



TE TĀHUHU O TE MĀTAURANGA

Ministry of Education

Hei Tautoko i te Marautanga Pāngarau

Te Tauanga



Hei Whakamihi

Nā He Kupenga Hao i te Reo ngā tuhinga o tēnei pukapuka. E whakamihi ana ki ngā puna kōrero e whai ake nei, inā te ohonga ake o te hinengaro.

Te Reo Pāngarau: Putanga Tuarua. (2010). Papaioea: He Kupenga Hao i te Reo.

Van de Walle, J.A. (2007). *Elementary and Middle School Mathematics: Teaching Developmentally.* Boston: Pearson.

Ngā rauemi katoa o Te Poutama Tau

Ngā rauemi o <http://www.nzmaths.co.nz/>

Ngā mihi hoki ki:

Ngā kura, ngā pouako, ngā kaitakawaenga, nā rātou i tirotiro, i whakamātau te pukapuka nei, me te āhua o ngā whakahokinga kōrero mai.

Te kaitirotiro i te takoto o te reo: Hēni Jacob

Ko ngā kōrero me ngā whakaahua © nā He Kupenga Hao i te Reo 2011

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Nā Te Tāhuhu o te Mātauranga ngā huruhuru tautoko hei whakaputa mā He Kupenga Hao i te Reo i tēnei pukapuka.

Kua rāhuitia ngā motika katoa kia āta whakaaetia rā anō e te hunga kei a ia te mana tārua.

HE KUPENGA HAO I TE REO



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Wāhanga 1

Ngā Kōrero Whānui



He Kupu Whakataki

Ko te kaupapa ia o tēnei pukapuka, ko te āta whakaatu i ngā huatau matua o tēnei wāhanga matua o te pāngarau, te Tauanga, me ngā whanaketanga ako hei ekenga taumata mā ā tātou ākongā. Āpiti atu ki tēnā, ko te whakaatu i ētahi ngohe e hāngai ana ki tēnā taumata, ki tēnā taumata o te marautanga, me ngā hononga ki te Mahere Tau¹ me ngā Whanaketanga Pāngarau².

main idea

Number Framework

Huri ki hea, huri ki hea, kitea ai te tauanga e whakamahia ana hei whakamārama i tō tātou ao. Hei tauira, ko ngā tauanga e hāngai ana ki:

- te huarere – te rahi o te ua, ngā haora e whiti ana te Rā, te kaha o te hau i ngā marama o te tau kua pahure;
- te pōti kāwanatanga – te maha o ngā kaipōti e hiahia ana ki tēnā rōpū tōrangapū, ki tēnā;
- te hākinakina – te maha o ngā piro a tēnā tīma, a tēnā i te whakataetae NRL;
- te hauora – te ōrau o tēnā iwi, o tēnā iwi e pāngia ana ki tētahi mate;
- te reo Māori – te maha o ngā tāngata e matatau ana ki te kōrero, me te rerekē haere o tērā i roto i ngā tau.

weather

political party

¹Tirohia: *Tē Poutama Tau, Pukapuka Tuatahi. Tē Mahere Tau*. Papaioea: He Kupenga Hao i te Reo (2011).

²Tirohia: *Whanaketanga Pāngarau: He aratohu mā te pouako*. Te Whanganui-a-Tara: Te Tāhuhu o te Mātauranga (2010).

Mā te tauanga e mārāma ai tātou ki tētahi kaupapa. He āwhina nui tērā ki te whakatau huarahi e anga whakamua ai i roto i taua kaupapa. Ia rā, puta ai he kōrero tauanga i ngā nūpepa, i te pouaka whakaata, i ngā moheni rānei, ā, ko te āhei ki te whakamāori i aua tauanga i runga i te tirohanga arohaehae tētahi pūkenga tino whaihua. Ka whai wāhi anō hoki te tauanga ki ētahi tūranga mahi whānui, pērā i te whakahaere pakihī, ngā tūranga pūtaiao, me te whakahaere hākinakina.

critical eye

E tino kitea ana ētahi atu o ngā whenu pāngarau i roto i te mahi tauanga. E whai ake nei ētahi taurira.

Te Tau

Ka tatauria ētahi momo raraunga, ā, ka whakaaturia ki ngā momo kauwhata. I ētahi wā, ka wāwāhia ētahi raraunga ki ōna rōpū, ā, ka āta kitea ngā pānga tau, pēnei i te nui ake, te iti iho, te huatango, me te ōrite. Hei taurira:

data
numeric relationship
difference

Ka kohia he raraunga e pā ana ki te haere a tētahi rōpū tamariki ki te kura. Ka wehea ki te kōtiro me te tama, ā, ka tatauria ā-rimatia ngā raraunga:

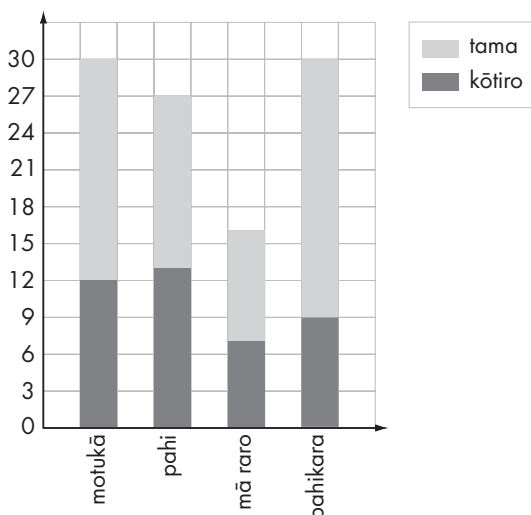
Mā hea haere ai ki te kura

	kōtiro	tama
motukā		
pahi		
mā raro		
pahikara		

Ina whakaaturia ngā raraunga ki tētahi kauwhata pou whakaapaapa, ka tino kitea ngā pānga:

stacked bar graph
relationships

Mā hea haere ai ki te kura



Hei taurira o ngā pānga tau e kitea ana:

- He tokomaha kē atu ngā tama i ngā kōtiro i tēnei rōpū tamariki.
- He iti ake ngā kōtiro e haere ana mā raro i ngā kōtiro e haere ana mā runga pahi.
- He ōrite te maha o ngā tamariki e haere ana mā runga motukā me ngā tamariki e haere ana mā runga pahikara.

Ka tino whakamahia te hautau me te ōrau hei whakatairite raraunga. Hei tauira:

Mā hea haere ai ki te kura

	Te hautau o ngā kōtiro*	Te hautau o ngā tama*	Te hautau o te katoa*
motukā	$\frac{12}{41} = 29\%$	$\frac{18}{62} = 29\%$	$\frac{30}{103} = 29\%$
pahi	$\frac{13}{41} = 32\%$	$\frac{14}{62} = 23\%$	$\frac{27}{103} = 26\%$
mā raro	$\frac{7}{41} = 17\%$	$\frac{9}{62} = 15\%$	$\frac{16}{103} = 16\%$
pahikara	$\frac{9}{41} = 22\%$	$\frac{21}{62} = 34\%$	$\frac{30}{103} = 22\%$

*Kua whakaawhiwhia ngā ōrau ki te 1% e pātata ana.

Hei tauira o ngā pānga tau e kitea ana:

- He tino nui ake te ōrau o ngā tama e haere ana mā runga pahikara i te ōrau o ngā kōtiro.
- He ōrite te hautau o ngā tama me ngā kōtiro e haere ana mā runga motukā.

Te Ine

He nui ngā raraunga e ahu mai ana i te ine i tētahi āhuatanga. Hei tauira:

Ka whakatakotoria te tāpaetanga kōrero, he tawhiti ake te whiu pōro a te hunga tamatāne, tērā i te hunga kōtiro o tētahi rōpū tamariki. Ka kohia he raraunga hei taunakitanga mō tēnei tāpaetanga kōrero. Arā, ka inea te tawhiti o te whiu pōro a te rōpū tamariki nei.

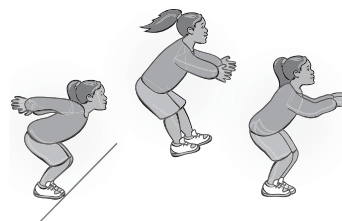


assertion
evidence

Te Taurangi

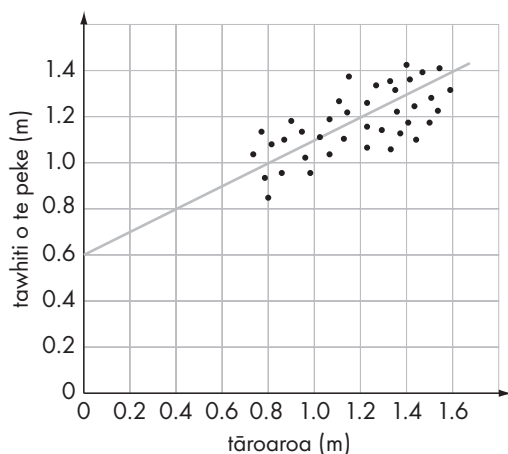
Ka whakamahia ngā tikanga o te taurangi hei whakaatu i ngā pānga e puta ana i tētahi huinga raraunga. Hei tauira:

Ka inea te tāroaroa o ia tamaiti me te tawhiti o tana peke. Ka tuhia he ira ki tētahi kauwhata hei tohu i ia tamaiti, e kitea ai te pānga o te tāroaroa me te tawhiti o te peke. Ka tuhia hoki he rārangi hei whakaatu i te ia matua o ngā raraunga. Ka kīia he kauwhata marara tēnei.



data set
main trend

Te tawhiti o te peke me te tāroaroa o te tangata



Ko te whārite taurangi o te rārangi kiwikiwi o te kauwhata, ko te $p = \frac{1}{2}t + 0.6$:

- p = te tawhiti o te peke
- t = te tāroaroa o te tamaiti
- $\frac{1}{2}$ = te rōnaki o te rārangi
- 0.6 = te haukotanga i te tuaka pou

algebraic equation
slope
intercept

Ka taea te whārite taurangi te whakamahi hei tātai i te tawhiti o te peke tērā pea ka tutuki i tētahi tamaiti hou:

Mēnā 1.2 te tāroaroa o te tamaiti hou, tērā tonu pea ko tana peke ko te:

$$\begin{aligned} p &= \frac{1}{2} \times 1.2 + 0.6 \\ &= 1.2 \text{ mīta} \end{aligned}$$

Ahakoā tēnei tātaitanga taurangi, ko ngā tikanga tauanga e mea ana, arā kē atu ngā āhuatanga ka pā ki te tawhiti o te peke a tētahi tamaiti, pērā i tōna taumaha, tōna pakeke pea, me tōna ngākaunui ki te korikori tinana.

Ngā Huatau Matua o te Tauanga

1. Ko tēnei mea te raraunga kei te pū o te mahi tauanga. Ko te raraunga he kohinga pārongo, he huinga tau, huinga inenga rānei e pā ana ki tētahi kaupapa. Hei tauira o te raraunga: data information
 - ngā whakaaro o tētahi rōpū tāngata e pā ana ki tētahi whakaari pouaka whakaata;
 - ngā wā i oti ai i tētahi rōpū tāngata tētahi omanga;
 - ngā tāroaroa o tētahi hunga tamariki;
 - te momo kai e manakohia ana e tētahi rōpū tāngata.
2. Mā te raraunga e mārama ai te tangata ki te kaupapa nō reira mai o aua raraunga. Hei āwhina anō tēnei ki te kōkiri whakamua i te kaupapa. Hei tauira: tackle scrum
 - Ko ngā raraunga e pā ana ki tētahi tīma whutupōro hei āwhina i te kaiako ki te aro ki ngā wāhanga hei whakapakari i te tīma (ākene pea ko te rutu, ko te kawē whakamua i te pōro, te kakari rānei);
 - Ko ngā raraunga e pā ana ki te reo Māori hei āwhina i ngā rōpū hāpai ki te whakatau i ngā kaupapa e kaha ake ai te kōrerotia o te reo (pērā i te pakeke o te hunga e ngoikore ana ki te ako, ki te kōrero i te reo – me aro ki taua hunga ngā mahi whakatairanga).
3. Ka kohia he raraunga hei whakautu i tētahi pātai, hei tūhura rānei i tētahi tāpaetanga kōrero e pā ana ki tētahi kaupapa. assertion

Hei tauira pātai:

Ko wai te rōpū tōrangapū ka tū hei kāwanatanga hei te pōtitanga e tū mai ana ā kō kō ake nei?

Hei tauira tāpaetanga kōrero:

He kaha ake te hunga wāhine ki te kōrero i te reo Māori i te hunga tāne.
4. Mēnā he rahi rawa te taupori o tētahi kaupapa hei kohi raraunga, ka kohia he raraunga mai i tētahi tīpako o taua kaupapa. E tika ana kia whakaatanga mai te kaupapa e te tīpako. population sample

Hei tauira:

He rahi rawa te kaupapa 'te iwi Māori' hei kohi raraunga e pā ana ki te whakamahinga o te reo Māori, nō reira ka tīpakona te 1,000 tāngata pea hei uiui. E tika ana kia rite te whai wāhi atu o ngā rōpū maha ki te tīpako, pērā i te wahine, te tāne, te tamariki, te taiohi, te mātua me te kaumātua, te hunga noho tāone, te hunga noho tuawhenua me ētahi noa atu.
5. Ko te whakarōpū te hīkoi tuatahi ki te āta whakaraupapa i ngā raraunga, e mārama ai ngā āhuatanga o aua raraunga. Hei tauira: group/classify

Ka whakarōpūngia ngā raraunga e pā ana ki te kōrerotia o te reo Māori ki ngā rōpū pēnei i ēnei: te tāne me te wahine; ngā rōpū pakeke pērā i te tamariki, te taiohi, te mātua me te kaumātua; te wāhi noho; te iwi; me ētahi noa atu.
6. He maha ngā momo whakaari raraunga, e pai ai, e mārama ai te whakaatu i ngā raraunga mō tētahi kaupapa, me te āta kite atu i ngā āhuatanga o aua raraunga. Hei tauira o te whakaari raraunga, ko te tūtohi me ngā momo kauwhata maha. data display table, graph

7. Ko ngā momo kauwhata me ngā momo tātaítanga tauanga (pērā i te toharite, te tau tātui, te tau waenga, te hora me te ia o ngā raraunga) hei whakaatu i ngā āhuatanga matua o aua raraunga. statistical calculations, average, mode, median, spread, trend
8. E tika ana kia arohaehaetia tētahi whakaaturanga raraunga, kia mōhiotia ai te pono me te tika o ngā whakataunga ka puta. Me āta arohaehae: critique validity, accuracy
- te āhua o te kohi i ngā raraunga;
 - te tīpako i kōhia ai ngā raraunga;
 - te āhua o te whakarōpū i ngā raraunga hei whakautu i ngā pātai e tūhuratia ana;
 - ngā tātaítanga raraunga;
 - te tika o ngā momo whakaari raraunga.
9. Ko te taurangi tētahi āhuatanga o tētahi mea ka rerekē haere, ka taea rānei te whakarerekē. I tētahi tūhuratanga tauanga, ka kohia he raraunga e pā ana ki tētahi taurangi (ētahi rānei) o roto i te kaupapa e tūhuratia ana. Hei tauira o tēnei mea te taurangi: variable statistical investigation
- te matatau o te tangata ki te kōrero i te reo;
 - te kaha o te tangata ki te kōrero i te reo;
 - ngā wāhi e kōrero ana te tangata i tōna reo Māori.
10. Arā ngā tikanga matatika hei ārahi i te tūhuratanga tauanga. Mā ngā tikanga matatika e tiakina ai te hunga e uru mai ana ki te kaupapa, te kairangahau anō hoki, ā, e tika anō ai te whakaatu i ngā raraunga ki te marea. ethical conventions

Ngā Momo Raraunga

Raraunga matatahi

univariate data
variable

Kotahi anake te taurangi o roto i ngā raraunga. Hei tauira, ko te tāroaroa o tētahi hunga tamariki:

Tangata	Tāroaroa
Pine	125cm
Hinewai	132cm
Arapeta	115cm
...	

Raraunga matarua

bivariate data

E rua ngā taurangi o roto i ngā raraunga. Hei tauira, ko te tāroaroa me te taumaha o tētahi hunga tamariki:

Tangata	Tāroaroa	Taumaha
Pine	125cm	43kg
Hinewai	132cm	54kg
Arapeta	115cm	45kg
...		

Raraunga matatini

multivariate data

He nui ake i te rua ngā taurangi o roto i ngā raraunga. Hei tauira, ko te tāroaroa, te taumaha me te pakeke o tētahi hunga tamariki:

Tangata	Tāroaroa	Taumaha	Pakeke
Pine	125cm	43kg	8 tau
Hinewai	132cm	54kg	10 tau
Arapeta	115cm	45kg	7 tau
...			

Raraunga whakarōpū

category data

Ka wehewehea ngā raraunga ki ētahi rōpū. Hei tauira, ko te wehewehe i ngā tāroaroa tamariki ki ētahi rōpū, pēnei i te wahine me te tāne:

	Tāroaroa		
	Iti ake i te 110cm	Kei waenga i te 110cm me te 120cm	Kei runga ake i te 120cm
wahine	3	7	5
tāne	6	4	2

Raraunga tatau

Ko ngā raraunga e taea ana te tatau. Hei tauira, ko te maha o ngā tamariki he iti ake i te kotahi mita te tāroaroa.

numeric data

Raraunga motumotu

Ko ngā raraunga e taea ana te whakaatu hei tauoti. Hei tauira, ko te maha o ngā tāngata.

discrete data

Raraunga motukore

Ko ngā momo raraunga e taea ana ngā uara ki waenga i ngā tauoti. He inenga te nuinga o ēnei momo raraunga. Hei tauira, ko te tāroaroa, ko te wā, ko te paemahana.

continuous data

Raraunga houanga

Ko ngā raraunga ka hua mai i te ine i tētahi āhuatanga i te takanga o te wā. Hei tauira, ko te ine i te tāroaroa o tētahi pēpi i ia marama.

time-series data

Ngā Momo Whakaari Raraunga

He maha ngā momo whakaari raraunga, he kauwhata te nuinga, ā, he mea nui kia mōhio te ākongā ki te tūhura, ki te whakamāori i ngā kauwhata, e mārama ai ki te āhua o ngā raraunga.

data display
interpret

Ina whakaaturia he raraunga ki te kauwhata, he māmā te kite atu i ēnei āhuatanga:

- te hora o ngā raraunga;
- ngā āhuatanga kōhure o ngā raraunga;
- mēnā e rāpoi ana ngā raraunga;
- ngā mōwaho o ngā raraunga;
- te ia o ngā raraunga;
- mēnā e pūmau ana te pānga o tētahi taurangi ki tētahi;
- mēnā e manei ana ngā raraunga.

spread
distinctive feature
cluster
outlier
trend
consistent, variable
fluctuate

E rua ngā tuaka o te nuinga o ngā kauwhata, ā, ka whakaaturia tētahi taurangi ki ia tuaka. Ko tā te kauwhata he whakaatu i te pānga o tētahi taurangi ki tētahi. E tika ana kia tapaina te kauwhata, kia tapaina hoki ngā tuaka.

axis

He mea nui kia mōhio te ākongā ki te whakauru raraunga ki te ripanga rorohiko (pērā i te Excel) me te whakaputa i ngā momo whakaari e hāngai ana.

Kauwhata whakaahua

Ka whakamahia he whakaahua, he tohu rānei hei whakaatu i te rahi, te auau rānei o ia rōpū raraunga.

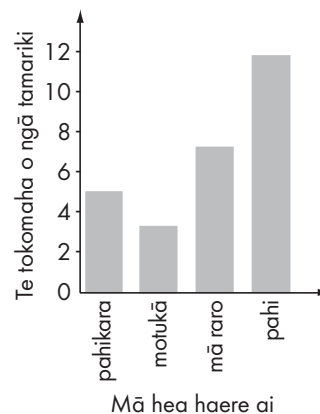
Hei tauira:

Te marama o te rā whānau	Te tokomaha
Kohitātea	4
Huitanguru	2
Poutūterangi	1
Paengawhāwhā	2
Haratua	3
Pipiri	0
Hōngongoi	5
Hereturikōkā	3
Mahuru	1
Whiringa ā-nuku	2
Whiringa ā-rangi	0
Hakihea	2

Kauwhata pou

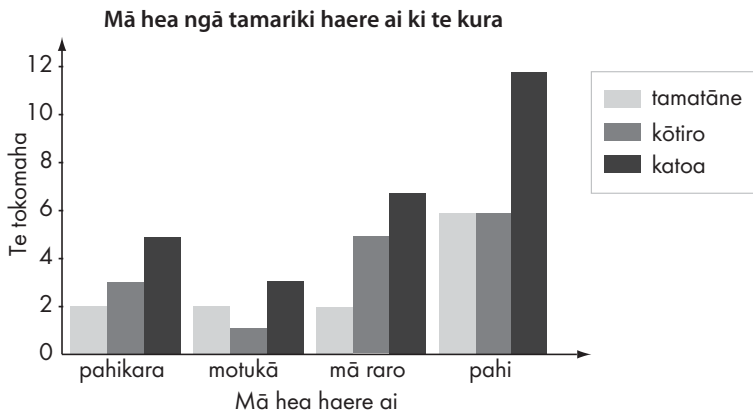
E rua ngā tuaka o te kauwhata pou. Ko te tuaka pae hei whakaatu i ngā rōpū raraunga. Ko te tuaka pou hei whakaatu i te auau, te uara, te rahi rānei o ia rōpū raraunga. Ka tuhia he pou mō ia rōpū raraunga, ko te teitei o te pou hei whakaatu i te auau. Hei tauira:

Mā hea ngā tamariki haere ai ki te kura



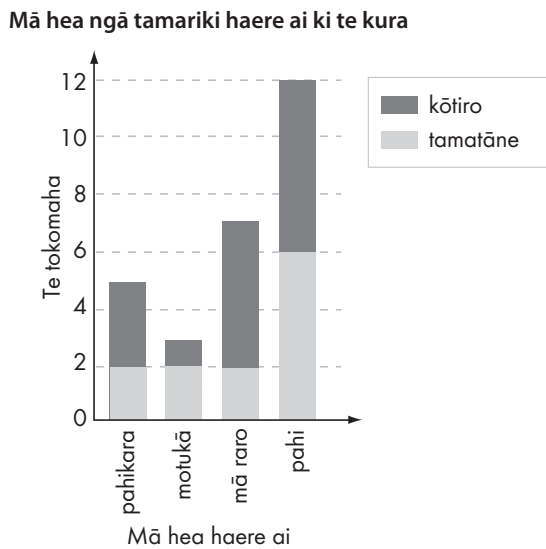
Kauwhata pou hiato

Mō te kauwhata pou hiato, e rua, nui ake rānei ngā pou hei whakaatu i ngā wehenga o ia rōpū raraunga. Hei tauira, ko ngā tūmomo waka e haere ai te hunga tamatāne me te hunga kōtiro ki te kura:



Kauwhata pou whakaapaapa

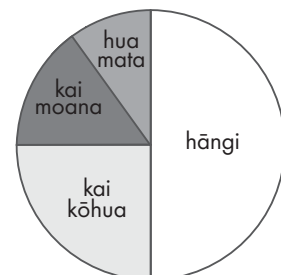
Mō te kauwhata pou whakaapaapa, ka wāwāhia ngā pou hei whakaatu i ngā wehenga o ngā rōpū raraunga. Mā tēnei momo kauwhata e whakatairitea ai ia wehenga o ngā rōpū raraunga ki te katoa o te rōpū. Hei tauira, kua wāwāhia ngā pou o tēnei kauwhata hei whakaatu i te tamatāne me te kōtiro. Ko te katoa o te pou, koia ko ngā tamariki katoa:



Kauwhata porowhita

Ka wehea te porowhita ki ētahi pewanga hei whakaatu i te hautanga, te ōrau ranei o ia rōpū raraunga. Ko te rahi o te pewanga he rite ki te hautanga o te rōpū raraunga e hāngai ana. He pai tēnei kauwhata hei whakatairite i tētahi rōpū raraunga ki te katoa o ngā raraunga.

Te kai matareka a ngā tamariki



Kauwhata tāhei

Ka wehea he tāhei hei whakaatu i te hautanga o ia rōpū raraunga. He pai tēnei kauwhata hei whakatairite i te hautanga o ia rōpū raraunga ki te katoa o ngā raraunga. Hei tauira: →



Kauwhata rautō

I tēnei momo kauwhata, ka raupapahia ngā raraunga tau e pā ana ki tētahi kaupapa. Ko tētahi wāhanga o ia raraunga tau ka whakaaturia ki te 'tō' o te kauwhata (pērā i ngā tekau), ko tētahi wāhanga ki ngā 'rau' o te kauwhata (pērā i ngā tahi). Hei tauira, koia nei ngā tapeke hahau pōro a ētahi tāngata 25 i tētahi whakataetae. E whakaaturia ana ngā tekau (mai i te 60 ki te 100) ki te 'tō' o te kauwhata. Kua raupapahia ngā tahi ki ngā 'rau', arā, ki te taha o ia tekau:

Ngā tapeke hahau pōro

10	0, 1, 4	} ngā rau (e whakaatu ana i ngā tahi, me te raupapa anō o ngā tapeke)
9	1, 4, 4	
8	1, 2, 2, 3, 3, 4, 5, 7, 8	
7	1, 2, 3, 4, 5, 6, 7, 8	
6	8	

↑
te tō (e whakaatu ana i ngā tekau)

Kauwhata rautō hiato

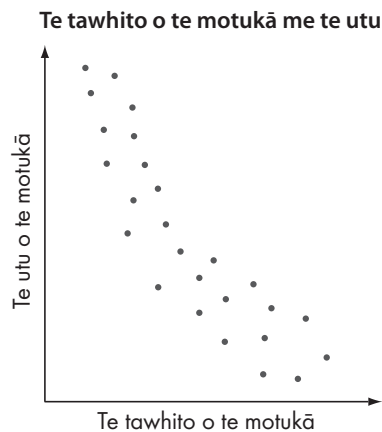
I te kauwhata rautō hiato, ka wehea ngā raraunga ki ētahi rōpū e rua hei whakatairiterite. Hei tauira:

Te tāroaroa o ngā tamatāne me ngā kōtiro (cm)

Ngā tamatāne		Ngā kōtiro
	18	1
	17	3, 6
3	16	0, 1, 1, 3, 8
5, 5, 4, 3, 0, 0	15	0, 1, 5, 6
2, 5, 5, 1	14	3, 3, 4
8, 6, 5	13	8

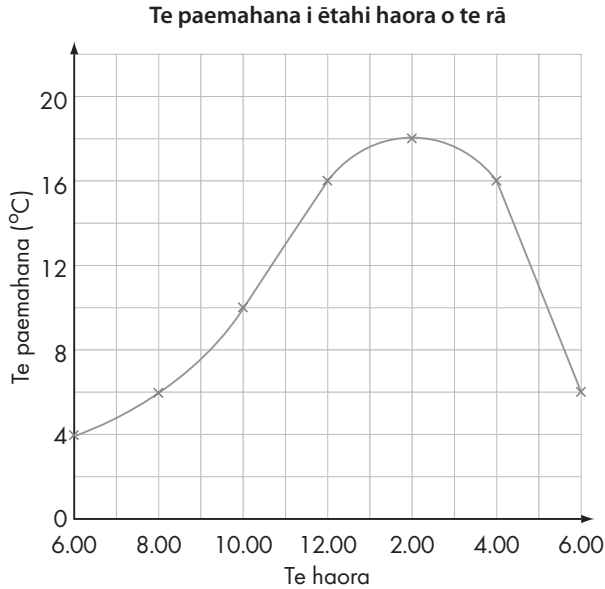
Kauwhata marara

Ka whakamahia tēnei momo kauwhata hei whakaatu i te pānga o ētahi taurangi e rua. Mā tēnei momo kauwhata e kitea ai te kaha, te ngoikore rānei o te pānga, ā, mēnā he pānga tōrunga, tōraro rānei. Hei tauira, e kitea ana te pānga tōraro kei waenganui i te tawhito o te motukā me tana utu:



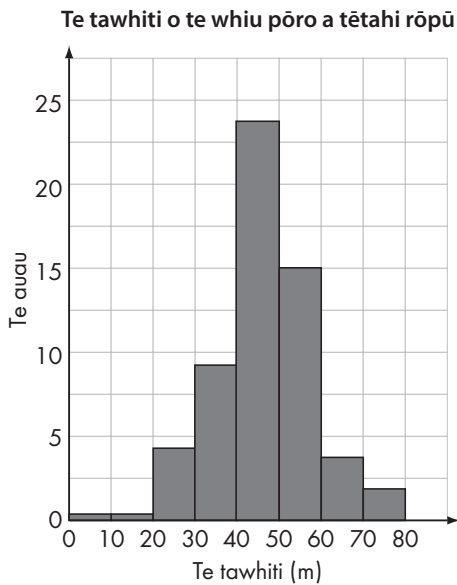
Kauwhata rārangi

Ka whakamahia te rārangi hei whakaatu i te pānga o ētahi taurangi e rua. Mā te rārangi e ngāwari ai te kitea o te ia o te pānga. Hei tauira, i tēnei kauwhata rārangi e kitea ana te pānga o te haora o te rā me te paemahana:



Kauwhata pouhere

He āhua rite tēnei momo ki te kauwhata pou, engari ka piri tahi ngā pou i runga anō i te motukore o ngā raraunga. Hei tauira:



Te Tūhuratanga Tauanga

Ko te tūhuratanga tauanga tētahi wāhanga matua o tēnei whenu o te marautanga. E rima ngā wāhanga o te tūhuratanga tauanga, e whakaaturia ana ki te whakaahua e whai ake nei (he mea tiki atu i te pae ipurangi: www.tataurangakitekura.org.nz)

KAUPAPA



I te wāhanga tuatahi, ka whakatauria te kaupapa hei tūhura, arā, ka whakatakotoria tētahi pātai mō te kaupapa, he tāpaetanga kōrero rānei, me te huarahi kimi raraunga hei whakautu i te pātai.

WHAKAMAHERE



Ko te wāhanga tuarua, he āta whakamahere i te huarahi kimi raraunga. Hei tauira, ko te whakatau i te hunga ka uiuitia, ngā pātai ka tukuna, me te huarahi kohikohi i ngā whakautu ki aua pātai.

RARAUNGA



Ko te wāhanga tuatoru ko te kohikohi i ngā raraunga.

TĀTARI



Ko te wāhanga tuawhā, he tūhura i ngā raraunga, he hanga whakaari raraunga, he tiroiro i ngā āhuatanga kōhure o aua raraunga.

WHAKATAU



Ko te tuarima, he whakautu i te pātai, he whakaputa kōrero rānei mō te tāpaetanga kōrero i runga anō i ngā whakakitenga ka puta i ngā raraunga. Ka waihangatia hoki he pātai atu anō hei tūhura, me te arohaehae i te pono me te tika o ngā hikoī katoa o te tūhuratanga.

Te Tūhiratanga Tairanga He Toa Tūhira Koe?

Kaurapa

- * me tautohu te kaurapa
- * te kite me te tautohu i te pātai
- * me pēhea te whakautu i tēnei pātai



Whakatao

- * te whakamāori i ngā raranga
- * te whakaputa whakatao
- * te whakatakoto whakaaoro hou
- * te whakaputa kōrero hei whakautu i te pātai i tūhiratia



Whakamāhere

- * he aha te mea kā inea, me pēhea te ine?
- * te āhua o te rangahau?
- * te āhua o te kohikohi i ngā raranga?
- * he aha ngā tikanga matatika e hāngai ana?



