotanga kua whakaawhiwhia ki te tūponotanga pono, kāore e mōhiotia ana. 	<ul style="list-style-type: none"> whakaatu i tō rātou āhei ki te whakamahi tika i ngā pūnaha o te wā mō te 12-hāora me te 24-hāora me te tautohu i te rerekētanga o ngā pūnaha wā e rua whakaatu i te tikanga me te mahi a ngā inenga wā ā-ira mō te poto o te wā (miri hēkona) whakaatu i tōna mōhiotanga mā te whakarea hautau ki tētahi tū ōrite ki te 1, (h.t., $\frac{1}{2} \times \frac{3}{3} = \frac{1}{2}$) ka hua mai he hautau ōrite whakamahi i ngā tikanga o te whakatau whānui mō te tapeke koki ā-roto me te tapeke koki ā-waho e pā ana ki ngā taparau katoa whakamahi i ngā āhuatanga paheko, (h.t., ngā āhuatanga kōaro, āhuatanga tohatoha, āhuatanga herekore, kōaro, tūmau hoki) ki ngā tau me ngā taurangi whakamahi i ngā raupapatanga paheko i te whakamahinga o ngā tau me ngā taurangi whakaatu i te ōritenga o ngā koki taurite i roto i ngā āhua ōrite me te roanga te pānga riterite o ngā taha taurite whakaatu i te hononga o ngā koki i waenga i ngā rārangi whakarara ki te rārangi whakawhiti (koki taurite, koki tauwhiti, koki tauroto).

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūāreere 4: Tau 9-10

Te Ngako o te Whāinga

Mā te Kaiako

<p>Tau 10 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> tīpako i tētahi taupori, ā, e rerekē ana te tuari o te taurangi o tēnā tīpako, ō tēnā tīpako. 	<p>Tau 10 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> panonihia he āhua me te panoni i ngā paenga, ngā horahanga e mārama ana ki te whakapapa o te āhua waihanganga taurangi hou mā te whakarōpū me te whakarerekē i ngā taurangi o te wā aro ki tētahi pūāhua tūponotanga hātepe-rua mā tōna māramatanga he whakamauru, he wehe kē rānei ngā hātepe (e ahu ana ki ngā tūponotanga whakawhirinaki). 	<p>Tau 10 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> whakahua i ngā pānga hei whārite taurangi, hei kauwhata XY, hei tūtohi, hei kupu rānei whakamahi i ngā tūmomo whārite maha e whakahua ana i tētahi pānga rārangi. 	<p>Tau 10 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> whakamahi i tō rātou mōhiotanga ki te hononga pūmau o te roanga o ngā tapa kei tētahi tapatoru hāngai, kua tohua e te ture Pythagoras. whakamahi i tō rātou mōhiotanga ki te tautohu he ahu-kore te ira, he ahu-1 te rārangi, he ahu-2 te papa, he ahu-3 te āhua ahu-3, ā, nui ake i te toru o ngā ahu i roto i te mahi pāngarau whakaatu i te tikanga o te whakawehe ki tētahi tau i waenganui i te 0 me te 1, ka puta he otinga nui ake i te tau e whakawehea ana whakamahi pāpātanga hei whakatairite i ngā rahinga e rua e rerekē ana ngā waeine whakamahi ōwehenga hei whakatairite i ngā rahinga e rua e ōrite ana whakaatu māramatanga ki ngā āhuatanga o ngā hātepe, ā, ka whāomo, kāore rānei, ā, he iti iho ngā whetoko i te hātepe whāomo.
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HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūārere 4: Tau 9-10

Te Ngako o te Whāinga

Mā te Mokopuna

Kei te ako te mokopuna ki te:

- kimi i te hautau, te ōrau rānei o tētahi tau
- whakataurite hautau mā te whakawehe ā-tohatoha, (h.t., te tohatoha i te 2 ki te 5, i te tohatoha 3 ki te 7)
- whakarūnā hautau mā te tauwehe pātahi nui rawa
- whakamahi pāpātanga ki te whakatauirā me te whakaahua panonitanga
- whakamahi me te whakahāngai ōwehenga ki te whakatauirā i ngā pūāhua o ia rā
- whakamahi tauoti ki ngā taupū
- waihanga ture whakarea, ture whakawehe rānei e whai taupū ana me te pūtaka ōrite
- whakahua ki ngā koki kāore i mōhiotia i ngā pūāhua rārangi whakarara, rārangi whakawhiti hoki me ngā koki ā-roto, koki ā-waho hoki o ngā taparau
- tautuhi pānga e ahu mai ana i ngā whārite rārangi, i ngā whārite pūrua māmā rānei
- tuhi pānga rārangi ki ngā kauwhata me te whakamāori i te rōnaki, te haukoti-x, me te haukoti-y e pā ana ki te hononga, ki te pūāhua rānei e whakaahua mai ana
- whakauru, te nahanaha, me te whakarūnā hoki i ngā kīanga mā te whakakotahi i ngā kupu ā-kaupapa e tika ana
- waihanga, te whakamahi rānei i ngā momo ture, ngā whārite, ngā tōrite rānei, hei tātai i ngā taurangi kāore e mōhiotia ana, me te aromātai mā ngā tikanga whakauru
- tautohu i te raupapatanga, te tīpakotanga, me te tōaitanga ka whakamahia i ngā hātepe mō te whakatakoto taurira.

Kei te ako te mokopuna ki te:

- whakatau tata tika, te tātai, me te whakaahua mā te whakamahi i ngā mati whai tikanga
- waeine me te whakamahi ture ki te tātai i te horahanga, te paenga o ngā taparau me ngā porowhita
- āwhata āhua mā tētahi tauwehe me te tātai i te tauwehe āwhata mō te horahanga, te rōrahi rānei o tētahi āhua kua āwhatahia
- whakamahere whakamātau tūponotanga e whakamahi raraunga tūturu ana ki te waihanga tuari tūponotanga mō ngā taurangi tau, ngā rerenga whaihanga, me te hopu raraunga.

Kei te ako te mokopuna ki te:

- waihanga whakarāpopototanga me ngā pātai whakataurite mō ngā taupori
- waihanga pātai tūhura mō ngā raraunga houanga, me ngā pānga raraunga i āna mahi whakamātau
- whakamahere ki te kohikohi raraunga mō ngā tumahi mā tiro me ngā mahi whakamātau, mā te tipako inenga tika mō ngā taurangirangi, te tiki rānei i ētahi huinga raraunga o te wā
- whakaraupapa anō i ngā taurangi me te whakamahi whakaahuhanga taurea ki te tātai me te kite pohewa i ngā raraunga
- whakawhiti kōrero mō ngā putanga mā te whakamahi taunakitanga o ngā tātaritanga
- whakaputa whakamāramatanga mō ngā putanga
- huritao i ngā matapaenga, i ngā tāpaetanga rānei
- arohaehae i ngā putanga me ngā whakapaenga a ētahi atu mā te whakau i ngā wāhanga katoa o tētahi pakirehua tauanga
- āhukahuka me te waihanga pātai tūhuratanga, ka whakaneinei i ngā tūāhua ka puta, me te whakaputa whakapae
- whakaahua i ngā momo tūponotanga e māmā ana, e tūhono ana, e whakawhirinaki ana hoki
- tautohu i ngā pūāhua tūponotanga e kore pea e tika ana me te whai whakaaro ki te whakapai ake i te tukanga o tērā i tūhuratia ai.

Kei te ako te mokopuna ki te:

- tāpiri me te tango hautau me ngā tauraro rerekē mā te whakamahi i ngā hautau ōrite
- whakarea me te whakawehe i ngā tau tōpū e rua, ngā hautau e rua, ngā tau ā-ira matirua rānei
- whakamahi āhuatanga i āhua ōrite ahu-2, me ngā tapatoru hāngai ki te kimi i ngā roanga kāore e mōhiotia ana
- whakamahi i te ariā o Pythagoras ki te kimi i te roa o tētahi tapa kāore e mōhiotia ana, o te tapatoru hāngai
- whakamahi i ngā āhuatanga pūmau ki te panoni i tētahi huinga pūwāhi ki te papa XY, mā te neke me te whakaata ki runga tuaka, me te huri i tētahi pūwāhi pūmau mā te taurea putu 90
- whakaahua āhua ahu-3 mā ngā tānga ahu-2 me ngā taputapu matihiko
- tātai i te horahanga, te rōrahi, te kītanga rānei o ngā poro me ngā rango.

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūārere 4: Tau 9-10

Te Roanga o te Kōrero

<p>Te Āhua o te Mokopuna E whakamahi ana te mokopuna i ngā tūhuratanga pāngarau ki te whai māramatanga mō ngā huatau me ngā ariā pāngarau, ngā pūāhua me ngā rapanga.</p> <p>E taea ana e te mokopuna te pāngarau ka whakamahia e ia te arohaehae, te whakamahi taputapu me te reo pāngarau ki te arohaehae pūāhua me ngā putanga e pā ana ki ngā rapanga e whai take ana ki tōna ao.</p> <p>E ākina ana te mokopuna kia whakamahi tauira, kupu, tohu, whakaahuahanga, hoahoa hoki ki te whakapuaki me te whai i te hōhonutanga o te mātau ki āna mahi akoako.</p> <p>E mārāma ana te mokopuna ki te tikanga o te whakamahi i ngā taputapu me ngā putanga pāngarau, ki te whakamāori tapatahi hoki i āna kitenga.</p>	<p>Te Āhua o te Mokopuna E whakawhanake ana tā te mokopuna arohaehae i āna mahi pāngarau o tōna anō ao, o ia rā, me tāna āhei ki te āhukahuka i ngā ritenga me ngā rerekētanga o te tirohanga Māori ki ngā tirohanga ahurea o te ao pāngarau.</p> <p>E āhukahuka ana te mokopuna i te painga o te pāngarau me te whakahāngai ki te whakatutuki i ōna hiahia o tōna ao, o tōna whānau, hapū, iwi, haporī hoki.</p> <p>E whai whakaaro ana te mokopuna ki ngā take ā-rohe, ā-ao whānui hoki (ngā raru kino o te ao) me te wāhi ki te pāngarau e hāpai ai i tōna māramatanga me te wāhi ki a ia ki te whakapai ake i ngā āhuatanga o te rohe, toro atu ai ki te ao whānui.</p>	<p>Te Āhua o te Mokopuna E ui ana te mokopuna i ngā pātai tōtika, ngā pātai arotahi pāngarau, me ngā pātai pāngarau e hāngai ana ki tōna ake ao.</p> <p>E taea ana e te mokopuna te whānuitanga o te reo pāngarau te whakamahi ki te whakawhiti whakaaro mō āna tūhuratanga pāngarau me ngā putanga.</p> <p>E taea ana e te mokopuna te matapaki āna tūhuratanga me ngā putanga hei mema o te haporī pāngarau. E mōhio ana hoki ia ki te mahi tahi me tōna ngākau whakaute ki ētahi atu, ki reira matapaki ai, tautohe ai hoki i te painga o āna putanga pāngarau ki ētahi atu. Mā te whakamahi i te reo pāngarau e hāpai ai i te mokopuna ki te aromātai me te huritao i tōna ao.</p> <p>E mārāma ana te mokopuna ki te whakamahi i ngā āhuatanga o te reo pāngarau ina e whakawhiti whakaaro ana ia ki ngā tāngata kanorau, mō ngā pūāhua rerekē rānei.</p>	<p>Te Āhua o te Mokopuna E taea ana e te mokopuna te āhukahuka ngā tūmomo tauira, i tana āhei ki te whakaahua āhuatanga, i tōna wāhi ake i ngā mokowā, i ōna whakaaro hoki ki ngā āheinga me ngā rahinga, ki ngā taumata kē atu o ngā mātauranga pāngarau me ngā paheko pāngarau.</p> <p>E whakaaro arorau ana, e whakaaro whānui ana hoki te mokopuna ki te whai pānga o te pāngarau ki ngā pūāhua me te whakaoti rapanga.</p> <p>E taea ana e te mokopuna te wahapū ngā tikanga ahurea pāngarau e rerekē ana i te ahurea me ngā tikanga Māori, me te whakamahi i aua tūāhua ki ngā pūtake whaihua.</p> <p>E taea ana e te mokopuna te pāngarau ki tōna anō haporī te kite me te whakamahi hoki.</p> <p>E kōtuitui ana te mokopuna i ngā akoranga pāngarau ki ngā wāhanga ako.</p> <p>E whakawhanake ana te mokopuna i tōna māia ki te tāiri kōrero, ki te kimi hāpono hoki.</p>
<p>Ngā Tini Mata o te Tuakiri E whanake ana te aronga a te mokopuna ki ngā tukanga whakaoti rapanga a ētahi atu, ki ngā hia mōhio a ētahi atu me te mahi tahi i ā rātou e tūhura pāngarau ana. Ko te ahurea tūhura tēnei i ā rātou e mahi takitahi ana, e mahi ngātahi ana hoki.</p> <p>E ngākau auaha ana, e whakaaro arorau ana te mokopuna ki tāna mahi pāngarau.</p>	<p>Ngā Tini Mata o te Tuakiri E whanake ana te māia a te mokopuna ki te ahurea, te reo, me ngā tikanga pāngarau me tāna āhei ki te wahapū i ngā wāhanga o ngā tukanga pāngarau i ahu māi i ngā tīpuna. E mōhio ana hoki ia e whai take ana te mātauranga pāngarau heoi, e kore e eke i te taumata mātauranga me ngā tikanga a ngā tīpuna.</p>	<p>Ngā Tini Mata o te Tuakiri E whanake ana te māiatanga o te mokopuna ki te whakawhiti whakaaro pāngarau me ngā putanga i tāna kuhu ki te mātauranga pāngarau marutuna. Ka whai take tēnei mēnā rānei he pūtake tō tā rātou tuari me te whakawhiti whakaaro mō ngā putanga o tā rātou i tūhura ai, ki te minenga.</p>	<p>Ngā Tini Mata o te Tuakiri E kaha ake ana te mokopuna ki te whakamahi i te mātauranga pāngarau, mātauranga Māori hoki mō ōna anō take, ka tautohu ai i tāna whakamahi i ngā putanga pāngarau hei kupu whakataunga mō tōna ia rā.</p>

Tohu Ako: Tūārere 4: Tau 9-10

Tau

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakamahi i te whānuitanga o ngā rautaki, pērā i te paheko kōaro hei whakaoti rapanga tāpiritanga, rapanga tangohanga tauoti, tau ā-ira māmā hoki
- whakamahi i te huhua o ngā rautaki hei whakaoti rapanga tāpiritanga, rapanga tangohanga mō ngā tauoti, ngā hautau, ngā tau ā-ira, ngā tau tōpū
- whakapae me te whakaoti rapanga whakarea, rapanga whakawehe tuatini mō ngā tauoti, tau ā-ira, ngā hautau, ngā ōrau me ngā tau toitū
- whakamahi pānga riterite hei whakaoti rapanga mō ngā ōrau, ngā pāpātanga me ngā ōwehenga me te whakarite whārite taurangi kia kotahi, kia rua hoki ngā hatepe mō te rahinga kōaro e mōhiotia ana.

Ko ngā rautaki matua hei whakamahi mā te mokopuna, ko:

- ngā rautaki whānui hei whakaoti rapanga tāpiri, rapanga tango (whakamahi taurea, whakamahi toharite, te pāheko ōrite mō ngā tau tōraro)
- te whakaoti rapanga tau ā-ira mā te huri kōaro ($6.03 - 5.8 = 5.8 + ? = 6.03$) me te tātai kōaro ($? + 3.98 = 7.04 = 3.98 + ? = 7.04$)
- te whakarea, te whakawehe tauoti, tau ā-ira, hautanga mā te wāwāhi uara, te tau māmā me te tikanga paremata, te pānga riterite, te huri kōaro me ngā meka mōhio
- te wehewehe rahinga ki ngā ōwehenga
- whakaoti rapanga mā te whakamahi ōwehenga, pāpātanga hoki.