Tātari

- * te wehewehe raranga
- * te hanga whakāari raranga e whaitake ana
- * te kimi taurira
- * te whakatakoto whakapae



Raranga

- * te kohikohi
- * te tiaki
- * te whakarōpi

Whakamahi ai te toa tūhira
i ngā tikanga o te tūhiratanga tairanga

He Tauira Mahere mō te Tauanga

Taumata 1	Te Mātauranga Tauanga	Te Whakaoti Rapanga Tauanga	Te Reo Matatini o te Tauanga
Whanaketanga 1a	<p>E mōhio ana ki ētahi momo rōpū rerekē e hāngai ana ki tētahi huīnga, pērā i te tae, te rahi me te pakeke.</p> <p>E mōhio ana ki te whakaatu i te maha o ngā mea kei roto i ia rōpū.</p>	<p>Ka whakarōpū i tētahi huīnga i runga i ngā āhuatanga māmā o ngā mea kei roto i te huīnga.</p> <p>Ka tatau i te maha o ngā mea kei roto i ia rōpū, hei whakatairite i ngā rōpū.</p>	<p>Ka whakamārama i ngā rōpū.</p> <p>E mōhio ana ki ngā kupu tauanga nei: rōpū, huīnga</p>
Whanaketanga 1e	<p>E mōhio ana ki te whakamāori kauwhata whakaahua.</p> <p>E mōhio ana ki te whakahaere i ngā momo pōti hei kohikohi raraunga e pā ana ki tētahi huīnga tāngata, pērā i te tatau ringaringa, me te whakamahi kāri raraunga.</p> <p>E mōhio ana ki te kohikohi raraunga ine māmā, pērā i te roa o ētahi rau rākau.</p>	<p>Ka whakatakoto pātai māmā e pā ana ki tētahi kaupapa ka hua mai i te ao o te tamaiti, hei tūhura māna. Hei tauira, ko ngā mea e manakohia ana, pērā i te momo kai, te momo hākinakina rānei.</p> <p>Ka kohikohi raraunga, ka wehewehe, ka whakaatu i ngā raraunga hei whakautu i te pātai.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te kauwhata whakaahua.</p> <p>E mōhio ana ki ngā kupu tauanga nei: raraunga, kauwhata, tūtohi</p>

Taumata 2	Te Mātauranga Tauanga	Te Whakaoti Rapanga Tauanga	Te Reo Matatini o te Tauanga
Whanaketanga 2a	<p>E mōhio ana ki te whakamahi tūtohi māmā hei pupuri, hei whakaatu raraunga.</p> <p>E mōhio ana ki te tārima i ngā raraunga e kohia ana.</p> <p>E mōhio ana ki te wehewehe raraunga ine ki ētahi rōpū māmā, pērā i te</p> <ul style="list-style-type: none"> • nui ake i te ... • kei waenga i te ... • iti ake i te ... 	<p>Ka whakatakoto pātai māmā e pā ana ki tētahi kaupapa ka hua mai i te ao o te tamaiti, hei tūhura māna. Hei tauira, ko te maha o tētahi mea, pērā i te maha o ngā tuākana, tēina, tuāhine, tungāne rānei o te tangata.</p> <p>Ka kohikohi raraunga, ka wehewehe, ka whakaatu i ngā raraunga hei whakautu i te pātai.</p> <p>Ka whakaputa kōrero mō ngā āhuatanga matua o tētahi huinga raraunga.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te tūtohi māmā.</p> <p>E mōhio ana ki ngā kupu tauanga nei: tārima, tūtohi tatau</p>
Whanaketanga 2e	<p>E mōhio ana ki te whakamāori kauwhata pou, kauwhata ira hoki.</p> <p>E mōhio ana ki te whakatakoto pātai, ki te kōhi raraunga, kia kore ai e mamae, e whakaitia rānei tētahi kaiwhakautu. Hei tauira, kia noho matatapu ngā whakautu mō ētahi pātai.</p>	<p>Ka whakatakoto pātai tauanga hei tūhura.</p> <p>Ka kohikohi raraunga, ka wehewehe, ka whakaatu i ngā raraunga hei whakautu i te pātai.</p> <p>Ka whakaputa kōrero mō ngā whakakitenga o te tūhuratanga tauanga.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te kauwhata pou me te kauwhata ira.</p> <p>E mōhio ana ki ngā kupu tauanga nei: kauwhata ira, kauwhata pou, tuaka pae, tuaka pou, raraunga</p>

Taumata 3	Te Mātauranga Tauanga	Te Whakaoti Rapanga Tauanga	Te Reo Matatini o te Tauanga
Whanaketanga 3a	<p>E mōhio ana ki te whakamāori kauwhata rārangi.</p> <p>E mōhio ana ki te kohikohi, ki te whakaatu, ki te whakamārama raraunga ine, raraunga houanga hoki.</p> <p>E mōhio ana ki te whakauru raraunga ki tētahi ripanga rorohiko, me te whakaputa anō i ngā kauwhata e hāngai ana.</p>	<p>Ka whakatakoto pātai tauanga hei tūhura, pērā i te raraunga ine. Hei tauira, ko te paemahana i ia haora o te rā i ētahi wāhi e rua, ko te tāroaroa o tētahi tipu i ia rā o tētahi marama.</p> <p>Ka kohikohi raraunga, ka wehewehe, ka tūhura, ka whakaatu i ngā raraunga hei whakautu i te pātai.</p> <p>Ka whakaputa kōrero mō ngā ia, ngā tauira me ngā āhuatanga kōhure o roto i ngā raraunga.</p> <p>Ka arohaehae i te āhua o te kohikohi me te whakaatu raraunga i tētahi tūhuratanga.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te kauwhata rārangi.</p> <p>E mōhio ana ki ngā kupu tauanga nei: kauwhata rārangi, āhuatanga kōhure, ia, ripanga, pou, kapa</p>
Whanaketanga 3e	<p>E mōhio ana ki te whakamāori kauwhata pou hiato, kauwhata rautō, kauwhata rautō hiato, kauwhata porowhita hoki.</p> <p>E mōhio ana ki te kohikohi, ki te whakaatu hoki i ngā raraunga whakarōpū matatini.</p> <p>E mārama ana ki te momo whakaari raraunga e hāngai ana mō tētahi huinga raraunga.</p> <p>E mōhio ana ki te tikanga matatika kia noho matatapu ngā kaiuru o tētahi tūhuratanga tauanga.</p>	<p>Ka whakatakoto pātai tauanga hei tūhura, kia rua, nui ake rānei ngā rōpū me ngā taurangi hei tūhura, pērā i te rerekē o te hunga wāhine me te hunga tāne ki te whiu pōro, ki te whana pōro hoki.</p> <p>Ka kohikohi raraunga, ka wehewehe, ka tūhura, ka whakaatu i ngā raraunga hei whakautu i te pātai.</p> <p>Ka whakaputa kōrero mō te āhua o tētahi huinga raraunga, pērā i ōna rāpoi, tōna hora, me tōna maneitanga.</p> <p>Ka arohaehae i te āhua o te kohikohi me te whakaatu raraunga i tētahi tūhuratanga.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te kauwhata pou hiato, te kauwhata rautō, te kauwhata rautō hiato, me te kauwhata porowhita.</p> <p>E mōhio ana ki ngā kupu tauanga nei: kauwhata pou hiato, kauwhata rautō, mōwaho, manei, rāpoi</p>

Taumata 4	Te Mātauranga Tauanga	Te Whakaoti Rapanga Tauanga	Te Reo Matatini o te Tauanga
Whanaketanga 4a	<p>E mōhio ana ki te whakamāori kauwhata pou whakaapaapa.</p> <p>E mōhio ana ki te whiriwhiri i ngā taurangi me te huarahi kohikohi raraunga e hāngai ana mō tētahi tūhuratanga raraunga.</p> <p>E mōhio ana ki te tātai i ngā wēanga o tētahi huinga raraunga, te tikanga me te whakamahinga o aua wēanga.</p> <p>E mōhio ana ki ngā momo whakaari e kitea ai te hora o ngā raraunga e whakaaturia ana.</p>	<p>Ka whakatakoto pātai tauanga, tāpaetanga kōrero rānei hei tūhura, hei whakatairite i ētahi huinga raraunga e rua.</p> <p>Ka kohikohi raraunga, ka wehewehe, ka tūhura, ka whakaatu i ngā raraunga hei whakautu i te pātai, hei taunaki rānei i te tāpaetanga kōrero.</p> <p>Ka tātai tauanga mō tētahi huinga raraunga, pērā i te toharite, te tau waenga me te tau tānui, ā, ka whakamahia ēnei hei whakaputa kōrero mō te āhua o taua huinga raraunga.</p> <p>Ka arohaehae tūhuratanga tauanga.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te kauwhata pou whakaapaapa.</p> <p>E mōhio ana ki ngā kupu nei: toharite, tau waenga, tau tānui, inenga whānui, tuari, tāpaetanga kōrero, taunaki</p>
Whanaketanga 4e	<p>E mōhio ana ki te whakamāori kauwhata pouhere.</p> <p>E mōhio ana ki te tātari i ngā whakakitenga ka hua mai i tētahi tūhuratanga raraunga.</p> <p>E mōhio ana ki ngā momo whiriwhiringa tīpako, pērā i te tīpako matapōkere, me te āhei o tētahi tīpako ki te whakaatu i te āhua o te taupori e tūhuratia ana.</p> <p>E mōhio ana ki ēnei tikanga matatika:</p> <ul style="list-style-type: none"> • kia whakamōhiotia atu te whakamahinga o ngā raraunga e kohia ana; • kia whakahokia he pūrongo ki ngā kaiuru; • kia kaua e haukume te whakaatu i ngā hua o tētahi tūhuratanga tauanga. 	<p>Ka whakatakoto pātai tauanga, tāpaetanga kōrero rānei hei tūhura.</p> <p>Ka kohikohi raraunga, ka tīkina atu rānei he pātengi raraunga kua oti kē te kohikohi, ka wehewehe, ka tūhura, ka whakaatu i ngā raraunga hei whakautu i te pātai, hei taunaki rānei i te tāpaetanga kōrero.</p> <p>Ka tātai, ka whakamahi tauanga hei whakautu i te pātai e tūhurangia ana hei taunaki rānei i te tāpaetanga kōrero.</p> <p>Ka arohaehae tūhuratanga tauanga.</p>	<p>E mōhio ana ki te whakaatu raraunga ki te kauwhata pouhere.</p> <p>E mōhio ana ki ngā kupu nei: taupori, tīpako, matapōkere, tōtika, haukume, tikanga matatika, kauwhata pouhere, raraunga motukore</p>

Taumata 5	Te Mātauranga Tauanga	Te Whakaoti Rapanga Tauanga	Te Reo Matatini o te Tauanga
Whanaketanga 5	<p>Ka mōhio ki ngā tikanga o ngā koki ka hua mai i te rārangi e haukoti ana i ētahi rārangi whakarara:</p> <ul style="list-style-type: none"> • koki tauaro; • koki tauroto; • koki taurite; • koki tauwhiti. 	<p>Ka tūhura, ka whakamārama i te pānga o ngā koki ka hua mai i te rārangi e haukoti ana i ētahi rārangi whakarara.</p> <p>Ka tūhura, ka whakaputa, ka whakamahi ture hei tātai āhuatanga āhuahanga. Hei tauira:</p> <ul style="list-style-type: none"> • te pūtoro o tētahi porowhita; • te hauroki o tētahi tapawhā hāngai; • te rārangi weherua o tētahi tapatoru rite. 	<p>E mōhio ana ki ngā kupu āhuahanga nei:</p> <ul style="list-style-type: none"> • koki tauaro; • koki tauroto; • koki taurite; • koki tauwhiti; • tāroa.



Wāhanga 2

Ngā Whanaketanga Tauanga me ngā Tauira Aromatawai



He mea tango mai ngā whārangi e whai ake nei i te pukapuka *Whanaketanga Pāngarau: He Aratohu mā te Pouako*, i whakaputaina e Te Pou Taki Kōrero i te tau 2010. Koia ko ngā whanaketanga mō te Tauanga, mai i te 1a ki te 5a, me ngā tauira aromatawai e hāngai ana.

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuetanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	¹³ data set
<ul style="list-style-type: none"> te whakarōpū raraunga māmā, e hāngai ana ki te ao o te tamaiti. 	<ul style="list-style-type: none"> ngā momo whakarōpūtanga e taea ana mō tētahi huinga raraunga¹³ māmā. 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu
<ul style="list-style-type: none"> rōpū whakarōpū
Hei tauira whakaahuhanga
<ul style="list-style-type: none"> ngā momo whakaatu huinga

He Tauira Rapanga

Te Tauanga 1a

Rapanga 12

Rauemi: Ngā kāri* e whakaatu ana i ngā hākinakina nei:

Nā ia tamaiti i te akomanga o Whaea Wini i whiriwhiri tētahi kāri hei whakaatu i te hākinakina e tino pai ana ki a rātou. Koia nei te huinga o aua kāri:



Tokohia te maha ake o ngā tamariki i whiriwhiri i te poitarawhiti i te whutupōro pā?

Kia tika te otinga (2). Ākene pea ka whakarōpūngia ngā hākinakina, ā, ka tatauria te maha o ngā kāri poitarawhiti me te maha o ngā kāri whutupōro pā. Ka whakatakotoria rānei ngā kāri poitarawhiti ki te taha o ngā kāri whutupōro pā, kia āta kitea e rua te nui ake o ngā poitarawhiti i ngā whutupōro pā.

Te Tauanga 1a

Rapanga 13

Rauemi: Ngā kāri e whakaatu ana i ngā hākinakina nei:



Whakarōpūngia ēnei hākinakina. Whakamāramatia mai ō rōpū hākinakina.

Kia whakarōpūngia ngā hākinakina, me te whakamārama i ngā āhuetanga ake o tēnā me tēnā o ngā rōpū.

Hei tauira:

- me whiwhi pōro mō ēnei hākinakina
- he hākinakina ā-tīma ēnei
- he hākinakina takitahi ēnei
- ka tākarohia ēnei hākinakina i tētahi pātiki
- ka tākarohia ēnei hākinakina i te papa mārō.

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuetanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	²⁶ interpret ²⁷ data display ²⁸ category data
<ul style="list-style-type: none"> te hanga me te whakamāori²⁶ whakaari raraunga²⁷ māmā, pēnei i te kauwhata whakaahua. 	<ul style="list-style-type: none"> te tatau raraunga whakarōpū²⁸ hei whakaputa kōrero mō tētahi huinga raraunga te tikanga o te whakamahi whakaahua hei tohu raraunga. 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
<ul style="list-style-type: none"> kauwhata whakaahua tūtohi 	<ul style="list-style-type: none"> raraunga ngā kupu whakatairite, pērā i te poto iho, te roa ake ... 	<ul style="list-style-type: none"> huinga raraunga
Hei tauira whakaahuahanga		
<ul style="list-style-type: none"> kauwhata whakaahua 	<ul style="list-style-type: none"> tūtohi 	

He Tauira Rapanga

Te Tauanga 1e

Rapanga 13

Ka mahi takirua ngā ākonga ki te kohikohi kia tekau ngā rau rākau rerekē. Ka whakawhitiwhiti kōrero ia takirua mō ētahi whakarōpūtanga o ngā rau.

- Ka whakamārama i ētahi whakarōpūtanga e rua.
- Ka whakaatu i tētahi o ngā whakarōpūtanga ki te kauwhata whakaahua.
- Ka whakaputa kōrero, ka whakautu pātai mō ngā raraunga ka whakaaturia ki te kauwhata whakaahua.

Kia pai te āhua o te tiki rau rākau me te manaaki anō i te taiao.

Kia pai te whai wāhi mai o ngā ākonga ki te whakawhitiwhiti whakaaro me te whakatau i ētahi whakarōpūtanga o ngā rau rākau. Hei tauira, ko te rahi o ngā rau; ko te tae o ngā rau; ko te āhua o ngā rau (pērā i te roa, te whānui, te koi ...); ko te kakano o ngā rau (pērā i te māeneene, te mārō, te taratara ...); te momo rākau (pērā i te rākau māori, te rākau rāwaho).

Kia tika te whakaatu i tētahi o ngā whakarōpūtanga ki te kauwhata whakaahua.

Kia tika te whakaputa kōrero, te whakautu pātai rānei mō te kauwhata whakaahua. Hei tauira:

- E whā ngā rau he poto iho i taku kōnui.
- E toru te maha ake o ngā rau māeneene i ngā rau mārō.



WHANAKETANGA 2a

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuatanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	³⁰ data ³¹ tally chart ³² interpret ³³ data display
<ul style="list-style-type: none"> te whakatakoto pātai māmā me te kohikohi raraunga³⁰ e hāngai ana, hei whakautu i ngā pātai te hanga me te whakamāori³² whakaari raraunga³³ e hāngai ana ki ngā raraunga i kohia. 	<ul style="list-style-type: none"> te tikanga o te tuhi raraunga ki te tūtohi tatau³¹ te whakaputa kōrero mō ngā āhuatanga matua o tētahi huinga raraunga. 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
• raraunga	• whakaari raraunga	• tūtohi tatau
Hei tauira whakaahuahanga		
• tūtohi tatau	• kauwhata whakaahua	

He Tauira Rapanga



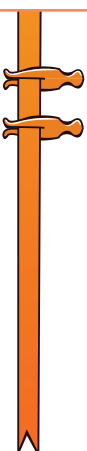

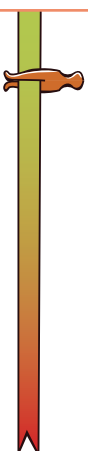
Te Tauanga 2a

Rapanga 13

Tonoa ngā ākonga kia whakahaere i tētahi tūhuratanga tauanga mō tētahi kaupapa e whitake ana ki te akomanga. Hei tauira, ko te whiriwhiri i te momo hua rākau hei whakatō mā te akomanga i tētahi māra hou o te kura.

Kia hāngai tonu te whakatakoto i te pātai, te kohikohi me te whakaatu raraunga. Hei tauira, mā ia ākonga e whakamau rawhi ki tētahi rīpene hei tohu i te momo hua rākau e hiahia ana.

Te Momo Hua Rākau E Hiahia Ana

pea	āporo	ārani	pītiti	netarini
				

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuatanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	¹⁴ category data ¹⁵ discrete data ¹⁶ bar graph ¹⁷ dot graph ¹⁸ statistical investigation ¹⁹ ethical conventions
<ul style="list-style-type: none"> te raraunga whakarōpū¹⁴ me te raraunga motumotu¹⁵ te whakaputa kōrero mō ngā whakakitenga o tētahi tūhuratanga tauanga¹⁸. 	<ul style="list-style-type: none"> te whakaatu raraunga ki te kauwhata pou¹⁶ māmā me te kauwhata ira¹⁷ ngā tikanga matatika¹⁹ e hāngai ana, (pērā i ngā momo pātai e tika ana kia kore ai te kaiwhakautu e mamae, e whakaitia rānei). 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
<ul style="list-style-type: none"> kauwhata pou tuaka pou 	<ul style="list-style-type: none"> kauwhata ira raraunga 	<ul style="list-style-type: none"> tuaka pae
Hei tauira whakaahuahanga		
<ul style="list-style-type: none"> kauwhata pou 	<ul style="list-style-type: none"> kauwhata ira 	

He Tauira Rapanga

Te Tauanga 2e

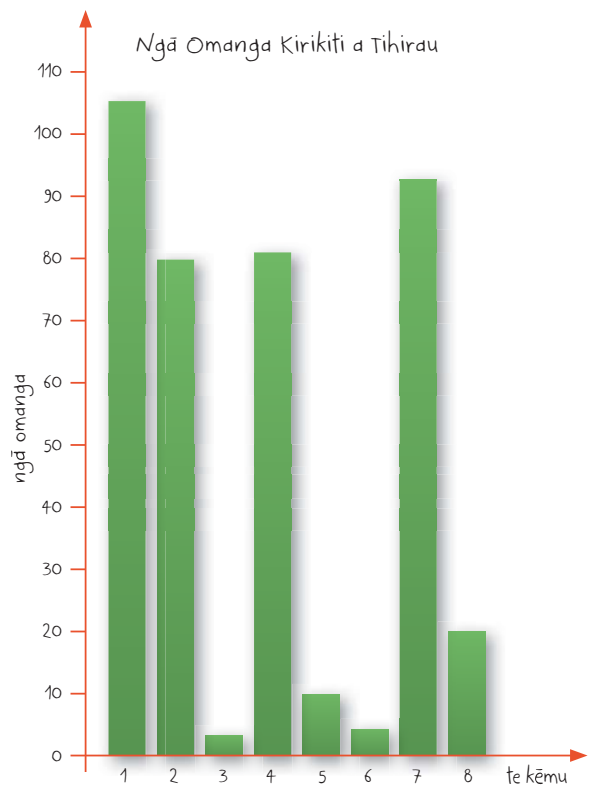
Rapanga 14

Rauemi: He kauwhata pou māmā pēnei i tēnei, e whakaatu ana i ētahi raraunga motumotu:

Ka whakaputa kōrero te ākonga mō te kauwhata pou, ka whakautu pātai rānei.

Kia tika ngā kōrero, ngā whakautu pātai rānei mō te kauwhata. Hei tauira:

- Ko te 105 te whiwhinga nui rawa a Tihirau i roto i ana kēmu e waru.
- E hia ngā omanga a Tihirau i tana kēmu tuarima? (10)
- E hia te maha ake o ngā omanga i tana kēmu tuarua, tērā i tana kēmu tuaono? (75)
- Pēhea nei te pai o Tihirau ki te patu omanga kirikiti? (I ētahi kēmu he pai, i ētahi kēmu kāore i te pērā rawa te pai, arā, ka piki, ka heke te maha o ana omanga.)
- He aha pea ngā take i pērā ai te patu omanga a Tihirau? (I ētahi kēmu pea he autai te epa pōro a te hoariri, i ētahi kēmu he māmā noa iho ngā epa.)



Rapanga 15

Rauemi: He pepa tukutuku, he rorohiko rānei (me tētahi hōtaka ripanga).

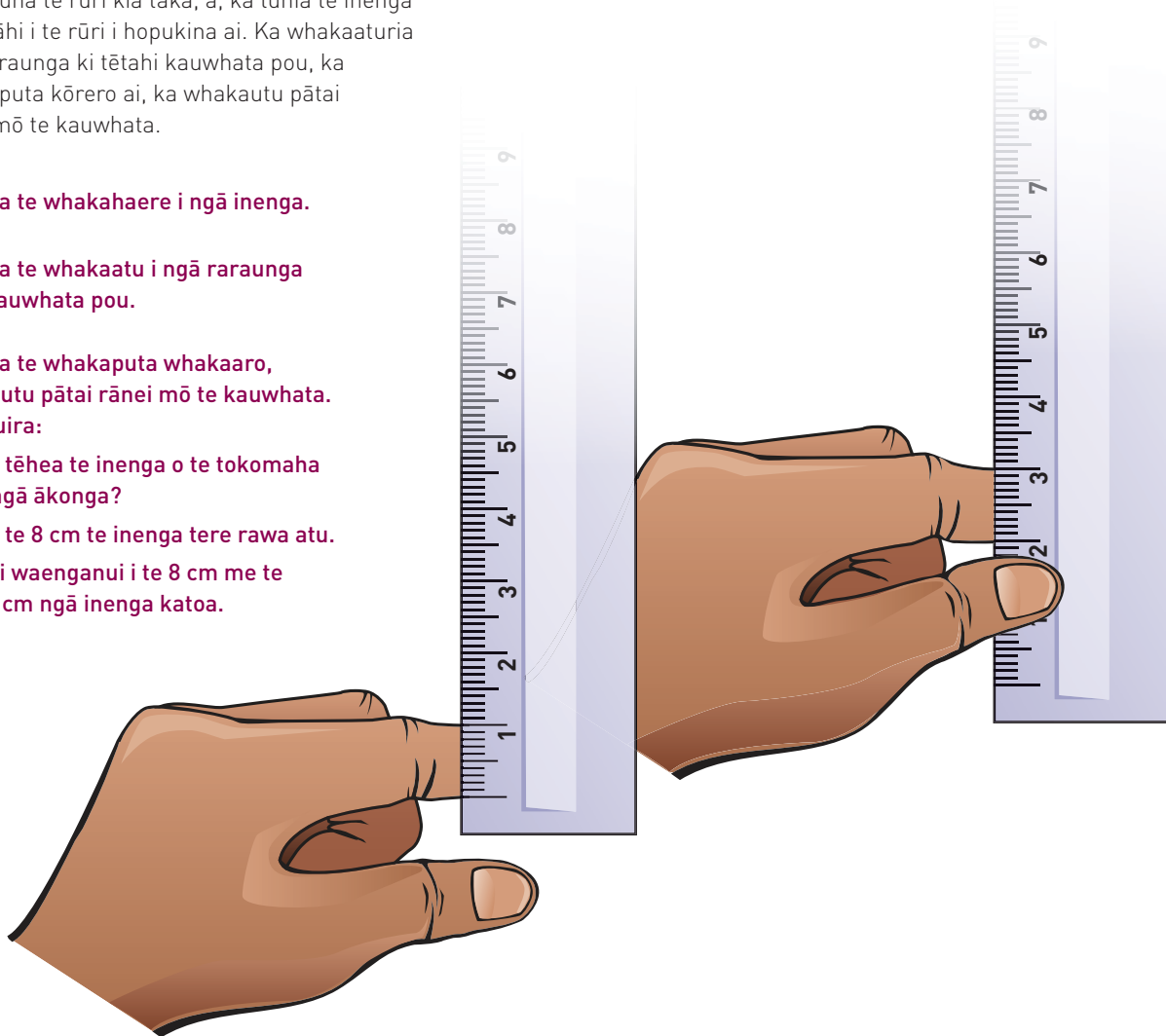
Ka whakahaere tūhuratanga kia kitea ai te tere urupare a ngā ākonga ki te hopu rūri, pēnei i te pikitia nei. Ka puritia te rūri e tētahi ākonga ki runga ake i te ringaringa o tana hoa. Ka tukuna te rūri kia taka, ā, ka tuhia te inenga o te wāhi i te rūri i hopukina ai. Ka whakaaturia ngā raraunga ki tētahi kauwhata pou, ka whakaputa kōrero ai, ka whakautu pātai rānei mō te kauwhata.

Kia tika te whakahaere i ngā inenga.

Kia tika te whakaatu i ngā raraunga ki te kauwhata pou.

Kia tika te whakaputa whakaaro, whakautu pātai rānei mō te kauwhata. Hei tauira:

- Ko tēhea te inenga o te tokomaha o ngā ākonga?
- Ko te 8 cm te inenga tere rawa atu.
- Kei waenganui i te 8 cm me te 24 cm ngā inenga katoa.



Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuetanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	¹⁵ continuous data ¹⁶ time-series data ¹⁷ trends ¹⁸ distinctive features
<ul style="list-style-type: none"> te whakatakoto pātai e hāngai ana, me te kohikohi raraunga hei tūhura i te pātai te raraunga motukore¹⁵ (pērā i te raraunga houanga¹⁶) te whakaputa kōrero mō ngā tauira, ngā ia, me ngā āhuetanga kōhure o tētahi huinga raraunga. 	<ul style="list-style-type: none"> te tikanga o te whakaari raraunga ki te kauwhata rārangi te āhua o te whakaaringa raraunga hei whakaatu i ngā ia¹⁷, ngā tauira, me ngā āhuetanga kōhure¹⁸ o roto i ngā raraunga. 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
<ul style="list-style-type: none"> huinga raraunga tuaka pae 	<ul style="list-style-type: none"> kauwhata rārangi tuaka pou 	<ul style="list-style-type: none"> ia
Hei tauira whakaahuahanga		
<ul style="list-style-type: none"> he kauwhata rārangi 	<ul style="list-style-type: none"> he ripanga 	

He Tauira Rapanga

Te Tauanga 3a

Rapanga 14

Rauemi: He pepa tukutuku, he rorohiko rānei me tētahi hōtaka ripanga.

Koia nei ngā inenga paemahana mō Taupō me Whāngārei i ngā hōra mai i te 6:00 i te ata ki te 8:00 i te pō i tētahi rangi:

	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
Whāngārei	12°	12°	13°	14°	15°	17°	19°	20°	20°	21°	20°	18°	13°	12°	11°
Taupō	2°	3°	5°	8°	12°	15°	19°	20°	21°	19°	17°	15°	13°	11°	9°

- Whakaaturia ngā inenga paemahana nei ki tētahi kauwhata. Whakamāramatia mai te take i whiriwhiria e koe tēnā momo kauwhata.
- He aha ētahi kōrero e kitea mai ana i ngā kauwhata?
- Me whakatau tata te paemahana i ngā wāhi e rua nei i te 5:30 i te ahiahi pō.

Kia tika te whakaatu i ngā raraunga ki tētahi kauwhata rārangi (mā te ringa, mā te rorohiko rānei), arā:

- ko te hōra o te rā ki te tuaka pae, ko te paemahana ki te tuaka pou
- ko te honohono i ngā pūwāhi o te kauwhata ki tētahi rārangi
- ko te whakamahi tae rerekē hei tohu i ngā paemahana mō Taupō me ērā mō Whāngārei.

Ka whakamārama i te take e tika ana te kauwhata rārangi.

Ka whakaputa kōrero mō ētahi āhuetanga kōhure o te kauwhata. Hei tauira:

- Ka tino piki te paemahana i Taupō, mai i te 2° ki te 21°.
- Kāore i te pērā rawa te piki o te paemahana i Whāngārei (mai i te 12° ki te 21°).
- Ka heke te paemahana i Whāngārei ki te paemahana āhua rite ki tērā i te tīmatanga o te rā.
- Kāore i te pērā rawa te heke o te paemahana i Taupō i te ahiahi pō.
- I te ata, he makariri ake a Taupō i Whāngārei, engari ka piki ki te paemahana ōrite i waenganui rā.

Ka whakamahia te kauwhata ki te whakatau tata i te paemahana i ngā wāhi e rua nei i te 5:30 i te ahiahi pō, arā, kei te takiwā o te 15° i Whāngārei, kei te āhua 14° i Taupō.

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuratanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	¹⁸ <i>multivariate category data</i> ¹⁹ <i>stem-and-leaf graph</i> ²⁰ <i>pie graph</i> ²¹ <i>data display</i> ²² <i>ethical conventions</i> ²³ <i>anonymous</i>
<ul style="list-style-type: none"> te raraunga whakarōpū matatini¹⁸ te arotake i te whaihua o ngā momo whakaari raraunga²¹. 	<ul style="list-style-type: none"> te whakaatu raraunga ki te kauwhata rautō¹⁹ me te kauwhata porowhita²⁰ ngā tikanga matatika²² e hāngai ana, (pērā i te tikanga kia noho matatapu²³ ngā kaiwhakautu pātai o tētahi tūhuratanga tauanga). 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
<ul style="list-style-type: none"> kauwhata rautō tāpaetanga kōrero kauwhata porowhita 	<ul style="list-style-type: none"> rāpoi manei mōwaho 	<ul style="list-style-type: none"> āhuratanga kōhure
Hei tauira whakaahuhanga		
<ul style="list-style-type: none"> kauwhata rautō 	<ul style="list-style-type: none"> kauwhata porowhita 	

He Tauira Rapanga

Te Tauanga 3e

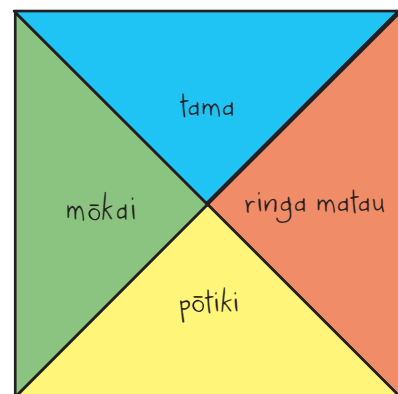
Rapanga 12

Rauemi: He kāri.

Mā ia ākonga e tuhi tētahi papa raraunga pēnei i te mea kei te taha matau. Kei ia wāhanga o te papa raraunga te whakautu ki ngā pātai nei:

- He tama, he kōtiro rānei koe?
- Ko te ringa mauī, ko te ringa matau rānei tō ringa tuhi?
- Ko koe te mātāmua, te pōtiki, tētahi tamaiti waenganui rānei o tō whānau?
- He mōkai tā tō whānau?

Ka whakakao mai i ngā papa raraunga katoa o te akomanga. Ka whakatakoto tāpaetanga kōrero, pātai rānei hei tūhura mā rātou i ngā raraunga, hei whakaputa whakaari raraunga.



Kia tika te whakatakoto tāpaetanga kōrero, pātai rānei, te tūhura me te wehewehe i ngā raraunga hei whakaputa whakaaro mō aua tāpaetanga kōrero. Hei tauira pātai:

- He aha te hautanga o te hunga ringa mauī me te hunga ringa matau?
- Ka pērā anō ngā hautanga ringa mauī, ringa matau mō ngā tamariki o tētahi atu akomanga?
- He nui ake te hautanga o te hunga kōtiro whiwhi mōkai, he nui ake rānei te hautanga o te hunga tamatāne whiwhi mōkai?
- Kei te hunga mātāmua, kei te hunga pōtiki, kei te hunga o waenganui rānei te kaha kitea o te ringa mauītanga?

Kia tika te whiriwhiri i ngā momo whakaari raraunga e hāngai ana ki te tūhuratanga me te hanga i aua whakaari raraunga.

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākongā, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuatanga me mātua mōhio te ākongā e tutuki ai tana whakaoti rapanga:	²¹ assertion ²² mean ²³ median ²⁴ range ²⁵ mode ²⁶ distribution ²⁷ stacked bar graph ²⁸ measure of central tendency ²⁹ variable
<ul style="list-style-type: none"> te whakatakoto pātai, tāpaetanga kōrero²¹ rānei hei tūāpapa mō tētahi tūhuratanga tauanga te whakatairite i te tuari²⁶ o ētahi huinga raraunga te whakamahi wēanga²⁸. 	<ul style="list-style-type: none"> te tātai toharite²², tau waenga²³, inenga whānui²⁴, tau tānui²⁵ o tētahi huinga raraunga, me te whakaatu ki te whakaari raraunga te tikanga o te whakaari raraunga ki te kauwhata pou whakaapaapa²⁷ te tautohu i ngā taurangi²⁹ o tētahi tūhuratanga tauanga, te kohikohi me te whakaari raraunga mō aua taurangi. 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
<ul style="list-style-type: none"> toharite inenga whānui pāteingi raraunga 	<ul style="list-style-type: none"> tau waenga tuari raraunga taurangi 	<ul style="list-style-type: none"> tau tānui tāpaetanga kōrero
Hei tauira whakaahuhanga		
<ul style="list-style-type: none"> he kauwhata pou whakaapaapa 		

He Tauira Rapanga

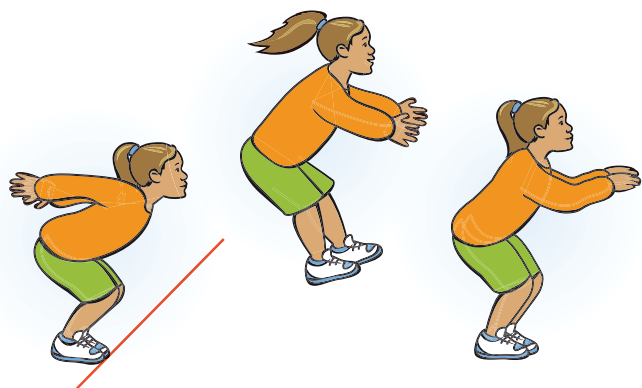
Te Tauanga 4a

Rapanga 14

Whakahaerehia tētahi tūhuratanga kia kitea ai te roa o te peke a ngā ākongā katoa o tō akomanga.