Ngā Tini Mata o te Mātauranga

Te Hanga o Ngā Tau

Tau 9**Kei te ako te mokopuna ki te:**

- tuhi, te whakatairite, te raupapa tauoti me ngā tau ā-ira hei tānga ngahuru:
h.t., 2.45×10^3
- tautohu i ngā āhuatanga motuhake o ngā tau pērā i ngā pūtaketoru ki te 1,000.

Tau 10**Kei te ako te mokopuna ki te:**

- tuhi, te whakatairite, te raupapa tauoti me ngā tau ā-ira hei tānga ngahuru, me ngā taupū tōraro:
h.t., 7.35×10^{-3} atu i te tuhi 0.00735.

Ngā Pāheko Tau

Kei te ako te mokopuna ki te:

- whakaawhiwhi me te whakatau tata ki te whakapae me te āta tiro ki te tikanga o ngā tātai
- whakapuaki i ngā toenga hei hautau, hei tau ā-ira e hāngai ana ki te horopaki
- tāpiri me te tango i ngā tau tōruna me ngā tau tōraro
- whakarea tau tōpū mā te tāpiri tāruarua, tango tāruarua
- whakawehe i ngā tau tōpū mā te huri kōaro hei whakarea.

Kei te ako te mokopuna ki te:

- whakaawhiwhi me te whakatau tata i te tika o ngā otinga
- tāpiri, te tango, te whakarea me te whakawehe tau tōraro tae atu ki ngā hautanga me ngā tau ā-ira.

Tohu Ako: Tūāreke 4: Tau 9-10

Tau

Ngā Tau Whakahau

Tau 9 Kei te ako te mōkōpuna ki te:	Tau 10 Kei te ako te mōkōpuna ki te:
<ul style="list-style-type: none"> tautohu, te pānui, te tuhi, te whakaatu, te whakataurite, te raupapa, me te huri i ngā hautau, tau ā-ira, me te ōrau. 	<ul style="list-style-type: none"> tautohu, te pānui, te tuhi, te whakaatu, te whakataurite, te raupapa, me te huri i ngā hautau, tau ā-ira, me te ōrau.
<ul style="list-style-type: none"> kimi i ngā hautau ōrite whakarūnā i ngā hautau huri i ngā hautau nui ake i te kotahi me ngā tau hanumi. 	<ul style="list-style-type: none"> kimi i ngā hautau ōrite whakarūnā i ngā hautau huri i ngā hautau nui ake i te kotahi me ngā tau hanumi.
<ul style="list-style-type: none"> kimi hautau, ōrau rānei o tētahi tau whakapiki, te whakaheke rānei i tētahi tau mā te hautau, mā te ōrau rānei. 	<ul style="list-style-type: none"> tātai i te pikinga, te hekenga rānei o ngā tau hei huringa ōrau.
<ul style="list-style-type: none"> kimi i te rahinga katoa, mehemea he hautau, he ōrau rānei o tētahi rahinga: h.t., ko te 20% o te rahinga ko te 30, ko te aha te rahinga matua? 	<ul style="list-style-type: none"> kimi i te rahinga katoa, mehemea he hautau, he ōrau rānei o tētahi rahinga: h.t., ko te 15% o te rahinga 27, ko te aha te rahinga matua?
<ul style="list-style-type: none"> whakawehe i ngā hautau ki ngā tauoti, ki te tāpiri, te tango me te whakarea hoki i ngā hautau whakawehe i ngā tau ā-ira ki ngā tauoti, ki te tāpiri, ki te tango me te whakarea hoki i ngā tau-ā-ira. 	<ul style="list-style-type: none"> tāpiri, te tango, te whakarea me te whakawehe hautanga, tau ā-ira hoki.
<ul style="list-style-type: none"> whakamahi ōwehenga ki te tohatoha i ngā pānga rite ōrite-kore kimi ōwehenga ōrite me ngā pāpātanga mā te whakarahi ake, whakaheke iho rānei. 	<ul style="list-style-type: none"> whakataurite me te whakamahi ōwehenga me ngā pāpātanga.

Te Mātau Ahumoni

Kei te ako te mōkōpuna ki te:	Kei te ako te mōkōpuna ki te:
<ul style="list-style-type: none"> tātai monihua, moningarō me ngā whakahekenga utu hei rahinga uara pū e pā ana ki te rahinga matua. 	<ul style="list-style-type: none"> huri tāra Aotearoa ki moni kē nō whenua kē (me te huri kōaro) me te whakapuaki wā ka tino whai take tēnei mahi.
<ul style="list-style-type: none"> tātai i te huamoni me te tāke hokohoko o ngā rahinga tāra: h.t., 15% o te \$432. 	<ul style="list-style-type: none"> kimi i ngā pānga riterite o te utu: h.t., te utu o te 400g mehemea kua hoatu te utu mō ia kg.

Ngā Tini Mata o Te Reo o Tau

E mōhio ana te mōkōpuna ki ngā kupu nei:	E mōhio ana te mōkōpuna ki ngā kupu nei:
<ul style="list-style-type: none"> tau hanumi rahinga matua pānga rite ōrite-kore pānga riterite kōaro ōwehenga ōrite tau tōrunga/tōraro monihua moningarō huamoni whakahekenga utu tāke hokohoko rahinga uara pū tānga ngahuru. 	<ul style="list-style-type: none"> tau hanumi pāpātanga pānga riterite huri tāra moni kē.

Tohu Ako: Tūārere 4: Tau 9-10

Taurangi

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakamahi i ngā hoahoa, ngā tūtohi, ngā kauwhata me ngā whārite hoki ki te whakaoti rapanga pānga rārangi
- tuhi i ngā kauwhata o ngā pānga rārangi, ka whakamārama i te tikanga o te unahi
- tuhi i te whārite ki te whakaahua i te whakaahuahanga pānga, ki te whakaoti rapanga.

Ngā Tini Mata o te Mātauranga

Tau 9

Kei te ako te mokopuna ki te:

- whakamahi tauoti ki ngā taipū
- whakamahi i te ture whakarea, ture whakawehe rānei e whai taipū ana me te pūtaka ōrite
- tautuhi pānga e ahu mai ana i ngā whārite rārangi, i ngā whārite pūrua taurira māmā rānei
- tuhi pānga rārangi ka whakamāori i te rōnaki
- tuhi pānga rārangi ki ngā kauwhata me te whakamāori i te rōnaki, te haukoti-x, me te haukoti-y e pā ana ki te hononga, ki te pūāhua rānei e whakaahua mai ana
- whakauru, te nahanaha me te whakarūnā hoki i ngā kīanga mā te whakakotahi i ngā kupu ā-kaupapa e tika ana
- waihanga, ki te whakamahi rānei i ngā momo ture, ngā whārite, ngā tōrite rānei, hei tātai i ngā taurangi kāore e mōhiotia ana, me te aromātai mā ngā tikanga whakauru
- tautohu i te raupapatanga, te tīpakotanga, me te tōaitanga ka whakamahia i ngā hātepe mō te whakatakoto taurira.

Tau 10

Kei te ako te mokopuna ki te:

- whakamahi tauoti ki ngā taipū
- whakamahi i te ture whakarea, ture whakawehe rānei e whai taipū ana me te pūtaka ōrite
- tautuhi pānga e ahu mai ana i ngā whārite rārangi, i ngā whārite pūrua taurira māmā rānei
- tuhi pānga rārangi ka whakamāori i te rōnaki
- tuhi pānga rārangi ki ngā kauwhata me te whakamāori i te rōnaki, te haukoti-x, me te haukoti-y e pā ana ki te hononga, ki te pūāhua rānei e whakaahua mai ana
- whakauru, te nahanaha me te whakarūnā hoki i ngā kīanga mā te whakakotahi i ngā kupu ā-kaupapa e tika ana
- waihanga, ki te whakamahi rānei i ngā momo ture, ngā whārite, ngā tōrite rānei, hei tātai i ngā taurangi kāore e mōhiotia ana, me te aromātai mā ngā tikanga whakauru
- tautohu i te raupapatanga, te tīpakotanga, me te tōaitanga ka whakamahia i ngā hātepe mō te whakatakoto taurira.

Te Whakawhānui Tau

Kei te ako te mokopuna ki te:

- tautohu i te pānga kei waenganui i te tāpiri me te tango tau tōruna me ngā tau tōraro.
- torotoro i te kōaro whakarea o ngā tau tōraro:
h.t., $1/b = -1/b$.
- tūhura i ngā paheko katoa e whai wāhi ai ngā pūtakerua me ngā taipū.
- whakarūnā, te whakawhānui, me te whakatauwehe i ngā kīanga taurangi e whai wāhi mai ana te tapeke, te otinga, ngā rerekētanga, me ngā pū tau tōpū tōruna.

Kei te ako te mokopuna ki te:

- tautohu i te pānga kei waenganui i te tāpiri me te tango tau tōruna me ngā tau tōraro.
- tautohu i te whakamahinga o te whakarea me te whakawehe hei paheko kōaro mō ngā tau tōraro:
h.t., $3 \times -2 = -6$.
- whakamahi i ngā tau ki ngā tauoti taipū me te tūhura i te pānga o ngā taipū ki ngā tau tōraro.
- whakarūnā, te whakawhānui me te whakatauwehe kīanga taurangi.

Tohu Ako: Tūārere 4: Tau 9-10

Taurangi

Ngā Whārite Me Ngā Pānga

Kei te ako te mōkōpuna ki te:	Kei te ako te mōkōpuna ki te:
<ul style="list-style-type: none"> • tuhi me te whakaoti whārite rārangi ki ngā otinga tau whakahau, tuhi me te whakautu rārangi tōrite hoki ki ngā tau tōrua tōrunga • kimi i te uara o tētahi kīanga, kimi rānei i te ture me ngā uara o te taurangirangi ki te whakaraupapa ture māmā. 	<ul style="list-style-type: none"> • tuhi me te whakaoti whārite rārangi me ngā tōritenga ki ngā otinga whakahau hei otinga tika, hei otinga whakaawhiwhi hoki.
<ul style="list-style-type: none"> • tuhi whārite ki ngā taurangi me ngā tohu taurangi hei whakaatu ture mā te whakapae. 	<ul style="list-style-type: none"> • whakamahi i te whārite o tētahi pānga rārangi hei tuhi kauwhata.
<ul style="list-style-type: none"> • tuhi, te whakamāori, te tuhi kauwhata me te whakapuaki pānga rārangi, ki te āhua $y = mx + c$, ko 'm' te pāpātanga o te whiti (te rōnaki), ko 'c' te haukotī-y. 	<ul style="list-style-type: none"> • tuhi, te whakamāori, te tuhi kauwhata me te whakapuaki pānga kīanga ki ngā whakaaturanga rerekē.
<ul style="list-style-type: none"> • tikanga o te rōnaki o te kauwhata rārangi ka hua mai i tētahi horopaki whai take. 	<ul style="list-style-type: none"> • whakapae i te āhua o te kauwhata ka hua mai i te pānga o ētahi taurangi e rua i tētahi horopaki whai take.
<ul style="list-style-type: none"> • āhukahuka i ngā pānga kei waenga i ngā huānga kei ngā tauira rārangi kore • tuhi i te whārite ki ngā taurangi, ngā tohu taurangi hei whakaatu i te ture • whakamahi i te ture hei whakapae i te tauira whārite pūrua o tētahi hanga, ko te 'c' te tau tōpū: h.t., $y = x^2 + c$. 	<ul style="list-style-type: none"> • ko te aha te hua o ngā kauwhata XY mehemea ka whakarerekē i te tau whakarea me te uara pūmau mō te whānuitanga o ngā pānga pūrua mehemea ko te āhua $y = ax^2$, he tau tōrua te a, he tau tōpū te c.

Te Whakaaro Taurangi

Kei te ako te mōkōpuna ki te:	Kei te ako te mōkōpuna ki te:
<ul style="list-style-type: none"> • tuhi kauwhata o ngā pānga tahi, ka mārama ki te tikanga o te unahi, ka tuhi whārite hei whakaahua pānga, ka whakamahi ēnei hei whakaoti rapanga • whakamahi i te ture pānga o te ripanga hei torotoro i te hua mehemea ka whakarerekē kotahi, nui ake rānei o ngā taurangirangi ki ngā hua (uara o ngā pūtau). 	<ul style="list-style-type: none"> • whiriwhiri i te whārite o tētahi kauwhata rārangi, me te whakamārama anō i te hononga o ngā taurangi e rua o te kauwhata • whakamahi i te ture pānga o te ripanga hei tūhura pūāhua.

Ngā Tini Mata o Te Reo o Taurangi

E mōhio ana te mōkōpuna ki ngā kupu nei:	E mōhio ana te mōkōpuna ki ngā kupu nei:
<ul style="list-style-type: none"> • tīpakotanga • pānga rārangi • haukotī • tau pū • pūtakerua • kīanga • pānga • pūtake ōrite • whakamāori • rōnaki • tau tōpū tōrunga • tau tōpū tōraro • tau whakarea tōrunga • kōaro whakarea • tauira rārangi kore • unahi • ripanga. 	<ul style="list-style-type: none"> • whakatauwehe • rārangi • pānga • kīanga • pānga pūrua • tau tōrua • uara pūmau • ripanga.

Tohu Ako: Tūārere 4: Tau 9-10

Ine

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakamahi i ngā ture hei tātai paenga, tātai horahanga me te rōrahi
- whai māramatanga ki te pānga kei waenganui i te pae me te whitianga, me te whai māramatanga he ōrite te $1\text{ g} = 1\text{ ml} = 1\text{ cm}^3$.

Ngā Tini Mata o te Mātauranga

Tau 9 Kei te ako te mokopuna ki te:	Tau 10 Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • whakatau tata, te tātai, te whakaahua i ngā ine tika ki ngā mati whai tikanga. 	<ul style="list-style-type: none"> • whakatau tata, te tātai, te whakaahua i ngā ine tika ki ngā mati whai tikanga.
<ul style="list-style-type: none"> • whiriwhiri me te whakamahi waeine e whai take ana ki te horopaki me te huri ki waenganui i ngā inenga ki ngā kūmua tika. 	<ul style="list-style-type: none"> • huri waeine me te whakamahi i ngā kūmua e tika ana ki te pūnaha tekau: h.t., kika, meka, kiro/mano, heni, miri/mano, whāiti, mōkitokito.
<ul style="list-style-type: none"> • whakamahi i te ture a Pythagoras ki te kimi i te roa o tētahi tapa kāore i te mōhiotia, i te tapatoru hāngai o tētahi hoahoa. 	<ul style="list-style-type: none"> • whakamahi i te ture a Pythagoras hei kimi i te roa o tētahi tapa kāore i te mōhiotia, i te tapatoru hāngai.
<ul style="list-style-type: none"> • kimi i te tere, te tawhiti me te wā mai i ngā inenga e 2 me te tautohu i ngā inenga kei waenganui i ngā inenga e rua, nui ake rānei. 	<ul style="list-style-type: none"> • kimi i te tere, te tawhiti me te wā mai i ngā inenga e 2 me te tautohu i ngā inenga kei waenganui i ngā inenga e rua, nui ake rānei.

Te Paenga, te Horahanga me te Rōrahi

Kei te ako te mokopuna ki te:	Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • kimi i te horahanga o ngā momo tapawhā whakarara, ngā tapawhā taparara, ngā manu tapawhā me te whakahāngai ki te ture mō ngā tapawhā hāngai • kimi i te paenga me te horahanga o ngā porohita. 	<ul style="list-style-type: none"> • kimi i te horahanga mata, te rōrahi me te kītanga o ngā poro me ngā rango.
<ul style="list-style-type: none"> • whakaāwhata i te āhua ki tētahi tauwehe, ka kimi ai i te paenga, te horahanga me te rōrahi o te āhua kua whakaāwhatatia. 	<ul style="list-style-type: none"> • whakaāwhata i te āhua ki tētahi tauwehe me te kimi i te taurahi mō te rōrahi me te kītanga mō te āhua kua whakaāwhatatia.

Te Wā

Kei te ako te mokopuna ki te:	Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • wetewete me te whakamārama he pēhea te hono o ngā tauira hurihanga o ngā tohu o te wā, pēnei i ngā whetū, ngā kaupeka o te tau, me ngā hekenga manu me te taiao puta noa i te tau • whakamahi i ngā waeine rerekē mō te wā, me ngā hautanga o ngā waeine me ngā tau-a-ira (miri hēkona) e whai take ana. 	<ul style="list-style-type: none"> • wetewete me te whakamārama he pēhea te hono o ngā tauira hurihanga o ngā tohu o te wā, pēnei i ngā whetū, ngā kaupeka o te tau, me ngā hekenga manu me te taiao puta noa i te tau • whakamahi i ngā waeine rerekē mō te wā, me ngā hautanga o ngā waeine me ngā tau-a-ira (miri hēkona) e whai take ana.

Ngā Tini Mata o Te Reo o Ine

E mōhio ana te mokopuna ki ngā kupu nei:	E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • paenga • horahanga • rōrahi • tapawhā whakarara • tapawhā whakarara rite • tapawhā taparara • manu tapawhā • whakaāwhata • kūmua • tauira hurihanga. 	<ul style="list-style-type: none"> • kītanga • horahanga mata • poro • rango • kūmua • taurahi • kaupeka o te tau.

Tohu Ako: Tūārere 4: Tau 9-10

Āhuahanga

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakaingoa, te tautohu, te tuhi taparau ki ōna āhuatanga ahu-2, ahu-3
- hoahoa āhua ki te raumata, ki ngā momo tirohanga, ki ngā inerite, ki ngā āwhata
- whakaahua taunga, te hoatu ahunga ki ngā pū tukutuku me ngā tōpito e 8, ngā āwhata; whakamahi koki hei whakaatu ahunga
- whakamārama i te hangarite panoni o tētahi āhua
- hoahoa i ngā āhua ki te raumata, ki ngā momo tirohanga, ki ngā inerite, ki ngā āwhata me te whiriwhiri i te rahi o tētahi koki
- whakaahua taunga, te hoatu ahunga ki ngā pū tukutuku me ngā tōpito e 8, ngā āwhata; whakamahi koki hei whakaatu ahunga
- whakamahi i tētahi raupapatanga panoni
- whakamahi ōwehenga hei tātai taurahi o tētahi mātātuhi whakarahi.

Ngā Tini Mata o te Mātauranga

Ngā Hanga

Tau 9 Kei te ako te mokopuna ki te:	Tau 10 Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • tautohu me te whakaahua i ngā wāhanga o ngā porohita me te hononga o ngā wāhanga ki te porohita: h.t., te aho, te whitianga, te pūtoro, te paenga. 	<ul style="list-style-type: none"> • whakamahi i ngā āhuatanga o te ritenga kei ngā hanga ahu-2, pēnei i ngā tapatoru hāngai hei kimi i ngā roa me ngā koki kāore i mōhiotia.
<ul style="list-style-type: none"> • kimi koki kāore i mōhiotia kei roto i ngā pūāhua e whai pānga ki ngā rārangi pūtahi, ngā rārangi whakarara me ngā rārangi whakawhiti. 	<ul style="list-style-type: none"> • kimi koki kāore i mōhiotia kei roto i ngā pūāhua e whai pānga ki ngā rārangi whakarara, ngā rārangi whakawhiti me ngā koki waho, ngā koki roto o ngā taparau.

Te Whakaaro Mokowā

Kei te ako te mokopuna ki te:	Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • waihanga me te tuhi āhua ahu-3 me ngā poro tapawhā hāngai, ngā poro tapatoru mai i ngā raumata, ngā tirohanga mahere me ngā pikitia inerite. 	
<ul style="list-style-type: none"> • panoni āhua ahu-2 ki runga papa XY mā te neke, te whakaatu i te rārangi whakaata me te whakahuri āhua i te pūwāhi mā te taurea 90 putu. 	<ul style="list-style-type: none"> • whakarahi mā tētahi āwhata taurea hei panoni i te rahi o ngā āhua ahu-2 pērā i ngā hanga hiato.
<ul style="list-style-type: none"> • whakamahi āwhata mahere, ahunga kāpehu hoki (h.t., N30°W) ki te whakamāori me te whakaputa i te tawhiti me te ahunga i waenga i ētahi taunga e rua. 	<ul style="list-style-type: none"> • whakamāori pūwāhi me ngā rārangi i runga papa taunga, pērā hoki i ngā āwhata me ngā ahunga ki runga mahere.
<ul style="list-style-type: none"> • whakaahua me te whakamahi panonitanga, ka whakaahua ai i ngā āhuatanga pūmau o ētahi hanga, āhua Māori hoki ki ngā momo panoni. 	<ul style="list-style-type: none"> • whakaahua me te whakamahi panonitanga, ka whakaahua ai i ngā āhuatanga pūmau o ētahi hanga, āhua Māori hoki ki ngā momo panoni.

Te Taunga me te Ahunga

Kei te ako te mokopuna ki te:	Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • whakamahi āwhata ki te tautohu i ngā tōpito o te ao: h.t., ngā tōpito e 8 hei whakamāori, hei whakaputa i te tawhiti me te ahunga kei waenganui i te taunga 	<ul style="list-style-type: none"> • whakamahi āwhata mahere ki te tautohu i ngā tōpito o te ao: h.t., ngā tōpito e 8 hei whakamāori, hei whakaputa i te tawhiti me te ahunga kei waenganui i te taunga
<ul style="list-style-type: none"> • whakamahi i ngā tohu o te taiao hei whakarite ahunga, pēnei i te rā, ngā hau, ngā whetū. 	<ul style="list-style-type: none"> • whakamahi i ngā tohu o te taiao hei whakarite ahunga, pēnei i te rā, ngā hau, ngā whetū.

Tohu Ako: Tūārere 4: Tau 9-10

Āhuahanga

Ngā Tini Mata o Te Reo o Āhuahanga

Tau 9 E mōhio ana te mokopuna ki ngā kupu nei:	Tau 10 E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • tōpito • hangarite • pū tukutuku • taurahi • rarangi whakaata • māātātuhi whakarahi • rārangi whakarara • rārangi pūtahi rārangi whakawhiti • whitianga • pūtoro • paenga • raumata • pikitia inerite • poro tapawhā hāngai poro tapatoru • kāpehu • āwhata • panoni • whakaata • huri • āhuatanga pūmau. 	<ul style="list-style-type: none"> • taurahi • taparau • rārangi whakarara • rārangi whakawhiti • koki hāngai • āwhata taurea • koki waho • koki roto • papa taunga • ahunga • whakamāori.

Tohu Ako: Tūārere 4: Tau 9-10

Tauanga

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakarite i te pakirehua tūhura tauanga e whai wāhi ana te raraunga matatini. Ka waihanga, ka whakamāori i te whānuitanga o ngā raraunga whakaari. Ka whakaputa kōrero mō te pānga o tētahi taurangirangi.

Ngā Tini Mata o te Mātauranga

Te Whakamahere

Tau 9 Kei te ako te mokopuna ki te:	Tau 10 Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • whakamahere ki te kōhi, te kimi raraunga hei whakautu i ngā pātai tūhura, mā te; <ul style="list-style-type: none"> - tautohu i ngā taurangirangi e hiahia ana ki te whakautu i te pātai tūhura - whakamahere he pēhea te whakatakoto me te whakaputa whai take, tika hoki i ngā taurangirangi (i te kohinga o ngā raraunga) te mārama i pēhea rānei i kohia (i te takenga) - tautohu i te rōpū whai take ki te raraunga, te tautohu rānei nō hea te raraunga rānei - whakamahi tūpātai ki te tautohu i ngā whakaritenga matatika e tika ana mō te katoa o te pakirehua tūhura tauanga me te arotake i te kohinga o ngā raraunga, ngā pātai tūhura i mua o te mātaitanga me ngā hoa. 	<ul style="list-style-type: none"> • whakamahere ki te kōhi, te kimi raraunga hei whakautu i ngā pātai tūhura mō ngā rangahau mātai me ngā whakamātau, mā te; <ul style="list-style-type: none"> - tautohu i ngā taurangirangi e hiahia ana ki te whakautu i te pātai tūhura - whakamahere he pēhea te whakatakoto me te whakaputa whai take, tika hoki i ngā taurangirangi (i te kohinga o ngā raraunga) - tūpātai i ngā raraunga kua kohia e mārama ai ki ngā putanga o ngā taurangirangi, i pēhea hoki i whakaritea ai - whakatakoto mēnā rānei e hāngai ana te tūpātai ki tētahi rōpū, ki tētahi taupori rānei. Mēnā rānei mō te taupori, ka tiki ake he tauira nō te taupori ki te whakautu i te tūpātai - whakatakoto i te rahinga o te tauira whakamātau e hiahia ana mō ngā raraunga whakarōpū me te raraunga inerahi ki te whakatau i te putanga mō ngā taupori - tautohu i te rōpū, te taupori whai take, te tangata rānei, nōna ngā raraunga - whakamahi tūpātai ki te tautohu i ngā whakaritenga matatika e tika ana mō te katoa o te pakirehua tūhura tauanga.

Te Kōhi Raraunga

Kei te ako te mokopuna ki te:	Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • whakatakoto taurangirangi tika me ngā tikanga kōhi raraunga. • kōhi, te wehewehe me te whakaatu raraunga matatini, inenga, raraunga houanga ki te hopu tauira, taurangirangi, pānga me ngā ia. 	<ul style="list-style-type: none"> • whakatakoto taurangirangi tika me ngā tikanga kōhi raraunga. • kōhi raraunga • whakatau mō te tika o te raraunga, te whakatika mēnā e whai take ana • kōhi raraunga meta.

Te Tātari, te Whakatau

Kei te ako te mokopuna ki te:	Kei te ako te mokopuna ki te:
<ul style="list-style-type: none"> • aromātai ngā kōrero ā ētahi atu mō ā rātou putanga tūhuratanga tauanga me ngā tūmahi tūponotanga. 	<ul style="list-style-type: none"> • aromātai i ngā tūhuratanga taunga, ngā tūmahi tūponotanga rānei a ētahi atu mā te aro ki ngā tikanga kōhi raraunga, te whakatakoto me te whakaputa, te tika hoki o ngā putanga.
<ul style="list-style-type: none"> • whakamahi i te huhua o ngā whakaari, ka whakaraupapa anō ai i ngā raraunga ki te kimi tauira, taurangirangi, pānga me ngā ia o ngā raraunga matatini. 	<ul style="list-style-type: none"> • whakamahi i te huhua o ngā whakaari, ka whakaraupapa anō ai i ngā raraunga ki te kimi tauira, taurangirangi, pānga me ngā ia o ngā raraunga matatini.
<ul style="list-style-type: none"> • tautohu āhuetanga whaitake o ngā tohanga • kōtui i te horopaki ki ngā whakamāramatanga o te tohanga. 	<ul style="list-style-type: none"> • tautohu āhuetanga whai take i ngā tohanga • whakatau tika ki te whakapae i ngā uara mō ngā putanga taurangirangi mō ngā whakamāramatanga taurangi, ki ngā pūāhua pānga e tika ana.

Tohu Ako: Tūārere 4: Tau 9-10

Tauanga

Ngā Tini Mata o Te Reo o Tauanga

E mōhio ana te mokopuna ki ngā kupu nei:

- tūpātai
- mātaītanga
- ia
- tohanga
- tikanga matatika
- mokowā
- tauira
- taurangirangi
- pānga
- ara tūhura
- tūponotanga.

E mōhio ana te mokopuna ki ngā kupu nei:

- raraunga whakarōpū
- raraunga inerahi
- pakirehua tūhura tauanga
- tāpae kōrero
- taupori
- uiui
- āhuatanga kōhure
- tikanga matatika
- puna
- rōpū arotahi.

Tohu Ako: Tūārere 4: Tau 9-10

Tūponotanga

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- mātai i te tukanga
- mātai i ngā hua o ngā tūhura tauanga o ētahi atu hei arotake i ngā hātepe me ngā whakataunga
- tūhura, te whakamātautau i ngā pūāhua pāpono
- whakamahi, te whakamāori hoki i ngā whakaari raraunga māmā e whakaatu ana i te tūponotanga.

Ngā Tini Mata o te Mātauranga

Tau 9

Kei te ako te mokopuna ki te:

- whakamahere me te whakamātautau tūponotanga mō ngā pūāhua tūponotanga me te whakamātautau ā-hangarau mā te whakapuaki pātai hei tūhura:
 - tautohu i ngā putanga mō ngā pātai tūhura me te whakapae i ngā putanga kei puta
 - waihanga tauira pāngarau mā te whakamahi i ngā tūponotanga āria, te tūponotanga tāiringa rānei
 - whiriwhiri e hia ngā whakamātautau, ngā taputapu ka whakamahia me te tikanga tuhi putanga
 - whakahaere whaihanga me te tuhi putanga
 - waihanga whakaaturanga raraunga mō te tuari o ngā putanga i kitea, o ngā whakamātautau tūponotanga me te tuari o ngā putanga kei puta, mō ngā putanga o ngā tauira tūponotanga ariā
 - whakaahua i ngā putanga o ngā whakaaturanga
 - kimi i ngā whakapaenga o te tūponotanga mō ngā hua rerekē
 - tohu i ētahi putanga ariā, tūponotanga herekore rānei mō ngā pūāhua karekau he tauira ariā: h.t., te whiu o te makatiti
 - tautohu i ngā ōritenga me ngā rerekētanga o ā rātou putanga ki ētahi atu
 - huritao i ngā putanga ka puta
 - tautohu me te tuhi pūtake mō ngā ōritenga me ngā rerekētanga kei waenga i ngā putanga o ngā whakamātau tūponotanga me ngā ariā tūponotanga herekore.

Tau 10

Kei te ako te mokopuna ki te:

- whakamahere me te whakamātautau tūponotanga mō ngā pūāhua tūponotanga me te whakamātautau ā-hangarau mā te whakapuaki pātai hei tūhura:
 - tautohu i ngā putanga mō ngā pātai tūhura me te whakapae i ngā putanga kei puta
 - tautohu tauira whakapae me ngā tepenga mō ngā pūāhua tūponotanga
 - waihanga tauira pāngarau mā te whakamahi i ngā tūponotanga āria, raraunga o-mua me ngā tūponotanga tāiringa rānei
 - whiriwhiri e hia ngā whakamātautau, ngā taputapu ka whakamahia me te tikanga tuhi putanga
 - whakahaere whaihanga me te tuhi putanga
 - waihanga whakaaturanga raraunga mō te tuari o ngā putanga i kitea, o ngā whakamātautau tūponotanga me te tuari o ngā putanga kei puta, mō ngā putanga o ngā tauira tūponotanga ariā
 - whakaahua i ngā putanga o ngā whakaaturanga
 - kimi i ngā whakapaenga o te tūponotanga mō ngā hua rerekē
 - tohu i ētahi putanga ariā, tūponotanga herekore rānei mō ngā pūāhua karekau he tauira ariā: h.t., te whiu o te makatiti
 - tautohu i ngā ōritenga me ngā rerekētanga o ā rātou putanga ki ētahi atu
 - huritao i ngā putanga ka puta
 - tautohu me te tuhi pūtake mō ngā ōritenga me ngā rerekētanga kei waenga i ngā putanga o ngā whakamātau tūponotanga me ngā ariā tūponotanga herekore.