Tuhia he pūrongo, kia whai wāhi mai ko:

- te whakamārama i te āhua o te kohikohi raraunga
- te whakaari i ngā raraunga ki ngā momo kauwhata e hāngai ana
- te whakaatu i ngā peke a te hunga kōtiro, a te hunga tamatāne, me te katoa o te akomanga, me te peke toharite a tēnā rōpū me tēnā
- te whakaatu i te inenga whānui o ia rōpū raraunga
- te whakaputa kōrero hei whakatairite i te roa o ngā peke a te hunga kōtiro me te hunga tamatāne.



Kia tika te whakahaere i te tūhuratanga me te whakaputa i te pūrongo:

- Ākene pea ka meatia kia toru ngā peke mā ia ākongā, ā, ka tātaihia te toharite, koia te roa ka whakaurua ki te huinga raraunga.
- Kia tika te whiriwhiri i te momo kauwhata e hāngai ana, pērā i te kauwhata pou hiato, te kauwhata rautō hiato rānei, me te whakaatu anō i te toharite a ia rōpū ki te kauwhata.
- Ka whakaputaina he kōrero e hāngai ana hei whakatairite i te roa o te peke a te hunga kōtiro me te hunga tamatāne.

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuratanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	²² analyse ²³ histogram ²⁴ critique ²⁵ data collection process ²⁶ ethical conventions ²⁷ sample ²⁸ population
<ul style="list-style-type: none"> te tātari²² i ngā whakakitenga o tētahi tūhuratanga tauanga te arohaehae²⁴ i te tōtika o te tukanga kohikohi raraunga²⁵, me te whakaari i ngā raraunga o tētahi tīpako²⁷, hei whakaatu i te āhua o tētahi taupori²⁸. 	<ul style="list-style-type: none"> te whakaatu raraunga ki te kauwhata pouhere²³ ngā tikanga matatika²⁶ e hāngai ana (pērā i te whakamōhio atu ki te kaiwhakautu pātai i te whakamahinga o ngā raraunga ka puta i te tūhuratanga tauanga). 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
• pānga	• ture	• taurangi
Hei tauira whakaahuahanga		
• kauwhata pouhere		

He Tauira Rapanga

Te Tauanga 4e

Rapanga 13

Kua tae mai tētahi tangata hou ki te whakahaere i te toa kai o tētahi kura nui (e 600 ngā ākonga). E whakaaro ana ia kia whakahaerehia tētahi uiuitanga kia mōhio ai ngā whakaaro o te hapori o te kura mō ngā momo kai hei hoko māna i te toa. Pēhea nei ō whakaaro mō ēnei tīpako hei uiui māna?

- Ka uiui i tētahi ākonga mai i ia akomanga o te kura.
- Ka uiui i ngā mātua me ngā pouako.
- Ka tukuna he tono kia huihui mai te hapori o te kura, ā, ka uiui i te hunga ka tae atu ki te hui.
- Ka uiui i ngā tūākana o te kura.
- Ka tīpako matapōkere i ngā ākonga tekau o roto i ngā ākonga katoa o te kura.
- Ka tīpako matapōkere i ngā ākonga kotahi rau o roto i ngā ākonga katoa o te kura.

Kia mārama ki ngā painga me ngā whakararu o ia tīpako. Hei tauira:

He tokoiti pea te tīpako tuatahi kia tino mōhio ai ngā whakaaro o te hapori katoa o te kura. Kāore i whai wāhi mai ngā pouako me ngā mātua. Engari, nā te tokoiti o te tīpako he māmā te whakahaere i te uiuitanga me te kohikohi i ngā raraunga.

Rapanga 14

Rauemi: He rorohiko me tētahi hōtaka ripanga.

	A	B	C	D	E	F	G
1		Kaiwhakawā 1	Kaiwhakawā 2	Kaiwhakawā 3	Kaiwhakawā 4	Kaiwhakawā 5	Kaiwhakawā 6
2	Whakaeke	76	72	75	80	62	95
3	Poi	93	72	67	89	65	90
4	Waiata ā-ringa	63	67	67	71	65	92
5	Waiata tira	87	73	70	76	67	90
6	Mōteatea	82	70	74	75	64	91
7	Haka	64	68	65	69	68	88
8	Whakawātea	94	95	87	83	65	92

Hoatu te tūtohi i runga nei ki ngā ākonga, me te tono kia whakaurua ki te hōtaka ripanga. Koinei ngā māka a ētahi kaiwhakawā e ono i tukuna ki tētahi kapa haka i tētahi whakataetae.

- He aha te māka kotahi hei whakaatu i ngā whakaaro o te Kaiwhakawā 1 mō tēnei kapa haka? Me pēhea te tātai ā-ringa i te māka?
- Tohua te rorohiko kia tātaihia te toharite a ia kaiwhakawā.
- Me pēhea te tātai i te māka kotahi e tika ana mō tēnei kapa haka?
- Whakaaturia ngā māka ki tētahi kauwhata pou kia kitea ai ngā māka mō ia momo whakatū waewae a tēnei kapa.
- Whakaaturia ngā māka ki tētahi kauwhata pou kia kitea ai ngā māka a ia kaiwhakawā.
- Tukuna he pātai, ka tono rānei mā ngā ākonga e whakaputa kōrero mō ēnei raraunga. Hei tauira:
 - ◇ Ko wai ngā kaiwhakawā he āhua ōrite ngā māka mō ia momo whakatū waewae, kāore e tino piki, e tino heke rānei ngā māka, arā, kāore e manei?
 - ◇ Ko wai ngā kaiwhakawā ka āhua manei ā rātou māka, arā, ka piki, ka heke?
 - ◇ He aha ngā kōrero mō te kaiwhakawā 6?
 - ◇ Hāunga te kaiwhakawā 6, ko ēhea ngā momo whakatū waewae he āhua ōrite ngā māka?
 - ◇ He aha ngā momo whakatū waewae e tino eke ana tēnei kapa haka i te taumata, he aha hoki ngā momo whakatū waewae kāore i te pērā rawa te pai?

Kia mōhio ki te whakamahi hōtaka ripanga rorohiko ki te tātai toharite, ki te whakaputa kauwhata hoki.

Kia mōhio ki te tikanga o te toharite me te tātai i te toharite.

Kia tika te tūhura i ngā raraunga me ngā kauwhata hei whakautu i ngā pātai.

Te Tauanga

Ngā Whāinga		
Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:	He tauira ēnei o ngā āhuatanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:	¹⁹ assertion ²⁰ box and whisker graph ²¹ scatter plot ²² data display ²³ evaluate ²⁴ ethical conventions ²⁵ be biased ²⁶ variable
<ul style="list-style-type: none"> te whakatakoto pātai, tāpaetanga kōrero¹⁹ rānei, te whakahaere tūhuratanga tauanga, me te whakaputa pūrongo te arotake²³ i ngā kōrero ka puta i tētahi tūhuratanga tauanga te whakaputa kōrero mō te pānga o tētahi taurangi²⁶ ki tētahi. 	<ul style="list-style-type: none"> te whakaatu raraunga ki te kauwhata kauamo²⁰ me te kauwhata marara²¹ te whaitake me te whaihua o ngā momo whakaari raraunga²² ngā tikanga matatika²⁴ e hāngai ana (pērā i te tikanga kia kaua e haukumea²⁵ te āhua o ngā pātai). 	

Te Reo Matatini o te Pāngarau

Hei tauira kupu		
<ul style="list-style-type: none"> tāpaetanga kōrero haukume pānga 	<ul style="list-style-type: none"> kauwhata kauamo taurangi 	<ul style="list-style-type: none"> kauwhata marara pātengi raraunga
Hei tauira whakaahuhanga		
<ul style="list-style-type: none"> he kauwhata kauamo 	<ul style="list-style-type: none"> he kauwhata marara 	

He Tauira Rapanga

Te Tauanga 5a

Rapanga 11

Rauemi: He rorohiko me te whai wāhi atu ki te Ipurangi.

Tikina atu he raraunga i te pae ipurangi www.censusatschool.org.nz, ka tūhura ai i te āhua o te pānga kei waenganui i te pakeke o te tamaiti me tōna mārō (te tawhiti mai i tētahi pito ki tētahi ina whātoro atu ngā ringaringa ki ngā taha). Whakatairitea te hunga kōtiro me te hunga tamatāne, ka whakaputa kōrero ai.

Tonoa mā te ākonga e whakatakoto tētahi pātai, tētahi tāpaetanga kōrero rānei hei tūhura māna i ngā raraunga o "Tatauranga ki te Kura" www.censusatschool.org.nz:

- ka tūhuratia te pānga o tētahi taurangi ki tētahi
- ka whakaputaina he pūrongo me ngā momo whakaari raraunga e whaitake ana.

Kia mōhio te ākonga ki:

- te whakatakoto pātai, tāpaetanga kōrero e hāngai ana ki te huinga raraunga
- te tūhura i ngā raraunga
- te whakaatu raraunga ki ngā momo whakaari e hāngai ana
- te whakaputa kōrero mō ngā whakakitenga matua me te pānga o tētahi taurangi ki tētahi.

Wāhanga 3

He Ngohe Whakaako i te Tauanga



He ngohe whakaako ēnei e hāngai ana ki ngā taumata Whanaketanga 1a ki te 5a. Hei tauira noa iho ēnei ngohe, hei āta whakaaro mā te pouako, hei whakawhānui, otirā hei whakahāngai ki āna ake ākongā.

Kei te Wāhanga 4 (whārangi 107) ngā Whārangi Tārua e hiahiatia ana hei whakatutuki i ētahi o ngā ngohe. Kei te pae ipurangi o www.nzmaths.co.nz hoki ēnei whārangi tārua.

Whanaketanga 1a

Mātauranga Matua kua Mau kē

Te Tau

- te tatau pānga tahi

Mātauranga Matua hei Ako

- te whakarōpū i tētahi huinga i runga i ngā āhuatanga o ngā mea kei roto i te huinga, pērā i te tae, te rahi me te pakeke
- te tatau i te maha o ngā mea kei roto i ia rōpū, hei whakatairite i ngā rōpū

Rauemi kē atu e Hāngai ana

Ngā Kōwae Ako o nzmaths

- Te Māra
<http://www.nzmaths.co.nz/sites/default/files/GardenMaori.pdf>

Whakarōpūngia

1a 1e 2a 2e 3a 3e 4a 4e 5a

E ako ana ahau ki te āta tautohu i ngā rōpū rerekē kei roto i tētahi huinga, me te whakamārama hoki i aua rōpū.

Rauemi

- He kāri hei whakarōpū mā ngā ākongā (Hei tauira: Whārangi Tārua 1)

Kupu matua

āhuatanga ōrite, āhuatanga rerekē, huinga, rōpū, whakarōpū

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Hoatu he huinga kāri (pēnei i ngā kāri kei te Whārangi Tārua 1), ka tono ai i ngā ākongā kia āta whakaaro i ētahi whakarōpūtanga mō ngā kāri.</p> <p>Kia whakamāramatia anō hoki ngā whakarōpūtanga.</p>	<p>He mahi takirua tēnei. Anei tētahi huinga kāri. He tau kua tuhia ki ngā kāri, ko ngā tau mai i te kore (0) ki te tekau (10).</p> <p>Ko tā kōrua mahi ko tō hoa, he āta whakaaro i ētahi whakarōpūtanga mō ngā kāri.</p> <p>He aha te whakamārama mō ia rōpū kāri?</p> <p>E hia katoa ngā whakarōpūtanga rerekē ka taea e kōrua ko tō hoa?</p> <p>He tauira whakarōpūtanga:</p> <ul style="list-style-type: none"> • ko ngā tau whero me ngā tau kahurangi • ko ngā tau nui me ngā tau iti • ko ngā tau mātotoru me ngā tau tūpuhi • ko ngā tau whero, he kaitā anō hoki • ko ngā taurua me ngā taukehe • ko ngā tau kei raro iho i te 5 • ...
<p>Māu e whakamārama ngā rōpū hei hanga mā ngā ākongā.</p> <p>Me āta whakamahi ngā kupu e rua nei, te ‘rānei’ me te ‘hoki’ kia mārama ai te tikanga o tēnā me tēnā.</p> <p>He pai pea kia tuhia ngā tohutohu mō ngā rōpū ki te papa tuhituhi.</p>	<p>Anei ētahi whakamāramatanga rōpū hei hanga mā kōrua ko tō hoa.</p> <p>Hei tauira tohutohu:</p> <ul style="list-style-type: none"> • Hangaia he rōpū o ngā tau kei waenganui i te 4 me te 8, he mātotoru, he whero hoki. • Whakarōpūngia ngā tau he tūpuhi, he kahurangi rānei. • Kimihia ngā tau mātotoru, he iti anō hoki. • Whakarōpūngia ngā tau kei runga ake i te 6, kāore e mātotoru. • Hangaia he rōpū o ngā tau e whai rārangi kōpiko ana, engari kāore ngā mea tūpuhi.

Tonoa ngā ākonga kia rārangihia ngā kārī o ngā rōpū, tētahi ki runga ake i tētahi. Ka taturia ngā rōpū, ka whakatairitea anō hoki te maha kei roto i tēnā rōpū, i tēnā.

3
3
2
2
1
1
0
0

ngā tau whero tūpuhi
kei raro iho i te whā

10
8
6
4
2
0

ngā taurua tūpuhi nui,
he kahurangi hoki

Hangaia he rōpū o ngā tau whero, he tūpuhi, kei raro hoki i te 4. Rārangihia ngā kārī o tēnei rōpū, tētahi ki runga ake o tētahi.

Kia pērā anō te hanga i te rōpū taurua, he nui, he tūpuhi, he kahurangi anō hoki.

Ko tēhea te rōpū he maha ake ngā tau o roto?

Ko ngā tau whero tūpuhi kei raro iho i te whā.

He aha koe i mōhio ai he maha ake ngā tau o tēnā rōpū?

Nā te mea he teitei ake te rārangī mai o ngā kārī.

E hia te maha ake o ngā kārī o tēnā rōpū?

E rua te maha ake.

He aha koe i mōhio ai?

Nāku i tatau ngā kārī e rua o tēnā rōpū he teitei ake i tēnā.

E rua kārī te teitei ake o tēnā rōpū kārī, i tēnā.

He Koropewa, he Rōpū

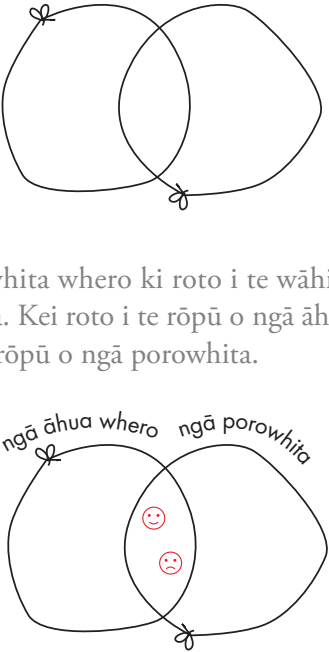
E ako ana ahau ki te āta tautohu i ngā rōpū rerekē kei roto i tētahi huinga, me te whakamārama hoki i aua rōpū.

Rauemi

- He kāri hei whakarōpū mā ngā ākonga (Hei tauira: Whārangi Tārua 2)
- He koropewa kua hangaia ki te aho

Kupu matua

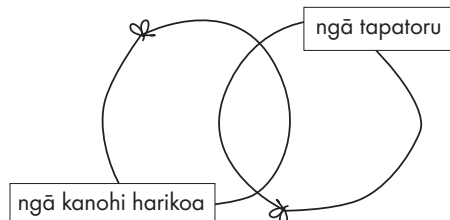
āhuatanga ōrite, āhuatanga rerekē, huinga, inaki, pātahi, rōpū, whakarōpū

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Whakaahuangia ngā kāri kei te Whārangi Tārua 2, ka tapahi ai.</p> <p>Hoatu he huinga kāri ki ia takirua ākonga, me ētahi aho koropewa e rua.</p> <p>Hoatu he tohutohu hei whakarōpū mā ngā ākonga i ngā kāri ki tēnā aho koropewa, ki tēnā.</p>	<p>Anei ētahi aho e rua kua herea hei hanga koropewa. Whakatakotoria ngā koropewa ki te papa.</p> <p>Anei hoki tētahi huinga kāri. He aha ngā āhua kei runga i ngā kāri?</p> <p>He tapatoru, he tapawhā, he porowhita. He whero ētahi, he kōwhai ētahi, he kākāriki ētahi, he kanohi harikoa ētahi, he kanohi pōuri ētahi.</p> <p>Hoatu ngā āhua whero ki tētahi o ngā koropewa, ko ngā porowhita ki tētahi.</p> <p>Me hoatu ngā porowhita whero ki tēhea o ngā rōpū?</p> <p>E pai ana pea kia pātahi, kia inaki ngā koropewa e rua, pēnei i tēnei:</p>  <p>Ko ngā porowhita whero ki roto i te wāhi e pātahi ana ngā rōpū e rua. Kei roto i te rōpū o ngā āhua whero, kei roto hoki i te rōpū o ngā porowhita.</p>

Whakatakotoria ētahi koropewa e rua ki te papa, kia inaki tētahi ki tētahi.

Tuhia he ingoa mō ia koropewa, kātahi ka hoatu i ngā kāri ki ngā ākonga hei tuku mā rātou ki te huinga e tika ana.

Anei ētahi koropewa e rua e inaki ana tētahi ki tētahi. Ko te ingoa o tēnei huinga, ko 'ngā kanohi harikoa'. Ko te ingoa o tēnei huinga, ko 'ngā tapatoru'.



Māku e hoatu he kāri hei tuku mā koutou ki te huinga e tika ana.

Ki hea tuku ai i tēnei kāri – he kikorangi, he tapatoru, he harikoa?

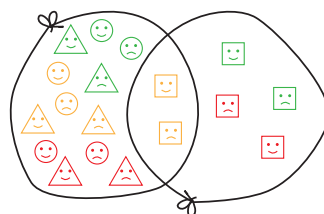
Ko 'ngā kanohi harikoa' tēnei rōpū, ko 'ngā tapatoru' tēnei rōpū, he aha hei ingoa mō te rōpū pātahi nei?

Ko ngā tapatoru harikoa.

Whakatakotoria ētahi koropewa e rua ki te papa, kia pātahi tētahi ki tētahi.

Māu e hoatu ngā kāri ki ngā rōpū, ka tono ai i ngā ākonga kia āta whakaaro i ngā ingoa o ngā rōpū.

Anei ētahi koropewa e rua, e pātahi ana. Mātaki mai i ahau e tohatoha ana i ngā kāri ki tēnā huinga, ki tēnā huinga.



He aha hei ingoa mō ngā rōpū e toru nei?

Kei te taha matau ko ngā tapawhā. Ko te rōpū kei te taha mauī, ko ngā porowhita, ngā tapatoru me ngā kanohi kōwhai. Kei waenganui, ko te rōpū pātahi, ko ngā tapawhā kōwhai. E rua ngā kāri o tērā rōpū.

Taku Mōkai

E ako ana ahau ki te whakarōpū i te huinga o ētahi mea, ki te whakamārama, ki te tatau, ki te whakaatu anō hoki i ngā rōpū.

Rauemi

- He kāri A5 te rahi

Kupu matua

āhuatanga ōrite, āhuatanga rerekē, huinga, rōpū, whakarōpū

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Hoatu he kāri, ka tono ai i ngā ākonga kia tuhia he pikitia o te kararehe e tino manakohia ana. He pai hoki pea kia tuhia te ingoa o te kararehe ki raro iho.</p> <p>Kohia mai ngā kāri hei whakarōpū mā ngā ākonga.</p> <p>Whakarārangihia ngā kāri hei whakatairite i ngā rōpū. Tukuna he pātai hei tūhura mā ngā ākonga i te rārangitanga mai o ngā kāri.</p> <div data-bbox="261 1261 687 1653"> </div>	<p>He aha ētahi kararehe e mōhio ana tātou? Homai ngā ingoa o ngā kararehe, māku e tuhi ki te papa tuhituhi.</p> <p>Māku e hoatu he kāri ki a koutou. Ko tā koutou mahi, he tuhi pikitia o te kararehe e tino pai ana ki a koe. Tuhia hoki te ingoa o taua kararehe.</p> <p>Anei ngā kāri katoa o ngā kararehe e tino pai ana ki tēnā, ki tēnā o tātou. He aha ētahi whakarōpūtanga mō te huinga kararehe nei?</p> <p>Hei tauira whakarōpūtanga:</p> <ul style="list-style-type: none"> • te momo kararehe – pēnei i te kurī, te ngeru, te taika, te manu, te hōiho ... • te āhua o te kiri – pēnā he māene, he huru poto, he huru roa, he raukura ... • te wāhi noho o te kararehe – pēnā ko te ngahere, ko te pāmu, ko te repo, ko te awa, ko te moana ... <p>← Me whakarāangi mai ngā kāri o ngā rōpū, tētahi ki te taha (ki runga rānei) o tētahi.</p> <p>Ko te rōpū o ngā kurī te rōpū he maha rawa ngā kāri. E tohu ana tērā i te aha?</p> <p>Ko te kurī te kararehe e tino pai ana ki ngā ākonga tokomaha.</p> <p>He aha tētahi kararehe kāore e tino pai ana ki ngā ākonga? Ko te nanenane – kotahi anake te ākonga e pai ana ki te nanenane.</p>

Whanaketanga 1e

Mātauranga Matua kua Mau kē

Te Tau

- te tatau ake
- te tatau māwhitiwhiti
- te hautau māmā (haurua, hauwhā)

Te Tauanga

- te whakarōpū i tētahi huinga i runga i ngā āhuatanga o ngā mea kei roto i te huinga, pērā i te tae, te rahi me te pakeke
- te tatau i te maha o ngā mea kei roto i ia rōpū, hei whakatairite i ngā rōpū

Mātauranga Matua hei Ako

- te whakatakoto pātai māmā e pā ana ki tētahi kaupapa ka hua mai i te ao o te tamaiti, hei tūhura māna
- te hanga me te whakamāori kauwhata whakaahua
- te whakahaere i ngā momo pōti hei kohikohi raraunga mai i tētahi huinga tāngata, pērā i te tatau ringaringa, me te whakamahi kāri raraunga
- te kohikohi, te wehewehe me te whakaatu raraunga māmā

Rauemi kē atu e Hāngai ana

Ngā Kōwae Ako o nzmaths

- Te Kauwhata Whakaahua
<http://www.nzmaths.co.nz/resource/ku-h-e-h-koi-ana>

Pū Ingoa

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakatakoto pātai hei kohikohi raraunga, ki te whakaatu hoki i ngā raraunga ki te kauwhata whakaahua.

Rauemi

- He pepa whakapiri

Kupu matua

kauwhata whakaahua

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Hoatu he tohutohu hei hanga mā ngā ākongā i tētahi kauwhata whakaahua hei tiroiro i te pū tīmatanga o ngā ingoa.</p> <p>Mēnā he tokoiti ngā ākongā, e pai ana kia whai wāhi mai ngā ingoa o ngā tāngata katoa i ō rātou whānau.</p> <p>Tukuna he pātai hei whakamāori mā ngā ākongā i te kauwhata whakaahua.</p>	<p>Ko tā tātou mahi, he tiroiro i te pū tīmatanga o ō tātou ingoa.</p> <p>He aha ngā pū o te wapakū reo Māori me te wapakū reo Ingarihi?</p> <p>Māku e tuhi ngā pū ki te papa tuhituhi.</p> <div data-bbox="762 1055 1412 1377" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>A B C D E F G H I J K L M N Ng O P Q R S T U V W Wh X Y Z</p> </div> <p>Ki tōu whakaaro, he maha rawa ngā ingoa e tīmata ana ki tēhea o ngā pū?</p> <p>Māku e hoatu he pepa whakapiri, ka haramai koutou ki te whakapiri i tō pepa ki runga ake i te pū tīmatanga o tō ingoa.</p> <div data-bbox="762 1704 1412 2027" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>A B C D E F G H I J K L M N Ng O P Q R S T U V W Wh X Y Z</p> </div>

Titiro ki ngā pepa whakapiri. He maha rawa ngā ingoa e tīmata ana ki tēhea o ngā pū?

Ināianei, me whakaaro ki ngā ingoa o ngā tāngata katoa i ō koutou whānau. He aha ngā pū tīmatanga o ō rātou ingoa? Whakapiria atu he pepa whakapiri ki runga ake i te pū e hāngai ana ki ia tangata o roto i tō whānau.

Titiro ki ngā pepa whakapiri. He maha rawa ngā ingoa e tīmata ana ki tēhea o ngā pū?

He aha tātou i mōhio ai?

Nā te mea koirā te pū he teitei rawa te rārangi mai o ngā pepa whakapiri.

E hia ngā ingoa e tīmata ana ki te P?

E hia ngā ingoa e tīmata ana ki te P, te H, te K rānei?

Karekau he ingoa e tīmata ana ki ēhea o ngā pū?

He tauira kaupapa hei tūhura

- Tētahi mea e manakohia ana e ngā ākongā, pērā i te hākinakina, te kai, te waiata, te mōkai, te aha atu rānei;
- Te āhua o ngā rau rākau a Tāne;
- Te pū mutunga o ngā ingoa o ngā ākongā;
- Te maha o ngā pū i te ingoa tuatahi o ngā ākongā.

Te Pōti

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakatakoto pātai, ki te whakahaere pōtitanga hei kohikohi raraunga.







Rauemi

- He kāri paku

Kupu matua

kauwhata whakaahua, matatapu pōti, pōtitanga ā-ringa, pōtitanga huna

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Whakamāramatia te tikanga o te pōti hei kōhi i ngā whakaaro o tētahi huinga tāngata mō tētahi kaupapa.</p> <p>Whakahaerehia he pōtitanga ā-ringa mō te hua rākau e manakohia ana e ngā ākongā.</p>	<p>Kei te hiahia au kia mōhio he aha te hua rākau e tino reka ana ki a koutou, hei hoko māku mō tā tātou kai āpōpō.</p> <p>Anei ngā hua rākau hei whiriwhiri mā koutou. Ko te āporo, ko te ārani, ko te pea, ko te panana, ko te pītiti, ko te netarīni rānei.</p> <div data-bbox="753 967 1417 1070" data-label="Image"> </div> <p>Ka tono au kia whakatūria tō ringa hei pōti mō te hua rākau e reka ana ki a koe. Kia kōtahi anake tō pōtitanga.</p> <p>Ko wai ka pōti mō te āporo? Ko wai o koutou e tino hiahia ana ki te āporo? Whakatūria tō ringa. Kia tatauria ngā ringaringa.</p> <p>E 6 e hiahia ana ki te āporo. Ki hea tuhi ai i te 6? Ki te rōpū o ngā āporo...</p> <div data-bbox="753 1487 1417 1590" data-label="Image"> </div>
<p>Whakahaerehia he pōtitanga huna, ka whakaatu ai i ngā raraunga.</p> <p>Whakawhitiwhiti kōrero mō te rerekē o te pōtitanga ā-ringa me te pōtitanga huna.</p>	<p>Ko tētahi atu momo pōtitanga, ko te pōtitanga huna. I te pōtitanga ā-ringa, ka kitea ngā pōti a tēnā, a tēnā o tātou.</p> <p>I te pōtitanga huna, kāore e kitea te pōti a tēnā me tēnā. Ka noho matatapu tō pōti ki a koe, kāore e whākina atu ki te marea.</p> <p>Hei tauira o te pōtitanga huna, māku e hoatu he kāri ki a koe. Ko tāu mahi, he tuhi i te hua rākau tino reka ki a koe. Kaua e whāki atu ki tētahi atu.</p>

	<p>Māku e kohikohi ngā kāri, kātahi ka rārangihia atu ki ngā rōpū.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="display: flex; flex-direction: column; gap: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> <input style="width: 30px; height: 20px;" type="text"/> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> āporo</div> <div style="text-align: center;"> ārani</div> <div style="text-align: center;"> pea</div> <div style="text-align: center;"> pīiti</div> <div style="text-align: center;"> panana</div> <div style="text-align: center;"> netarīni</div> </div> <p>He ōrite, he rerekē rānei te hua o te pōtitanga ā-ringa me te pōtitanga huna? Hei tauira whakautu: He rerekē. E 6 i hiahia ki te āporo i te pōtitanga ā-ringa, e 4 i te pōtitanga huna.</p> <p>He aha pea i pērā ai? He whaiwhai pea tā ētahi i te pōti a ō rātou hoa i te pōtitanga ā-ringa.</p>
<p>Whakawhitiwhiti kōrero mō te pātai i tūhuratia.</p>	<p>He aha tātou i mahi ai i tēnei pōtitanga? Kia kitea ai ko tēhea te momo hua rākau hei hoko māu mō tā tātou kai āpōpō.</p> <p>Nō reira, me hoko au i te aha? Me hoko he netarīni. Kaua e hoko panana. Ākene pea me hoko ētahi āporo me ētahi pīiti hoki.</p>
<p>Tonoa ngā ākonga kia whakaaro i tētahi pātai hei whakahaere pōtitanga.</p> <p>He pai pea te mahi takirua.</p> <p>I te mutunga o te mahi, ka tuku kōrero ia takirua mō tā rāua pātai me ngā raraunga i kohia.</p>	<p>Ka mahi takirua koutou. Ko tā kōrua mahi ko tō hoa, he āta whakaaro i tētahi pātai hei pōtitanga mā te akomanga.</p> <p>Mā kōrua e whakatau mēnā ka whakahaerehia he pōtitanga ā-ringa, he pōtitanga huna rānei.</p>
<p>Hei whakawhānui</p> <p>Tonoa ngā ākonga kia kohikohi i ngā kōrero mō te hua rākau e tino manakohia ana e ngā tāngata o roto i ō rātou whānau. Ka whakaaturia ērā raraunga ki te taha o ngā raraunga mō te akomanga. Whakawhitiwhiti kōrero mō te ōrite, te rerekē rānei o ngā raraunga.</p>	

Te Whakamāori Kauwhata Whakaahua

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakamāori kauwhata whakaahua.

Rauemi

- Whārangi Tārua 3

Kupu matua

kauwhata whakaahua

Ngā tohutohu	He tauira kōrero mā te pouako
<p>E whā ngā kauwhata whakaahua kei te Whārangi Tārua 3. Whakawhitiwhiti kōrero mō te kaupapa o ia kauwhata whakaahua me ngā kōrero e whakaaturia ana.</p>	<p>He tauira whakawhitiwhitinga kōrero tēnei mō te kauwhata tuatahi: He aha te pōtitanga i whakahaerehia mō te kauwhata whakaahua tuatahi? He pōti i te tae e tino manakohia ana.</p> <p>Ki tōu whakaaro, he aha te tikanga o ia pikitia tangata? E tohu ana ngā pikitia i ngā pōti.</p> <p>He aha te tae i tino manakohia? Ko te kākāriki. E 6 i pōti mō te kākāriki.</p> <p>He aha te tae kāore i tino manakohia? Ko te karaka. Kotahi anake te pōti mō te karaka.</p> <p>E hia ngā pōti mō te kahurangi? E rua.</p> <p>E hia te maha ake o ngā pōti mō te kākāriki i ngā pōti mō te karaka? E 5 te maha ake.</p> <p>He aha ngā tae i ōrite te maha o ngā pōti? Ko te kōwhai me te whero.</p> <p>Ki ōu whakaaro, ka pērā anō te maha o ngā pōti mō ia tae mēnā ko te akomanga o Matua Hohepa e pōti ana? Kāore e mōhiotia ana, he pōtitanga anō tērā. Ko tēnei pōtitanga e whakaatu ana i tō tātou akomanga, ākene pea he āhua ōrite te akomanga o Matua Hōhepa, ākene pea ka rerekē.</p>

Whanaketanga 2a

Mātauranga Matua kua Mau kē

Te Tau

- ngā rautaki wāwāhi tau māmā

Te Tauanga

- te whakatakoto pātai māmā e pā ana ki tētahi kaupapa ka hua mai i te ao o te tamaiti, hei tūhura māna
- te hanga me te whakamāori kauwhata whakaahua
- te whakahaere i ngā momo pōti hei kohikohi raraunga mai i tētahi huinga tāngata, pērā i te tatau ringaringa, me te whakamahi kāri raraunga
- te kohikohi, te wehewehe me te whakaatu raraunga māmā

Mātauranga Matua hei Ako

- te whakatakoto pātai māmā e pā ana ki tētahi kaupapa ka hua mai i te ao o te tamaiti, hei tūhura māna
- te kohikohi raraunga, te wehewehe, te whakaatu i ngā raraunga hei whakautu i te pātai
- te whakaputa kōrero mō ngā āhuatanga matua o tētahi huinga raraunga
- te whakamahi tūtohi māmā hei pupuri, hei whakaatu raraunga
- te tārima i ngā raraunga e kohia ana

Tūtohi

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakaatu raraunga ki te tūtohi.

Rauemi

- He kāri
- Whārangī Tārua 4

Kupu matua

kohikohi raraunga, raraunga, tūtohi

Ngā tohutohu	He tauira kōrero mā te pouako
Tirohia te Whārangī Tārua 4, ka whakawhitiwhiti kōrero ai mō ngā raraunga me te whakaatu i aua raraunga ki tētahi tūtohi.	<p>Ka tuhia e Mere te āhua o te rangi mō ngā rā katoa o te hararei kura.</p> <p>E hia ngā rā i tuhia e Mere te āhua o te rangi? 14</p> <p>Ka kīia ēnei tuhinga a Mere, he raraunga. Ko ēnei raraunga he kōrero e pā ana ki te āhua o te rangi i ngā rā 14 o te hararei kura.</p>

Ko te tūtohi tētahi momo whakaaturanga e pai ana mō ēnei raraunga, kia rite ki te āhua o te maramataka. Ka whakaaturia te rā ki te rārangi runga o te tūtohi, ko ngā wiki e rua ki ngā kapa ki raro iho:

	Rāhina	Rātū	Rāapa	Rāpare	Rāmere	Rāhoroi	Rātapu
Wiki 1							
Wiki 2							

He aha hei tuhi atu ki te kapa tuarua me te kapa tuatoru o te tūtohi?

Ko te āhua o te rangi i aua rā.

	Rāhina	Rātū	Rāapa	Rāpare	Rāmere	Rāhoroi	Rātapu
Wiki 1	paki	paki	tāmaru	marangai	hauhau	marangai	tāmaru
Wiki 2	marangai	paki	tāmaru	hauhau	paki	paki	paki

Me pēhea te whakaatu i te maha o ngā rā paki, te maha o ngā rā tāmaru, me te maha o ērā atu āhua o te rangi ki tētahi tūtohi?

Whakaaturia te āhua o te rangi ki te kapa runga o te tūtohi, me te maha o ngā rā ki te papa tuarua:

Te āhua o te rangi	paki	tāmaru	hauhau	marangai
Te maha o ngā rā	6	3	2	3

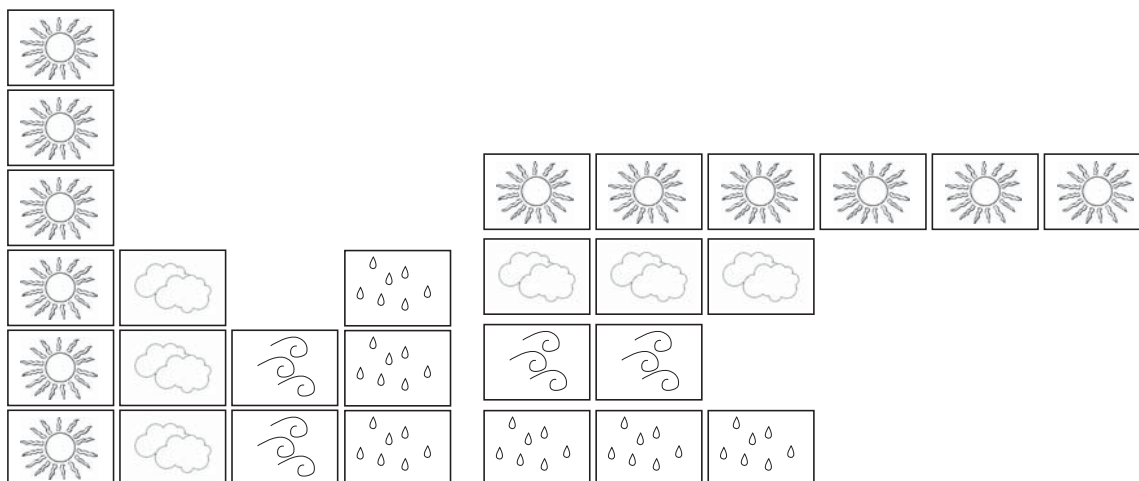
Anei ētahi kāri tekau mā whā, tētahi kāri mō ia rā o te hararei. Kia hia ngā kāri mō te rā paki?

Kia 6. Me tuhi he tohu mō te rā paki ki ētahi kāri e 6.

Kia pērā anō mō ērā atu āhua o te rangi.

Me pēhea te whakatakoto i ngā kāri hei hanga kauwhata whakaahua?

Me wehewehe ngā kāri ki ngā rōpū, ka whakatakoto ai i tētahi ki runga o tētahi. Whakarārangiā rānei tētahi ki te taha o tētahi:



He aha ētahi mea e tino kitea ana i ngā kauwhata whakaahua?

He ōrite te maha o ngā rangi tāmaru me ngā rangi heke te marangai. He rearua te maha ake o ngā rangi paki i ngā rangi tāmaru. Ko ngā rangi pupuhi te hau te iti rawa o ngā rangi.

Tonoa ngā ākonga kia kohikohi raraunga me te whakaatu i aua raraunga ki tētahi tūtohi. Hei taurira o ngā raraunga kia kohikohia a ngā ākonga, hei whakaatu ki tētahi tūtohi:

- te tae o ngā kākahu o ngā ākonga;
- te maha o ngā pūkoro i ngā kākahu o ngā ākonga;
- te marama o ngā rā whānau o ngā ākonga;
- te maha o ngā tamariki i ngā whānau o ngā ākonga;
- te tae o ngā whare o ngā ākonga;
- ...

Tūhuratanga Tauanga 2a

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakatakoto pātai tauanga hei tūhura, ki te kohikohi, ki te whakaatu raraunga anō hoki.

Kupu matua

kohikohi raraunga, raraunga, tūtohi

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākongā, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hapori.

1. Kua homai e te rūnanga whakahaere o te kura tētahi pūtea moni hei hoko pukapuka hou mō te whare pukapuka. He aha ngā momo pukapuka hei hoko?
2. Kua homai e te rūnanga whakahaere o te kura tētahi pūtea moni hei hoko taputapu hākinakina hei tākaro mā ngā ākongā i te wā o te kai rānui. He aha ngā taputapu me mātua hoko?
3. Kei te hiahia te rūnanga whakahaere o te kura kia mōhio i ngā iwi me ngā hapū o ngā ākongā.
4. Kei te hiahia te toa kai o te kura kia mōhio i te momo inu wera e tino pai ana ki ngā ākongā i ngā marama o te hōtoke.

Whanaketanga 2e

Mātauranga Matua kua Mau kē

Te Tau

- ngā rautaki wāwāhi tau me te rautaki paheko kōaro mō te tāpiritanga me te tangohanga
- ngā rautaki tāpiri tāruarua mō te whakareatanga māmā
- ngā tikanga hautau

Te Tauanga

- te whakatakoto pātai māmā e pā ana ki tētahi kaupapa ka hua mai i te ao o te tamaiti, hei tūhura māna
- te kohikohi raraunga, te wehewehe, te whakaatu i ngā raraunga hei whakautu i te pātai
- te whakaputa kōrero mō ngā āhuatanga matua o tētahi huinga raraunga
- te whakamahi tūtohi māmā hei pupuri, hei whakaatu raraunga
- te tārima i ngā raraunga e kohia ana

Mātauranga Matua hei Ako

- te whakaatu raraunga ki te kauwhata pou, kauwhata ira hoki, me te whakamāori anō i ēnei momo kauwhata
- te whakatakoto pātai tauanga hei tūhura
- te kohikohi raraunga, te wehewehe, te whakaatu i ngā raraunga hei whakautu i te pātai
- te whai i ngā tikanga matatika kia kore ai e mamae, e whakaitia rānei ngā tāngata e whai wāhi mai ana ki tētahi tūhuratanga tauanga

Rauemi kē atu e Hāngai ana

Ngā Kōwae Ako o nzmaths

- He Papa Raraunga 1
<http://www.nzmaths.co.nz/resource/he-papa-raraunga-1>

Raraunga Whutupōro 1

1a	1e	2a	2e	3a	3e	4a	4e	5a
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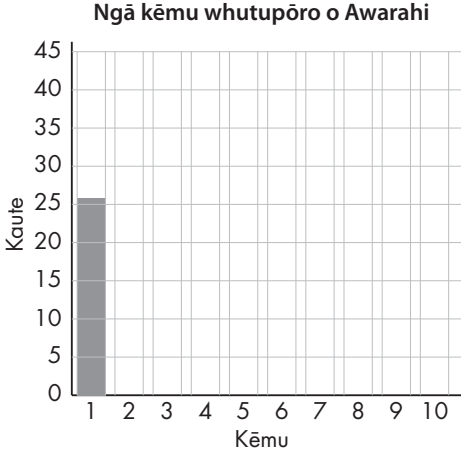
E ako ana ahau ki te whakaatu raraunga ki te tūtohi, ki te kauwhata pou hoki.

Rauemi

- Whārangi Tārua 5

Kupu matua

kapa, kauwhata pou, pou, raraunga, tūtohi

Ngā tohutohu	He tauira kōrero mā te pouako																																																																													
<p>Tirohia te Whārangi Tārua 5, ka whakawhitiwhiti kōrero ai mō ngā raraunga me te whakaatu i aua raraunga ki tētahi tūtohi.</p> 	<p>Kia titiro tātou ki ngā kēmu whutupōro o te tīma o Awarahi. Ko Paora tētahi o roto i te tīma, nāna i tuhi ngā kaute o ngā kēmu tekau.</p> <p>Ka kīia ēnei kaute, he raraunga. Arā, he kōrero e pā ana ki tēnei kaupapa, arā te tīma o Awarahi.</p> <p>Ko te tūtohi tētahi momo whakaaturanga e pai ana mō ēnei raraunga e pā ana ki te tīma o Awarahi.</p> <p>Ka tuhia te nama o te kēmu ki te kapa runga o te tūtohi:</p> <table border="1" data-bbox="670 1142 1340 1254"> <thead> <tr> <th>Kēmu</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Ki tōu whakaaro, he aha te mea hei tuhi ki te kapa tuarua o te tūtohi?</p> <p>Ko ngā kaute o te tīma o Awarahi mō ērā kēmu tekau.</p> <table border="1" data-bbox="670 1433 1340 1545"> <thead> <tr> <th>Kēmu</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>Awarahi</td> <td>26</td> <td>5</td> <td>8</td> <td>15</td> <td>24</td> <td>19</td> <td>32</td> <td>41</td> <td>54</td> <td>38</td> </tr> </tbody> </table> <p>Me pēhea te whakaatu i ngā kaute o ngā tīma hoariri?</p> <p>Me tāpiri tētahi anō kapa hei whakaatu i ngā kaute o ngā hoariri.</p> <table border="1" data-bbox="670 1702 1340 1870"> <thead> <tr> <th>Kēmu</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>Awarahi</td> <td>26</td> <td>5</td> <td>8</td> <td>15</td> <td>24</td> <td>19</td> <td>32</td> <td>41</td> <td>54</td> <td>38</td> </tr> <tr> <td>Hoariri</td> <td>28</td> <td>16</td> <td>35</td> <td>18</td> <td>19</td> <td>3</td> <td>24</td> <td>12</td> <td>27</td> <td>35</td> </tr> </tbody> </table> <p>Ka kīia tēnei momo kauwhata he kauwhata pou. Ka tuhia he pou hei whakaatu i ngā kaute o te tīma o Awarahi i ia kēmu.</p>	Kēmu	1	2	3	4	5	6	7	8	9	10												Kēmu	1	2	3	4	5	6	7	8	9	10	Awarahi	26	5	8	15	24	19	32	41	54	38	Kēmu	1	2	3	4	5	6	7	8	9	10	Awarahi	26	5	8	15	24	19	32	41	54	38	Hoariri	28	16	35	18	19	3	24	12	27	35
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Māu e whakaoti te kauwhata. Whakaaturia he pou mō ērā atu o ngā kēmu.

Ina tirohia te kauwhata pou, he aha te mea e kitea mai ana? He aha tētahi kōrero matua mō te āhua o te kauwhata? Mai i te kēmu tuarua, ka piki haere te kaute o te tīma i ia kēmu.

E tohu ana tērā i te aha?

E tohu ana i te pakari haere o te tīma i ia wiki i te roanga atu o te wāhanga tākaro o te tau.

Hei whakawhānui

Tonoa ngā ākonga kia whakaatu i ngā kaute a te tīma hoariri ki te kauwhata pou, ka whakawhitiwhiti kōrero ai mō ngā whakakitenga matua.

E ako ana ahau ki te whakamāori, ki te hanga kauwhata pou, kauwhata ira hoki.

Rauemi

- Whārangi Tārua 6

Kupu matua

kauwhata ira, kauwhata pou, raraunga

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Whakawhitiwhiti kōrero mō te wehewehe i tētahi huinga raraunga, me te whakaatu i ngā wehewehenga rerekē ki te kauwhata pou me te kauwhata ira.</p> 	<p>Ka inea e tētahi rōpū ākongā te roa o ō rātou matikara. Kei te Whārangi Tārua 6 te tūtohi me ētahi kauwhata e whakaatu ana i ngā raraunga mō te roa o ngā matikara.</p> <p>He aha ētahi kōrero mō ia kauwhata? He aha ngā āhuatanga e whakaaturia ana ki tēnā, ki tēnā o ngā kauwhata?</p> <p><u>Kauwhata 1</u></p> <p>He āhua ōrite tēnei kauwhata pou ki te tūtohi. E whakaaturia ana te ingoa o ia ākongā. Kua tuhia he pou mō ia ākongā hei whakaatu i te roa o tana matikara. I te tūtohi, e whakaaturia ana te inenga mitarau e hāngai ana ki te roa o te matikara. I te kauwhata, he ōrite te teitei o te pou ki te roa o te matikara.</p> <p><u>Kauwhata 2</u></p> <p>Kua whakarōpūngia ngā ākongā i runga i te roa o ngā matikara. Ko te pou tuatahi e tohu ana i ngā ākongā tokorua kei roto i te rōpū 15cm te roa o te matikara. Ko te teitei o te pou e tohu ana i te maha o ngā ākongā kei tēnā rōpū, kei tēnā. He māmā te kitea atu i tēnei kauwhata he tokomaha ngā ākongā 16cm te roa o te matikara. Tokorua ngā ākongā he tino roa ake te matikara i ērā atu o ngā ākongā (21cm).</p> <p><u>Kauwhata 3</u></p> <p>Kua wehea ngā raraunga ki ētahi rōpū e rua, ko ngā kōtiro me ngā tama. E whakaaturia ana te roa o ngā matikara o ngā ākongā o tēnā rōpū, o tēnā, mai i te iti ki te rahi. Mō te hunga kōtiro, ko te 15 te iti rawa o ngā matikara, ko te 19 te roa rawa. Mō te hunga tamatāne, ko te 16 te matikara iti rawa, ko te 21 te roa rawa.</p> <p><u>Kauwhata 4</u></p> <p>Kua tuhia he ira hei whakaatu i ia ākongā ki runga ake i te inenga o te roa o tana matikara. He āhua rite ki te Kauwhata Pou 2, engari mā te tatau i ngā ira e mōhioia ai te maha</p>

	<p>o ngā ākongā o tēnā rōpū, o tēnā. Ka kīia tēnei momo kauwhata he kauwhata ira.</p> <p><u>Kauwhata 5</u></p> <p>He rite ki te Kauwhata 4, engari kua wehea ngā raraunga hei whakaatu i te hunga kōtiro me te hunga tamatāne.</p>
<p>Hoatu he kaupapa hei kohikohi raraunga mā ngā ākongā, hei wehewehe i aua raraunga, hei whakaatu ki ētahi kauwhata rerekē.</p> <p>Whakawhitiwhiti kōrero mō ngā momo kōrero e whakaaturia ana ki tēnā kauwhata, ki tēnā.</p>	<p>Ko tā tātou mahi, he ine i te roa, huri amio i ō tātou māhunga, e mōhiotia ai te roa hei hanga tīpare.</p> <p>Me pēhea te ine i te roa huri amio i te māhunga?</p> <p>Whakamahia he aho, ka inea te roa o te aho e amio ai i te māhunga.</p> <p>Tuhia ngā inenga ki tētahi tūtohi.</p> <p>Hangaia ētahi kauwhata rerekē hei whakaatu i ngā raraunga.</p> <p>Ki tōu whakaaro, ko tēhea o ngā kauwhata te mea pai hei hoatu ki te tangata e mahi ana i ngā tīpare? He aha ai?</p> <p>Ko te kauwhata e whakaatu ana i te maha o ngā tīpare o tēnā inenga, o tēnā. Kia mōhiotia ai e hia o tēnā inenga, o tēnā inenga hei mahi māna.</p> <p>Ko te whakapae a tētahi o ngā ākongā, kia roa ake ngā tīpare mō ngā tama, i ērā mō ngā kōtiro. Ko tēhea o ngā kauwhata hei tiro tiro kia mōhiotia ai mēnā e tika ana tēnei whakapae?</p>

Tūhuratanga Tauanga 2e

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakatakoto pātai hei tūhura, ki te kohikohi, ki te whakaatu raraunga anō hoki.

Kupu matua

kauwhata, kohikohi raraunga, raraunga, tūtohi

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākongā, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi, ki te kauwhata anō hoki. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hāpori.

1. Kei te hiahia te kura ki te whakaiti i ngā para e tukuna ana ki ngā ipu para o te kura. Kohikohia he raraunga e mōhiohia ai te rahi o ngā momo para (pērā i te pepa, te kirihou, te konumohe, te para kai, te aha atu rānei) e puta ana i te kura i ia rā (i ia wiki rānei).
2. Kei te hia mōhio te kaiako he pēhea nei te pai o ngā ākongā ki te whiu pōro.
3. Kei te hia mōhio te kaiako he pēhea nei te pai o ngā ākongā ki te whana pōro.
4. Kei te hia mōhio te kaiako he pēhea nei te mōhio o ngā ākongā ki ngā meka tāpiritanga.

Whanaketanga 3a

Mātauranga Matua kua Mau kē

Te Tau

- ngā rautaki whakarea māmā
- ngā tau ā-ira (kia kotahi te mati ā-ira)
- te whiriwhiri hautanga māmā

Te Tauanga

- te whakaatu raraunga ki te kauwhata pou, kauwhata ira hoki, me te whakamāori anō i ēnei momo kauwhata
- te whakatakoto pātai tauanga hei tūhura
- te kohikohi raraunga, te wehewehe, te whakaatu i ngā raraunga hei whakautu i te pātai
- te whai i ngā tikanga matatika kia kore ai e mamae, e whakaitia rānei ngā tāngata e whai wāhi mai ana ki tētahi tūhuratanga tauanga.

Mātauranga Matua hei Ako

- te whakatakoto pātai tauanga hei tūhura; te kohikohi raraunga, te wehewehe, te whakaatu i ngā raraunga hei whakautu i te pātai
- te kohikohi, te whakaatu, te whakamārama raraunga ine, raraunga houanga hoki
- te whakauru raraunga ki tētahi ripanga rorohiko, me te whakaputa anō i ngā kauwhata e hāngai ana
- te whakamāori kauwhata rārangi, te whakaputa kōrero mō ngā ia, ngā taurira me ngā āhuatanga kōhure o roto i ngā raraunga
- te arohaehae i te āhua o te kohikohi me te whakaatu raraunga i tētahi tūhuratanga

Rauemi kē atu e Hāngai ana

Ngā Kōwae Ako o nzmaths

- Ripanga
<http://www.nzmaths.co.nz/resource/ripanga>
- Te Kauwhata Pou
<http://www.nzmaths.co.nz/resource/te-kauwhata-pou>

He Tau Anō te Tau

- Te Tauanga (Putanga Hou)

Kauwhata Rārangi

1a 1e 2a 2e 3a 3e 4a 4e 5a

E ako ana ahau ki te whakaatu raraunga ki te kauwhata rārangi.

Rauemi

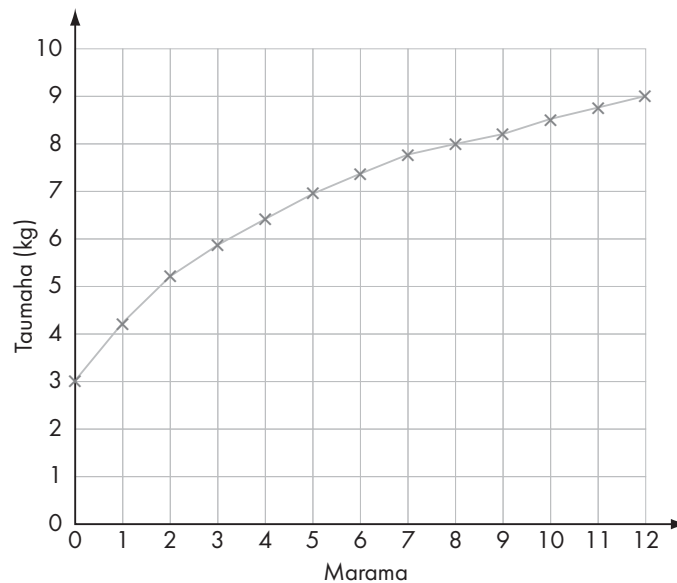
- Whārangi Tārua 7

Kupu matua

ia, kauwhata rārangi, rārangi kōpiko, raraunga

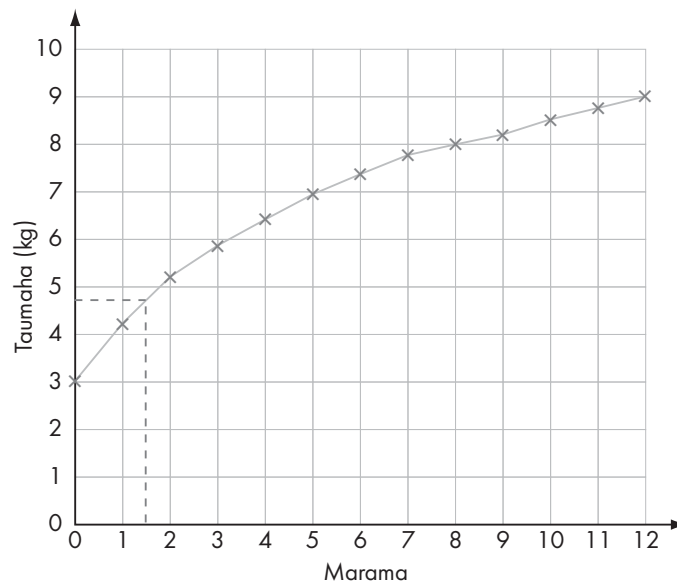
Ngā tohutohu	He tauira kōrero mā te pouako
<p>Tirohia te Whārangi Tārua 7, ka whakawhitiwhiti kōrero ai mō ngā raraunga e whakaaturia ana ki te tūtohi.</p> <p>Aratakina ngā ākonga kia whakaatu i ngā raraunga ki te kauwhata.</p>	<p>Kia titiro tātou ki te Whārangi Tārua 7. Ia marama ka inea e Roimata te taumaha o tana pēpi hou. Ka tuhia ki tētahi tūtohi.</p> <p>Ka whakaaro ia ki te whakaatu i ngā raraunga mō te taumaha o tana pēpi ki te kauwhata. Kua tīmata te tuhi i te kauwhata. E rua ngā rārangi hei anga mō tēnei kauwhata. He huapae tētahi, he poutū tētahi. Ka kīia ēnei rārangi ko ngā tuaka o te kauwhata.</p> <p>Tohua te tuaka pae o te kauwhata. He aha te mea e whakaaturia ana ki te tuaka pae? Ko te marama, arā, ko te pakeke o te pēpi.</p> <p>He aha te tikanga o te nama kore i te tuaka pae? Koia te wā i whanau mai ai te pēpi. Ko te tīmatanga tēnā o ōna rā ki tēnei ao.</p> <p>Tohua te tuaka pou o te kauwhata. He aha te mea e whakaaturia ana ki te tuaka pou? Ko te taumaha o te pēpi, hei manokaramu (kg).</p> <p>He aha te tikanga o te rīpeka paku kua tuhia ki te kauwhata? Koia e whakaatu ana i te taumaha o te pēpi i tana whānautanga mai. Arā, i te ‘kore marama,’ e 3kg tōna taumaha.</p> <p>Māu e whakaoti te kauwhata. Tuhia he rīpeka paku hei whakaatu i te taumaha o te pēpi i ērā atu o ngā marama.</p>
<p>Whakawhitiwhiti kōrero mō te tikanga o te kauwhata rārangi.</p>	<p>Kua whakaaturia te taumaha o te pēpi i ia marama ki te kauwhata. Me pēhea tātou e mōhio ai ki te taumaha o te pēpi ki waenganui i aua marama, pērā i te kotahi me te haurua marama?</p>

Ko tētahi tikanga mō ēnei momo raraunga, ko te tuhi i tētahi rārangi hei honohono i ngā rīpeka. Tuhia he rārangi kōpiko hei honohono i ngā rīpeka paku kua tuhia e koe ki tō kauwhata.



Tohua te 1.5 i te tuaka pae o te kauwhata. Piki whakarunga ki te rārangi kōpiko kua tuhia e koe. He aha te taumaha e hāngai ana ki tērā pūwāhi i te rārangi kōpiko?

Kei te takiwā o te 4.8.



Ka kīia tēnei momo kauwhata ko te kauwhata rārangi. Ka whakamahia he rārangi hei whakaatu i ngā wāhi kei waenganui i ērā kua tohua ki te tuaka pae.

Tirohia te rārangi kōpiko o te kauwhata. Tohua te wāhi o te rārangi e tino piki ana te taumaha o te pēpi.

Mai i tana whānautanga mai ki te marama tuatahi. Koirā te wāhi pou pou rawa o te rārangi kōpiko. E tohu ana tērā i te tino piki o te taumaha o te pēpi i taua marama.

Hoatu ētahi atu raraunga, ka tono ai i ngā ākonga kia whakaatu i ngā raraunga ki tētahi kauwhata rārangi. Whakawhitiwhiti kōrero mō te ia o ngā raraunga e kitea mai ana i te kōpiko o te rārangi. Hei tauira:

Koinei ngā paemahana toharite mō ia marama o te tau 2009 mō Taupō:

Marama	1	2	3	4	5	6	7	8	9	10	11	12
Paemahana	7	6	9	13	16	19	22	21	20	18	14	9

Koinei te tawhiti o te eke pahikara a Tamanui i ia 5 meneti i te roanga atu o tana haere:

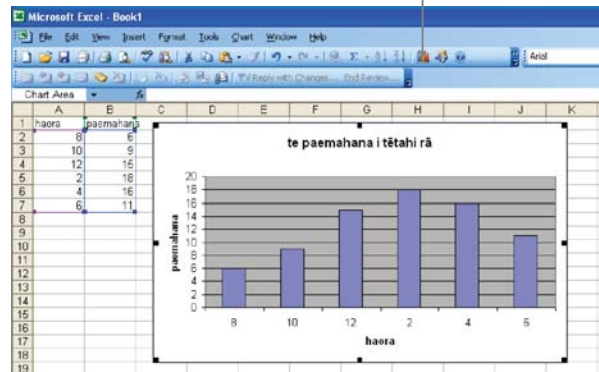
Meneti	5	10	15	20	25	30	35	40	45	50	55	60
Tawhiti (km)	2.5	5	7.3	9	10.8	12.5	14	15.4	16.8	18	19	20

	A	B	C	D
1	haora	paemahana		
2	8	6		
3	10	9		
4	12	15		
5	2	18		
6	4	16		
7	6	11		
8				

Tuhia te upoko kōrero 'paemahana' ki te wehenga B1 o te ripanga. Ki ngā wehenga o raro iho, tuhia ngā paemahana e hāngai ana ki ia haora.

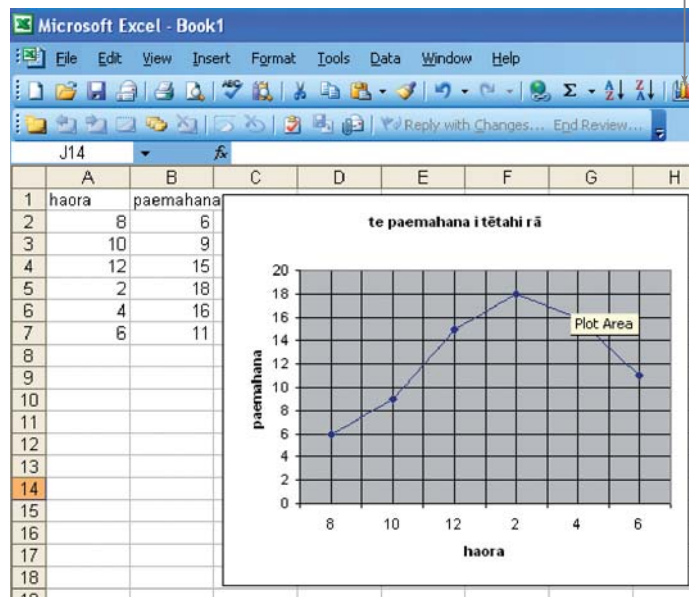
Pāwhiria te pūtohu mō te whakaputa kauwhata, ka whai ai i ngā tohutohu hei whakaputa i tētahi kauwhata pou:

te pūtohu hei whakaputa kauwhata



Kia pērā anō te mahi hei whakaputa kauwhata rārangi:

te pūtohu hei whakaputa kauwhata



Whakawhitiwhiti kōrero mō te momo kauwhata e tika ana mō ēnei momo raraunga.

Ki tōu whakaaro, ko tēhea te kauwhata e pai ake ana mō ēnei raraunga?

Ko te kauwhata rārangi, nā te mea e kitea ana ngā paemahana mō ngā haora kei waenganui i ērā o roto i te tūtohi.

Hoatu ētahi atu huinga raraunga hei whakauru mā ngā ākonga ki te ripanga rorohiko, hei whakaputa kauwhata.

Me whakawhitiwhiti kōrero mō te momo kauwhata e pai ana mō tēnā huinga raraunga, mō tēnā. Kei te **Whārangi Tārua 8** ētahi taurira huinga raraunga.

Tūhuratanga Tauanga 3a

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakatakoto pātai tauanga hei tūhura, ki te kohikohi, ki te whakaatu raraunga anō hoki.

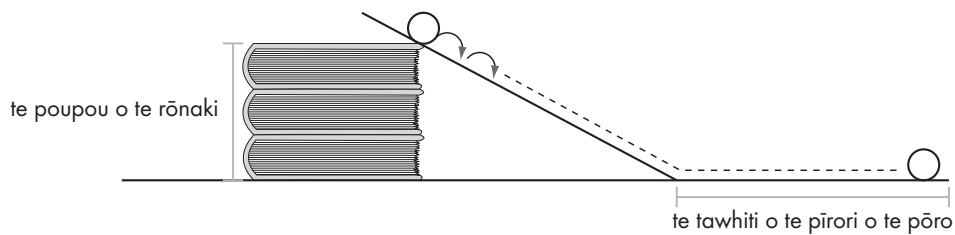
Kupu matua

kapa, pou, ripanga rorohiko, tūtohi

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākongā, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi, ki te kauwhata anō hoki. Me tuhi pūrongo mō te tūhuratanga, ka whakaatu ai ki te akomanga, me te arohaehae anō i ngā wāhanga katoa. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hapori.

1. Kei te hia mōhio a Hinerangi mō te roa o ngā ātaarangi i ngā haora katoa e whiti ana te Rā.
2. E tautohe ana a Māia rāua ko Hēmi mō te tawhiti o te pīrori o tētahi pōro tēnehi me tētahi poi whana i tētahi rōnaki.



3. E whakaaro ana te rūnanga whakahaere o te kura ki te hoko i ētahi pūrere whakamahana hou mō te akomanga. Kei te hia mōhio rātou i te rerekē o te paemahana i roto i te akomanga me te paemahana i waho i ngā haora katoa o te rā.
4. E tūhura ana a Tauihu i te tāroaroa o te tipu o tētahi kākano pīni i te roanga atu o tētahi marama.

Whanaketanga 3e

Mātauranga Matua kua Mau kē

Te Tau

- ngā rautaki whakarea
- ngā tau ā-ira (kia toru ngā mati ā-ira)

Te Tauanga

- te whakatakoto pātai tauanga hei tūhura; te kohikohi raraunga, te wehewehe, te whakaatu i ngā raraunga hei whakautu i te pātai
- te kohikohi, te whakaatu, te whakamārama raraunga ine, raraunga houanga hoki
- te whakauru raraunga ki tētahi ripanga rorohiko, me te whakaputa anō i ngā kauwhata e hāngai ana
- te whakamāori kauwhata rārangi, te whakaputa kōrero mō ngā ia, ngā tauira me ngā āhuatanga kōhure o roto i ngā raraunga
- te arohaehae i te āhua o te kohikohi me te whakaatu raraunga i tētahi tūhuratanga

Mātauranga Matua hei Ako

- te whakatakoto pātai tauanga hei tūhura, kia rua, nui ake rānei ngā rōpū me ngā taurangi hei tūhura
- te kohikohi, te wehewehe, te whakaatu hoki i ngā raraunga whakarōpū matatini ki ngā momo whakaari raraunga e hāngai ana hei whakautu i te pātai
- te whakamāori kauwhata pou hiato, kauwhata rautō, kauwhata rautō hiato, kauwhata porowhita hoki
- te whakaputa kōrero mō te āhua o tētahi huinga raraunga, pērā i ōna rāpoi, tōna hora, me tōna manei
- te arohaehae i te āhua o te kohikohi me te whakaatu raraunga i tētahi tūhuratanga tauanga
- te tikanga matatika kia noho matatapu ngā kaiuru o tētahi tūhuratanga tauanga

Rauemi kē atu e Hāngai ana

Ngā Kōwae Ako o nzmaths

- He Papa Raraunga 2
<http://www.nzmaths.co.nz/resource/he-papa-raraunga-2>
- Te Whakaari Raraunga
<http://www.nzmaths.co.nz/resource/te-whakaari-raraunga-0>

Ngā Rapanga o nzmaths

- Te Whakapakari mō te Omaoma
<http://www.nzmaths.co.nz/sites/default/files/TrainingMaori.pdf>

He Tau Anō te Tau

- *He Tau Anō te Tau: Te Tauanga: Putanga Hou.* Te Whanganui-a-Tara: Te Pou Taki Kōrero (2009).

Raraunga Whutupōro 2

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakaatu raraunga ki te tūtohi, ki te kauwhata pou hiato hoki.