Ngā Whakaaroaro Tūponotanga

Kei te ako te mokopuna ki te:

- tautohu he aha i hapa ai ngā pūāhua pāpono me te whakatakoto whakaaro kia whakatika ai
- arotake i te take o ngā whakataunga pāpono a ētahi atu tāngata.

Kei te ako te mokopuna ki te:

- tautohu he aha i hapa ai ngā pūāhua pāpono me te whakatakoto whakaaro kia whakatika ai
- whakaaro arohaehae mō ngā kitenga kei kite mā te whakamahi i ngā āhuatanga tūponotanga ki te:
 - tautohu i ngā whakapaenga kei ngā whakataunga o ētahi tauira tūponotanga
 - arotake i te tika o ngā whakataunga tūponotanga a ētahi atu
 - whakamārama mai mēnā rānei he kōrero horihori, ka whakamahuki ai he aha e nukarau nei.

Tohu Ako: Tūārere 4: Tau 9-10

Tūponotanga

Ngā Tini Mata o Te Reo o Tūponotanga

Tau 9 E mōhio ana te mokopuna ki ngā kupu nei:	Tau 10 E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • tāiringa • putanga • tauira • āria tūponotanga • tāiringa tūponotanga • whakamātau • whakaaturanga • putanga • pūāhua pāpono • whakataunga pāpono • pūāhua tūponotanga • tūponotanga whakamātau • tūponotanga herekore • tauira ariā. 	<ul style="list-style-type: none"> • whaihanga • tepenga • putanga ariā • āria tūponotanga • tūponotanga herekore • putanga • pūāhua pāpono.

Hei Tautoko i te Ako

Tikanga Whakaako

Ko tā te mahi kaiako he whakaako i te mokopuna, ko te whakaako i te reo, ko te whakaako hoki i te ako, nō reira me whakarite kia taea ai e te katoa o ngā mokopuna te whai wāhi ki te ako.

Te whakamahere me te whakaako mā te:

- whakarite wheako ki te whakaoti rapanga (h.t., ui pātai arohaehae, whakarite tūmahi e whakatenatena ana ki te matapaki, ki te arotake, me te aromātai i ngā take arohaehae e hāngai ana ki te mokopuna)
- whakamahi pānga kupu (h.t., kīanga pāngarau, ngā huatau kua ākona, hoahoa me ngā rauemi, pēnei i ngā taputapu matihiko)
- urutau mahi (h.t., whakamahi rautaki pāngarau me ngā huatau pāngarau ki ngā horopaki huhua, ka whakauaua ake)
- tuku pātai hei ārahi i ō rātou whakaaro me te whakatītina i ngā hononga
- whakawhāiti i te mātauranga kia iti iho ngā wāhanga hei ako
- whakatakoto whakaaro mā te whakamahi whakaahuahanga me ngā rauemi
- whakarite wheako ki te whakaatu putanga o ngā tūhuranga pāngarau ki tētahi minenga
- āta ako horipū (whakaako anō), whakatauirā, ka whakaū ai
- whakarerekē i te horopaki ki tētahi e mōhiotia ana e ngā mokopuna.

Te tautoko mokopuna ki ngā tīrewa mā te:

- whakaako kiritahi i ngā pūkenga pāngarau motuhake e tika ana kia whanake ai te mokopuna
- whakaawe me te ui pātai mā te hoki mahara me te whakamahi i ngā akoranga kua ākona kētia
- ārahi i te mokopuna ki te whakapuaki i te pāngarau ki ā rātou tūhuranga ki ā rātou anō kupu
- whakawhānui i te māramatanga pūāhua a te mokopuna mā te ui i te pātai e tika ana, e pai ai tā rātou whakaoti rapanga pāngarau me te whakamahi ariā pāngarau e hāngai ana ki a ia
- akiaki mokopuna mā te whāngai ataata me ngā rauemi e hono ai ia ki ngā huatau pāngarau, (h.t., whāngai ataata o ngā rautaki pāngarau, tukanga tūhuranga)
- whakamātau i ētahi whakaahuahanga whānui kē
- whakamahi horopaki e hāngai ana ki te mokopuna ki te whakaū huatau ka whakauaua ake
- tautoko i te mokopuna ki te whai pānga ki ngā kīanga pāngarau me ētahi whakaahooho ka whakairi ai ki ngā pātū o te akomanga
- whakarite wheako mā te mokopuna me ngā momo ngohe mahi, tūmahi aromatawai hoki e mōhio ai te kaiako me te mokopuna kua mau i a ia ngā mātauranga pāngarau motuhake
- āhukahuka i ngā akoranga e tika ana mā te mokopuna, nāwai rā, ka whakaako kia kite ai, kia rongu ai i te ako, ka tōaitia
- tuari i ngā whētoko a te mokopuna, ngā rautaki whakawhanake tūmahi, me ngā putanga o ngā tūmahi i te kura, ki ngā rōpū whai take o te hapori
- āwhina, me te tautoko i te ako mā te āta whakaako me te ako pū i te wā e tika ana.

Te whakarōpū mokopuna:

- e ai ki tō rātou tūhuranga take, tūhuranga pūāhua, whakaoti rapanga rānei, ā, e ai anō hoki ki te mātauranga pāngarau e hiahia ana ā-rōpū kaupapa, ā-rōpū ako pāngarau hoki
- whakarerekētia ngā rōpū ki ngā whakaritenga rerekē i te akoranga kotahi, arā, ka mahi ngātahi te katoa, ka wehe ai ki ngā rōpū rerekē hei tūhura pūāhua pāngarau, ka hoki mai anō ētahi, te katoa rānei, ka noho rānei ētahi ki ō rātou kōwhiringa rōpū i ētahi wā hoki.

Ngā Rautaki Whakaako: He Taura Noa

Whakarite wā kia taea ai ngā mokopuna te whakahāngai mātauranga pāngarau	<ul style="list-style-type: none">• Ka ako ngā mokopuna mā te mahi, te kōrero, te tuhi, te waihangā, te tūhura.• Me whakamahere he wā mō ngā mokopuna ki te whakakotahi i ngā mea i ākona e rātou mā te mahi anō i te tukanga, te mahi rānei i whakaatuhia e te kaiako, ka neke mai ai i ngā pūāhua e mōhiotia ana ki ngā pūāhua hou.• Me whakarite mahi e whakamahi ana i ngā horopaki rerekē kia whakahāngai ngā mokopuna i tā rātou e ako ai ki ngā rapanga rerekē, hei taura - te whakamahi pūkenga whakarea ki te whakaoti rapanga horahanga me te rōrahi, me te whakamahi pūkenga whakawehe ki te rapu i te pūtea e hiahia ana mō tētahi haerenga nui.• Me hoahoa i ngā mahi e whai ana i ngā wāhi maha e taea ana te uru mai me te mārama, e taea ana te puta me te whai otinga, whai kounga tonu.• Me nui atu i te kotahi otinga, te ara whai rānei ina e whakaoti rapanga ana.
Whakaakona tonohia ngā mokopuna ki te pupuri i ngā taunaki o ā rātou akoranga	<ul style="list-style-type: none">• Me tautoko ngā mokopuna ki te tuhi, te arotake, te wetewete, te hono, me te whakahiato i ngā whakaaro i ngā mātauranga pāngarau e tika ana mō ō rātou pakeketanga.• Tonoa ngā mokopuna ki te whakamārama me te whakaatu i ō rātou whakaaro mā te whakamahi i ngā kupu, tohu, pikitia, hoahoa, taura, me ā rātou ake whakaaturanga rerekē.• Whakamaheretia ngā wā maha i te haerenga o te wiki mā ia mokopuna ki te tuhi i ō rātou akoranga pāngarau ki roto i tā rātou pukapuka, rorohiko, pūrere matihiko rānei.• Me tautoko ngā mokopuna ki te āta whakatakoto i ō rātou ake whakaaro. Me tautoko ngā mokopuna ki te kite i ngā hononga o ngā pāngarau e whakamahia ana hei whakaoti rapanga mā te whakamahi ki ngā horopaki huhua kē.• Whakaatu atu ki a rātou ngā aromatawai e whakaatu ana i ngā akoranga pāngarau kua puta mai i ngā horopaki huhua.• Whakaatu atu ki a rātou i ētahi wā, ko te pāngarau, me te tūhura pāngarau te horopaki, ehara i te mea me whai whakaotinga rapanga, pūāhua, take, aha rānei, i ētahi wā, ko te pāngarau kē te ao e tūhura ana.

Paerewa Tautokorua NCEA

Me whiwhi te katoa o ngā ākonga i ngā paerewa tautokorua 20 te whiwhinga e hāngai ana ki te pāngarau me te reo matatini kia riro i a rātou tētahi taumata o te tohu NCEA. Ka taea te mahi mai i te tau 9 ki te 13.

Kei te hononga e whai ake nei ngā kōrero whakamārama mō te aromatawai Paerewa Tautokorua NCEA.

https://ncea-live-3-storagestack-53q-assetstorages3bucket-2o21xteOr81u.s3.amazonaws.com/s3fs-public/2024-03/Improved%20NCEA%20Co-requisite%20standards_TeReMaori_WEB.pdf?VersionId=okaWbub8am6LMYzWVuKOkGsawbqY3djl

Anei ngā hononga ki ngā rauemi:

<https://www2.nzqa.govt.nz/ncea/subjects/select-subject/te-reo-matatini-me-te-pangarau/>

He Rauemi Te Reo Pāngarau Anō mō te Paerewa Tautokorua NCEA

[Ngā Ara Tohu Te Reo Pāngarau \[PDF, 3.8 MB\]](#).

He rauemi mā te kaiako e whai kōrero whānui hei āwhina i te whakarite, whakaako me pēhea hoki te aromatawai i te tautokorua NCEA. Ka whai hononga-ā-ipurangi hoki me ngā mahere ka taea e ngā kaiako te whakamahi hei āwhina i tō rātau hōtaka whakaako me te ako.

[Ngā Whanaketanga 5a \(A3\) \[PDF, 164 KB\]](#).

[Whakaatu ai ngā ākonga kei te paearu i ngā tukanga Pāngarau \(A3\) \[PDF, 278 KB\]](#)

Ka whakamārama tēnei rauemi i ngā paearu e āwhina ana i ngā ākonga kia whiwhi i ngā putanga o te tautokorua (co-requisites) i roto i te reo Māori me te reo Pākehā.

He Rauemi Ngā Tautokorua

<https://ncea.education.govt.nz/mi/te-reo-matatini-me-te-pangarau/pangarau/te-ako>

Tūārere 1
Tau 0-3

Tūārere 2
Tau 4-6

Tūārere 3
Tau 7-8

Tūārere 4
Tau 9-10

Tūārere 5
Tau 11-13



Tūārere 5 Tau 11-13



Whenu			
HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho

Toi Mokopuna			
He tāwariwari, he aro, he pākiki, he mahi ngātahi, he auaha, he huritao, he kaitūhura whakaata hoki te mokopuna, e ako ana ki te whakamahi tikanga pāngarau me te whakaoti rapanga mō te kura, te whānau, te hapū me te iwi, ā, mō rātou anō te take.	He koi te hinengaro o te mokopuna, rite ana ki ōna mātua tīpuna. Ko ngā whakaaro me te whakamahi pāngarau he mea tuku iho ki a ia, ā, ka tukuna ki ētahi atu.	He māia, he pūkōrero hoki te mokopuna ki te whakamārama me te whakaputa i ōna whakaaro me āna tukanga pāngarau ki te reo pāngarau. E ngākaunui ana ia ki te pāngarau me te motuhaketanga o taua reo.	He manawanui, he huritao, he aroturuki hoki te mokopuna ki te panoni i ōna whakaaro me āna mahi, ā, ka tautohu tauira, hononga hoki hei hanga pāngarau me tōna anō ao.

Tohu Ako: Tūāreere 5: Tau 11 - 13

Whāinga			
Ka aro te ako a te mokopuna ki te taki tūhuratanga kaupapa-mahi me te parahau i ngā tikanga pāngarau, kua kōwhirihiā, ki te tātari me te whakaoti rapanga. Ka aromātai otinga me ngā pūrongo pūāhua mā te mātauranga pāngarau.	Ka aro te ako a te mokopuna ki te mārama ki te whakamahinga a te ao i te pāngarau mō te oranga tonutanga o te whānau, te hapū, te iwi mā te kōhi taunakitanga o ngā hua hei ārahi i ngā kōwhiringa mō te ara whakamua, mō te anamata hoki.	Ka aro te ako a te mokopuna ki te whakamahi i te reo motuhake o te pāngarau ki te matapakī i ngā kitenga o te tūhuratanga i ngā wāhanga whai take, me te whakamārama i ngā taunaki ki ngā mātanga pāngarau ki te hunga e hiahia ana ki te whai māramatanga rānei.	Ka aro te ako a te mokopuna ki te aromātai i ngā whakatauirā me ngā whakaahuhanga pāngarau ki te ruku ki te rētōtanga o ngā tāiringa kōrero, ngā hāpono, me ngā whakatau whānui.

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūāreere 5: Tau 11-13

Kia Mataara

Hei te mutunga o te tau 11 me mōhio te mokopuna ki te:	Hei te mutunga o te tau 11 me mōhio te mokopuna ki te:	Hei te mutunga o te tau 11 me mōhio te mokopuna ki te:	Hei te mutunga o te tau 11 me mōhio te mokopuna ki te:
<ul style="list-style-type: none"> whakamahi i ngā tini tikanga whakahāngai i te mātauranga pāngarau māmā ki ngā horopaki o ia rā, me ngā rapanga e hāngai ki tōna anō ao, (h.t., te mātau ahumoni) whakamahere me te whakahaere i tētahi tūhuratanga tauanga, ka whakatau ai i ngā hīkaro tika mō te taupori, ā, ka mārama hoki ki te take matua o te rahinga o te tīpako tātai tūponotanga me te whakamahi hei tohu i ngā mahi e haere ake nei tūhura i ngā rapanga pāngarau, ka whakawhānui ai i ngā putanga ka hono ai ki ngā putanga e mōhiohia kētia ana. 	<ul style="list-style-type: none"> whakamahi pāngarau hei tautoko i te ao Māori mā te āta whakamahi, te āta whakamāori me te āta rāwekeweke i te mātauranga pāngarau me ōna tikanga kia aronuitia ai ngā uara, ngā wawata me ngā whāinga o te ao Māori tīpako i ngā horopaki e tino hirahira ana ki a ia me te whakamahi pāngarau ki te tautoko i te ao Māori. 	<ul style="list-style-type: none"> whakahua i ngā pānga i waenga i ētahi taurangi mā te whakamahi i ngā ture, ngā hoahoa me ngā kauwhata whakatakoto tika i ngā tātaaitanga pāngarau mā te whakamahi i ngā tohu pāngarau me ngā tikanga whānui o te pāngarau whakamārama i te hiranga o ngā putanga o te tūhuratanga tauanga e pā ana ki te taupori e rangahautia ana matapaki i te hiranga o ngā tūponotanga me ngā hiraunga mō ngā whakataunga kei kitea arotake i ngā pūrongo tauanga me te arohaehae i te pono o ngā whakataunga. 	<ul style="list-style-type: none"> whakawhānui i ngā rapanga mā te whakamahi me te rāwekeweke i ngā kīanga taurangi whakamahi tukanga pāngarau ki te arotake i te ture me te whakaoti tātaaitanga tātai i te paenga, te horahanga, me te rōrahi o ngā āhuahanga ahu-2 me ngā ahu-3 mā te whakamahi i ngā inenga me ngā waeine tika e hāngai ana ki te horopaki whakaaro arorau mō ngā putanga o ngā rahinga, ngā taurangirangi, ngā āhuahanga me ngā āhua ahu-3 (h.t., mā te whakamahi whakaaro pānga riterite, putanga whānui, ngā pākoki, me te ture a Pythagoras) tātai i ngā pāpātanga o ngā raraunga kei ngā kauwhata waihanga kauwhata ki te whakahono i ngā taurangi (h.t., he kauwhata o ngā pānga pūrua) whakamahi i te papa taunga ki te whakaoti rapanga (h.t., te pūwāhi o tētahi mea, te roa o tētahi haerenga me te horahanga o tētahi āhuahanga) te tiro whakamua ki ngā momo kāpeka aramahi e pai ana mōna, ā, e whai wāhi ai hoki te pāngarau.

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
Tohu Ako: Tūārere 5: Tau 11-13			

Kia Mataara

<p>Hei te mutunga o te tau 12 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • whakahaere tūhuratanga tauanga mā te whakataui i ngā tikanga tīpako, me te whakataui tata i ngā tawhā taupori • whakaputa hīkaro ōpaki, te matapae, ngā mārohi ā-roto, ngā mārohi ā-waho mō tētahi tūhuratanga tauanga • tūhura i ngā pūāhua e whai wāhi mai ana te tūponotanga mā te whakamahi i ngā tuari tātai (h.t., te tuari māori), te whaihanga me te whakamātau • waihanga tairinga kōrero pāngarau me te tūhura kia whakaputa hāpono • tūhonohono i ngā huanga mātauranga pāngarau rerekē, ka whakamahia ki ngā horopaki o ia rā, ki ngā horopaki whānui, horopaki motuhake hoki. 	<p>Hei te mutunga o te tau 12 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • whakahono i te mātauranga pāngarau ki te mātauranga Māori e tika ana, e rangona ai ngā mātauranga e rua • tautohu i ngā ōritenga me ngā rerekētanga o te pāngarau ki te mātauranga Māori. 	<p>Hei te mutunga o te tau 12 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • tohu i ngā rapanga me ngā pūāhua mā te whakamahi i ngā raupapatanga, te tuanaki, te āhuahanga taunga, ngā ture taurangi, ngā pānga me ngā kauwhata • matapaki i te hirangao ngā putanga o ngā tūhuratanga pāngarau, o te tauanga hoki • arotake i ngā pūrongo tauanga, te arohaehae i ngā tukanga me te matapaki i te pono me ngā hiraunga. 	<p>Hei te mutunga o te tau 12 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> • whakamahi āhuahanga taunga ki ngā pūwāhi, ngā rārangi me ngā āhua kei tētahi papa taunga • whakamahi raupapatanga āhuatanga, raupapatanga tātai • whakamahi i ngā raupapa tau tāpiri me ngā raupapa tau whakarea • whakamahi i te pākoki (me te ture aho, te ture whenu) me te ture a Pythagoras i ngā pūāhua ahu-2, ahu-3 hoki • rāwekeweke i ngā kīanga taupūtanga, ngā kīanga pūkōaro me ngā kīanga taurangi whakahau • waihanga me te whakamahi i ngā whārite rārangi, ngā whārite pūrua, whārite pākoki māmā, me ngā whārite tukutahi takirua (tērā pea he whārite kōpiko tētahi) • whakamahi i ngā tikanga tuanaki mō te pārōnaki, te pārōnaki-kōaro hoki mō ngā kīanga pūrau • tātai tūponotanga mā te whakamahi i ngā rautaki huhua (h.t., tūtohi rua, hoahoa rākau, me te whaihanga rorohiko) • whai māramatanga ki te mahi nui a te mātauranga pāngarau i roto i te waihangananga me te auahatanga hangarau.
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HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūāreere 5: Tau 11–13

Kia Mataara

<p>Hei te mutunga o te tau 13 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> whakahaere i ngā tūhuratanga tauanga mā te whakamahi i ngā mātāpono whakamātau, ngā tirohanga, te ine hononga taurangi rārangi, te raraunga houanga, āputa whakawhirinaki me te ture tepe wēanga waihanga i ngā tauira pāngarau whai hua e whakaata ana i ngā pūāhua mā te whakamahi i ngā whiriwhiringa raupapa, te raupapa kore rānei, ngā rau ara, ngā whārite tukutahi, te tuanaki me ngā tuari tūponotanga. 	<p>Hei te mutunga o te tau 13 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> whakamahi i ngā momo tauira pāngarau ki te arotake pūāhua me te waihanga whakapae whakataunga hoki e whakatinana ana i ngā wawata o ngā hapori Māori me te pāpori whānui arohaehae i ngā whakatete me ngā whakahorihori ka hua ake i waenga i te tirohanga “mathematics” me te tirohanga Māori (pāngarau) ki te ao whakamauru i ēnei āmāimai mā te tautohu i ngā ōritenga me ngā rerekētanga o te tirohanga Māori (pāngarau) i te tirohanga “mathematics”, ka whakatau ai i ngā tikanga pāhekoheko. 	<p>Hei te mutunga o te tau 13 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> matapaki i te whakamahinga o ngā tauira pāngarau, ka whakamārama ai i te waihangatanga o te tauira me te pono o te tauira ki te pūāhua matapaki i te hiranga o ngā putanga i hua mai i ngā tauira pāngarau aromātai i ngā tauira me te arohaehae i te hāngaitanga, te pono me ngā hiraunga. 	<p>Hei te mutunga o te tau 13 me mōhio te mokopuna ki te:</p> <ul style="list-style-type: none"> whai māramatanga ki ngā mātauranga nunui o te reanga nei, arā: <ul style="list-style-type: none"> te āhuahanga o te motunga koeko ngā whiriwhiringa raupapa, whiriwhiringa raupapa kore te tikanga o te noho a te rārangi kōpiko te rau ara me te ara matua te whārite tukutahi mō ngā whārite e toru ngā tuanaki kimi pārōnaki, pāwhaitua me ngā whārite pārōnaki ngā tikanga tau hei whakaoti whārite te tuari mā te Poisson, te tuari whārite huarua me te tuari māori te pāpono wehe kē, pāpono raupapa, pāpono whakawhirinaki hoki aromātai i te hiranga o te mahi pāngarau i roto i te hītori me te ōhanga o Aotearoa whakarite i tōna ara ūmanga mō ngā tau tata, mō ngā tau wawaenga hoki, ā, te whai wāhi mai o te mātauranga pāngarau ki tōna ara.
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HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
Tohu Ako: Tūārere 5: Tau 11-13			
Te Ngako o te Whāinga			
Mā te Kaiako			
<p>Tau 11 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakawhanake i ngā ariā me ngā tukanga o te mātauranga pāngarau matua mō ngā Tau 11 • whakamāori i ngā rapanga o ngā horopaki e mōhiotia ana kia pai ai te mahi pāngarau • whakahaere i ngā momo tātaitanga me te whakamahi hoahoa ki te kimi putanga e whakatutuki ai i ō rātou whāinga me ngā whāinga o te whānau, hapū, iwi (h.t., ka whakarite i tētahi mahere pūtea e whakaatu ana i te hua moni o tētahi hinonga). 	<p>Tau 11 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakamahi i te pāngarau i roto i ngā hinonga e whai take ana ki te papakāinga, hapori, whānau hapū, iwi rānei (h.t., ka whakahou anō i te whenua, ka whakatipu kai, ka tiaki i te marae rānei) • whakamahi i te pāngarau ki te arotake take nui ā-motu. 	<p>Tau 11 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakamārama i ā rātou tikanga tātai, tikanga hoahoa hoki me te hononga o ngā putanga ki te rapanga, te pūāhua, te horopaki rānei e tūhuratia ana. 	<p>Tau 11 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • arotake i ā rātou tikanga tātai me ngā hoahoa, ka āta whakaaro ai ki te whakapai i te whāomo me te tika • arotake me te aromātai i ā rātou mahi mēnā rānei e whai take ana ki te horopaki o te pūāhua, o te rapanga rānei e whakaotia ana • aromātai i te pono me te whai takenga o ā rātou putanga.
<p>Tau 12 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakamahi i ngā huatau pērā i te āhuahanga taunga me te tuanaki ki te: <ul style="list-style-type: none"> - arohaehae i ngā rapanga me ngā pūāhua ā-horopaki - whakaputa mai ai he whakatau e hāngai ana ki a ia, ki te whānau, ki te hapū me te iwi. 	<p>Tau 12 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakamahi i ngā huatau pāngarau whānui me ngā tūpātai i ngā tāke e hāngai ana ki tōna whānau, hapū me tōna iwi hoki • whakaaro arorau ki te hononga o te whānuitanga o ngā huatau pāngarau me ngā tikanga pāngarau ki te mātauranga Māori (h.t., te whakatauritenga o ngā tikanga whakaterenga o ngā tūpuna ki te pūnaha GPS). 	<p>Tau 12 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakamahi i te reo, ngā tohu me ngā whakaahuaanga e hono ana i ngā whenua pāngarau rerekē o te pāngarau (h.t., ka pēhea te tuanaki e whakakao ai i ngā huatau ine, te reo taurangi ki ngā rāwekehanga taurangi me ngā kauwhata). 	<p>Tau 12 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • tāmiro i ngā whenua pāngarau rerekē o te mātauranga pāngarau (h.t., ko te Āhuahanga Taunga te tāmirotanga o te taurangi me te āhuahanga).
<p>Tau 13 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakapakari i tōna mātauranga pāngarau me ōna pūkenga ki te tātari me te whakaoti rapanga whānui • āta whakamahi arorautia ngā momo hangarau o te rautau 21 (h.t., i te atamai hangahanga, AI) me ngā whakaaro nui ki ngā wawata a te Māori. 	<p>Tau 13 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • tūtohu i ngā whāinga me ngā wawata o tōna hapū ka whai whakaaro he pēhea te pāngarau e whakatutuki ai • tīpako i ngā wāhanga whai take o te mātauranga pāngarau e whai hua ai mō ngā pūāhua e wero mai ana • whakamahi pāngarau ki te whakaputa i ngā otinga, ngā tāpaetanga me ngā matapae e tautoko ana i ngā whāinga o te hapū me te iwi. 	<p>Tau 13 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • whakamahi tika i ngā kupu motuhake, ngā kīanga, ngā tohu me ngā whakaahuaanga pāngarau • whakamahi pāngarau ki te whakamārama i ōna whakaaro, i ōna tāpaetanga ki tangata kē, i horopaki kē • whakamārama kaupapa pāngarau ki ngā tangata tauhou. 	<p>Tau 13 E tautoko ana te mokopuna kia:</p> <ul style="list-style-type: none"> • waihanga me te whakamahi i ngā whakauauatanga o ngā taurira tikanga pāngarau.

HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūārere 5: Tau 11-13

Te Ngako o te Whāinga

Mā te Mokopuna

<p>Kei te ako au ki te:</p> <ul style="list-style-type: none"> • āta whakarite i ōku whakaaro, whakamahi i ōku pūkenga me te wahapū i ōku whakautu ki te ārahitanga a te kaiako • ngākau titikaha ki te whakatutuki i ngā tino whāinga kei te tūārere nei mā te tautohu i ngā whāinga pāngarau me ngā putanga mō ngā hinonga kua kōwhiria • tūtohu i te mana o te mātauranga Māori me te mātauranga pāngarau i roto i aku whakamahere tūhuratanga pāngarau. 	<p>Kei te ako au ki te:</p> <ul style="list-style-type: none"> • rapu i ngā kōrero moroki, kōrero tuku iho hoki ki te whakamahi pāngarau hei tautoko i te ao Māori • āta tīpako me te whakahono i ngā tūmomo mātauranga pāngarau ki te whakaoti rapanga mō ngā take hapori Māori • whakamahi pāngarau kia whai hua ai a tangata kē, me ngā hapori • whakamahi matatikahia ngā momo hangarau (h.t., AI, rorohiko, ipurangi) ki tā te tirohanga Māori whakamahinga, mā te whakaahua i ngā whakamahinga matatika. 	<p>Kei te ako au ki te:</p> <ul style="list-style-type: none"> • whakawhānui i tōku puna kupu pāngarau (h.t., mō te tuanaki, me te āhuahanga taunga) • whakaatu i tōku māiatanga me taku whakamahinga tika i te reo pāngarau ki te whakawhiti kōrero mō āku putanga e hāngai ana ki te hunga whakarongo • whakamārama i ōku ariā pāngarau ki ngā āhuatanga huhua mō ngā horopaki whai take. 	<p>Kei te ako au ki te:</p> <ul style="list-style-type: none"> • whakamahi pūkenga taurangi hei whakaoti rapanga whakauaua, ka whakamārama ai i te hua me te hua ka puta • waihanga, te whakamahi kauwhata ki te arohaehae i ngā tauira e rangahau ana i ngā horopaki whai take • whakamahi i ngā ariā me ngā tikanga tauanga hei whakamārama i te whānuitanga o tētahi āhuatanga o te wā (h.t., te horapa o te mate kōwhēori i te ao) • tātai tūponotanga mō ngā putanga e whai take ana, me te whakapae i te nui o ētahi putanga • tāmiro i ngā wāhanga rerekē o te mātauranga pāngarau i tētahi tauira pāngarau kia whakaputa mai ai he kōrero whai take mō te iwi Māori, mō te hapori whānui hoki.
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HE TANGATA tūhura ki te ao	HE URI WHAKAHEKE ki te whai ao	HE PUNA KŌRERO o te reo pāngarau	HE ĀKONGA mauri oho
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Tohu Ako: Tūāreere 5: Tau 11-13