Rauemi

- Whārangī Tārua 9

Kupu matua

kauwhata pou, kauwhata pou hiato, raraunga, tūtohi

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Whakaaturia te tūtohi me te tīmatanga o te kauwhata pou kei te Whārangī Tārua 9.</p> <p>Whakawhitiwhiti kōrero mō te tikanga o te kauwhata pou hiato hei whakaatu i ētahi rōpū raraunga e rua.</p>	<p>Titiro ki te tūtohi kei te Whārangī Tārua 9. E whakaatu ana te tūtohi i te aha?</p> <p>E whakaatu ana i ngā kaute o te tīma whutupōro o Awarahi me te kaute o te hoariri i roto i ngā kēmu tekau.</p> <p>Kei raro iho i te tūtohi te tīmatanga o tētahi kauwhata pou. E rua ngā pou e whakaaturia ana, he pango tētahi, he kiwikiwi tētahi. Ki tōu whakaaro, he aha te tikanga o aua pou?</p> <p>Ko aua pou e whakaatu ana i ngā kaute a te tīma o Awarahi me tā te hoariri i te kēmu tuatahi. Ko te pou pango hei whakaatu i te kaute a Awarahi, ko te pou kiwikiwi hei whakaatu i te kaute a te hoariri.</p> <p>Āe rā. E rua ngā rōpū raraunga e whakaaturia ana ki tēnei kauwhata pou. He aha aua rōpū raraunga?</p> <p>Ko ngā kaute a Awarahi me ngā kaute a te hoariri.</p> <p>Mēnā e rua ngā rōpū raraunga e whakaaturia ana ki te kauwhata pou kotahi, ka kīia he kauwhata pou hiato. Ko te kupu hiato e tohu ana i te whakaemīnga o ētahi mea ki te wāhi kotahi. Arā, ka whakaemīa ngā rōpū raraunga e rua ki te kauwhata kotahi.</p> <p>Mā koutou e whakaoti te kauwhata pou hiato.</p> <p>He aha te tikanga mēnā he teitei ake te pou pango i te pou kiwikiwi mō tētahi kēmu?</p> <p>E tohu ana tērā i toa te tīma o Awarahi i tērā kēmu nā te mea he nui ake te kaute i tā te hoariri.</p> <p>E hia ngā kēmu i toa te hoariri?</p> <p>Koia ko ngā kēmu he teitei ake te pou kiwikiwi. E whā ngā kēmu i toa te hoariri.</p>

	<p>He aha ētahi kōrero e kitea mai ana ki te kauwhata? I toa te hoariri i ngā kēmu e whā i te tuatahi. Mai i te kēmu tuarima i toa a Awarahi. Ko te 54 te kaute nui rawa o te tīma o Awarahi, ko te 5 te kaute iti rawa.</p> <p>He aha pea ētahi take i pērā ai? Ākene pea i whai hua te mahi whakapakari i te tīma. Ākene pea i uru mai tētahi tangata hou ki te whakapiki i te tīma, he waewae hohoro.</p>																																												
<p>Whakawhitiwhiti kōrero mō te kauwhata pou tuarua kei te Whārangi Tārua 9.</p>	<p>Titiro ki te kauwhata pou tuarua kei te Whārangi Tārua 9. He aha pea ki tōu whakaaro e whakaaturia ana ki ngā pou pango? Koia ko ngā kēmu i toa ai te hoariri, ko ngā kēmu tahi ki te 4.</p> <p>Pēhea nei te teitei o te pou pango tuatahi ki raro iho i te tuaka pae o te kauwhata? E hāngai ana ki te 2.</p> <p>E tohu ana tērā i te aha? Ko te teitei o te pou ki raro iho i te tuaka pae o te kauwhata e tohu ana i te huatango o te kaute o Awarahi me te kaute o te hoariri. Arā, te rahi i toa ai te hoariri.</p> <p>Pēhea ngā pou kiwikiwi, he aha te tikanga o ērā ki ōu whakaaro? Koia ko ngā kēmu i toa ai te tīma o Awarahi. Ko te teitei o ngā pou e tohu ana i te nui o te toa, arā, te nui ake o te kaute o Awarahi i te kaute o te hoariri.</p>																																												
<p>Tonoa ngā ākonga kia tāpiri i tētahi anō kapa ki te tūtohi hei whakaatu mēnā i toa a Awarahi, i toa rānei ko te hoariri.</p> <p>Me whakaatu hoki te huatango o te kaute o Awarahi me te kaute o te hoariri, arā, te nui ake o tētahi o ngā kaute i tētahi.</p>	<p>Me pēhea te whakaatu ki te tūtohi mēnā i toa a Awarahi, i toa rānei ko te hoariri? Mā te tāpiri i tētahi atu kapa ki te tūtohi. Ka whakamahia te ‘T’ mēnā i toa a Awarahi, ko te ‘H’ hei tohu i hinga kē a Awarahi:</p> <table border="1" data-bbox="679 1727 1342 1962"> <tr> <td>Kēmu</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> </tr> <tr> <td>Awarahi</td> <td>26</td> <td>5</td> <td>8</td> <td>15</td> <td>24</td> <td>19</td> <td>32</td> <td>41</td> <td>54</td> <td>38</td> </tr> <tr> <td>Hoariri</td> <td>28</td> <td>16</td> <td>35</td> <td>18</td> <td>19</td> <td>3</td> <td>24</td> <td>12</td> <td>27</td> <td>35</td> </tr> <tr> <td>Toa/Hinga</td> <td>H</td> <td>H</td> <td>H</td> <td>H</td> <td>T</td> <td>T</td> <td>T</td> <td>T</td> <td>T</td> <td>T</td> </tr> </table>	Kēmu	1	2	3	4	5	6	7	8	9	10	Awarahi	26	5	8	15	24	19	32	41	54	38	Hoariri	28	16	35	18	19	3	24	12	27	35	Toa/Hinga	H	H	H	H	T	T	T	T	T	T
Kēmu	1	2	3	4	5	6	7	8	9	10																																			
Awarahi	26	5	8	15	24	19	32	41	54	38																																			
Hoariri	28	16	35	18	19	3	24	12	27	35																																			
Toa/Hinga	H	H	H	H	T	T	T	T	T	T																																			

Tāpiria tētahi anō kapa hei whakaatu i te nui o te toa, o te hinga rānei o te tīma o Awarahi:

Kēmu	1	2	3	4	5	6	7	8	9	10
Awarahi	26	5	8	15	24	19	32	41	54	38
Hoariri	28	16	35	18	19	3	24	12	27	35
Toa/Hinga	H	H	H	H	T	T	T	T	T	T
Huatango	2	11	27	3	5	16	8	29	27	3

Kauwhata Rautō

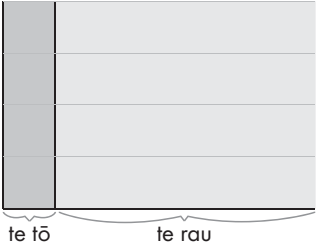
E ako ana ahau ki te whakaatu raraunga ki te kauwhata rautō, ki te kauwhata rautō hiato hoki.

Rauemi

- Whārangi Tārua 10

Kupu matua

kauwhata rautō, kauwhata rautō hiato, raraunga, tūtohi

Ngā tohutohu	He tauira kōrero mā te pouako																																																		
<p>Tirohia ngā raraunga me te kauwhata rautō kei te Whārangi Tārua 10.</p> <p>Whakawhitiwhiti kōrero mō te whakaatu i ēnei momo raraunga ki te kauwhata rautō, me te whakamāori anō i te kauwhata i runga i te hanga o ngā raraunga ki te kauwhata.</p>  <p>Ngā omanga kirikiti a Hone</p> <table border="1" data-bbox="244 1375 560 1895"> <tr><td>9</td><td>3</td><td></td><td></td><td></td></tr> <tr><td>8</td><td>4</td><td>5</td><td>9</td><td></td></tr> <tr><td>7</td><td>1</td><td></td><td></td><td></td></tr> <tr><td>6</td><td>7</td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td>2</td><td>4</td><td></td><td></td></tr> <tr><td>2</td><td>3</td><td>5</td><td>6</td><td></td></tr> <tr><td>1</td><td></td><td></td><td></td><td></td></tr> <tr><td>0</td><td>0</td><td>0</td><td>3</td><td>5</td></tr> </table>	9	3				8	4	5	9		7	1				6	7				5					4					3	2	4			2	3	5	6		1					0	0	0	3	5	<p>Ko ngā raraunga ka puta i ētahi kaupapa, he rārangitanga tau noa iho. Hei tauira, ko ngā omanga a tētahi tangata i roto i ana kēmu kirikiti:</p> <p>34, 25, 67, 89, 93, 84, 71, 5, 0, 0, 3, 26, 32, 23, 85</p> <p>Ko tētahi momo kauwhata e hāngai ana ki tēnei momo raraunga, ko te kauwhata rautō. Anei ngā whakamārama mō te hanga i tētahi kauwhata rautō.</p> <p>E rua ngā wāhanga o te kauwhata rautō – ko te tō me te rau.</p> <p>Ka whakaaturia tētahi wāhanga o ngā tau ki te tō o te kauwhata, ko tētahi ka whakaaturia ki te rau. I tēnei tauira o ngā omanga kirikiti, ka whakaaturia ngā tekau ki te tō, ko ngā tahi ki ngā rau.</p> <p>He aha tētahi atu āhuatanga o ngā tau kua tuhia ki te kauwhata rautō?</p> <p>Kua raupapahia ngā tau. Hei tauira, ko te 0, te 0, te 3 me te 5 o te rārangi ngahuru kore. Ko te 23, te 25 me te 26 o te ngahuru 2.</p> <p>Ko tētahi painga o te kauwhata rautō, ko te kitenga atu o te 'hanga' o ngā raraunga. Pēhea nei te hanga o ngā raraunga i tēnei o ngā kauwhata rautō?</p> <p>E toru ngā wāhi o te kauwhata e kitea ana ngā omanga a Hone. Ko tētahi ko ngā ngahuru kore, arā, ko ngā kēmu kāore i pai tana patu omanga. Ko tētahi ko ngā ngahuru 2 me ngā ngahuru 3, he āhua pai tana patu omanga.</p>
9	3																																																		
8	4	5	9																																																
7	1																																																		
6	7																																																		
5																																																			
4																																																			
3	2	4																																																	
2	3	5	6																																																
1																																																			
0	0	0	3	5																																															

Ngā omanga kirikiti a Hone

9	3				
8	4	5	9		
7	1				
6	7				
5					
4					
3	2	4			
2	3	5	6		
1					
0	0	0	3	5	

Ko tētahi wāhi ko ngā ngahuru o runga ake (o ngā 60, ngā 70, ngā 80 me ngā 90), he autai tonu tana patu omanga.

Āe rā. Ka kīia ērā wāhi e toru, ngā wāhi e rāpoi ana ngā raraunga. Ko te tikanga o te kupu rāpoi, ko te piri tata o ētahi mea. I konei e piri tata ana ngā raraunga ki ētahi wāhi e toru o te kauwhata.

Ko tētahi atu mea e kitea ana i te kauwhata, ko te piki me te heke o te patu omanga a Hone, arā, e manei ana ngā raraunga.

Aratakina ngā ākonga kia whakaatu raraunga ki te kauwhata rautō hiato.

Mēnā ka hiahia ki te whakatairite i ngā omanga kirikiti a Hone me ngā omanga a tōna hoa, ka tāpiria tētahi anō rau ki te taha mauī o te tō o te kauwhata. Ka tuhia te huinga raraunga tuarua ki reira:

Ngā omanga a Wi					Ngā omanga a Hone				
					9	3			
					8	4	5	9	
					7	1			
			1	0	6	7			
7	5	2	2	5					
8	6	5	3	4					
	4	1	0	3	2	4			
		7	5	2	3	5	6		
				1					
				0	0	0	3	5	

He aha ngā kōrero mō te patu omanga a Wi e kitea mai ana i te hanga o ngā raraunga ki te kauwhata rautō hiato nei? Kei waenganui i te 25 me te 61 ngā omanga a Wi. E rāpoi ana ngā raraunga ki te wāhi kotahi. Kāore ana kēmu he iti noa iho ana omanga, engari kāore hoki ana kēmu he tino nui ana omanga.

Hoatu he huinga raraunga hei whakaatu mā ngā ākonga ki te kauwhata rautō, ki te kauwhata rautō hiato rānei. Kei te **Whārangi Tārua 10** ētahi tauira.

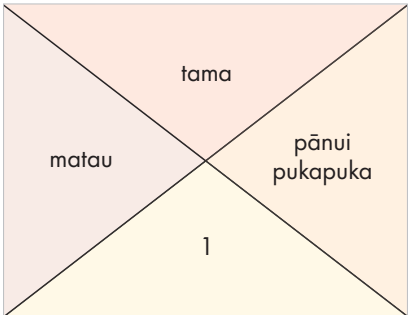
E ako ana ahau ki te kohikohi, ki te tūhura raraunga whakarōpū.

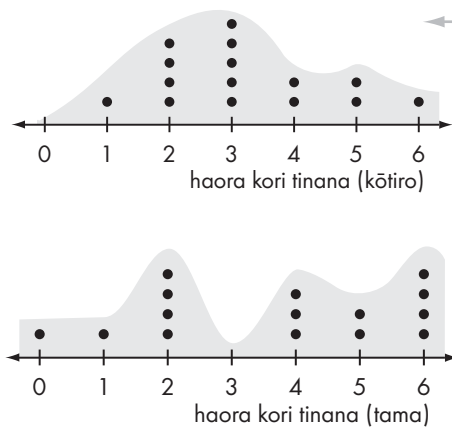
Rauemi

- Whārangi Tārua 11

Kupu matua

kauwhata, raraunga, tāpaetanga kōrero, tūtohi, whakapae

Ngā tohutohu	He tauira kōrero mā te pouako																								
<p>Hoatu ngā kāri kei te Whārangi Tārua 11, ka tono ai mā ngā ākonga e tapatapahi.</p> <p>Whakamāramatia te whakamahinga o te kāri hei whakautu mā tētahi rōpū i ētahi pātai e hāngai ana ki tētahi tūhuratanga tauanga.</p>  <p>Whakawhitiwhiti kōrero mō ngā momo whakarōpūtanga o ngā kāri.</p> <p>Tonoa ngā ākonga kia whakarōpū i ngā kāri hei whakautu i te tāpaetanga kōrero a Haki. Ka whakaaturia ngā raraunga ki te tūtohi, ki te kauwhata anō hoki.</p>	<p>I tukuna e Haki ētahi pātai e whā ki ngā tāngata o tōna kura. E whakapae ana ia he kaha ake te aro a ngā tama ki te hākinakina me te whakakori tinana i tā te hunga kōtiro aro.</p> <p>Koia nei āna pātai e whā:</p> <ul style="list-style-type: none"> • He tama, he kōtiro rānei koe? • E hia ō haora whakakori tinana, hākinakina rānei i ia wiki? • He aha te kaupapa ako e tino pai ana ki a koe i te kura? • He ringa matau koe, he ringa mauī rānei? <p>Ka tuhia ngā whakautu ki ngā pātai nei ki ētahi kāri. Anei te huinga kāri i whakahokia mai.</p> <p>E hia katoa ngā tāngata i whakautu i ngā pātai? E 30.</p> <p>He aha ētahi whakarōpūtanga mō ngā kāri?</p> <p>Hei tauira whakarōpūtanga:</p> <ul style="list-style-type: none"> • kōtiro/tama • ringa mauī/ringa matau • kaupapa ako i te kura e manakohia ana (toi, pūtaiao, pānui pukapuka, pāngarau, kori tinana, tikanga ā-iwi rānei) • haora kori tinana (0, 1, 2, 3, 4, 5, 6 rānei) <p>Me pēhea te whakautu i te whakapae a Haki?</p> <p>Me tuhi ngā haora whakakori tinana a te hunga kōtiro me te hunga tamatāne, kātahi ka whakaatu ki te kauwhata:</p> <table border="1" data-bbox="676 1839 1342 1989"> <thead> <tr> <th>Haora kori tinana i ia wiki</th> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Te maha o ngā kōtiro</td> <td>0</td> <td>1</td> <td>4</td> <td>5</td> <td>2</td> <td>2</td> <td>1</td> </tr> <tr> <td>Te maha o ngā tama</td> <td>1</td> <td>1</td> <td>4</td> <td>0</td> <td>3</td> <td>2</td> <td>4</td> </tr> </tbody> </table>	Haora kori tinana i ia wiki	0	1	2	3	4	5	6	Te maha o ngā kōtiro	0	1	4	5	2	2	1	Te maha o ngā tama	1	1	4	0	3	2	4
Haora kori tinana i ia wiki	0	1	2	3	4	5	6																		
Te maha o ngā kōtiro	0	1	4	5	2	2	1																		
Te maha o ngā tama	1	1	4	0	3	2	4																		



Ko te kauwhata ira pea tētahi whakaari raraunga e hāngai ana.

He aha te mea e whakaaturia ana ki te āhua o ngā kauwhata? Mō te hunga kōtiro, ko te nuinga kei waenganui o te kauwhata, arā, e whakakori tinana ana mō te 2, te 3 haora i te wiki. Tokoiti kei ia pito o te kauwhata. E rua ngā wehenga o te hunga tamatāne, ko tētahi kei te pito mauī o te kauwhata, he iti noa iho te kori tinana, ko tētahi wehenga kei te pito matau o te kauwhata, arā, he kaha te whakakori tinana.

Nō reira he aha te whakautu ki te whakapae a Haki?

He kaha ake te aro a tētahi wāhanga o te rōpū tamatāne ki te kori tinana i tā te kōtiro aro, engari he wāhanga tamatāne anō he ngoikore ake i te rōpū kōtiro.

Whakawhitiwhiti kōrero mō ētahi atu pātai e taea ana te tūhura mā te tiroiro i ngā kāri whakautu i ngā pātai e whā nei.

He aha ētahi atu pātai, ētahi atu whakapae kōrero rānei hei tūhura i ēnei kāri?

Hei tauira pātai/whakapae:

- He nui ake ngā kōtiro ringa mauī, he nui ake rānei ngā tamatāne?
- He kaha ake te aro ki te kori tinana a te hunga e manako ana i te pūtaiao i te hunga e manako ana i te toi.
- Ko te hunga ringa mauī e kaha ana te aro ki te kori tinana.
- He nui ake te hunga kōtiro e manako ana i te pānui pukapuka i te hunga tamatāne.

Tonoa ngā ākonga kia whakamahi i ngā kāri hei tūhura i tētahi o ngā pātai, me te whakaatu anō i ngā hua o te tūhuratanga.

Hei whakawhānui

Tukuna ngā pātai e whā o runga ake nei hei whakautu mā ngā ākonga o te kura, ka whakatairite ai i ngā whakautu ki ngā kāri o te **Whārangi Tārua 11**.

Kauwhata Porowhita

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakaatu raraunga ki te kauwhata porowhita.

Rauemi

- Whārangi Tārua 11 & 12
- He ripanga rorohiko

Kupu matua

kauwhata porowhita, raraunga, ripanga rorohiko, tāpaetanga kōrero, tūtohi, whakapae

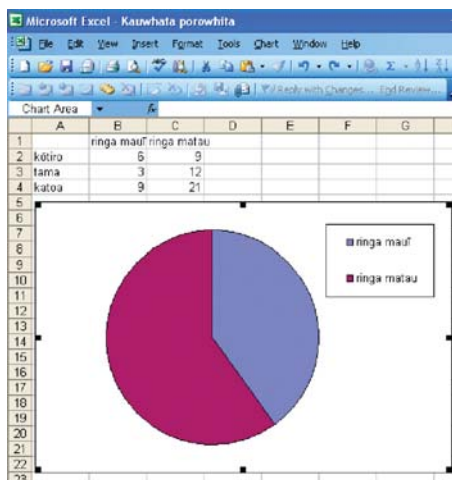
Ngā tohutohu	He tauira kōrero mā te pouako
Whakaaturia ngā kauwhata porowhita kei te Whārangi Tārua 12 , ka whakawhitiwhiti kōrero ai mō te āhua o te kauwhata me ngā kōrero o roto.	<p>Titiro ki te Whārangi Tārua 12, he momo kauwhata e whakaaturia ana. He aha te momo? He kauwhata porowhita.</p> <p>He aha te kaupapa e whakaaturia ana ki te kauwhata porowhita tuatahi? Ko te momo waka e haere ai te tangata ki te kura.</p> <p>Tokohia katoa ngā tāngata o roto i ngā raraunga o tēnei kauwhata? Kāore e whakaaturia ana te tokomaha.</p> <p>He aha kē te mea e whakaaturia ana? Ko te hautanga o ngā tāngata e haere ana mā runga i tēnā momo waka, i tēnā.</p> <p>He aha te hautanga e haere ana mā runga pahikara? Ko te hauwaru o ngā tāngata. Koirā te hautanga o te porowhita e hāngai ana ki te pahikara.</p> <p>Mēnā e 48 ngā tāngata katoa, tokohia e haere ana mā raro? Ko te hauwhā o te 48. Ko te 12 tērā.</p>
Kia pērā anō ngā whakawhitiwhiti kōrero mō ērā atu o ngā kauwhata porowhita.	
Titiro anō ki ngā kāri raraunga kei te Whārangi Tārua 11 , ka tono ai i ngā ākongā kia whakaatu i ētahi o ngā raraunga ki te kauwhata porowhita.	Kia hoki tātou ki te kohikohinga raraunga e pā ana ki ngā haora kori tinana me te kaupapa ako i te kura e manakohia ana. Ko te hautanga o ngā ringa mauī me ngā ringa matau tētahi āhuatanga o ngā raraunga e taea ana te whakaatu ki te kauwhata porowhita.

	A	B	C	D
1		ringa mauī	ringa matau	
2	kōtiro	6	9	
3	tama	3	12	
4	katoa	9	21	

Huakina te ripanga rorohiko. Tuhia te maha o ngā ringa mauī me ngā ringa matau ki ētahi pou o te ripanga. E pai ana kia wehea ki ngā kōtiro me ngā tama.

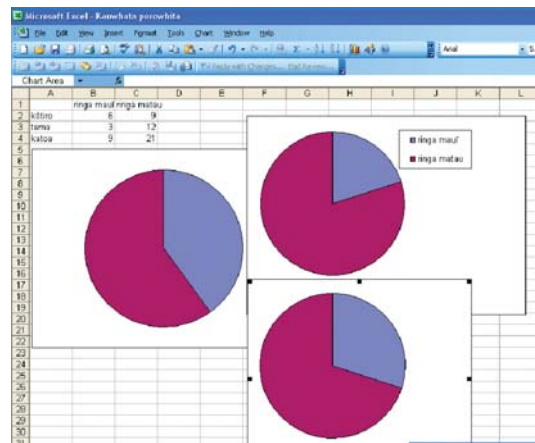
Kōwhiria ngā upoko o ngā pou me te tokomaha o ngā kōtiro:

	A	B	C	D
1		ringa mauī	ringa matau	
2	kōtiro	6	9	
3	tama	3	12	
4	katoa	9	21	



Pāwhiria te pūtohu mō te whakaputa kauwhata, ka whai ai i ngā tohutohu hei whakaputa kauwhata porowhita.

Kia pērā anō te mahi hei whakaputa kauwhata e whakaatu ana i te hautanga ringa mauī/ringa matau o ngā tama, me tētahi anō kauwhata mō te katoa o ngā tāngata:



He aha te mea e mārā ana te kitea i roto i ngā kauwhata? He nui ake te hautanga ringa mauī o ngā kōtiro i te hautanga ringa mauī o ngā tama.

Tonoa ngā ākonga kia tūhura i ngā kāri raraunga, ka whakaaro ai i ētahi atu kaupapa hei whakaatu ki te kauwhata porowhita.

He aha ētahi atu o ngā kaupapa o roto i ngā kāri raraunga e taea ana te whakaatu ki te kauwhata porowhita?

- Ko te hautanga o ngā kōtiro me te hautanga o ngā tama.
- Ko te hautanga e manakohia ana i tēnā kaupapa ako, i tēnā kaupapa ako.
- Ko te hautanga o ngā ākonga me ngā haora kori tinana.

Māu e whakaatu tētahi o ēnei kaupapa ki te kauwhata porowhita.

Tūhuratanga Tauanga 3e

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakatakoto pātai tauanga hei tūhura, ki te kohikohi, ki te whakaatu raraunga anō hoki.

Kupu matua

kauwhata, kohikohi raraunga, raraunga, ripanga rorohiko, tūtohi

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākonga, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi, ki te kauwhata anō hoki. Me tuhi pūrongo mō te tūhuratanga, ka whakaatu ai ki te akomanga, me te arohaehae anō i ngā wāhanga katoa. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hapori.

1. E whakapae ana a Hone ko te toa hākinakina te tangata rongonui e tino manakohia ana e te hunga tamatāne, kāore i te pērā rawa tā hunga kōtiro manako i te toa hākinakina.
2. Kei te hia mōhio te tumuaki o te kura i te maha o ngā haora mātakitaki pouaka whakaata i ia rā o ngā ākonga o tēnā akomanga, o tēnā akomanga o te kura.
3. Kei te hia mōhio te rūnanga whakahaere o te kura i ngā momo hākinakina e manakohia ana e te hunga kōtiro, e te hunga tamatāne, e ngā tuākana me ngā tāina o te kura.
4. E tautohe ana a Māka rāua ko Hinerangi he pai ake te huarere o Tūranganui ā-Kiwa i te huarere o Kaikōura. Ka tīkina atu he raraunga i te pae ipurangi a Tāihoro Nukurangi (NIWA):
<http://www.niwa.co.nz/education-and-training/schools/resources/climate>

Whanaketanga 4a

Mātauranga Matua kua Mau kē

Te Tau

- te whakaawhiwhi tau
- te ōrau me ngā ōwehenga māmā
- ngā hautau ōrite

Te Tauanga

- te whakatakoto pātai tauanga hei tūhura, kia rua, nui ake rānei ngā rōpū me ngā taurangi hei tūhura
- te kohikohi, te wehewehe, te whakaatu hoki i ngā raraunga whakarōpū matatini ki ngā momo whakaari raraunga e hāngai ana, hei whakautu i te pātai
- te whakamāori kauwhata pou hiato, kauwhata rautō, kauwhata rautō hiato, kauwhata porowhita hoki
- te whakaputa kōrero mō te āhua o tētahi huinga raraunga, pērā i ōna rāpoi, tōna hora, me tōna manei
- te arohaehae i te āhua o te kohikohi me te whakaatu raraunga i tētahi tūhuratanga
- te tikanga matatika kia noho matatapu ngā kaiuru o tētahi tūhuratanga tauanga

Mātauranga Matua hei Ako

- te whakatakoto pātai tauanga, tāpaetanga kōrero rānei, hei tūhura, hei whakatairite i ētahi huinga raraunga e rua
- te whiriwhiri i ngā taurangi me te huarahi kohikohi raraunga e hāngai ana mō tētahi tūhuratanga tauanga; te kohikohi, te wehewehe, te tūhura, te whakaatu i ngā raraunga hei whakautu i te pātai, hei taunaki rānei i te tāpaetanga kōrero
- te tātai tauanga mō tētahi huinga raraunga, pērā i te toharite, te tau waenga me te tau tānui, ā, ka whakamahia ēnei hei whakaputa kōrero mō te āhua o taua huinga raraunga
- ngā momo whakaari e kitea ai te hora o ngā raraunga e whakaaturia ana
- te whakamāori kauwhata pou whakaapaapa
- te arohaehae tūhuratanga tauanga

Rauemi kē atu e Hāngai ana

Ngā Kōwae Ako o nzmaths

- Ripanga Kapa Haka
<http://www.nzmaths.co.nz/resource/ripanga-kapa-haka>
- Wā Toharite
<http://www.nzmaths.co.nz/resource/w-toharite>

Ngā Rapanga o nzmaths

- Te Hoko Pōtae
<http://www.nzmaths.co.nz/sites/default/files/BBallMaori.pdf>

He Tau Anō te Tau

- *He Tau Anō te Tau: Te Tauanga: Putanga Hou.* Te Whanganui-ā-Tara: Te Pou Taki Kōrero (2009).

Kauwhata Pou Whakaapaapa

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau ki te whakaatu raraunga ki te kauwhata pou whakaapaapa.

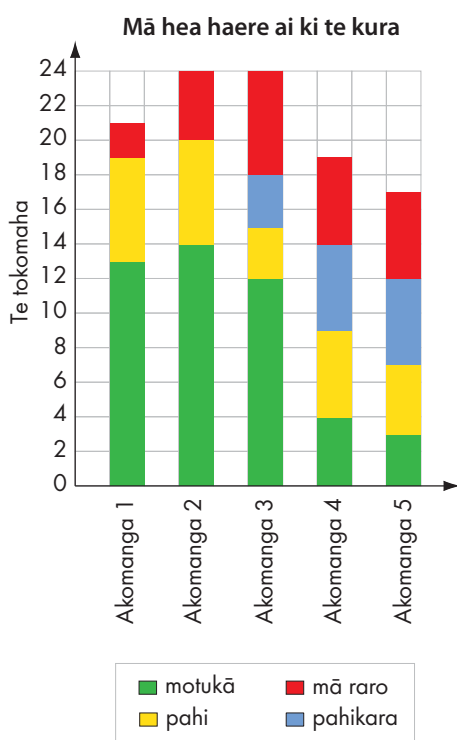
Rauemi

- Whārangi Tārua 13
- He ripanga rorohiko

Kupu matua

huinga raraunga, kauwhata pou whakaapaapa, kauwhata tāhei, ripanga rorohiko

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Tuhia he kauwhata tāhei ki te papa tuhituhi, ka whakawhitiwhiti kōrero ai mō ōna āhuatanga.</p>	<p>He mea kohikohi mai ētahi raraunga mai i ngā akomanga e rima o te kura, e pā ana ki te momo waka e haere ai ngā ākonga ki te kura.</p> <p>Koinei te kauwhata e whakaatu ana i ngā raraunga o tētahi o ngā akomanga:</p>  <p>■ motukā ■ mā raro ■ pahi ■ pahikara</p> <p>Ka kīia tēnei momo, he kauwhata tāhei. E whakaaturia ana ngā wehenga o ngā raraunga ki tētahi tāhei. He aha ētahi o ngā kōrero o roto i te kauwhata?</p> <p>Ko te haurua o ngā ākonga e haere ana mā runga motukā. Ko te hauwhā e haere ana mā raro. Ko te hauwaru mā runga pahi, he hauwaru anō mā runga pahikara.</p> <p>Mēnā e 24 ngā ākonga o te akomanga, tokohia e haere ana mā runga pahikara?</p> <p>Ko te hauwaru o te 24, arā, ko te toru tērā.</p> <p>Ki tōu whakaaro, kei hea pea tēnei kura?</p> <p>Ākene pea kei te tāone nui, nā te mea he nui te hautanga e haere ana mā raro, mā runga motukā rānei.</p>
<p>Tirohia te kauwhata pou whakaapaapa kei te Whārangi Tārua 13, ka whakawhitiwhiti kōrero ai.</p>	<p>Kei te Whārangi Tārua 13 tētahi kauwhata e whakaatu ana i ngā akomanga katoa me te momo waka e haere ai ngā ākonga ki te kura.</p>



Pēhea nei te āhua o te whakaatu i ngā raraunga ki tēnei kauwhata?

He pou hei whakaatu i ngā raraunga mō ia akomanga. Kua wehea ia pou hei whakaatu i ngā momo waka e haere ai ngā tamariki o tēnā akomanga, o tēnā akomanga. Arā, ko te wehenga kākārīki e whakaatu ana i te hautanga o ngā ākongā e haere ana mā runga motukā, ko te wehenga kōwhai e hāngai ana ki te hautanga e haere ana mā runga pahi. Ko te wehenga kahurangi mō te hautanga e pahikara ana, ā, ko te wehenga whero te hunga e haere ana mā raro.

Ka kīia tēnei momo kauwhata, he kauwhata pou whakaapaapa. Ko te tikanga o te kupu whakaapaapa, ko te whakaputu haere i ētahi mea, tētahi ki runga i tētahi. Ko ia pou e rite ana ki te kauwhata tāhei.

Ki tōu whakaaro, ko ēhea ngā akomanga o ngā tuākana o te kura, ko ēhea ngā akomanga o ngā tāina?

Ko te Akomanga 1 me te 2 ngā tāina, nā te mea karekau he mea e haere ana mā runga pahikara. He nui ake te hautanga o te Akomanga 4 me te 5 e haere ana mā runga pahikara, nō reira ko ērā pea ngā akomanga o ngā tuākana.

Tokohia katoa ngā ākongā o te kura nei?

Whiriwhiria te teitei o ngā pou o ia akomanga, ka tāpiri ai. Arā, $21 + 24 + 24 + 19 + 17$, ka 105.

Tonoa ngā ākongā kia whakauru i ngā raraunga kei te **Whārangi Tārua 13** ki te ripanga rorohiko, ka whakaputa ai i tētahi kauwhata whakaapaapa.

Kei te **Whārangi Tārua 13** ētahi huinga raraunga. Ko tāu mahi, he whakauru i ngā raraunga ki te ripanga rorohiko, kātahi ka whakaputa kauwhata whakaapaapa.

Te Toharite

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau i te tikanga o te toharite, me te tātai i te toharite o tētahi huinga raraunga.