Te Roanga o te Kōrero

<p>Te Āhua o te Mokopuna E marohi ana te mokopuna i tōna haepapa kia whakamahi i ōna mātauranga pāngarau me ōna pūkenga pāngarau ki ngā mānīania kei mua i te aroaro o te ao Māori, o te ao whānui hoki (h.t., te taiao, te whakahaumanu i ngā tamariki katoa a Tāne).</p> <p>He kaitiaki te mokopuna o te taiao me te ao Māori, ka whakamahi ai i te pāngarau ki te hiki i ngā mānīania e whakahāwini whānuitia ana i te taiao.</p>	<p>Te Āhua o te Mokopuna He kaitakawaenga te mokopuna o ngā mātauranga tuku iho me ngā mātauranga pāngarau, ā, ka puritia te mana me te whakatinanatanga o ngā mātauranga e rua.</p> <p>Kei te kauwhanga tōna tuakiri hei uri Māori, ā, e kairangi ana te mātauranga, te māramatanga me ngā pūkenga pāngarau.</p> <p>E mōhio ana te mokopuna ki ōna pitomata me ōna haepapa hei uri takoha ki te ao mā te whakamahi i ōna mātauranga me ōna pūkenga pāngarau.</p>	<p>Te Āhua o te Mokopuna E whāia ana te mokopuna kia arero taiaha, kia arero pāngarau ia ki ngā reo e rua. Ka rangaranga i te reo Māori me te reo pāngarau e mārakerake ai tā rātou whakaputa i ō rātou anō whakaaro me te whakamārama i ā rātou tūtohu.</p> <p>E whakamahi ana te mokopuna i te reo pāngarau e hua ai tētahi mahi mā te takitahi me te takitini.</p> <p>E taea ana e te mokopuna te waihanga me te rāwekeweke te whānuitanga o ngā tohu whakaahuahanga o tētahi rahinga me te whakamāori i ngā nuka pāngarau pērā i ngā kauwhata, ngā hoahoa me ngā tauira pāngarau mā te tō mai i te tūāpapa o te reo pāngarau.</p>	<p>Te Āhua o te Mokopuna He mokopuna o te ako te mokopuna e kore e motu tana tōtō i ōna mātauranga. E rangona ana e te mokopuna tōna āhei ki te waihanga me te tuari i āna akoranga hou ki te ao.</p> <p>Ka whakarite te mokopuna i tōna anō kāpeka aramahi, ā, ka rangona te painga o te pāngarau hei hoa haere mōna kia tika ai, kia arorau hoki ai ōna kōwhiringa.</p> <p>Ka tāmaua e te mokopuna tōna anō mana me tana whakamahi i te pāngarau.</p> <p>Kua rite te mokopuna ki te rere atu i te kōhanga ki te ao whānui, hei tangata ki te ao, ā, ko tōna ao Māori, ko tōna tirohanga Māori hei hoa haere mōna, ka mutu, ka tāmirohia ki ngā tini āhuatanga o te mātauranga e niwha ai i ngā mānīania o te ao Māori, o te ao whānui hoki.</p>
<p>Ngā Tini Mata o te Tuakiri Kua whanake te aronga a te mokopuna ki ngā tukanga whakatika a ētahi, ki ngā hia mōhio o ētahi, me tana hono tika ki a rātou i āna tūhuratanga pāngarau me te tohu o tērā ki tōna ahurea tūhuratanga pāngarau e mahi motuhake ana, e mahi tahi ana hoki.</p> <p>E ngākau auaha ana te mokopuna ki āna mahi pāngarau, ā, ka whakaaro arorau i a ia e mahi pāngarau ana.</p>	<p>Ngā Tini Mata o te Tuakiri E mōhio ana te mokopuna ki te ahurea, te reo, me ngā tikanga pāngarau me tōna āhei ki te whakahua i ngā wāhanga o ngā tukanga pāngarau e ahu mai ana i ngā whakaaro o ngā tīpuna, ki te wāhi hoki o te mātauranga pāngarau e whai take ana, engari e kore tērā e whakakapi i te mātauranga me ngā tikanga a ngā tīpuna.</p>	<p>Ngā Tini Mata o te Tuakiri E māia ana te mokopuna ki te whakawhiti i ōna whakaaro pāngarau me ngā putanga i tana kuhu haere ki te mātauranga pāngarau marutuna, inarā, ka whai take nui ia ki te whakahoahoa me te whakawhiti whakaaro ki te minenga whānui mō te whai take o ngā putanga pāngarau e pā ana ki ngā pūāhua i tūhuratia ai.</p>	<p>Ngā Tini Mata o te Tuakiri E whai hononga ana te mokopuna ki te mātauranga pāngarau mō tōna ake pai, me ngā tukanga o te whakamahi pāngarau i tōna ao o ia rā hei kōwhiri ai i ngā putanga pāngarau me te mātauranga ahurea.</p>

Te Ako - Tau 11 ki te Tau 13

Tau 11	Te Whitinga i Tau 11 ki Tau 12	Tau 12	Tau 13
<p>Ko te whakamahinga o ngā tikanga pāngarau hei whakaoti rapanga, hei whakatau take o ia rā, o ia rā tae atu ki ngā wheako a te ākongā, horopaki whānui hoki.</p>	<p>E pā ana ki te mātauranga pāngarau, ka huri te tirohanga mai i ngā horopaki o ia rā atu ki ngā hanganga ariā o te pāngarau. Ka hono atu ngā raupapatanga huatau nei ki ngā āhuatanga nui o te wā, ki ngā horopaki o ia rā. Ka tīmata ngā akoranga pāngarau motuhake i konei.</p>	<p>Ko te aronga nui ko te tāmirotanga o ngā pekanga ki te whakarite pūnaha arorau e whakaawe ai i te mātauranga, ki te whakamārama hoki i ngā āhuatanga nui o te wā, me ngā wheako o waho atu o ngā wheako o te mokopuna.</p>	<p>Ka tōai tonu ngā akoranga motuhake, ā, hei tēnei tau, ka kitea te mokopuna hei mātanga pāngarau. Ka hāngai ki te waihanganatanga o ngā tauira pāngarau, ngā arotake arorau mō ngā tauira, me ngā whakapaenga, ngā whakataunga o ngā putanga.</p>

Tohu Ako: Tūārere 5: Tau 11 – 13

Tau

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakamahi i ngā rautaki huhua hei whakaoti rapanga mō:
 - ngā tauoti
 - tau toitū
 - tau whakahau, tau kewha
 - ngā tau tōpū (tau tōruna me ngā tau tōraro)
 - ngā tau huripoki hoki
- whakamahi i ngā rautaki huhua ki te whakaoti i ngā rapanga whakarea, rapanga whakawehe mō te tau tōpū (tōruna/tōraro), ngā tau ā-ira, ngā hautau, ngā taupū me ngā ōrau
- whakaoti rautaki whānui ki te whakaoti rapanga tauoti, tau ā-ira, hautanga, ōrau, tau tōpū
- whakaoti rapanga pānga riterite mā te whakamahi whakarea, (h.t., mehemea 12 paoro wūru ka hangā kāmata 18, e hia ngā paoro wūru hei hanga 15?).

Ngā Tini Mata o te Mātauranga

Tau 11

Kei te ako ngā mokopuna ki te:

- āhukahuka i ngā āhuatanga o ngā tau me te tautohu i ngā pūāhua e tika ana, mō ngā:
 - tauoti
 - tau toitū
 - tau whakahau, tau kewha
 - tau tōpū (tau tōruna me ngā tau tōraro).
 - tau huripoki hoki
- tātai ki ngā tau tānga ngahuru
- whakaawhiwhi me te whakataua tata hei matapae putanga me te aro i te tika o ngā tātauranga
- whakamahi paheko whakahautanga tau tōruna, tau tōraro ki ngā momo tau katoa (tauoti, hautanga me ngā tau-a-ira) me te huri hei taupū, hei pūtakerua
- whakamahi paheko mō ngā ōrau, te whakapiki me te whakahaheke rahinga, mā te whakamahi taurea tahi, te whakawhānui taupū me ngā tau tōpū
- whakamahi hautau, tau ā-ira me ngā ōrau, mā te kōwhiri i te paheko e tika ana
- whakamahi pāpātanga, ōwehenga, te pānga riterite me te whakaaro pānga riterite kōaro
- tātai huamoni whakaputu i te haerenga o tētahi wā, me te whakaputu mō ia tau, ia hauwhā tau, ia marama, mō ia rā hoki.

Ngā Tini Mata o Te Reo o Tau

E mōhio ana te mokopuna ki ngā kupu nei:

- tikanga taupū
- pānga riterite kōaro
- tau toitū
- tau whakahau
- tau kewha
- tau huripoki
- tānga ngāhuru.

Tohu Ako: Tūārere 5: Tau 11 - 13

Taurangi

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- whakamahi i ngā kauwhata, ngā tūtohi me ngā ture hei whakaahua pānga rārangi kei roto i ngā tau me ngā tauira mokowā
- whakamahi tikanga kauwhata pānga hei whakaoti rapanga whārite tukutahi
- whakamahi kīanga me te tuhi kauwhata o ngā pānga hei whakaoti rapanga
- matapakī i ngā kauwhata huhua hei whakaatu tauira me te pānga ki tētahi pūāhua Māori.

Ngā Tini Mata o te Mātauranga

Whārite, Tōrite & Kīanga

Tau 11

Kei te ako ngā mokopuna ki te:

- kimi otinga e whakamōrahi ai, e whakamōkito ai tētahi maha me te whai i ngā herenga o te pūāhua mā te mahi rārangi, tūtohi, kauwhata, me te whakatairite uara
- whakaoti kīanga tau, kīanga taurangi e whiwhi taupū tōpū ai mā te whakamahi ture taupū
- tāpiri, tango, whakarea me te whakawehe hautanga taurangi e whiwhi tauraro tau ana
- whakarūnā, te whakawhānui, te whakatauwehe kīanga taurangi
- waihanga me te whakaoti whārite rārangi, whārite tōrite hoki
- waihanga me te whakaoti whārite rārangi tukutahi e rua ngā taurangi me te tuhi kauwhata o aua whārite e tautohu i ngā pūtahi
- waihanga me te whakaoti whārite pūrua me te tau whakarea:
h.t., $x^2 + bx + c = 0$
- whakauru, whakatairite anō me te whakarūnā kīanga taurangi, ture rānei
- whakamāori, tuhi kauwhata, me te waihanga pānga rārangi
- mō ngā panga pūrua me ngā panga taupū, he tau tōrunga, me te:
 - waihanga he tūtohi me te kauwhata o tētahi whārite
 - whakamāori i ngā kōrero matua me ngā āhuatanga o te kauwhata.
- āhukahuka i ngā pānga i waenganui i ngā tauira rārangi me ngā tauira pūrua, ka tuhi ai i te whārite hei ture, me te whakamahi i taua ture ki te whakapae.

Ngā Tini Mata o Te Reo o Taurangi

E mōhio ana te mokopuna ki ngā kupu nei:

- whakatauwehe
- pāpātanga o te whiti
- whārite pūrua
- whārite taupū
- tauira mokowā
- whakarūnā
- pānga rārangi
- pānga rārangi kōaro
- pānga taupū
- pānga pūrua
- ture taupū.

Tohu Ako: Tūārere 5: Tau 11 – 13

Ine me te Āhuahanga

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- āhukahuka i te tuatini o ngā āhuatanga e ine ana me te whakamahi waeine whai take
- whakaoti rapanga ine mā te wāwāhi āhua ki ōna wāhanga. Ka whakamahi ture, ka whakamahi ōwehenga ine me ngā ōwehenga pākoki e tika ana
- whakaahua me te whakatakoto ahunga ki ngā pere
- whakamahi hangarite o ngā koki o ngā rārangi pūtahi, whakarara, ngā taparau me ngā matarau
- whakamahi panoni āhuahanga me te ture a Pythagoras hei whakaoti rapanga
- whakamahi tikanga āhuahanga hei whakaoti rapanga
- tātari me te whakamahi tikanga pānga me ngā kauwhata pākoki hei whakaoti rapanga
- tūhura i ngā tikanga pākoki mō tētahi pūāhua Māori
- whakamātau i ngā tikanga maha mō te kimi pārōnaki mō tētahi pūāhua Māori
- tūhura i ngā tikanga maha ki te kimi pāwhaitua mō tētahi pūāhua Māori.

Ngā Tini Mata o te Mātauranga

Te Ine

Tau 11

Kei te ako ngā mokopuna ki te:

- whakatutuki inenga kia hāngai pū ai ki te horopaki
- honohono i ngā tau mati whai tikanga me ngā tepe o te tika
- whakamahi i ngā waeine o te pūnaha ngahuru, tae atu ki ngā waeine mō ngā āhuatanga rerekē me ngā waeine pāpātanga
- kimi te horahanga me te rōrahi o ngā āhua ahu-3 pēnei i ngā rango, koeko, poi me ngā poro mā te whakamahi ture
- whakamahi ōwehenga pākoki me te ture a Pythagoras ki te whakaoti rapanga, mō ngā pūāhua ahu-2, ahu-3 hoki
- honohono i ngā panoni ki ngā rārangi me ngā unahi kei ngā kauwhata XY ki ngā rerekētanga o ngā whārite.

Te Āhuahanga

Kei te ako ngā mokopuna ki te:

- whakamahi papa taunga, he mahere rānei hei whakaatu i ngā pūwāhi ōrite me ngā horanga kei roto i ngā huanui e rua, nui ake rānei
- whakaputa, ka whakamahi i ngā tikanga koki o te porowhita
- tautohu i ngā āhua ōrite, ā, ka whakamahi whakaaro pānga riterite hei tātai i tētahi tapa kāore e mōhiotia ana
- whakamahi ōwehenga pākoki me te ture Pythagoras ki ngā ahu-2, ahu-3 rānei
- whakatairite, te whakamahi i ngā panoni papa-tahi, papa-maha hoki
- tātari tauira hangarite mā te whakaatu i ngā panoni i hangaia ai aua tauira
- whakarahi i te āhua ki tētahi tauwehe me te kimi i te paenga, te rōrahi o taua āhua.

Ngā Tini Mata o Te Reo o te Ine me te Āhuahanga

E mōhio ana te mokopuna ki ngā kupu nei:

- ōwehenga pākoki
- koeko
- rango
- panoni papa-tahi
- panoni papa-maha
- taunga pātahi
- pūwāhi ōrite
- huanui
- whakaāwhata
- kauwhata pākoki
- rārangi pūtahi
- whakarara
- taparau
- matarau
- tauira hangarite
- waeine pāpātanga.

Tohu Ako: Tūārere 5: Tau 11 – 13

Ine me te Āhuahanga

Te Taurira me te Pānga

Tau 11 ki Tau 12 – Pāngarau Motuhake

- Kua kōmitimiti atu te mātauranga Ine me te mātauranga Āhuahanga ki roto i te Taurangi me te Tuanaki.
- Ko te Tuanaki, he whakawhānuitanga ake o te mātauranga e kuhu ai ngā momo kīanga, pēnei i ngā nekehanga o ngā momo taurangi, kua anake ko te nekehanga o tētahi mea whai matū pērā i te waka, te wakarerangi, te pōro, te tangata rānei.

Tau 12 Kei te ako ngā mokopuna ki te:	Tau 13 Kei te ako ngā mokopuna ki te:
<ul style="list-style-type: none"> • whakamahi taurira pāngarau ki te whakatau tata i ngā pūāhua e hāngai ana. 	<ul style="list-style-type: none"> • whakamahi taurira pāngarau ki te whakatau tata i ngā pūāhua e hāngai ana.
<ul style="list-style-type: none"> • rāwekeweke kīanga taurangi pērā i ngā hautanga taurangi mā te: <ul style="list-style-type: none"> - whakarūnā, whakarōpū anō, whakaroha me te whakatauwehe - tāpiri, tango, whakarea me te whakawehe - whakarea i te tau matua ki a ia anō e ai ki te maha o ngā pū hautanga: h.t., $2^3 = 2 \times 2 \times 2 = 8$. 	<ul style="list-style-type: none"> • rāwekeweke kīanga taurangi pērā i ērā e whiwhi pūtaka ana mā te: <ul style="list-style-type: none"> - whakarūnā, whakarōpū anō, whakaroha me te whakatauwehe - tāpiri, tango, whakarea me te whakawehe - huri i te tau kewha hei tau whakahau - whakarea ki te tau whakahau.
<ul style="list-style-type: none"> • waihanga, whakaoti me te tuhi kauwhata mō ngā whārite pūrua, ngā whārite tōrite ki ngā hautanga whakarea me te pūtaka rua mā te whakamahi i te rahinga kīanga taurangi. 	<ul style="list-style-type: none"> • waihanga, whakaoti me te tuhi kauwhata mō ngā whārite pūrua, ngā whārite tōrite ki ngā hautanga whakarea me ngā pūtakerua tuatini.
<ul style="list-style-type: none"> • tuhi, tuhi kauwhata me te whakaoti whārite tukutahi. 	<ul style="list-style-type: none"> • waihanga, whakaoti me te tuhi kauwhata whārite tukutahi, ki ngā whārite rārangi e toru, me ngā taurangirangi e toru. Ka whakamāori i te putanga e hāngai ana ki te horopaki.
<ul style="list-style-type: none"> • tūhura kauwhata rārangi me ngā kauwhata rārangi kore me te whakahāngai te āhuatanga me te pānga e whakatauirahia ana. 	<ul style="list-style-type: none"> • waihanga, te whakamāori i ngā kauwhata pānga me ngā kauwhata pānga kōaro, kauwhata pānga huri kōaro.
<ul style="list-style-type: none"> • whakahono i te kauwhata ki tōna rōnaki • whakamahi tikanga kimi pārōnaki, kimi pārōnaki-kōaro hoki e whai wāhi mai ana te pūrau • whakamahi tikanga āhuahanga taunga e whai wāhi mai ana te pūwāhi, te rārangi torotika me te kōpiko. 	<ul style="list-style-type: none"> • whakamahi i ngā tikanga āhuahanga o te motunga koeko • rāwekeweke tau hiato hei whakaoti whārite, ā, ka whakaatu hei kauwhata • whakamahi tikanga whakanoho rārangi kōpiko, taurira pūkōaro, me ngā tukanga whakamārohi pānga rārangi ki te whakaatu pūāhua • whiriwhiri, te whakamahi i ngā tikanga maha mō te kimi pārōnaki, te kimi pāwhaitua, te kimi pārōnaki kōaro o tētahi pānga, pērā i te tikanga tātari me te tikanga tau • waihanga whārite pārōnaki ka whakamāori i te otinga.
<ul style="list-style-type: none"> • whakamahi i te ture aho, te ture whenu me te ture horahanga (h.t., $\frac{1}{2} ab \sin C$) hei kimi i te tapa o ngā tapatoru, ngā koki me te horahanga. 	<ul style="list-style-type: none"> • whakamahi i ngā tūmau pākoki hei whakarūnā te whakarite anō kīanga pākoki.
<ul style="list-style-type: none"> • whakamahi i ngā rau ara ki te kimi i ngā ara matua mai i tētahi pūwāhi ki tētahi atu. 	<ul style="list-style-type: none"> • tuhi hoahoa rau ara hei whiriwhiri i te otinga e tino whai hua ana, ka whakamārama hoki i ngā ara matua.

Tohu Ako: Tūārere 5: Tau 11 – 13

Ine me te Āhuahanga

Ngā Tini Mata o Te Reo

Tau 12 E mōhio ana te mokopuna ki ngā kupu nei:	Tau 13 E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • rau ara • tapeke raupapa tāpiri • tapeke raupapa whakareā • pūwāhi • rārangi torotika • kōpiko • kīānga taurangi hautanga • taupūtanga • taupūtanga kōaro • ara matua • ōwehenga pākoki • pārōnaki • pārōnaki-kōaro • pūrau • ture aho • ture whenu • ture horahanga • pū hautanga. 	<ul style="list-style-type: none"> • tau hiato • pūnaha whārite tukutahi • whārite rārangi-kore • whārite pākoki • whārite pūrau • whārite rārangi-kore • motunga koeko • pārōnaki • pārōnaki-kōaro • pāwhaitua • tukanga whakamarohi pānga rārangi • rārangi whakanoho kōpiko • tauira pū kōaro • tūmau pākoki • hoahoa rau ara.

Te Tuanaki

Kei te ako ngā mokopuna ki te:	Kei te ako ngā mokopuna ki te:
<ul style="list-style-type: none"> • whakahono i te kauwhata ki tōna rōnaki • whakamahi tikanga kimi pārōnaki, kimi pārōnaki-kōaro hoki e whai wāhi mai ana te pūrau. 	<ul style="list-style-type: none"> • tautohu i ngā arurunga me ngā tepe o tētahi pānga • whiriwhiri, te whakamahi i ngā tikanga maha mō te kimi pārōnaki, te kimi pāwhaitua, te kimi pārōnaki kōaro o tētahi pānga, mā te whakamahi i ngā tikanga tātari me te tikanga tau • waihanga whārite pārōnaki, ka whakamārama hoki i ngā otinga.

Ngā Tini Mata o Te Reo o Tuanaki

E mōhio ana te mokopuna ki ngā kupu nei:	E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • pānga rōnaki • pārōnaki-kōaro • pūrau. 	<ul style="list-style-type: none"> • arurunga • tepe o tētahi pānga • whārite pārōnaki • pāwhaitua • pārōnaki kōaro • tikanga tātari • tikanga tau.

Tohu Ako: Tūārere 5: Tau 11 – 13

Tauanga me te Tūponotanga

Ngā Tini Mata o te Ako

Kei te ako te mokopuna ki te:

- mātai i te tukanga me ngā putanga o ngā tūhuratanga tauanga a ētahi atu kia arotake mēnā rānei he pono, he whai take hoki
- whai māramatanga i te take kua whakaaturia pērā ai te tūhuratanga tauanga
- tūhura i ngā pūāhua pāpono mā te kimi hononga kei waenganui i ngā putanga whakamātautau
- whakarite i ngā pātai tūhura mō nga taupori whānui
- kohikohi i ngā tīpako raraunga matatini, ka tātari ki te kimi taura kei roto, kei waenga, kei waho atu hoki o te raraunga, me te tautohu uara kē
- mōhio mēnā rānei me whakapai i te raraunga, ka matapaki ai i ngā take mō ngā taurangirangi rerekē o te raraunga
- whakaputa kōrero mō ā rātou kitenga ki ngā whakaaturanga whai take me te whakahoropaki i te tūhuratanga
- tūhura raraunga matatini, raraunga matarua me ngā raraunga houanga me te whakamahi i ngā tikanga o te mana o te raraunga
- arotake i te whakataunga tūhuratanga tauanga e hāngai ana, mō ngā tikanga tīpako me ngā tikanga tauanga ki te hīkaro ōkawa mō ngā rōpū e rua
- arotake i ngā matapae ka puta i ngā tūhuratanga raraunga houanga, raraunga matarua hoki
- whakamahi tikanga tūponotanga, huatau tūponotanga me ngā tikanga tuari hei whakarite whakapae.

Ngā Tini Mata o te Mātauranga

Te Rapanga

Tau 11

Kei te ako ngā mokopuna ki te:

- tūhura huinga raraunga matatini mō ngā rangahau mātai me te tūhura whakatairite takirua mō ngā whakamātautau mā te:
 - puaki pātai whakarāpopoto me ngā pātai whakatairite hei tūhura taupori
 - puaki pātai hei tūhura pūāhua hounanga pānga me ngā whakamātautau
 - whakapae, te tāpae rānei mō ngā putanga ka kitea.

Te Whakamahere

Kei te ako ngā mokopuna ki te:

- whakamahere ki te kōhi, ki te kimi raraunga ki te whakautu pātai tūhura mō ngā rangahau mātai me ngā whakamātau mātai me te:
 - tautohu me te parahau i ngā taurangirangi e hiahiatia ana ki te whakautu i te pātai tūhura
 - whakamahere me te parahau he pēhea te whakatakoto me te whakaputa tika whai take mō ngā taurangirangi (i te kohinga o ngā raraunga) te parahau raraunga rānei ki te mōhio he aha e inea ai ngā taurangirangi, he pēhea hoki i inea ai
 - whakatakoto mēnā rānei e hāngai ana te tūpātai ki tētahi rōpū, ki tētahi taupori rānei. Mēnā rānei mō te taupori, ka tiki ake he taura nā te taupori ki te whakautu i te pātai tūhura
 - whakatakoto i te rahinga o te taura whakamātau e hiahiatia ana mō ngā raraunga whakarōpū me te raraunga inerahi ki te whakatau i te putanga mō ngā taupori
 - tautohu i te rōpū, te taupori whai take, te tangata rānei, nōna ngā raraunga
 - whakamahi tūpātai ki te tautohu i ngā whakaritenga matatika e tika ana mō te katoa o te pakirehua tūhura tauanga.

Te Kohi Raraunga

Kei te ako ngā mokopuna ki te:

- whakamahi tīpakonga matapōkere hei kōhi, hei kimi raraunga rānei mō te taupori mō ngā pūāhua whakarāpopoto me te whakatairite
- waihanga i te papakupu raraunga (raraunga kua kohia), te kimi rānei i ngā raraunga meta (puna raraunga kua kohia)
- pupuri raraunga ka tiaki ai kia haumaruru te noho, kia noho matatapu ai hoki
- arotake mehemea e whai take ana te raraunga, ka māmā te whakatika, ka whakapai ai i ngā wāhi, ki te hiahia
- whakahaere i te tukanga kōhi raraunga
- whakarōpū raraunga mō te tātaringa.

Te Tātari

Kei te ako ngā mokopuna ki te:

- waihanga whakaari maha, kia kite ai i ngā hononga
- whakarōpū anō, waihanga rānei i ētahi taurangirangi hou, ki te hiahia
- tautohu, te whakawhiti whakaaro mō ngā āhuatanga o te horopaki mā te whakamahi i ngā whakaaturanga maha (te ia, ngā hononga taurangi, ngā taurangirangi, ngā rerekētanga i roto, i waenga o ngā tuari)
- whakaputa hīkaro ka hua ake i ngā raraunga mō te taupori
- parahau i ngā putanga mā te whakamahi whakaaturanga me ngā inenga, ka arohaehae i ngā pārongo a ētahi atu.

Tohu Ako: Tūārere 5: Tau 11 – 13

Tauanga me te Tūponotanga

Ngā Take Mana Raraunga

Tau 11

Kei te ako ngā mokopuna ki te:

- whakamahi i ngā tikanga matatika e hāngai ana, pēnei i ngā whakaaetanga a ngā kaiuru o tētahi tirohanga, ka tiaki ai i te kirimuna o taua kaiuru
- mārama ki ngā tikanga matatika o ngā iwi taketake me ngā take mana mō ngā rauranga.

Te Whakatau

Kei te ako ngā mokopuna ki te:

- whakamahi taunakitanga o te tātaritanga
- whakawhānui ki kō atu o te tīpako ki te taupori mā te whakatakoto taunakitanga me te whai whakaaro ki ngā haurokuroku (ngā pūāhua whakarārapo me ngā whakatairitenga)
- whakatakoto whakamārama mō ngā ia kei roto i te raraunga (ngā pūāhua raraunga houanga me ngā pānga)
- huritao i ngā matapae, i ngā tāpae rānei
- arohaehae i ngā matapae, i ngā tāpae rānei
- arohaehae arorautia tōna tūhuratanga mō ngā wāhanga rerekē o te pakirehua tūhura me te aro ki ngā taurangirangi
- raupapa i ā rātou taunakitanga me ngā kitenga hei pārongo kotahi e kōrerorero ana i te katoa o te tūhuratanga ki ētahi tāngata, ehara i te mātanga
- aromātai i ngā pārongo tauanga ka puta i ngā pāhotanga, mā te tūhono i ngā whakaari raraunga, ngā tauanga, ngā tukanga me ngā pāponotanga o ngā pārongo.

Te Tūponotanga

Kei te ako ngā mokopuna ki te:

- whakamahere me te whakahaere whakamātautau tūponotanga mō ngā pūāhua tūponotanga, pēnei i te whakahaere whakamātautau mā te whakamahi hangarau mā te:
 - puaki pātai tūhuratanga
 - tautohu putanga mō te pātai tūhuratanga, ka whakaneinei i ngā putanga
 - tautohu tauira pūmārama me ngā tepe mō taua pūāhua tūponotanga
 - waihanga tauira ki ngā tūponotanga ariā, tūponotanga raraunga kua kohia kētia me ngā tūponotanga tāiringa
 - whakatau e hia ngā whakamātautau, ngā taputapu me ngā hangarau ka whakamahia me te tikanga tuhituhi
 - whakahaere waihanga me te tuhi raraunga
 - waihanga whakaari raraunga mō te tuari o ngā putanga kua kitea kei ngā whakamātautau tūponotanga me te tuari o ngā putanga tēnā pea ka puta mō ngā tauira tūponotanga ariā
 - whakaahua i te āhua o ēnei whakaari
 - kimi e hia ngā whakapae tūponotanga mō ngā putanga
 - tautohu ōritenga me ngā rerekētanga kei waenga i āna kitenga me ngā kitenga ā ētahi atu
 - huritao mō ngā putanga e whakaneinei ai
 - tautohu me te whakaputa i te pūtake o ngā ōritenga me ngā rerekētanga i waenga i ngā kitenga o ngā whakamātautau tūponotanga me tūponotanga ariā e whai pānga ana.

Tohu Ako: Tūārere 5: Tau 11 – 13

Tauanga me te Tūponotanga

Ngā Tini Mata o Te Reo o Tauanga me te Tūponotanga

Tau 11

E mōhio ana te mokopuna ki ngā kupu nei:

- taupori
- pakirehua tūhura tauanga
- pātai whakarāpopoto
- pātai whakatairite
- mana raraunga
- matatika taketake
- raraunga matatini
- hīkaro ōkawa
- hīkaro
- tūponotanga tāiringa
- raraungameta
- tauira pūmārama
- tūponotanga tātai
- tīpokanga matapōkere
- hīkaro whakamātau
- raraunga houanga
- raraunga matarua.

Tau 11 ki Tau 12 – Pāngarau Motuhake

- I ngā tau 12, tau 13, e noho motuhake tonu ana a Tauanga me te Tūponotanga.
- Ko te tino whanaketanga me te whakahōhonutanga, ka aro pū atu ki te tuari, te tūāpapa o te tauira pāngarau.

Te Tūhuratanga Tauanga

Tau 12

Kei te ako ngā mokopuna ki te:

- whakamahi i te pakirehua tūhuratanga tauanga:
 - waihanga raupapatanga-raraunga mai i ngā puna raraunga pēnei i te tuhinga, pikitia, oro, nekehanga (spatio-temporal) me ngā wheako whaiaro (h.t., whakaaro, kare ā-roto)
 - tautohu wā me te ako i ngā pūāhua whakamahi me te torotoro raraunga
 - whakahaere tirohanga tauanga mā te tīpako matapōkere, te whakamātau me te whakamahi i ngā huinga raraunga kua kohia kētia
 - arotake i te kōwhiringa o ngā inenga mō ngā taurangi me ngā tukanga tīpako, tukanga kohikohi raraunga hoki
 - whakamahi mōhiotanga ki te horopaki, te tātaritanga raraunga tūhura me te hīkarotanga tauanga
 - whai i ngā tikanga matatika e hāngai ana ki ngā tūhuratanga tauanga
 - whakamahi i ngā tikanga matatika taketake ki te whakawhānui i ngā tikanga matatika
 - mārama ki ngā take e whai wāhi mai ana ki ngā tikanga o te mana raraunga
- whakaputa hīkaro, mai i ngā tirohanga tauanga me ngā whakamātau:
 - whakaputa whakapae ōpaki, marohi rāroto, marohi rāwaho hoki
 - whakamahi i ngā tīpakonga tauanga ki te whakatau tata pūwāhi i ngā tawhā taupori
 - āhukahuka i te pānga o te rahinga o te tīpakonga ki te taurangitanga o tētahi whakatau tata
- arotake i ngā pūrongo tauanga:
 - whakamāori i ngā tūraru me te tūponotanga whai pānga o ngā tūraru
 - tautohu i ngā hapa tīpako me ngā hapa kē atu ka hua mai i ngā rangahau me ngā pōti.