Rauemi

- He tātai

Kupu matua

huinga raraunga, tapeke, toharite

Ngā tohutohu	He tauira kōrero mā te pouako																					
Whakawhitiwhiti kōrero mō tētahi horopaki e whai wāhi mai ana te toharite, ka whakamārama ai i tōna tikanga.	<p>Koinei ngā māka a ētahi kaiwhakawā e toru o tētahi whakataetae kapa haka, he māka o roto i te 10: 5, 8, 8</p> <p>He aha te māka whakamutunga hei hoatu ki tēnei kapa? He māka kei waenganui i te 5 me te 8. Kia pātata atu ki te 8 nā te mea e rua ngā 8, kotahi anake te 5.</p> <p>Ka tika. Ka tātaihia te māka toharite, he māka kei waenganui o ngā māka e toru katoa. Ka tāpirihia ngā māka katoa, ā, ka tohaina anō ki ia kaiwhakawā, kia ōrite ngā māka a tēnā me tēnā. Arā:</p> $5 + 8 + 8 = 21 \text{ (te tapeke o ngā māka katoa)}$ $21 \div 3 = 7 \text{ (ka tohaina kia ōrite ngā māka a ngā kaiwhakawā tokotoru)}$ <p>Nō reira, ko te 7 te toharite o ngā māka, koia te māka me hoatu ki te kapa haka nei.</p>																					
<p>1. Tukuna he horopaki hei tātai mā ngā ākonga i te toharite o ētahi huinga raraunga. Hei tauira: Mēnā e 5 ngā kaiwhakawā kapa haka, ā, koinei ā rātou māka, e hia te māka toharite hei hoatu ki te kapa? 5, 8, 8, 5, 4</p> <p>2. I te whakataetae whiu pōro a Roimata rāua ko Hinewai. E 6 ngā whiunga a tēnā me tēnā. E hia mīta te toharite o te tawhiti o te whiu pōro a tēnā me tēnā? He aha ētahi atu kōrero mō te whiu pōro a te tokorua nei?</p> <table border="1" data-bbox="220 1579 1248 1715"> <thead> <tr> <th></th> <th>Whiunga 1</th> <th>Whiunga 2</th> <th>Whiunga 3</th> <th>Whiunga 4</th> <th>Whiunga 5</th> <th>Whiunga 6</th> </tr> </thead> <tbody> <tr> <td>Roimata</td> <td>23m</td> <td>25m</td> <td>26m</td> <td>27m</td> <td>28m</td> <td>30m</td> </tr> <tr> <td>Hinewai</td> <td>16m</td> <td>32m</td> <td>18m</td> <td>28m</td> <td>35m</td> <td>39m</td> </tr> </tbody> </table> <p>3. Koinei ngā omanga kirikiti i riro i a Hema i ana kēmu kirikiti e 8 i tētahi tau. E hia te toharite o ana omanga? 52, 28, 8, 65, 14, 0, 3, 36</p> <p>4. Koinei ngā tāwhitiwhiti mai i ngā kāinga o tētahi rōpū tamariki ki te kura. E hia manomita te tawhiti toharite? 1.3, 1.8, 5.0, 2.8, 0.5, 0.3, 1.8, 4.6, 3.1, 1.3</p>		Whiunga 1	Whiunga 2	Whiunga 3	Whiunga 4	Whiunga 5	Whiunga 6	Roimata	23m	25m	26m	27m	28m	30m	Hinewai	16m	32m	18m	28m	35m	39m	
	Whiunga 1	Whiunga 2	Whiunga 3	Whiunga 4	Whiunga 5	Whiunga 6																
Roimata	23m	25m	26m	27m	28m	30m																
Hinewai	16m	32m	18m	28m	35m	39m																
<h3>Hei whakawhānui</h3> <p>Tirohia te tātaianga toharite o tētahi huinga raraunga kua tuhia ki te ripanga rorohiko.</p>																						

Te Tau Waenga

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau i te tikanga o te tau waenga, me te tātai i te tau waenga o tētahi huinga raraunga.

Rauemi

- He tātai

Kupu matua

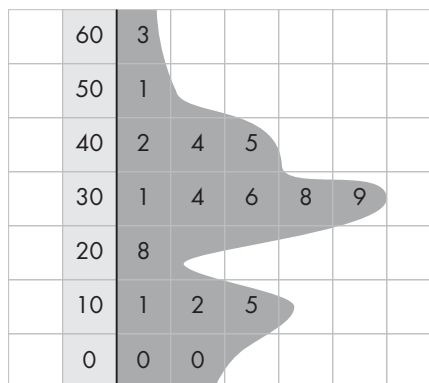
huinga raraunga, inenga whānui, tau waenga

Ngā tohutohu	He tauira kōrero mā te pouako																																			
<p>Whakawhitiwhiti kōrero mō ngā horopaki e whai wāhi mai ana te tau waenga me te inenga whānui o tētahi huinga raraunga.</p>	<p>Koinei ngā omanga kirikiti i riro i a Raniera i ana kēmu 11 i tētahi tau: 45, 23, 42, 68, 36, 33, 52, 56, 47, 45, 18</p> <p>Ko tētahi mea nui hei tiroiro i tētahi huinga raraunga pēnei i tēnei, ko te ‘hanga’ o ngā raraunga. E tino kitea ana te hanga o ngā raraunga ina whakaaturia ki te kauwhata rautō:</p> <div data-bbox="890 958 1273 1384" data-label="Figure"> <p style="text-align: center;">Ngā omanga a Raniera</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>70</td><td></td><td></td><td></td><td></td></tr> <tr><td>60</td><td>8</td><td></td><td></td><td></td></tr> <tr><td>50</td><td>2</td><td>6</td><td></td><td></td></tr> <tr><td>40</td><td>2</td><td>5</td><td>5</td><td>7</td></tr> <tr><td>30</td><td>3</td><td>6</td><td></td><td></td></tr> <tr><td>20</td><td>3</td><td></td><td></td><td></td></tr> <tr><td>10</td><td>8</td><td></td><td></td><td></td></tr> </table> </div> <p>Pēhea nei te hanga o tēnei huinga raraunga? Ko te nuinga o ngā omanga kei waenganui, he ruarua noa iho ngā wā he maha, he iti rānei ngā omanga.</p> <p>Koia. Kei waenganui i te 18 me te 68 ana omanga katoa. Ka kīia tērā ko te inenga whānui o ngā raraunga – mai i te 18 ki te 68.</p> <p>Ko te tau waenga o ngā omanga kirikiti a Raniera, koirā te mea kei waenganui o ana omanga katoa. Ina raupapahia ngā omanga mai i te iti ki te rahi, he māmā te kitea atu o te tau waenga: 18, 23, 33, 36, 42, 45, 45, 47, 52, 56, 68</p> <p>E rima ngā omanga kei raro iho i te 45, e rima anō kei runga ake, nō reira ko te 45 te tau waenga o ngā omanga a Raniera.</p> <p>Kei hea te wāhi o te tau waenga o ngā omanga i te kauwhata rautō?</p>	70					60	8				50	2	6			40	2	5	5	7	30	3	6			20	3				10	8			
70																																				
60	8																																			
50	2	6																																		
40	2	5	5	7																																
30	3	6																																		
20	3																																			
10	8																																			

Whakawhitiwhiti kōrero mō te putanga mai o ētahi tau waenga e rua mō tētahi huinga raraunga.

Anei anō tētahi horopaki. Ko te maha o ngā āporo i kohia mai i ētahi rākau 16 i tētahi rangi:

Ngā āporo i kohia i ngā rākau 16



He aha te tau waenga o ngā āporo i kohia i ēnei rākau 16? Ko te 36 me te 38 ngā tau kei waenganui – e 7 ngā tau kei raro iho i te 36, e 7 kei runga ake i te 38.

Nō reira ka tātaihia te tau kei waenganui i te 36 me te 38 – koirā te tau waenga o ngā āporo, arā, ko te 37.

E hoki ki te tiroiro i ngā horopaki o te akoranga o mua (e pā ana ki te toharite), ka tono ai i ngā ākonga kia tātai i te inenga whānui o ngā raraunga me te tau waenga.

1. Ngā māka a ngā kaiwhakawā kapa haka e rima: 5, 8, 8, 5, 4
2. Te tawhiti o te whiunga pōro a Roimata rāua ko Hinewai:

	Whiunga 1	Whiunga 2	Whiunga 3	Whiunga 4	Whiunga 5	Whiunga 6
Roimata	23	25	26	27	28	30
Hinewai	16	32	18	28	35	39

3. Ngā omanga kirikiti i riro i a Hema i ana kēmu kirikiti e 8 i tētahi tau: 52, 28, 8, 65, 14, 0, 3, 36
4. Ngā tāwhitiwhiti mai i ngā kāinga o tētahi rōpū tamariki ki te kura:
1.3, 1.8, 5.0, 2.8, 0.5, 0.3, 1.8, 4.6, 3.1, 1.3

Te Tau Tānui

1a	1e	2a	2e	3a	3e	4a	4e	5a
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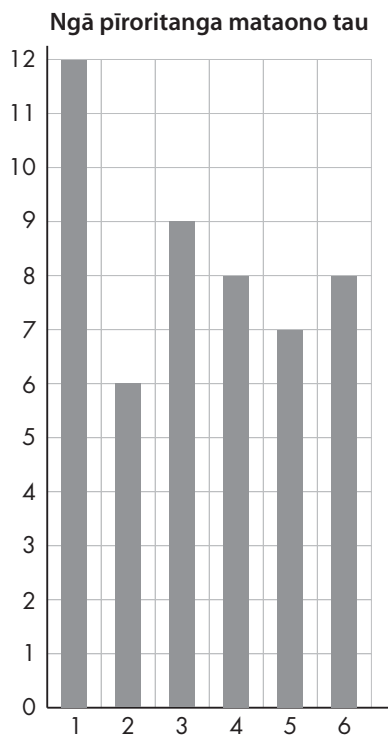
E ako ana ahau ki te tikanga o te tau tānui o tētahi huinga raraunga.

Kupu matua

hora raraunga, huinga raraunga, inenga whānui, tau tānui

Ngā tohutohu

Whakawhitiwhiti kōrero mō ngā horopaki e whai wāhi mai ana te tau tānui o tētahi huinga raraunga.



He tauira kōrero mā te pouako

Koinei ngā putanga o ngā pīroritanga 50 a Tama i tētahi mataono tau:

Putanga	1	2	3	4	5	6
Te maha	⋈⋈⋈ ⋈⋈ ⋈⋈	⋈⋈ ⋈	⋈⋈ ⋈⋈⋈	⋈⋈ ⋈⋈	⋈⋈ ⋈⋈	⋈⋈ ⋈⋈

Ko tēhea te tau he maha rawa ngā putanga?

Ko te tahi – koia te tau waimarie i ēnei pīroritanga 50.

Ka kīia tērā ko te tau tānui o ēnei raraunga. Ina whakaaturia ki te kauwhata pou, koirā te pou teitei rawa.

Tirohia ētahi atu horopaki e whai wāhi mai ana te tau tānui. Hei tauira:

1. Ka tuhia e te kaiwhakahaere o te toa kai o te kura te maha o ngā hua rākau i hokona i te roanga atu o tētahi wiki:

Te hua rākau	ārani	āporo	panana	netarīni	pītiti	pea
Te maha i hokona	35	73	54	45	36	17

- a) He aha te tau tānui o ngā hua rākau?

Ko te āporo. E 73 o ērā i hokona.

- e) He aha te āwhina a te tau tānui i te kaiwhakahaere o tēnei toa?

E mōhio ana ia kia maha rawa ngā āporo hei tonono māna nā te mea koia te hua rākau e tino hokona ana e ngā ākongā o te kura.

2. Koinei ngā tapeke hahau pōro a ētahi tāngata tokorua i roto i ā rāua kēmu 10:

	Kēmu 1	Kēmu 2	Kēmu 3	Kēmu 4	Kēmu 5	Kēmu 6	Kēmu 7	Kēmu 8	Kēmu 9	Kēmu 10
Hata	46	47	46	44	46	48	48	47	46	45
Tema	42	49	43	44	52	45	50	43	52	46

a) He aha te tau tānui o ia tangata?

Ko te 46 te tau tānui a Hata – e 4 ngā kēmu ko te 46 tana tapeke. Ko te 43 te tau tānui a Tema – e rua ngā kēmu koirā tana tapeke.

e) He aha tētahi kōrero matua hei whakatairite i ngā ringa hahau pōro tokorua nei?

He āhua pūmau ngā tapeke hahau pōro a Hata, kāore i tino rerekē tētahi i tētahi, waihoki kāore i tino rahi te inenga whānui – mai i te 44 ki te 48. E whā ngā putanga o tana tau tānui (te 46). Engari a Tema, ka piki, ka heke ana tapeke, e rua noa iho ngā putanga o te tau tānui (te 43), ā, he āhua rahi tonu tana inenga whānui – mai i te 42 ki te 52.

3. Koinei ngā tāwhitiwhiti mai i ngā kāinga o tētahi rōpū tamariki ki te kura (manomita - km):
1.3, 1.8, 5.0, 1.8, 0.5, 0.3, 1.8, 6.6, 10, 1.3

a) He aha te tau tānui o ngā tāwhitiwhiti?

Ko te 1.8km manomita. E toru ngā tamariki ko te 1.8km te tawhiti mai i ō rātou kāinga ki te kura.

e) He aha te toharite o ngā tāwhitiwhiti?

Tāpiria ngā tāwhitiwhiti katoa, ko te 30.4km. Whakawehea ki te 10 nā te mea tekau ngā tamariki. Ko te 3.04km te tawhiti toharite.

i) He aha te tau waenga o ngā tāwhitiwhiti?

Ko te 1.8km te tau waenga.

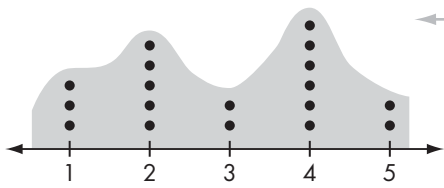
h) Ko te toharite, te tau waenga, te tau tānui rānei te tātaitanga pai hei whakaatu i te tawhiti o tēnei rōpū tamariki i tō rātou kura?

Ko te tau waenga pea, nā te mea ko te nuinga o ngā tāwhitiwhiti kei raro iho i te 1.8km, e toru anake ngā tamariki he tawhiti ake i tēnei. He nui rawa te toharite hei whakaata i tēnei huinga tamariki.

E ako ana ahau ki te whakamahi āwhata hei kohikohi mai i ngā whakaaro o tētahi rōpū tāngata.

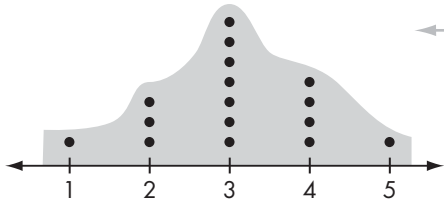
Kupu matua
āwhata, tāpaetanga kōrero

Ngā tohutohu	He tauira kōrero mā te pouako																								
<p>Whakahaerehia tētahi kohikohinga whakaaro o te akomanga e hāngai ana ki tētahi kaupapa o te wā.</p> <p>Whakawhitiwhiti kōrero mō te whakamahinga o tētahi āwhata hei whakaatu i ngā whakaaro o tētahi tangata. Hei tauira:</p> <p style="text-align: center;">Me whakapiki te pakeke mō te taraiwa motukā ki te 18.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;">tino tautoko</td> <td></td> <td style="text-align: center;">rangirua</td> <td style="text-align: center;">whakahē</td> <td style="text-align: center;">tino whakahē</td> </tr> </table>	1	2	3	4	5						tino tautoko		rangirua	whakahē	tino whakahē	<p>Kua oti ā tātou tiro tiro, ā tātou whakawhitiwhiti whakaaro mō te pakeke e āhei ai te tangata ki te taraiwa motukā. Anei tētahi kāri hei tuhi māu, hei kohikohi māku i ō koutou whakaaro mō te tāpaetanga kōrero nei ‘Me whakapiki te pakeke mō te taraiwa motukā ki te 18’.</p> <p>E kitea ana i te kāri tētahi rārangi me ngā wāhi e rima e tohua ana. He aha tērā?</p> <p>He momo āwhata hei tautohu mā te tangata i ōna whakaaro ki te tāpaetanga kōrero.</p> <p>Āe rā. Ko tāu mahi he porowhita i tētahi o ngā tau, mai i te 1 ki te 5 hei whakaatu mai i ō whakaaro. Kāore he wāhi hei tuhi i tō ingoa, nō reira kia kohia mai ngā kāri kāore e mōhioitia nā wai tētahi kāri. Arā, ka noho matatapu ō whakaaro ki a koe i tēnei momo kohikohinga. He pērā anō ngā pōti kāwanatanga, ka noho matatapu tō pōti.</p> <p>Tēnā porowhitatia te tau e hāngai ana ki ōu whakaaro. Māku e kohikohi.</p>									
1	2	3	4	5																					
tino tautoko		rangirua	whakahē	tino whakahē																					
<p>Whakaaturia ngā raraunga ki tētahi tūtohi, ka whakawhitiwhiti kōrero ai.</p>	<p>Ko tāku mahi, he tatau i te maha o ngā tāngata e tohu ana i ia wāhi o te āwhata. Anei ngā hua:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th colspan="5">Me whakapiki te pakeke mō te taraiwa motukā ki te 18</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> <tr> <th></th> <th>tino tautoko</th> <th>tautoko</th> <th>rangirua</th> <th>whakahē</th> <th>tino whakahē</th> </tr> </thead> <tbody> <tr> <td>Tokomaha</td> <td>3</td> <td>5</td> <td>2</td> <td>6</td> <td>2</td> </tr> </tbody> </table> <p>Tokohia katoa ngā tāngata i whai wāhi mai ki tēnei kohikohinga whakaaro?</p> <p>Tekau mā waru – koirā te tapeke o ngā kāri katoa.</p> <p>Whakaaturia te tokomaha o ia whakaaro ki tētahi kauwhata ira.</p>		Me whakapiki te pakeke mō te taraiwa motukā ki te 18						1	2	3	4	5		tino tautoko	tautoko	rangirua	whakahē	tino whakahē	Tokomaha	3	5	2	6	2
	Me whakapiki te pakeke mō te taraiwa motukā ki te 18																								
	1	2	3	4	5																				
	tino tautoko	tautoko	rangirua	whakahē	tino whakahē																				
Tokomaha	3	5	2	6	2																				



Pēhea nei te hanga o te kauwhata? He aha te mea e tino kitea ana?

E rua ngā tino rōpū – ko te hunga e whakaae ana, ko te hunga e whakahē ana, kāore i te tokomaha ngā mea o waenganui, arā, te hunga kāore i te tautoko, i te whakahē rānei.



Mēnā i pēnei te hanga o te kauwhata, he aha kē te tino kōrero?

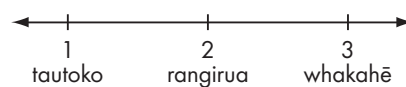
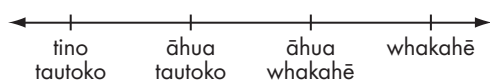
Kāore te rōpū nei i te tino whakaae, i te tino whakahē rānei i te tāpaetanga kōrero, arā, e noho ana te nuinga ki waenganui.

Tukuna mā ia ākonga e kohikohi ngā whakaaro o ētahi tāngata 20 mō te tāpaetanga kōrero nei mō te taraiwa motukā, ka whakaatu ai ki te kauwhata. Anei ētahi whakaaro mō tēnei tūhuratanga:

- Tuhia he wāhi ki ia kāri hei whakaatu mā te kaiwhakautu mēnā he wahine, he tāne rānei ia, mēnā kei runga ake i te 20 te pakeke, kei raro iho rānei. Mā konei e taea ai ētahi whakatairitenga ā-rōpū.
- Whakamātauria ētahi momo kauwhata rerekē hei whakaatu i ngā raraunga, hei whakatairite i ngā rōpū. Whakawhitiwhiti kōrero mō te momo kauwhata e tino whaihua ana.
- Whakaemia ngā raraunga i kohia mai e tēnā me tēnā o ngā ākonga. Whakawhitiwhiti kōrero mō te ōrite, te rerekē rānei o tēnei whakaeminga raraunga, me ngā raraunga a te ākonga takitahi.
- Whakawhitiwhiti kōrero mō te tāpaetanga kōrero e pā ana ki ēnei raraunga e mea ana 'koirā ngā whakaaro o Aotearoa whānui mō tēnei take'.

Hei whakawhānui

Tonoa ngā ākonga kia kohikohi mai i ngā whakaaro mō tētahi atu take o te wā, me te whakamātau i ētahi atu āwhata, pēnā e whā ngā tauwhata, e toru rānei ngā tauwhata:



Hei tauira o ētahi tāpaetanga kōrero hei kohikohi whakaaro mai:

- Me ako te reo Māori ki ngā kura katoa o Aotearoa.
- Me whakaae te patunga tamariki e ō rātou mātua.
- Me whakakore te hoko hikareti i Aotearoa.

E ako ana ahau ki te whakahaere tūhuratanga tauanga me te arohaehae anō i ōna wāhanga katoa.

Kupu matua

kauwhata, kohikohi raraunga, raraunga, ripanga rorohiko, tūtohi

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākonga, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi, ki te kauwhata anō hoki. Me tuhi pūrongo mō te tūhuratanga, ka whakaatu ai ki te akomanga, me te arohaehae anō i ngā wāhanga katoa. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hapori.

1. E whakapae ana a Hīria, he toa ake ngā kōtiro ki te whiu koropewa i ngā tama.



2. E whakapae ana a Manahi, mēnā he pouaka whakaata kei roto i tō rūma moe, kāore i te pērā rawa te kaha ki te whakakori tinana. Ka tonoa e tōna kaiako kia tirohia ngā raraunga e noho mai ana ki te pae ipurangi www.censusatschool.org.nz hei tūhura i tēnei whakapae āna.
3. E whakapae ana a Hēmi kāore ngā ākonga o tōna ake akomanga i te tino rite ki ngā ākonga o te motu. Ka kohikohi raraunga ia mai i tōna akomanga, ā, ka tīkina hoki he raraunga i te pae ipurangi www.censusatschool.org.nz kia kitea ai mēnā kei te tika tana whakapae.

4. E tūhura ana a Pikirangi i te pai o ētahi matū hei ārai pōkākā. Ka ringia he wai koropupū ki tetahi kapu, ka waiho ai ki tētahi pouaka, ā, ka inea te paemahana o te wai i ia rua meneti.

- I tētahi whakamātau, ka waiho kia huaki te taupoki o te pouaka.
- I tētahi whakamātau, ka taupokina te pouaka.
- I tētahi whakamātau, ka purua he nūpepa kōpenupenu ki te pouaka hei karapoti i te kapu.
- I tētahi whakamātau, ka purua he raupō kōpenupenu ki te pouaka hei karapoti i te kapu.
- I tētahi whakamātau, ka purua he papa rākau hei karapoti i te kapu.



Whanaketanga 4e

Mātauranga Matua kua Mau kē

Te Tau

- te ōwehenga me te pāpātanga
- te taupū māmā

Te Tauanga

- te whakatakoto pātai tauanga, tāpaetanga kōrero rānei hei tūhura, hei whakatairite i ētahi huinga raraunga e rua
- te whiriwhiri i ngā taurangi me te huarahi kohikohi raraunga e hāngai ana mō tētahi tūhuratanga tauanga; te kohikohi, te wehewehe, te tūhura, te whakaatu i ngā raraunga hei whakautu i te pātai, hei taunaki rānei i te tāpaetanga kōrero
- te tātai tauanga mō tētahi huinga raraunga, pērā i te toharite, te tau waenga me te tau tānui, ā, ka whakamahia ēnei hei whakaputa kōrero mō te āhua o taua huinga raraunga
- ngā momo whakaari e kitea ai te hora o ngā raraunga e whakaaturia ana
- te whakamāori kauwhata pou whakaapaapa
- te arohaehae tūhuratanga tauanga

Mātauranga Matua hei Ako

- te whakatakoto pātai tauanga, tāpaetanga kōrero rānei hei tūhura; te kohikohi raraunga, te tiki atu rānei i ētahi raraunga kua oti kē te kohikohi; ka wehewehe, ka tūhura, ka whakaatu i ngā raraunga hei whakautu i te pātai, hei taunaki rānei i te tāpaetanga kōrero
- ngā tikanga matatika e hāngai ana mō te tūhuratanga tauanga
- ngā momo whiriwhiringa tīpako, pērā i te tīpako matapōkere, me te āhei o tētahi tīpako ki te whakaatu i te āhua o te taupori e tūhuratia ana
- te tātai me te whakamahi tauanga hei whakautu i te pātai e tūhurangia ana, hei taunaki rānei i te tāpaetanga kōrero
- te whakamāori kauwhata pouhere
- te tātari i ngā whakakitenga ka hua mai i tētahi tūhuratanga raraunga me te arohaehae anō i ngā wāhanga katoa o te tūhuratanga

Rauemi kē atu e Hāngai ana

- *He Tau Anō te Tau: Te Tauanga: Putanga Hou.* Te Whanganui-ā-Tara: Te Pou Taki Kōrero (2009).

He Tīpako hei Whakaatu Taupori

1a	1e	2a	2e	3a	3e	4a	4e	5a
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E ako ana ahau i te tikanga o te whiriwhiri tīpako hei kohikohi raraunga, me te tikanga o te tīpako ki te whakaatu i te taupori e tūhuratia ana.

Kupu matua

matapōkere, taupori, tīpako, tīpako haukume

Ngā tohutohu	He tauira kōrero mā te pouako
Whakawhitiwhiti kōrero mō ētahi horopaki tauanga e whai wāhi mai ana tēnei mea te tīpako.	<p>Tērā Te Taura Whiri i te Reo Māori e hiahia ana kia mōhio e pēhea ana te ora o te reo Māori. E whakarite ana rātou kia kohia mai he raraunga hei whakautu i te pātai. Koia nei pea ētahi o ā rātou whakawhitiwhiti kōrero. Pēhea nei ōu whakaaro mō ēnei take?</p> <ul style="list-style-type: none"> • Kia uiuitia ā-kanohi ngā tamariki o tētahi kura kaupapa Māori. Mā konei e mōhiohia ai te ora o te reo i taua kura anahe. Kāore e rite ana ētahi atu kura, ētahi atu hapori, otirā te whānuitanga o Aotearoa. Kāore hoki e whai wāhi mai te hunga mātua, kaumātua hoki. Nā te mea he uiuitanga ā-kanohi, tērā e tino puta ai te mōmona me te whānui o ngā kōrero a ēnei tamariki. • Kia uiuitia ā-kanohi ngā tumuaki o ngā kura kaupapa Māori katoa. Ka puta i ēnei uiuitanga ko ngā whakaaro anahe o aua tumuaki, kāore e rite ki ngā whakaaro o te marea. Nā te mea he uiuitanga ā-kanohi, tērā e tino puta ai te mōmona me te whānui o ngā kōrero a ēnei tumuaki. • Kia tukuna he rārangi pātai ki ngā kura katoa o Aotearoa, mā ngā kura e kohikohi mai ngā raraunga i ā rātou tamariki. Ko te hunga tamariki anahe ka whai wāhi mai ki tēnei kohikohinga raraunga, kāore e kohia mai he kōrero i te hunga mātua, i te hunga kaumātua. I tua atu i tērā, he rerekē te whakahaere i te kohinga raraunga a tēnā kura, a tēnā kura, ā, i tērā tonu ka rerekē ki te āhua o ngā whakahokinga kōrero a ngā tamariki. • Kia uiuitia ā-waea ia tangata tokorima i te pukapuka waea o Tāmakimakaurau. Kāore e whai wāhi mai ki tēnei kohikohinga raraunga ngā tāngata kei waho atu i Tāmakimakaurau e noho ana, me te hunga kāore ā rātou waea ā-kāinga. He rerekē pea ngā whakahokinga kōrero a te hunga noho tuawhenua, me te hunga noho tāone paku.

<p>Whakamāramatia tēnei mea te tīpako me tōna tikanga ki te whakaatu i te taupori e tūhuratia ana.</p>	<p>Ka kīia ēnei hunga e whakaarotia ana kia uiuia, he tīpako. He rite te kupu tīpako ki te whiriwhiri. Ko te hunga ka whiriwhiria kia kohia mai ngā raraunga, i a rātou koia te tīpako.</p> <p>Pēhea nei ō whakaaro mō ēnei tīpako e whā e whakaarotia ana? Kāore e rite ana ki te taupori whānui o Aotearoa. Mēnā e hiahia ana Te Taura Whiri i te Reo kia mōhio i te ora o te reo Māori i Aotearoa whānui, me rite te tīpako ki te taupori whānui o Aotearoa.</p> <p>Nō reira, ka kīia ēnei tīpako e whā, he tīpako haukume. He āhua rite te kupu haukume ki te 'tītaha'. Arā, ka tītaha, ka haukume ngā raraunga ka hua mai i ēnei tīpako, kāore e rite ki te taupori whānui o Aotearoa.</p>
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<p>Whakamāramatia te rerekē o te taturanga (census) me te tīpako.</p>	<p>Mēnā ka uiuitia ngā tāngata katoa o Aotearoa, ka kīia tērā ko te taturanga. Ia rima tau ka whakahaerehia e te kāwanatanga te taturanga ā-motu kia mōhioia ai te āhua o te iwi whānui o Aotearoa.</p> <p>Ko te tīpako, he whiriwhiri i tētahi wāhanga o te taupori kia kohia mai ngā raraunga, ko te taturanga he kohikohi raraunga mai i te katoa o te taupori.</p> <p>He aha ngā painga me ngā whakararu o te taturanga me ērā anō o te tīpako?</p>
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Taturanga:

Painga	Whakararu
<ul style="list-style-type: none"> • Ka kohia mai he raraunga i ngā tāngata katoa e whai wāhi mai ana, kāore tētahi e mahue ki waho. 	<ul style="list-style-type: none"> • He nui te mahi, he nui te utu mēnā he rahi rawa te taupori hei whakahaere taturanga. • He whakautu pātai ki te pepa te nuinga o ngā taturanga – he maha rawa te taupori hei whakahaere uiuitanga ā-kanohi.

Tīpako:

Painga	Whakararu
<ul style="list-style-type: none"> • Kāore i te pērā rawa te nui o te mahi, o te utu rānei ki te kohikohi mai i ngā raraunga. • Mō ētahi tīpako e taea ana he uiuitanga ā-kanohi, nō reira he hōhonu ake, he whānui ake pea ngā raraunga e taea ana te kōhi mai. 	<ul style="list-style-type: none"> • Kāore pea te tīpako e whakaatu i te taupori, arā, kia whai wāhi mai ngā hunga katoa ki te tīpako – wāhine mai, tāne mai, kaumātua mai, tamariki mai, hunga noho tāone mai, hunga noho tuawhenua mai ...

Whakawhitiwhiti kōrero mō ētahi atu horopaki e whai wāhi mai ana te tīpako. Āta kōrerohia te taupori, te tīpako, me te āhua o te kohikohi mai i ngā raraunga mō ia horopaki. Me whai whakaaro anō ki te āhua o ngā pātai ka tukuna. Hei tauira horopaki:

- E hiahia ana Te Taura Whiri i te Reo Māori kia mōhio e pēhea ana te ora o te reo Māori i roto i te hunga tamariki o Aotearoa whānui.
- E hiahia ana tētahi rūnanga ā-iwi kia mōhio i te kaha o te kaihikareti a ngā tāngata katoa o taua iwi.
- E hiahia ana te Tari Hauora kia mōhio i te kaha o te iwi whānui o Aotearoa ki te korikori tinana.
- E hiahia ana te Whare Pukapuka Matua o Tāmaki-makaurau kia mōhio i te momo pukapuka e manakohia ana e te iwi whānui o Tāmaki.

Hei whakawhānui

Tirohia ngā momo pātai o roto i ngā tatauanga ā-motu. Kei tēnei pae ipurangi e noho mai ana:

<http://search.stats.govt.nz/search?w=census%20questions>

E ako ana ahau i te tikanga o te kauwhata pouhere hei whakaatu raraunga motukore.

Rauemi

- Whārangi Tārua 14

Kupu matua

kauwhata pouhere, raraunga motukore, raraunga motumotu

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Whakaaturia ngā tūtohi, te kauwhata pou me te kauwhata pouhere kei te Whārangi Tārua 14, ka whakawhiti kōrero ai mō te tikanga o te kauwhata pouhere.</p>	<p>Ka kimihia e Mika te taupori o ētahi tāone o Aotearoa. Ka tuhia ki tētahi tūtohi.</p> <p>Kātahi a Mika ka whakaawhiwhi i ngā taupori ki te mano e pātata ana. Ka raupapahia ngā tāone mai i te iti ki te rahi, ā, ka whakaaturia ki tētahi kauwhata pou.</p> <p>Ka whakaaro ia ki te whakarōpū i ngā tāone. E hiahia ana ia ki te tirotiro i te maha o ngā tāone kei tēnā rōpū taupori, kei tēnā. Kua tīmata ia ki te tuhi i tētahi anō tūtohi. Māu e whakaoti.</p> <p>Kua tīmata hoki a Pita ki te whakaatu i ngā rōpū taupori ki tētahi kauwhata. Ka kīia tēnei momo kauwhata he kauwhata pouhere. Māu e whakaoti te kauwhata pouhere.</p> <p>Tirohia ngā kauwhata e rua. I te kauwhata pou, e tū motuhake ana ia pou. I te kauwhata pouhere, e hono ana ia pou. He aha ki tōu whakaaro i pēnei ai?</p> <ul style="list-style-type: none"> • I te kauwhata pou, e whakaaturia ana ia tāone. He tāone motuhake ēnei, e tū ana ki ngā wāhi rerekē o Aotearoa whānui, nō reira e tika ana kia motuhake anō ngā pou, kāore he hononga o tētahi ki tētahi. • I te kauwhata pouhere, e whakaaturia ana ngā rōpū taupori o ngā tāone. E hono ana ngā rōpū, e whai ana tētahi i tētahi, kāore he āputa ki waenganui. Nō reira e tika ana kia honoa ngā pou o te kauwhata. <p>He raraunga motumotu e whakaaturia ana ki tētahi o ngā kauwhata, he raraunga motukore e whakaaturia ana ki tētahi. Ki tōu whakaaro, ko tēhea tēhea?</p> <p>Ko te kauwhata pou e whakaatu ana i te raraunga motumotu, arā, he motumotu te tū o ngā tāone ki tēnā rohe, ki tēnā rohe. Ko te kauwhata pouhere e whakaatu</p>

ana i te raraunga motukore, arā, kāore e motumotu ngā rōpū taupori, e hono ana tētahi i tētahi, kāore he āputa ki waenganui.

Kei te **Whārangi Tārua 14** ētahi atu tūtohi hei whakawhitiwhiti whakaaro mēnā he kauwhata pou, he kauwhata pouhere rānei te mea tika hei whakaatu i ngā raraunga. Tonoa ngā ākonga kia whiriwhiri i ētahi o ngā kaupapa hei tuhi kauwhata.