Tau 13

Kei te ako ngā mokopuna ki te:

- whakamahi i te pakirehua tūhuratanga tauanga:
 - rāwekeweke me te whakaraupapa anō i ngā raraunga mai i ngā puna raraunga pēnei i te tuhinga, pikitia, oro, nekehanga (spatio-temporal) me ngā wheako whaiaro (h.t., whakaaro, kare ā-roto)
 - tautohu wā me ngā putanga mō te ako i ngā pūāhua whakamahi me te torotoro raraunga
 - whakahaere tirohanga tauanga, whakahaere whakamātau tauanga, mā te whakamahi tikanga whakamahere whakamātau tauanga, me te whakamahi i ngā huinga raraunga kua kohia kētia
 - whiriwhiri, te whakamahi, ka arotake i ngā tauira tauanga e whai take ana ki te whakatakoto matapae, ki te kimi whakamārama (pērā i te ine hononga taurangi rārangi mō te raraunga matarua, me te tauira tāpiripiri mō te raraunga houanga)
 - whakamahi mōhiotanga ki te horopaki, te tātari raraunga tūhura me te hīkaro tatauranga
 - mārama ki ngā tikanga matatika me ngā tikanga matatika taketake ki te whakapapa, te mana o ngā raraunga me te tiaki i ngā taonga tuku iho
 - whakamārama i ngā putanga, ka arotake i ngā wāhanga katoa o te tūhuratanga
- whakaputa hīkaro, mai i ngā tirohanga tauanga me ngā whakamātau:
 - whiriwhiri i ngā whakataunga tata me ngā whaitua taupono mō ngā pānga riterite, ngā rerekētanga, te āhukahuka i te whai takenga o te ture tepe wēanga
 - whakamahi tikanga pērā i te tīpako anō, me te whakamatapōkere, ki te aromātai i te whai takenga o te taunakitanga
 - arotake i te whānuitanga o ngā momo pūrongo pāpāho, pērā i ngā tirohanga tauanga, ngā pōtitanga, ngā whakamātau me ngā rangahau mātai
 - arohaehae i ngā kōrero mō ngā take o tētahi pānga
 - whakamāori i ngā pae hapa.

Tohu Ako: Tūārere 5: Tau 11 – 13

Tauanga me te Tūponotanga

Ngā Tini Mata o Te Reo Tauanga

Tau 12 E mōhio ana te mokopuna ki ngā kupu nei:	Tau 13 E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • tīpakonga matapōkerewhakamātau • hapa tīpako • hapa kē • tawhā taupori • mana rāraunga • tūraru • tūponotanga whai pānga o ngā tūraru • mārohi rāroto • mārohi rāwaho. 	<ul style="list-style-type: none"> • pae hapa • pūrongo pāpāho • tirohanga tauanga • whakamātau • mana raraunga • ture tepe wēanga • rangahau mātai • take o tētahi pānga.

Te Tūponotanga

Kei te ako ngā mokopuna ki te:	Kei te ako ngā mokopuna ki te:
<ul style="list-style-type: none"> • tūhura pūāhua mō ngā huanga pāpono: <ul style="list-style-type: none"> - whakatairite i ngā tuari tātai, pērā i te tuari hangarite, me ngā tuari whakamātau - tātai tūponotanga mā te whakamahi tūtohi ararua, hoahoa rākau, whaihanga, me te hangarau e hāngai ana - tūhura mā te whakarerekē i ngā āhuatanga o te tūponotanga me ngā whakaari tūponotanga, ka matapaki ai i ngā pānga - whakamāori me te arohaehae i ngā pārongo me ngā tikanga e whai wāhi ana ki ngā raraunga, ngā pāpono, ngā whakaari raraunga, me ngā whakataunga mai i ngā puna raraunga pērā i te pāpāhotanga. 	<ul style="list-style-type: none"> • tūhura pūāhua e whai wāhi ai ngā huanga pāpono: <ul style="list-style-type: none"> - tātai i te tūponotanga o ngā pāpono wehe kē, pāpono paheko me ngā pāpono whakawhirinaki - tātai, te whakamāori i ngā uara me ngā ine mahora o ngā taurangi motumotu matapōkere - te whakamahi i ngā momo tuari pērā i te tuari Poisson, te tuari huarua me te tuari hangarite.

Ngā Tini Mata o Te Reo o te Tauanga me te Tūponotanga

E mōhio ana te mokopuna ki ngā kupu nei:	E mōhio ana te mokopuna ki ngā kupu nei:
<ul style="list-style-type: none"> • tuari tātai • tuari hangarite • tuari whakamātau • tūtohi ararua • hoahoa rākau • whaihanga • whakaari tūponotanga • pāpāhotanga. 	<ul style="list-style-type: none"> • huanga pāpono • tuari Poisson • tuari huarua • tuari hangarite • taurangi motumotu matapōkere • pāpono wehe kē • pāpono paheko • pāpono whakawhirinaki • whaitua taupono.

Hei Tautoko i te Ako

Tikanga Whakaako

Ko tā te mahi kaiako he whakaako i te mokopuna, ko te whakaako i te reo, ko te whakaako hoki i te ako, nō reira me whakarite kia taea ai e te katoa o ngā mokopuna te whai wāhi ki te ako.

Te whakamahere me te whakaako mā te:

- whakarite wheako ki te whakaoti rapanga (h.t., ui pātai arohaehae, whakarite tūmahi e whakatenatena ana ki te matapaki, ki te arotake, me te aromātai i ngā take arohaehae e hāngai ana ki te mokopuna)
- whakamahi pānga kupu (h.t., kīanga pāngarau, ngā huatau kua ākona, hoahoa me ngā rauemi, pēnei i ngā taputapu matihiko)
- urutau mahi (h.t., whakamahi rautaki pāngarau me ngā huatau pāngarau ki ngā horopaki huhua, ka whakauaua ake)
- tuku pātai hei ārahi i ō rātou whakaaro me te whakatītina i ngā hononga
- whakawhāiti i te mātauranga kia iti iho ngā wāhanga hei ako
- whakatakoto whakaaro mā te whakamahi whakaahuahanga me ngā rauemi
- whakarite wheako ki te whakaatu putanga o ngā tūhuranga pāngarau ki tētahi minenga
- āta ako horipū (whakaako anō), whakatauirā, ka whakaū ai
- whakarerekē i te horopaki ki tētahi e mōhiotia ana e ngā mokopuna.

Te tautoko mokopuna ki ngā tīrewa mā te:

- whakaako kiritahi i ngā pūkenga pāngarau motuhake e tika ana kia whanake ai te mokopuna
- whakaawe me te ui pātai mā te hoki mahara me te whakamahi i ngā akoranga kua ākona kētia
- ārahi i te mokopuna ki te whakapuaki i te pāngarau ki ā rātou tūhuranga ki ā rātou anō kupu
- whakawhānui i te māramatanga pūāhua a te mokopuna mā te ui i te pātai e tika ana, e pai ai tā rātou whakaoti rapanga pāngarau me te whakamahi ariā pāngarau e hāngai ana ki a ia
- akiaki mokopuna mā te whāngai ataata me ngā rauemi e hono ai ia ki ngā huatau pāngarau (h.t., whāngai ataata o ngā rautaki pāngarau, tukanga tūhuranga)
- whakamātau i ētahi whakaahuahanga whānui kē
- whakamahi horopaki e hāngai ana ki te mokopuna ki te whakaū huatau ka whakauaua ake
- tautoko i te mokopuna ki te whai pānga ki ngā kīanga pāngarau me ētahi whakaohoho ka whakairi ai ki ngā pātū o te akomanga
- whakarite wheako mā te mokopuna me ngā momo ngohe mahi, tūmahi aromatawai hoki e mōhio ai te kaiako me te mokopuna kua mau i a ia ngā mātauranga pāngarau motuhake
- āhukahuka i ngā akoranga e tika ana mā te mokopuna, nāwai rā, ka whakaako kia kite ai, kia rongō ai i te ako, ka tōaitia
- tuari i ngā whētoko a te mokopuna, ngā rautaki whakawhanake tūmahi, me ngā putanga o ngā tūmahi i te kura, ki ngā rōpū whai take o te hapori
- āwhina, me te tautoko i te ako mā te āta whakaako me te ako pū i te wā e tika ana.

Te whakarōpū mokopuna:

- e ai ki tō rātou tūhuranga take, tūhuranga pūāhua, whakaoti rapanga rānei, ā, e ai anō hoki ki te mātauranga pāngarau e hiahiatia ana ā-rōpū kaupapa, ā-rōpū ako pāngarau hoki
- whakarerekētia ngā rōpū ki ngā whakaritenga rerekē i te akoranga kotahi, arā, ka mahi ngātahi te katoa, ka wehe ai ki ngā rōpū rerekē hei tūhura pūāhua pāngarau, ka hoki mai anō ētahi, te katoa rānei, ka noho rānei ētahi ki ō rātou kōwhiringa rōpū i ētahi wā hoki.

Āta whakaarohia ngā āheinga whānui i te whakamahinga o te pāngarau:

- hīraurau i ngā wero whai pānga ki te taiao
- whakamahi mō ngā āhuatanga matareka me ngā āhuatanga matakawa
- ngā whakatairitenga me ngā rerekētanga o te mātauranga Māori i te mātauranga pāngarau.

Ngā Rautaki Whakaako: He Taura Noa

Whakarite wā kia taea ai ngā mokopuna te whakahāngai mātauranga pāngarau	<ul style="list-style-type: none">• Ka ako ngā mokopuna mā te mahi, te kōrero, te tuhi, te waihanganga, te tūhura.• Me whakamahere he wā mō ngā mokopuna ki te whakakotahi i ngā mea i ākonga e rātau mā te mahi anō i te tukanga, te mahi rānei i whakaatuhia e te kaiako, ka neke mai ai i ngā pūāhua e mōhiotia ana ki ngā pūāhua hou.• Me whakarite mahi e whakamahi ana i ngā horopaki rerekē kia whakahāngai ngā mokopuna i tā rātau e ako ai ki ngā rapanga rerekē, hei tauira - te whakamahi pūkenga whakarea ki te whakaoti rapanga horahanga me te rōrahi, me te whakamahi pūkenga whakawehe ki te rapu i te pūtea e hiahia ana mō tētahi haerenga nui.• Me hoahoa i ngā mahi e whai ana i ngā wāhi maha e taea ana te uru mai me te mārama, e taea ana te puta me te whai otinga, whai kounga tonu.• Me nui atu i te kotahi otinga, te ara whai rānei ina e whakaoti rapanga ana.
Whakaakona tonohia ngā mokopuna ki te pupuri i ngā taunaki o ā rātau akoranga	<ul style="list-style-type: none">• Me tautoko ngā mokopuna ki te tuhi, te arotake, te wetewete, te hono, me te whakahiato i ngā whakaaro i ngā mātauranga pāngarau e tika ana mō ō rātau pakeketanga.• Tonoa ngā mokopuna ki te whakamārama me te whakaatu i ō rātau whakaaro mā te whakamahi i ngā kupu, tohu, pikitia, hoahoa, tauira, me ā rātau ake whakaaturanga rerekē.• Whakamaherehia ngā wā maha i te haerenga o te wiki mā ia mokopuna ki te tuhi i ō rātau akoranga pāngarau ki roto i ā rātau pukapuka, rorohiko, pūrehe matihiko rānei.• Me tautoko ngā mokopuna ki te āta whakatakoto i ō rātau ake whakaaro. Me tautoko ngā mokopuna ki te kite i ngā hononga o ngā pāngarau e whakamahia ana hei whakaoti rapanga mā te whakamahi ki ngā horopaki huhua kē.• Whakaatu atu ki a rātau ngā aromatawai e whakaatu ana i ngā akoranga pāngarau kua puta mai i ngā horopaki huhua.• Whakaatu atu ki a rātau i ētahi wā, ko te pāngarau, me te tūhura pāngarau te horopaki, ehara i te mea me whai whakaotinga rapanga, pūāhua, take, aha rānei, i ētahi wā, ko te pāngarau kē te ao e tūhuria ana.

NCEA Pāngarau

Hononga ki NCEA Pāngarau: <https://www2.nzqa.govt.nz/ncea/subjects/select-subject/pangarau/>

He hono tēnei ki te whārangi whakahaere i te NCEA taumata 1-3 mō te pāngarau kei roto i te reo Māori, te reo Pākehā rānei.

Ko ngā rauemi aromatawai tautoko ki te whakamahere me te ako i te NCEA tautoko e whai ake nei:

- Ngā rā aromatawai: [Ngā rā aromatawai 2024](#)
- Ngā paerewa paetae: [Ngā paerewa paetae](#)
- Ngā aromatawai tarāwhare, tarāwaho: [Ngā aromatawai o mua, ngā tauaromahi, ngā mahere aromatawai me ngā pūrongo aromatawai](#)
- Ngā tautuhinga, ngā tūmahi me te whakamahere aromatawai: [Ngā tautuhinga, ngā tūmahi, me ngā mahere aromatawai](#)
- Ngā rauemi tautoko i te kaiaromātai: [Ngā rauemi tautoko o te kaiaromātai mō ngā aromatawai ā-roto](#)
- Ētahi atu rauemi me ngā taipitopito kōrero: [Ētahi atu rauemi, taipitopito kōrero hoki](#)

Pāngarau Kuputaka

A

ahu-3	3-dimensional
ahu-2	2-dimensional
āhuatanga pūmau	invariant property
aromātai	to evaluate
aroturuki	monitor

H

hātepe	steps; algorithm
hononga	relationship
hōpara	explore
horopaki	context
huritao	reflect upon

K

kīanga	phrase; expression
kīanga taurangi	algebraic expression
kitenga	finding
kōwhiringa	option; choice

M

māramatanga	understanding
matike	arise

O

otinga	outcome; effect
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P

pākiki	curious
pānga rārangi	linear relationship
panoni	transformation; change
pāpātanga	rate
pāpono	event
parahau	justify
pūāhua	situation (like context)
pūhui	compound
pūkenga	skill
pūnaha	system
pūtahitanga	institution
pūtake	purpose
putanga, putanga iho	outcome

R

rahinga	quantity
rārangi whakarara	parallel lines
raraunga houanga	time series data
raraunga matarua	bi-variate data
raraunga motumotu	discrete data
raraunga whakarōpū	category data
raumata	net (of a solid shape)
rautaki	strategy
rawa	natural resources; resource; materials

T

takahuri	amend; alter; change
takirua raupapa	ordered pair

tāpaetanga kōrero	assertion
tāpua	significant
taputapu	tool; instrument
tau hiato	complex number
tau toitū	prime number
tau tōpū	integer
tauirā raupapa	sequential pattern
tauirā tāruarua	repeating pattern
taunaki (-tanga)	evidence
taupori	population
taupū	exponent
taurangi	variable; algebra
taurea	multiple
taurite	equilibrium
tautohe(tia)	contested
tautohu	identify
tauwehe	factor
tāwariwari	flexible
tipu	plant
tirohanga	perspective
tō	pull
tohu	symbol
toitū	lasting; sustainable
torotoro	explore
tūāhua	description of a person or thing
tuakiri	identity
tūāpapa	foundation; basis
tūārere	phase
tuhi	record
tūhurātanga tauanga	statistical investigation
tukutuku	grid
U	
uara	value
urutau	adapt
W	
wahapū	articulate
waihangā	shape; devise; create
wāwāhi	partition
whai wāhi (ki) ...	participate; have opportunity
whakaahua	describe
whakaahuahanga	representation
whakaari raraunga	data display
whakaata	reflect
whakaawhiwhi	round (a number)
whakamahi	use; apply
whakamātau tika	fair test
whakaoti rapanga	problem-solving
whakatakoto	outline; propose
whakataurite	compare; contrast
whakatinana	implement
whakatutuki (matea tangata)	meet (peoples' needs)
whakauru	engage; insert; include
whakaute	respectful
wheako	experience