E ako ana ahau ki te whakahaere tūhuratanga tauanga me te arohaehae anō i ōna wāhanga katoa.

Kupu matua

kauwhata pouhere, raraunga motukore, raraunga motumotu, ripanga rorohiko, taupori, tīpako, toharite

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākonga, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi, ki te kauwhata anō hoki. Me tuhi pūrongo mō te tūhuratanga, ka whakaatu ai ki te akomanga, me te arohaehae anō i ngā wāhanga katoa. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hapori.

1. E whakaaro ana te rūnanga whakahaere o te kura kia whakaturehia te 'kākahu ōrite' mō te kura. Pēhea nei ngā whakaaro o te hunga ākonga, o te hunga kaiako, o ngā whānau o te kura? Mēnā he nui rawa te utu hei hoko i te kākahu ōrite, ka pā tēnā ki ngā whakaaro o ēnei tāngata? He aha te momo kākahu ōrite e hiahiaitia ana, me ngā tae?
2. Ko te whakapae a tētahi, he maha rawa ngā motukā e taraiwahia ana i ngā huarahi, kotahi anahe te tangata o roto. He tino take tēnei e piki haere nei te parahanga CO₂ e whakaputaina ana ki te hau takiwā, e mahana haere ai te āhuarangi o te ao.
3. E tūhura ana a Wiri i te āhuarangi o Aotearoa. Ka haere ia ki te pae ipurangi nei a Taihoro Nukurangi (NIWA), mā tēnei whārangi e whakaputaina ai ngā toharite ā-marama mō te paemahana, te ua me ngā haora e whiti ana te rā mō ētahi tāone o Aotearoa:

<http://www.niwa.co.nz/education-and-training/schools/resources/climate>

Ka taea ēnei raraunga te whakaputa hei ripanga rorohiko (Excel).

He aha ētahi whakaaturanga whaihua mō ēnei raraunga (momo kauwhata)? Whakamātauria ēnei whakaaturanga raraunga. He aha ētahi kōrero matua ka puta i ēnei kauwhata?

Tuhia ētahi pātai hei tūhura māu i ngā raraunga a Taihoro Nukurangi.

4. Tūhuratia te tāpaetanga kōrero 'Tokomaha rawa ngā tamariki o Aotearoa e kawea ana ki te kura mā runga motukā'. Anei ētahi mahi, ētahi whakaaro, ētahi pātai rānei hei tūhura:

Kohikohia he raraunga mai i ngā tamariki katoa o tō kura kia mōhioia ai mā hea rātou tae atu ai ki te kura.

Tikina atu he raraunga mō ngā tamariki katoa o Aotearoa, mai i te pae ipurangi:

<http://www.censusatschool.org.nz/>

Whakatairitea ngā raraunga mō tō kura me ngā raraunga mō Aotearoa whānui.

Whakatairitea ngā raraunga mō te hunga tamatāne me te hunga kōtiro.

Whakatairitea ngā raraunga mō ngā rōpū pakeke, mō ngā tau kura rānei.

Kohikohia he raraunga mō ngā whakaaro o tētahi hunga ki te tāpaetanga kōrero 'Tokomaha rawa ngā tamariki o Aotearoa e kawea ana ki te kura mā runga motukā'.

Tuhia ngā take e haere ai te tamaiti ki te kura mā runga motukā, mā raro, mā runga pahikara, mā hea atu rānei.

Whanaketanga 5a

Mātauranga Matua kua Mau kē

Te Tau

- te kōwhiri i te rautaki paheko tau e tino hāngai ana ki te horopaki

Te Tauanga

- te whakatakoto pātai tauanga, tāpaetanga kōrero rānei hei tūhura; te kohikohi raraunga, te tiki atu rānei i ētahi raraunga kua oti kē te kohikohi; ka wehewehe, ka tūhura, ka whakaatu i ngā raraunga hei whakautu i te pātai, hei taunaki rānei i te tāpaetanga kōrero
- ngā tikanga matatika e hāngai ana mō te tūhuratanga tauanga
- ngā momo whiriwhiringa tīpako, pērā i te tīpako matapōkere, me te āhei o tētahi tīpako ki te whakaatu i te āhua o te taupori e tūhuratia ana
- te tātai me te whakamahi tauanga hei whakautu i te pātai e tūhurangia ana, hei taunaki rānei i te tāpaetanga kōrero
- te whakamāori kauwhata pouhere
- te tātari i ngā whakakitenga ka hua mai i tētahi tūhuratanga raraunga me te arohaehae anō i ngā wāhanga katoa o te tūhuratanga

Mātauranga Matua hei Ako

- te whakahaere tūhuratanga tauanga, te whakamārama, te parahau hoki i ōna wāhanga katoa
- te whakaputa kōrero mō te pānga o tētahi taurangi ki tētahi o roto i te tūhuratanga tauanga
- ngā momo whakaari raraunga whānui e hāngai ana mō tētahi tūhuratanga raraunga, me te whakamāori anō i aua whakaari
- te whakaatu raraunga ki te kauwhata marara me te kauwhata kauamo
- te tikanga matatika kia kua e haukumea te āhua o ngā pātai o tētahi tūhuratanga tauanga
- te arotake i ngā kōrero ka puta i tētahi tūhuratanga tauanga

Rauemi kē atu e Hāngai ana

- *He Tau Anō te Tau: Te Tauanga: Putanga Hou.* Te Whanganui-ā-Tara: Te Pou Taki Kōrero (2009).

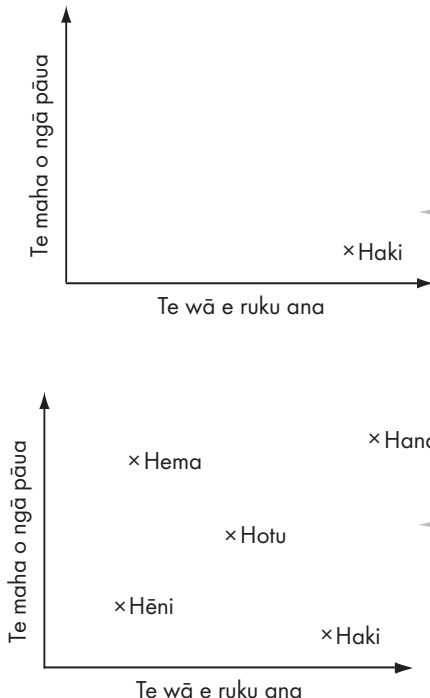
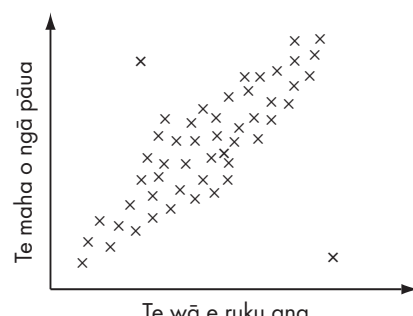
E ako ana ahau i te tikanga o te kauwhata marara hei whakaatu i te pānga o ētahi taurangi e rua.

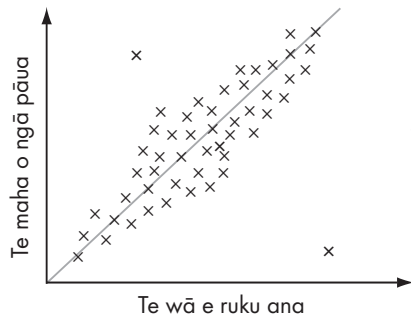
Rauemi

- Whārangi Tārua 15

Kupu matua

ia, kauwhata marara, mōwaho, pānga, taurangi

Ngā tohutohu	He tauira kōrero mā te pouako																		
<p>Whakawhitiwhiti kōrero mō te whakaatu i ētahi taurangi e rua ki te kauwhata, me te tuhi ira hei whakaatu i tētahi pūāhua motuhake ki te kauwhata.</p> 	<p>Arā ētahi tāngata tokorima, i haere ki te ruku pāua. I tuhia ki te tūtohi te maha o ngā pāua i mau i tērā tangata, i tērā, me te wā e ruku ana:</p> <table border="1" data-bbox="678 817 1332 1019"> <thead> <tr> <th>Tāngata</th> <th>Hema</th> <th>Hotu</th> <th>Haki</th> <th>Hana</th> <th>Hēni</th> </tr> </thead> <tbody> <tr> <td>Te maha o ngā pāua</td> <td>15</td> <td>7</td> <td>3</td> <td>14</td> <td>4</td> </tr> <tr> <td>Te wā e ruku ana</td> <td>20 meneti</td> <td>12 meneti</td> <td>18 meneti</td> <td>6 meneti</td> <td>5 meneti</td> </tr> </tbody> </table> <p>E taea ana ēnei āhuatanga (taurangi) e rua te whakaatu ki ngā tuaka e rua o tētahi kauwhata. Ko te maha o ngā pāua ki te tuaka pou, ko te wā e ruku ana ki te tuaka pae.</p> <p>Kua tuhia he rīpeka iti ki te kauwhata hei whakaatu i tētahi o ngā tāngata ruku. Ki tōu whakaaro ko tēhea tangata tēnei? Ko Haki, nā te mea he wā roa e ruku ana, engari he ruarua noa iho ngā pāua i mau i a ia.</p> <p>Ki hea tuhia ai he rīpeka hei whakaatu i ērā atu o ngā kairuku?</p> <p>Ko wai te kairuku e tino whai pūkenga ana ki tēnei mahi? Ko Hana, nā te mea he wa poto noa iho e ruku ana, engari he maha ngā pāua i mau i a ia.</p>	Tāngata	Hema	Hotu	Haki	Hana	Hēni	Te maha o ngā pāua	15	7	3	14	4	Te wā e ruku ana	20 meneti	12 meneti	18 meneti	6 meneti	5 meneti
Tāngata	Hema	Hotu	Haki	Hana	Hēni														
Te maha o ngā pāua	15	7	3	14	4														
Te wā e ruku ana	20 meneti	12 meneti	18 meneti	6 meneti	5 meneti														
<p>Whakaaturia ētahi kairuku maha ki te kauwhata, ka whakawhitiwhiti kōrero ai mō te ingoa o te kauwhata me ngā āhuatanga kōhure e whakaaturia ana.</p>	<p>Mēnā ka tuhia ētahi atu rīpeka iti ki te kauwhata hei whakaatu i ētahi kairuku 50, ka pēnei pea te āhua:</p> 																		



Ka kīia tēnei momo kauwhata, he kauwhata marara. E noho marara ana ngā rīpeka iti ki te kauwhata. He aha tētahi āhuatanga matua e kitea ana i tēnei kauwhata?

Hāunga ngā rīpeka e rua (a Hana rāua ko Haki), e kitea ana ina piki te wā e ruku ana, ka piki anō te maha o ngā pāua.

← Ka kīia tērā ko te ia o te kauwhata. Ko te ia o te kauwhata hei whakaatu i te pānga kei waenganui i ngā taurangi e rua o te kauwhata, arā, te roa o te wā e ruku ana me te maha o ngā pāua ka mau. Ko tētahi tikanga, he tuhi rārangi hei whakaatu i tēnei ia matua.

E rua ngā rīpeka iti e noho ana ki waho i te ia matua o te kauwhata. Ka kīia ēnei he mōwaho.

Ko tētahi o ngā mōwaho he ringa rehe ki te ruku pāua nā te mea he poto te wā e ruku ana, engari he maha tonu ngā pāua i mau i a ia. Ko tētahi o ngā mōwaho he tiro tiro noa pea i te ao o Tangaroa tāna mahi nā te mea he wā roa e ruku ana, engari he ruarua noa iho ngā pāua i mau.

Kei te **Whārangi Tārua 15** ētahi atu tūtohi raraunga hei whakaatu mā te ākongā ki tētahi kauwhata marara. Me āta whakawhitiwhiti kōrero mō ngā āhuatanga kōhure e kitea ana i ia kauwhata.

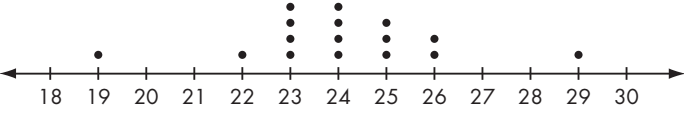
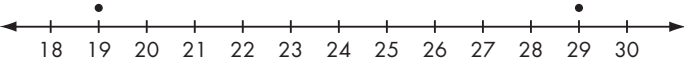
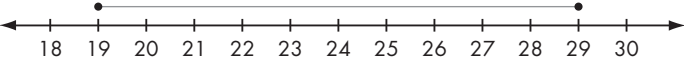
E ako ana ahau i te tikanga o te kauwhata kauamo hei whakaatu i te tuari o tētahi huinga raraunga.

Rauemi

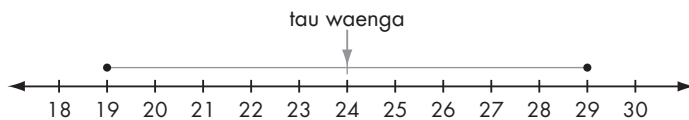
- Whārangi Tārua 16

Kupu matua

hauwhā raro, hauwhā runga, hora raraunga, kauwhata kauamo, tau waenga, tuari

Ngā tohutohu	He tauira kōrero mā te pouako
<p>Whakawhitiwhiti kōrero mō te whakaatu i te āhua (te hanga rānei) o tētahi huinga raraunga ki te kauwhata kauamo.</p>	<p>He aha te momo kauwhata tuatahi kei te Whārangi Tārua 16?</p> <p>He kauwhata ira.</p>  <p>He aha te kaupapa o te kauwhata?</p> <p>E whakaatu ana i ngā mōkai i riro i tētahi huinga ākonga i tā rātou whakamātautau. Ko ia ira hei tohu i te mōkai o tētahi ākonga kotahi.</p> <p>He aha ētahi o ngā kōrero e whakaaturia ana ki te kauwhata ira?</p> <p>Ko te 19 te mōkai iti rawa, ko te 29 te mōkai nui rawa. Ko te nuinga o ngā mōkai kei te takiwā o te 23 ki te 26.</p> <p>Māku koutou e ārahi ki te tuhi i tētahi anō momo kauwhata, ka kīia he kauwhata kauamo. Ko te kauamo tētahi o ngā pou roroa kei ia taha o te arawhata, ā, ka whakamahia mō tēnei momo kauwhata nā te mea koirā te āhua.</p> <p>Ko tā te kauwhata kauamo he whakarāpopoto i te tuari o ngā raraunga. Ko te mahi tuatahi, he tuhi i te rārangi tau e hāngai ana ki ngā raraunga:</p>  <p>Tuarua, ka tuhia he rārangi mai i te raraunga iti rawa ki te raraunga nui rawa. E whakaatu ana tēnei rārangi i te aha? E whakaatu ana i te inenga whānui, arā, te hora o ngā raraunga mai i te mea iti ki te mea rahi.</p> 

Ko te mahi tuatoru, he whakaatu i te tau waenga o ngā raraunga ki te rārangi. Ko te tau waenga kei waenganui pū o te huinga raraunga. Ko tētahi haurua o ngā raraunga kei raro iho i te tau waenga, ko tētahi haurua kei runga ake. Ko te 24 te tau waenga o ngā māka whakamātautau nei:



Ināianei, ka tohua te hauwhā raro me te hauwhā runga o ngā raraunga. He aha ki ōu whakaaro te tikanga o te hauwhā raro me te hauwhā runga?

Kotahi hauwhā o ngā māka kei raro iho i te hauwhā raro, kotahi hauwhā kei runga ake i te hauwhā runga.

Nō reira, he aha te hautanga o ngā māka kei waenganui i te hauwhā raro me te hauwhā runga? Kotahi haurua, e rima tekau ōrau.

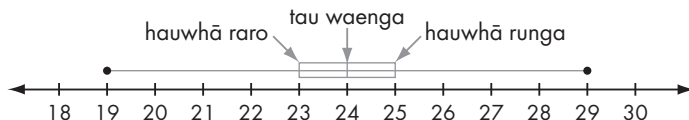
Anei te raupapa mai o ngā māka o tēnei whakamātautau, ā, kua whakarōpūngia ngā hauwhā:

19, 22, 23, 23, 23, 23, 24, 24, 24, 24, 25, 25, 25, 26, 26, 29

Nō reira, he aha te hauwhā raro me te hauwhā runga o ēnei māka?

Ko te 23 te hauwhā raro, ko te 25 te hauwhā runga.

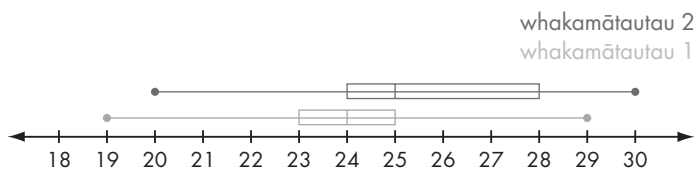
Ko te mahi whakamutunga hei hanga i te kauwhata kauamo, he whakaatu i ngā hauwhātanga nei (hauwhā raro, hauwhā runga), ā, ka tuhia he pouaka hei whakaatu i te wāhi kei waenganui:



E tino kitea ana i te kauwhata kauamo te rohe whāiti kei reira te nuinga o ngā māka, arā, kei waenganui i te 23 me te 25 te haurua o ngā māka.

Whakawhitiwhiti kōrero mō te whakamahinga o te kauwhata kauamo hei whakatairite i te tuari o ētahi huinga raraunga e rua.

He kauwhata kauamo te kauwhata tuarua kei te **Whārangi Tārua 16**. E rua ngā huinga raraunga e whakaaturia ana ki te kauwhata nei. Ko tētahi ko ngā māka whakamātautau i kōrerohia i mua nei. Ki runga ake i tērā ko te whakarāpopoto o ngā māka o tētahi atu whakamātautau.



E tino kitea ana te rerekē o te tuari o ngā māka o tēnā whakamātautau, o tēnā. He aha ngā kōrero?

He whāiti te tuari o ngā raraunga i te whakamātautau tuatahi, he āhua whānui ake te tuari mō te whakamātautau tuarua. He pai ake hoki ngā māka i te whakamātautau tuarua.

He aha te tau waenga o ngā māka mō te whakamātautau tuarua?

Ko te 25.

E tohu ana tērā i te aha?

Kotahi haurua o ngā māka kei raro iho i te 25, kotahi haurua kei runga ake.

He aha ētahi kōrero whakatairite mō ngā whakamātautau e rua nei?

Ākene pea he mātau ake ngā ākonga o te whakamātautau tuarua, he kaha ake rānei ki te mahi i ā rātou mahi kura. Ākene pea he māmā ake te whakamātautau tuarua.

Kei te **Whārangi Tārua 16** ētahi atu huinga raraunga hei whakaatu mā ngā ākonga ki tētahi kauwhata kauamo. Āta kōrerohia te tuari o ngā raraunga e whakaaturia ana ki ngā kauwhata kauamo.

Tūhuratanga Tauanga 5a

1a 1e 2a 2e 3a 3e 4a 4e 5a

E ako ana ahau ki te whakahaere tūhuratanga tauanga me te arohaehae anō i ōna wāhanga katoa.

Kupu matua

kauwhata, kohikohi raraunga, raraunga, ripanga rorohiko, tūtohi

Hei mahi

Whiriwhiria he kaupapa tauanga hei tūhura mā ngā ākonga, hei whakatakoto pātai, hei kohikohi, hei whakaatu raraunga ki te tūtohi, ki te kauwhata anō hoki. Me tuhi pūrongo mō te tūhuratanga, ka whakaatu ai ki te akomanga, me te arohaehae anō i ngā wāhanga katoa. He tauira ēnei e whai ake nei, engari e pai ake ana mēnā ka puta te tūhuratanga i ngā kaupapa o te wā o roto i te kura, o roto rānei i te hapori.

1. E tūhura ana a Pita i te tipu o ētahi tāone i Aotearoa i ngā tau 50 kua pahure. Ka tirohia e ia te ipurangi, ā, ka tuhia ngā taupori o ētahi tāone 16 i te tau 1961 me te tau 2010. Māu e whakaoti te tūhuratanga, ka whakaputa ai i tētahi pūrongo mō te tipu o ēnei tāone 16. Hei whakaaroaro:
 - Me whakaawhiwhi ngā taupori o ngā tāone.
 - Me whakauru ngā raraunga ki te ripanga rorohiko hei āwhina i te tūhuratanga.
 - Me whiriwhiri te ōrau o te tipu o tēnā tāone, o tēnā.
 - Me whiriwhiri te ōrau o te tipu o te katoa o ēnei tāone.

Te Tāone	Taupori 1961	Taupori 2010
Ahuriri	32,716	54,832
Heretaunga	32,490	59,615
Kāpiti	12,305	35,609
Kirikiriroa	50,505	143,602
Ngāmotu	32,387	47,531
Ōtepoti	105,003	107,027
Papaioea	43,185	72,412
Rotorua	25,068	52,987
Tauranga	24,659	103,210
Te Waiharakeke	11,956	27,342
Te Waihōpai	41,088	45,374
Te Tīhi-o-Maru	26,424	27,112
Tūranganui-a-Kiwa	25,065	31,406
Whakatū	25,321	56,224
Whanganui	35,694	38,908
Whāngārei	21,790	47,638

2. E tūhura ana a Himiona i te momi hikareti a te hunga taiohi. E whakapae ana ia he nui ake te momi hikareti a te hunga taiohi mēnā e momi hikareti ana ngā mātua. Māu e whakahaere tētahi tūhuratanga hei tiroiro i tēnei whakapae a Himiona. Me āta whakaaro:

- Ko wai te hunga ka uiuitia e koe?
- He aha ngā pātai ka tukuna ki a rātou?
- Me pēhea te tuku i ngā pātai?
- Me pēhea te wehewehe, te whakaatu hoki i ngā raraunga ka kohia mai?
- He aha ētahi atu pātai ka puta i te tūhuratanga?
- He aha ngā kōrero matua e whakaaturia ana i ngā raraunga?
- Kei te ipurangi ētahi atu huinga raraunga e hāngai ana ki te kaupapa nei hei tiki atu māu, hei whakamahi i roto i te tūhuratanga?
- I runga i te āhua o ngā raraunga i kohia e koe, he aha nei tō whakahoki ki te tāpaetanga kōrero a Himiona?

3. E tūhura ana a Wena i ngā toa o te ao mō te peke roa. Ka kite ia i ngā raraunga nei mō te hunga tāne i ngā taumāhekeheke o te ao mai i te tau 1896.

Te tau	Te peke toa (m)
1896	6.34
1900	7.19
1904	7.34
1908	7.48
1912	7.60
1920	7.15
1924	7.45
1928	7.74
1932	7.64
1936	8.06
1948	7.82
1952	7.57
1956	7.83
1960	8.12
1964	8.07
1968	8.90
1972	8.24
1976	8.34
1980	8.54
1984	8.54
1988	8.72
1992	8.70
1996	8.50
2000	8.55
2004	8.60
2008	8.34

Whakaaturia ēnei raraunga ki ēnei momo kauwhata, ka whakaputa kōrero ai mō ngā āhuatanga matua e whakaaturia ana e tēnā kauwhata, e tēnā.

- kauwhata rautō
- kauwhata kauamo
- kauwhata rārangi

Tūhuratia tētahi atu mahi kaiaka (pēnei i te peke teitei, i te maka poroāwhio me te oma rau mita), ka whakaputa kōrero ai. Māu anō e āta whakaaro ngā pātai hei tūhura me te pae ipurangi hei tiki atu i ngā raraunga.

4. Koia nei ētahi raraunga e pā ana ki te maha o ngā mate huarahi i Aotearoa i ngā tau e rima, mai i te 2004:

Te Marama	2004	2005	2006	2007	2008
Kohitātea	41	30	40	39	35
Huitanguru	36	52	27	19	41
Poutūterangi	40	37	31	39	32
Paengawhāwhā	30	37	27	38	28
Haratua	27	44	35	28	32
Pipiri	42	32	32	38	29
Hōngongoi	37	30	27	38	20
Hereturikōkā	42	22	36	31	23
Mahuru	31	25	31	30	24
Whiringa ā-nuku	25	27	40	34	26
Whiringa ā-rangi	33	28	21	41	26
Hakihea	51	41	46	46	50

Tuhia ētahi kauwhata hei whakaatu i ēnei raraunga, ka whakaputa kōrero ai. Ko ētahi āhuatanga hei āta tiroiro:

- te maha o ngā mate i ia tau, mēnā e piki ana, e heke ana, e pūmau ana rānei.
- te maha o ngā mate i ia marama o te tau, ā, mēnā rānei he tauira e kitea ana. He aha ki tōu whakaaro i pēnei ai?
- te tuari o ngā raraunga mō ia marama i ia tau, me te tuari o ngā raraunga katoa.
- te piki me te heke o ngā mate i te roanga atu o ia tau.

Kimihia he raraunga kē atu i te ipurangi hei tūhura i ētahi atu āhuatanga e pā ana ki te mate huarahi. Hei tauira:

- te wāhi ki te taraiwa haurangi
- te maha o ngā mate aituā i tēnā whakarōpūtanga pakeke, i tēnā
- te maha o ngā mate o te hunga tāne me te hunga wāhine
- te maha o ngā mate huarahi i tēnā rohe, i tēnā rohe o Aotearoa



Wāhanga 4

Ngā Whārangī Tārua*



Koinei ngā Whārangī Tārua e hāngai ana ki ngā ngohe whakaako o roto i te Wāhanga 3 o tēnei pukapuka. Whakamahia he kutikuti hei tapahi i ngā rārangi iraira o ngā Whārangī Tārua.

He Kāri Tau

Te Tauanga
Whārangī Tārua 1



0

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Te Tauanga

Whārangī Tārua 1

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Whārangī Tārua 1

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2

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Te Tauanga

Whārangī Tārua 1

Te Tauanga

Whārangī Tārua 1

Te Tauanga

Whārangī Tārua 1



2	2	3
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
2	2	3
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
2	2	3
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
3	3	3
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
3	3	4
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
4	4	4
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1



4

4

5

Te Tauanga

Whārangī Tārua 1

Te Tauanga

Whārangī Tārua 1

Te Tauanga

Whārangī Tārua 1

4

4

5

Te Tauanga

Whārangī Tārua 1

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Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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6

6

Te Tauanga

Whārangī Tārua 1

Te Tauanga

Whārangī Tārua 1

Te Tauanga

Whārangī Tārua 1



6	6	7
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
7	7	7
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
7	7	7
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
8	8	7
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
8	8	8
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1
8	8	8
Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1	Te Tauanga Whārangī Tārua 1



9

Te Tauanga

Whārangī Tārua 1

9

Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Whārangī Tārua 1

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Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

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Te Tauanga

Whārangī Tārua 1

10

Te Tauanga

Whārangī Tārua 1

10

Te Tauanga

Whārangī Tārua 1

He Kanohi Āhua

Te Tauanga
Whārangī Tārua 2



Te Tauanga

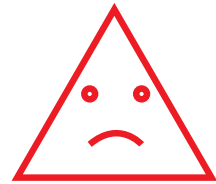
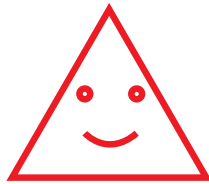
Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2



Te Tauanga

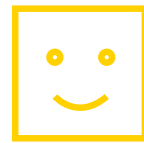
Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2



Te Tauanga

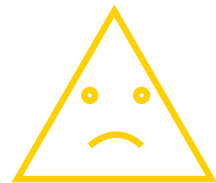
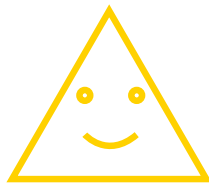
Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2



Te Tauanga

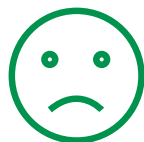
Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2



Te Tauanga

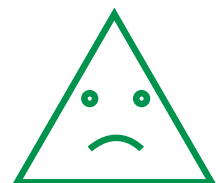
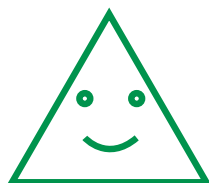
Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2

Te Tauanga

Whārangī Tārua 2



Te Tauanga

Whārangī Tārua 2





















Te Tauanga

Whārangī Tārua 2
























Te Tauanga

Whārangī Tārua 2

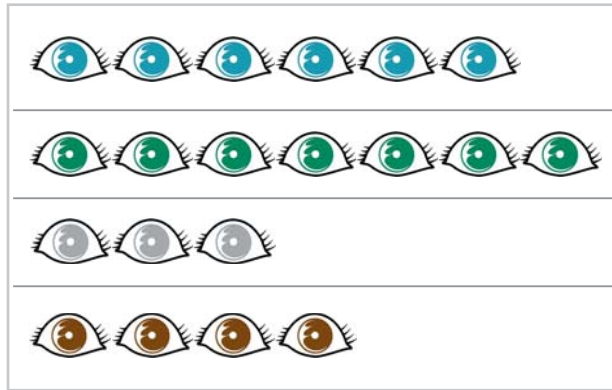
Te Tae e Manakohia ana

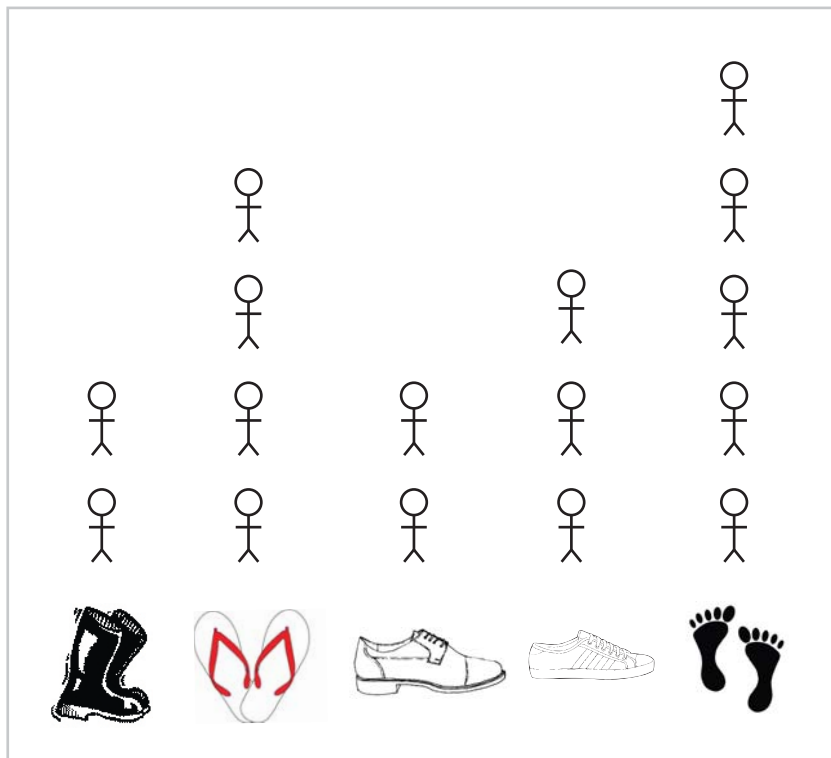
Te Haere ki te Kura

Te Tae o ngā Karu



Te Momo Hū



Te āhua o te rangi i ngā rā hararei o te kura:

Rāhina
he paki

Rātū
he paki

Rāapa
he tāmaru

Rāpare
he marangai

Rāmere
he hauhau

Rāhoroi
he marangai

Rātapu
he tāmaru

Rāhina
he marangai

Rātū
he paki

Rāapa
he tāmaru

Rāpare
he hauhau

Rāmere
he paki

Rāhoroi
he paki

Rātapu
he paki

Ngā kēmu whutupōro o te tīma o Awarahi:

Kēmu 1

Awarahi 26, Maungatū 28

Kēmu 2

Awarahi 5, Reponui 16

Kēmu 3

Awarahi 8, Te Hāpua 35

Kēmu 4

Awarahi 15, Rotomaire 18

Kēmu 5

Awarahi 24, Wainui 19

Kēmu 6

Awarahi 19, Rāhira 3

Kēmu 7

Awarahi 32, Maniaroa 24

Kēmu 8

Awarahi 41, Awapiko 12

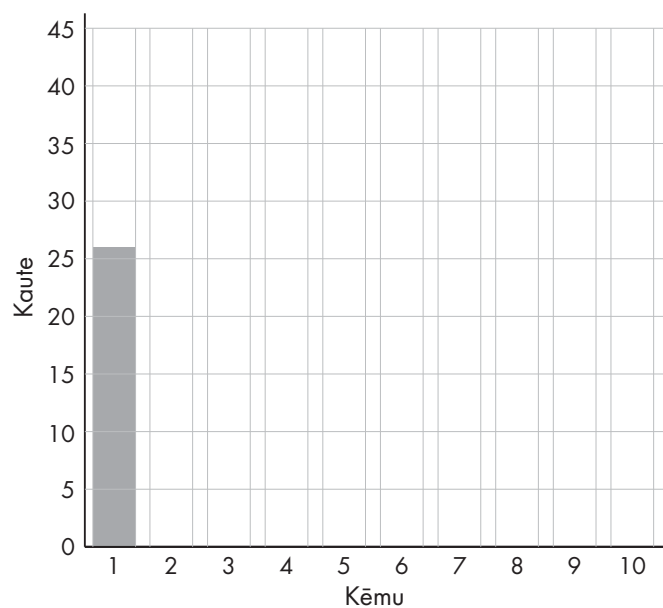
Kēmu 9

Awarahi 54, Hinatoa 27

Kēmu 10

Awarahi 38, Tū Toa 35

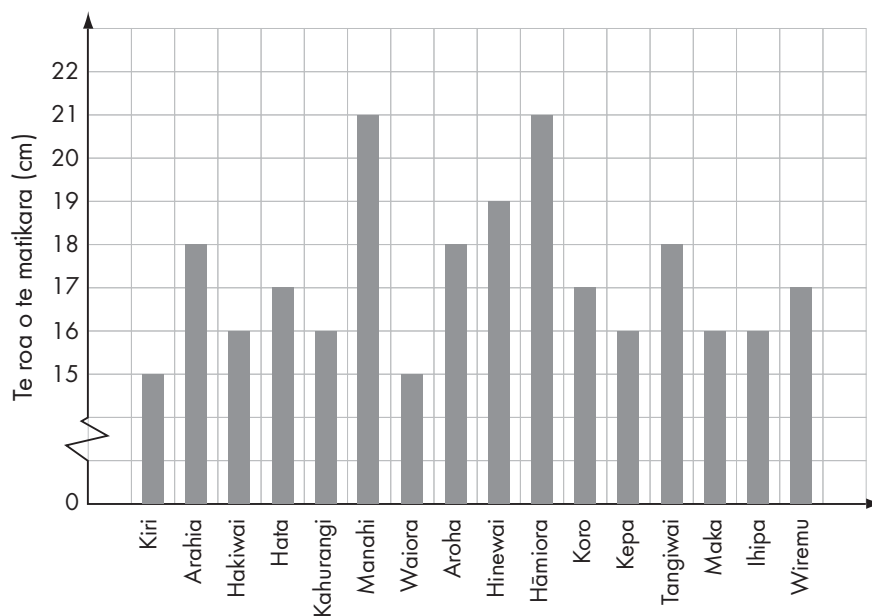
Ngā kēmu whutupōro o Awarahi

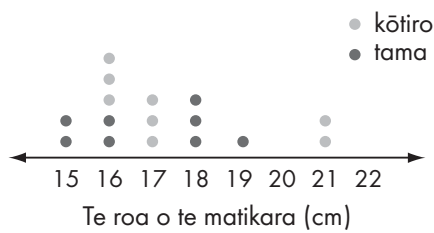
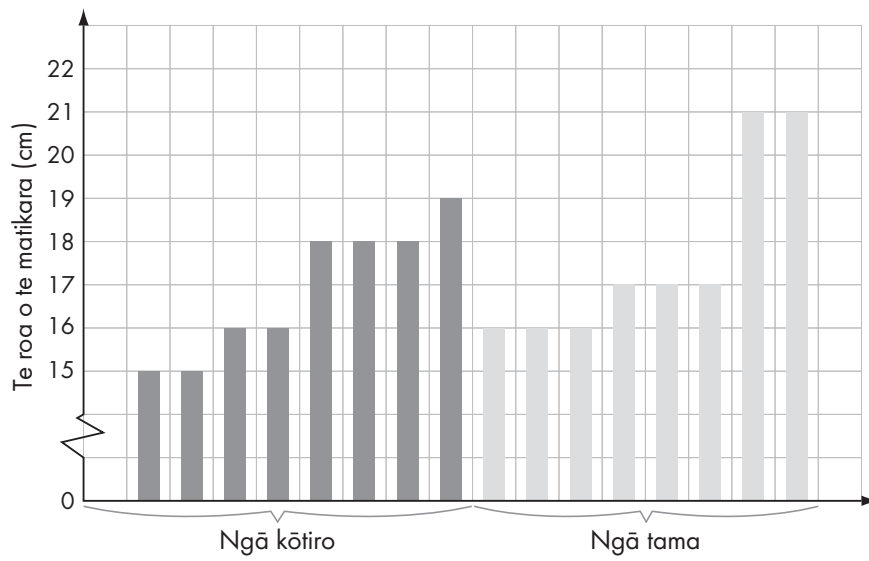
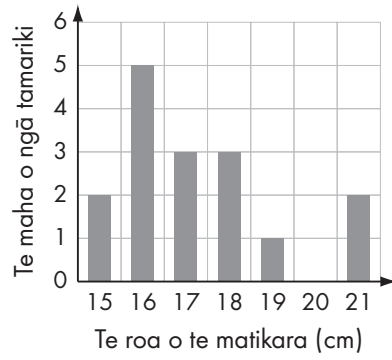


Te roa o ngā matikara o tētahi hunga tamariki:



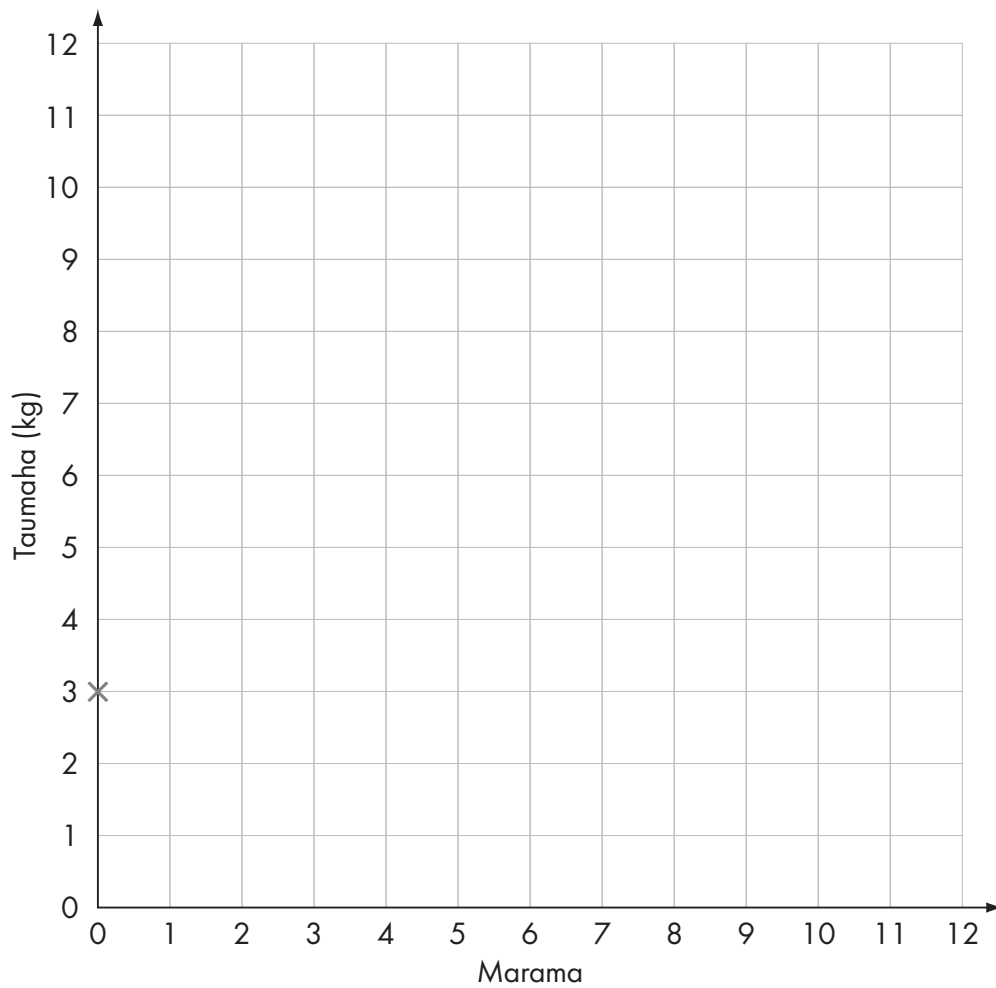
Ingoa	Te roa o te matikara (cm)
Kiri	15
Arahia	18
Hakiwai	16
Hata	17
Kahurangi	16
Manahi	21
Waiora	15
Aroha	18
Hinewai	19
Hāmiora	21
Koro	17
Kepa	16
Tangiwai	18
Maka	16
Ihipa	16
Wiremu	17





Te taumaha o tētahi pēpi hou:

Marama	0	1	2	3	4	5	6	7	8	9	10	11	12
Taumaha (kg)	3	4.2	5.2	5.8	6.4	6.9	7.3	7.7	8	8.2	8.5	8.7	9



Te tāroaroa o tētahi pēpi hou i tana tau tuatahi:

Marama	0	1	2	3	4	5	6	7	8	9	10	11	12
Tāroaroa (cm)	50	54	58	61	63	65	67	68.5	70	71.5	73	74.5	76

Te tāroaroa o tētahi hunga tamariki:

Ingoa	Kiri	Wi	Ihi	Maka	Tū	Hine	Tama	Māia
Tāroaroa (cm)	85	88	82	87	85	91	80	82

Te utu kōhinu i ngā marama o tētahi tau:

Marama	1	2	3	4	5	6	7	8	9	10	11	12
Utu	\$1.55	\$1.55	\$1.60	\$1.65	\$1.65	\$1.80	\$1.75	\$1.70	\$1.80	\$1.85	\$1.85	\$1.75

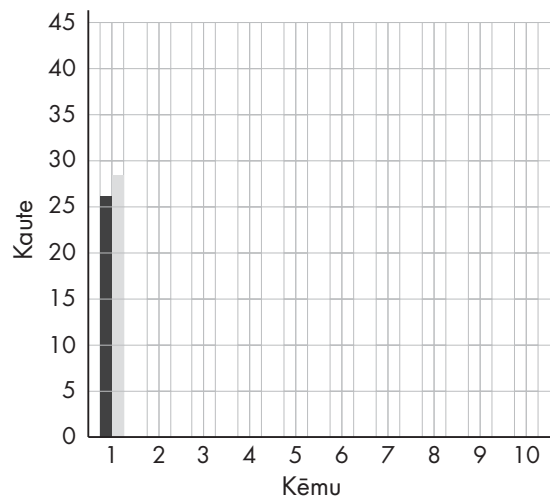
Te tawhiti o te whiu pōro a tētahi hunga tamariki:

Te tawhiti (mita)	iti iho i te 30	30–32	32–34	34–36	36–38	38–40	nui ake i te 40
Te maha o ngā tamariki	2	4	7	6	9	5	3

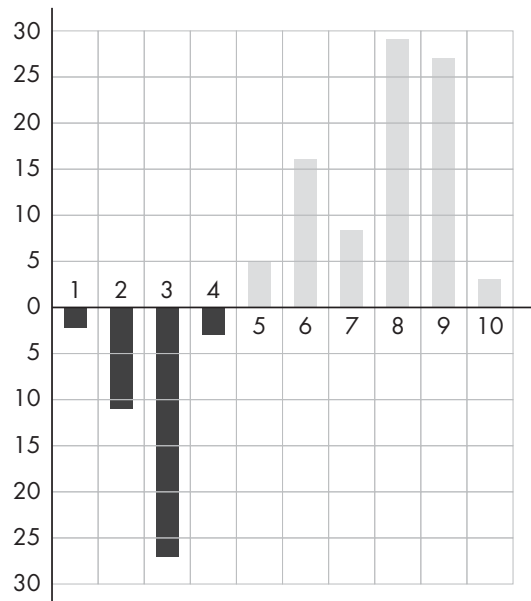
Ngā kēmu whutupōro o te tīma o Awarahi

Kēmu	1	2	3	4	5	6	7	8	9	10
Awarahi	26	5	8	15	24	19	32	41	54	38
Hoariri	28	16	35	18	19	3	24	12	27	35

Ngā kēmu whutupōro o Awarahi



Ngā kēmu whutupōro o Awarahi



Ngā omanga kirikiti a Hone i ana kēmu 15:

34, 25, 67, 89, 93, 84, 71, 5, 0, 0, 3, 26, 32, 23, 85

Ngā omanga kirikiti a Hone

9	3				
8	4	5	9		
7	1				
6	7				
5					
4					
3	2	4			
2	3	5	6		
1					
0	0	0	3	5	

Ngā omanga a Wi Ngā omanga a Hone

				9	3			
				8	4	5	9	
				7	1			
		1	0	6	7			
7	5	2	2	5				
8	6	5	3	4				
	4	1	0	3	2	4		
		7	5	2	3	5	6	
				1				
				0	0	0	3	5

Te tawhiti o te whiu pōro a tētahi hunga tamariki (mita):

32, 53, 36, 29, 68, 45, 50, 53, 17, 38, 43, 40, 36, 43

Ngā kaute a te tīma o Awarahi i ana kēmu whutupōro:

26, 5, 8, 15, 24, 19, 32, 41, 54, 38

Ngā kaute a te hoariri o Awarahi i aua kēmu whutupōro:

28, 16, 35, 18, 19, 3, 24, 12, 27, 35

Te tāroaroa o tētahi hunga tamariki (cm):

kōtiro:

83, 88, 84, 78, 91, 102, 76, 120, 85, 90, 81, 80

tama:

72, 85, 75, 78, 81, 79, 81, 69, 92, 82, 80, 73

Kāri Raraunga

Te Tauanga
Whārangī Tārua 11

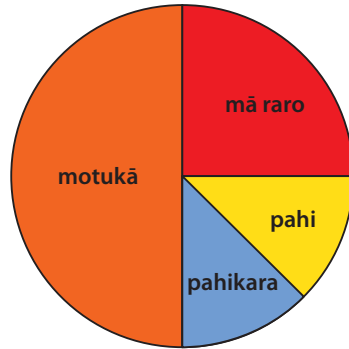


<p>tama</p> <p>matau</p> <p>1</p>	<p>tama</p> <p>pānui pukapuka</p> <p>mauī</p> <p>2</p>	<p>tama</p> <p>mauī</p> <p>pāngarau</p> <p>4</p>			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
<p>tama</p> <p>matau</p> <p>4</p>	<p>tama</p> <p>mauī</p> <p>pānui pukapuka</p> <p>2</p>	<p>tama</p> <p>matau</p> <p>pūtaiao</p> <p>0</p>			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
<p>tama</p> <p>matau</p> <p>6</p>	<p>tama</p> <p>matau</p> <p>pānui pukapuka</p> <p>5</p>	<p>tama</p> <p>matau</p> <p>pūtaiao</p> <p>2</p>			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
<p>tama</p> <p>matau</p> <p>2</p>	<p>tama</p> <p>matau</p> <p>toi</p> <p>4</p>	<p>tama</p> <p>matau</p> <p>kori tinana</p> <p>6</p>			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
<p>tama</p> <p>matau</p> <p>5</p>	<p>tama</p> <p>matau</p> <p>kori tinana</p> <p>6</p>	<p>tama</p> <p>matau</p> <p>kori tinana</p> <p>6</p>			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11

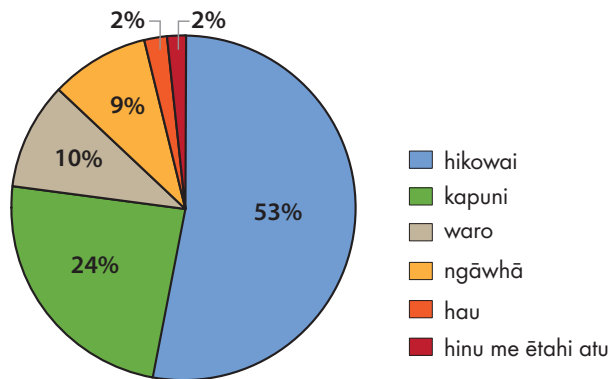


kōtiro	kōtiro	kōtiro			
matau	pāngarau	mauī	tikanga ā-iwi	matau	tikanga ā-iwi
2	1	3			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
kōtiro	kōtiro	kōtiro			
mauī	pānuī pukapuka	matau	pāngarau	matau	pūtaiao
3	3	4			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
kōtiro	kōtiro	kōtiro			
mauī	pānuī pukapuka	matau	toi	matau	toi
4	3	2			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
kōtiro	kōtiro	kōtiro			
matau	pānuī pukapuka	matau	toi	matau	toi
4	3	2			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11
kōtiro	kōtiro	kōtiro			
mauī	pūtaiao	matau	kori tinana	mauī	kori tinana
2	5	5			
Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11	Te Tauanga	Whārangī Tārua 11

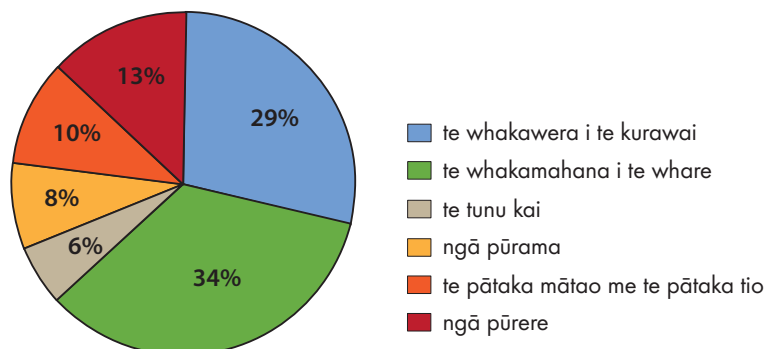
Mā hea haere ai ki te kura

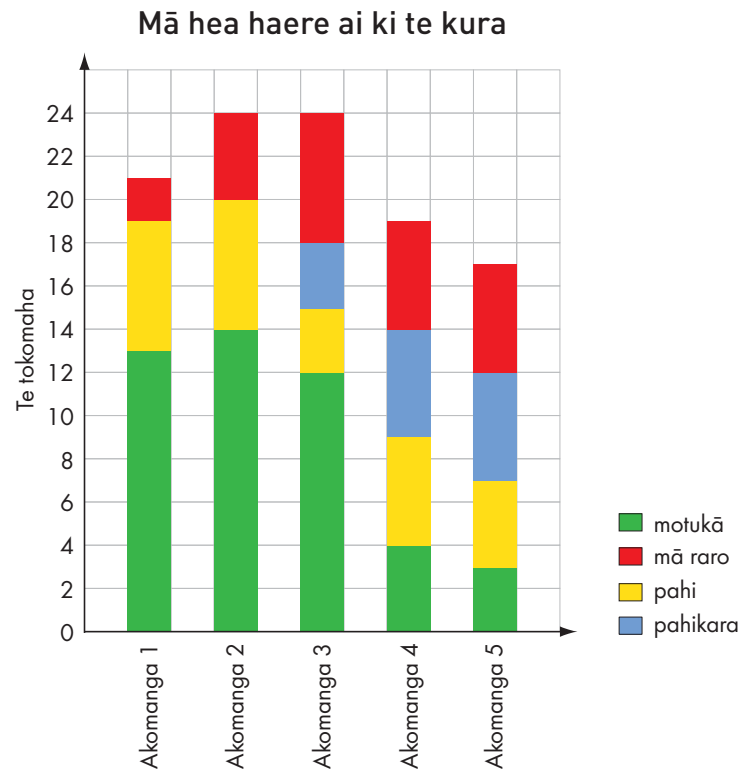


Ngā momo whakaputanga hiko i Aotearoa 2009



Te whakapaunga hiko i te kāinga





Te kaupapa ako e tino manakohia ana

	Akomanga 1	Akomanga 2	Akomanga 3	Akomanga 4
Te reo (tuhituhi, kōrero, pānui)	5	8	7	6
Te pāngarau	6	2	4	5
Te pūtaiao	2	2	3	2
Ngā toi	3	7	4	2
Te kori tinana	5	4	4	5
Te tikanga ā-iwi	2	1	3	3

Ngā haora mātakitaki pouaka whakaata i ia pō

	0–1 haora	1–2 haora	2–3 haora	3–4 haora	4+ haora
Kōtiro	5	7	4	2	0
Tama	2	5	7	4	2

Te tangata rongonui e manakohia ana me ngā haora kori tinana i ia wiki

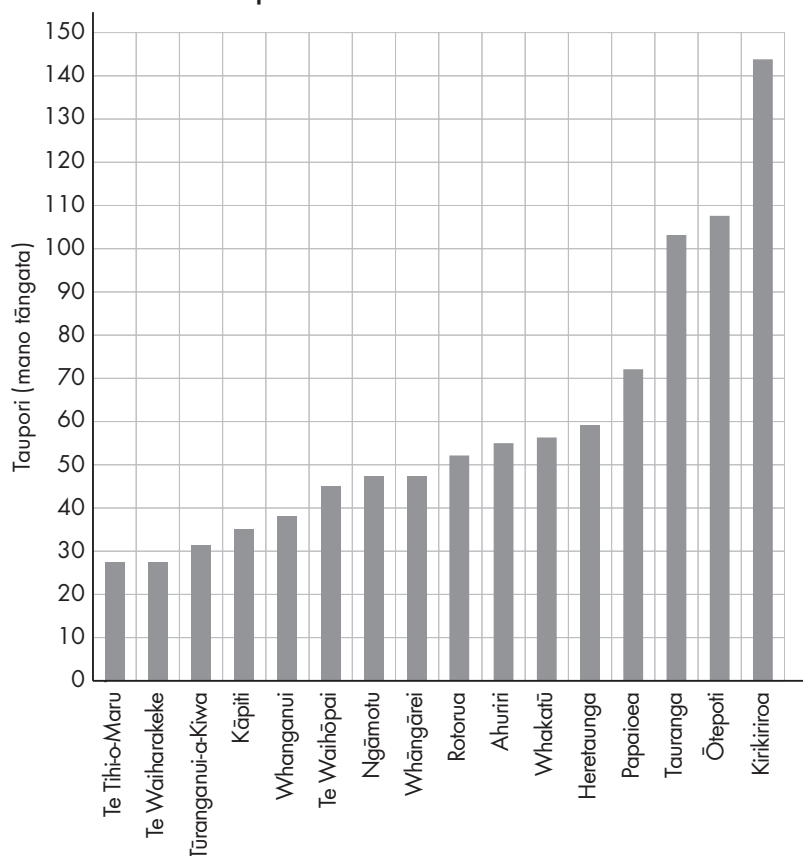
Haora kori tinana	0–1 haora	1–2 haora	2–3 haora	3–4 haora	4–5 haora	5+ haora
He toa hākinakina	0	1	3	5	7	6
He toa waiata	4	3	3	3	2	0
He toa whakaari	3	2	4	5	4	1
He toa tōrangapū	0	1	2	0	1	0
He kaiako	4	5	4	3	2	1
Tētahi whanaunga	2	4	5	4	3	1

Kaupapa 1:

Te taupori o ētahi tāone o Aotearoa

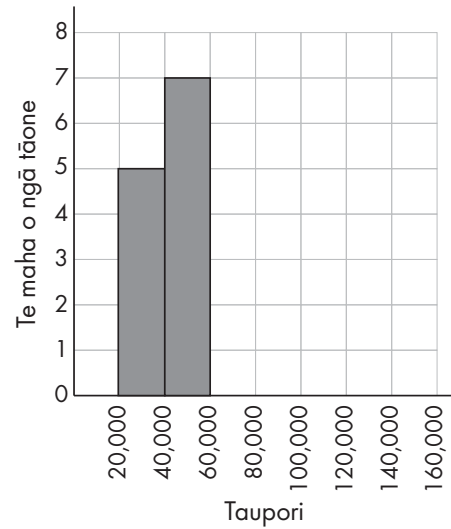
Te tāone	Taupori (2010)
Ahuriri	54,832
Heretaunga	59,615
Kāpiti	35,609
Kirikiriroa	143,602
Ngāmotu	47,531
Ōtepoti	107,027
Papaioea	72,412
Rotorua	52,987
Tauranga	103,210
Te Waiharakeke	27,342
Te Waihōpai	45,374
Te Tihi-o-Maru	27,112
Tūranganui-a-Kiwa	31,406
Whakatū	56,224
Whanganui	38,908
Whāngārei	47,638

Te taupori o ētahi tāone o Aotearoa



Rōpū taupori	Te maha o ngā tāone
20,000 – 40,000	5
40,000 – 60,000	...
...	...

Ngā rōpū taupori o ngā tāone o Aotearoa



Kaupapa 2:

Ngā omanga a ngā tāngata o tētahi tīma kirikiti

Tāngata	Omanga		
	Kēmu 1	Kēmu 2	Kēmu 3
Waiora	34	31	37
Hāpai	4	0	7
Te Rito	56	3	14
Āwhina	67	72	14
Anaru	5	24	18
Manaaki	37	42	21
Keita	63	13	25
Ihipa	81	64	55
Maka	11	15	0
Kahurangi	2	35	42
Kapua	27	42	85
Tīmoti	46	18	4
Haratua	21	23	22

Kaupapa 3: Ngā marama o ngā rā whānau o tētahi hunga tamariki

Te marama	Te maha o ngā rā whānau
Pipiri	4
Hōngongoi	7
Hereturikōkā	2
Mahuru	8
Whiringa ā-nuku	3
Whiringa ā-rangi	5
Hakihea	5
Kohitātea	4
Huitanguru	8
Poutūterangi	6
Paengawhāwhā	2
Haratua	3

Kaupapa 4: Te tāroaroa o tētahi hunga tāngata

Te tāroaroa (cm)	Te maha o ngā tāngata	
	Wāhine	Tāne
120 – 130	2	0
130 – 140	4	1
140 – 150	7	5
150 – 160	8	9
160 – 170	12	15
170 – 180	8	12
180 – 190	2	7

Kaupapa 5: Ngā tāwhitiwhiti o tētahi hunga tamariki i te kura

Te tawhiti (km)	Te maha o ngā tamariki	
	Kōtiro	Tama
0 – 0.5	12	14
0.5 – 1.0	15	13
1.0 – 1.5	11	14
1.5 – 2.0	8	7
2.0 – 2.5	5	5
2.5 – 3.0	3	5
3.0 – 3.5	4	2
3.5 – 4.0	2	1
4.0 – 4.5	1	3
4.5 – 5.0	0	1

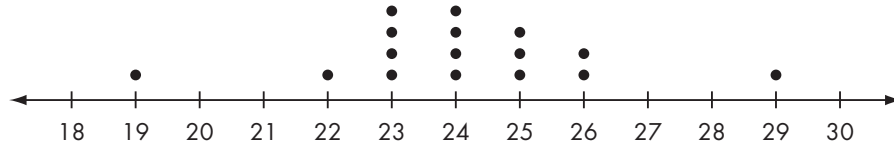
Te tāroaroa me te taumaha o ētahi tāngata

Tāroaroa (cm)	140	175	160	140	145	180	173	168	156	153	135	158	174	181
Taumaha (kg)	105	84	80	75	77	90	83	80	78	76	70	77	85	92

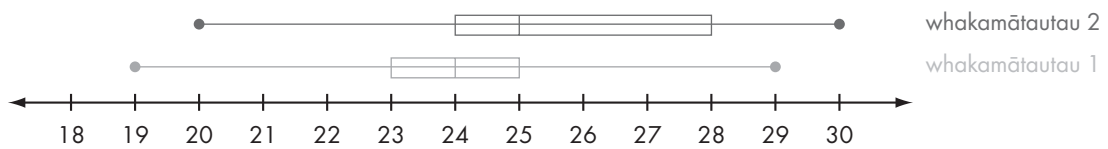
Te māka i tētahi whakamātautau pāngarau me te māka i tētahi whakamātautau reo

Reo	78	62	83	94	55	56	67	83	69	75	74	92	72	64
Pāngarau	80	65	81	93	93	58	65	79	71	76	72	48	75	63

Ngā māka whakamātautau a tētahi rōpū



Ngā māka a tētahi rōpū i ngā whakamātautau e rua



Ngā tapeke hahau pōro a tētahi rōpū

68, 69, 71, 71, 74, 74, 75, 75, 75, 75, 78, 78, 79, 80, 81, 81, 81, 81, 89, 90, 95

Te tāroaroa o ngā ākonga o ētahi akomanga e rua (cm)

Akomanga 1	162, 153, 175, 135, 140, 141, 141, 148, 137, 142, 143, 155, 138
Akomanga 2	128, 140, 132, 147, 185, 172, 156, 147, 178, 134, 143, 164, 176

Te wā i oti ai i tētahi rōpū whakataetae te 30km te pahikara (haora:meneti)

Wāhine	1:05, 1:01, 1:28, 0:58, 1:02, 1:00, 0:56, 0:58, 1:05, 1:13, 1:08, 1:04, 1:02, 0:57, 1:00, 1:03
Tāne	1:02, 1:16, 0:52, 0:55, 1:28, 1:18, 1:13, 0:53, 1:04, 1:17, 1:21, 1:25, 1:17, 1:07, 1:19, 0:58



Wāhanga 5
Te Kuputaka



Māori → Ingarihi

arohaehae	critique
arotake	review
āwhata	scale
hangarite	symmetrical, symmetry (<i>takenga mai</i> : hanga – shape; rite – alike, corresponding)
haukume	biased (<i>takenga mai</i> : haukume – pull)
hauwhā ~tia ~tanga	quartile
hauwhā raro	lower quartile
hauwhā runga	upper quartile
hiato	composite (<i>takenga mai</i> : hiato – be gathered together)
hikuwaru	irregular (<i>takenga mai</i> : hikuwaru – crooked, asymmetrical)
hoahoa huinga	Venn diagram
hora raraunga	spread of data
hōtaka rorohiko	computer programme
huānga	element, member (of a set) (<i>takenga mai</i> : huānga – relative, member of the same hapū)
huapae	horizontal
huatango	difference (in subtraction) (<i>takenga mai</i> : hua – outcome, product; tango – subtract)
huinga pātahi	intersection set
huinga raraunga	dataset
ia	trend
inaki	overlap
ine hauwhātanga	inter-quartile range
ine pānga	correlation
ine pānga tōraro	negative correlation
ine pānga tōrunga	positive correlation
kapa	row (<i>kupu kē atu</i> : rārangi huapae [horizontal line])
kāri raraunga	data card
kauwhata	graph (<i>takenga mai</i> : kauwhata – stage or frame)
kauwhata ira	dot graph, dot plot
kauwhata kauamo	box and whisker graph, boxplot (<i>takenga mai</i> : kauwhata – graph; kauamo – pole of a ladder)
kauwhata marara	scatter graph
kauwhata porowhita	pie graph, circle graph
kauwhata pou	bar graph
kauwhata pouhere	histogram (<i>takenga mai</i> : kauwhata pou – bar graph; here – tie, bind)
kauwhata pou hiato	composite bar graph (<i>takenga mai</i> : kauwhata pou – bar graph; hiato – be gathered together)

kauwhata pou whakaapaapa	stacked bar graph (<i>takenga mai</i> : kauwhata pou – bar graph; whakaapaapa – stack)
kauwhata rārangi	line graph
kauwhata rautō	stem and leaf graph (<i>takenga mai</i> : kauwhata – graph; rau – leaf; tō – stem)
kauwhata rautō hiato	composite stem and leaf graph
kauwhata tāhei	strip graph (<i>takenga mai</i> : kauwhata – graph; tāhei – band, stripe)
kauwhata whakaahua	picture graph, pictograph (<i>kupu kē atu</i> : kauwhata pikitia)
kohikohi raraunga	data collection
kōhure	distinctive, prominent (<i>takenga mai</i> : kōhure – outstanding, conspicuous <i>kupu kē atu</i> : tāpua)
kōpiko	curve
mahere	map, plan
manei ~tanga	fluctuate, fluctuation (<i>takenga mai</i> : manei – waver, vacillate <i>kupu kē atu</i> : mānenei)
matapae ~hia	predict
matapōkere	random (<i>takenga mai</i> : matapōkere – blindly, at random, in the dark <i>kupu kē atu</i> : kapo noa, tupurangi)
matatapu	private, confidential
matatika	ethics (<i>takenga mai</i> : matatika - right, straight)
mōkito	minimum (of a data set) (<i>takenga mai</i> : mōkito [mōkitokito] – minute, small)
mōrahi	maximum (of a data set)
motukore	continuous (<i>takenga mai</i> : motu – severed, broken off; kore – not, negative)
motumotu	discrete (<i>takenga mai</i> : motumotu – divided into isolated portions)
mōwaho	outlier (<i>takenga mai</i> : mōwaho – on the outside)
nahanaha	systematic (<i>takenga mai</i> : nahanaha – well arranged, in good order)
ōrau	percent (<i>takenga mai</i> : ō – of, belonging to; rau – hundred <i>kupu kē atu</i> : paihēneti)
pānga	function, relation (<i>takenga mai</i> : pā – connected with <i>kupu kē atu</i> : hononga)
pānga tahi	one-to-one relationship
parahau ~tia	justify (<i>takenga mai</i> : parahau – protection, defence)
pātahi	intersect
pātengi raraunga	database (<i>kupu kē atu</i> : putu raraunga)
pewanga	sector (of a circle)
pōti	vote
pōti huna	secret ballot, anonymous vote
pou	column (<i>kupu kē atu</i> : rārangi poutū [vertical line])
poutū	vertical (<i>kupu kē atu</i> : poupou)
rāpoi	cluster (<i>takenga mai</i> : rāpoi – swarm, cluster, assemble)
raraunga	data (<i>takenga mai</i> : rarau – lay hold of)

raraunga houanga	time series data (<i>takenga mai</i> : raraunga – data; houanga – an interval of time <i>kupu kē atu</i> : raraunga takanga wā)
raraunga kounga	qualitative data
raraunga matarua	bivariate data
raraunga matatahi	univariate data
raraunga matatini	multivariate data
raraunga motukore	continuous data
raraunga motumotu	discrete data
raraunga rōpū matatini	multivariate category data
raraunga taketake	raw data
raraunga tatau	quantitative data
raraunga whakarōpū	grouped data
ripanga	spreadsheet (<i>takenga mai</i> : ripa – row, rank, line)
ripanga rorohiko	computer spreadsheet
rōnaki	gradient, slope (<i>takenga mai</i> : rōnaki – sloping, slanting)
rōpū	category, group
rōpū raraunga	category of data
tāiringa kōrero	conjecture (<i>takenga mai</i> : tāiri – be suspended; kōrero – talk)
tāpae ~tanga kōrero	assert, assertion (<i>takenga mai</i> : tāpae – place before a person, present; kōrero – talk)
tārima ~hia	tally in fives (<i>takenga mai</i> : tā – print; rima – five)
tāroaroa	height (of a person)
tātari	analyse
tatau ~ria	count, tally (<i>kupu kē atu</i> : kaute)
tauanga	statistics
tauirā	pattern, example
taunaki ~tanga	evidence (<i>takenga mai</i> : taunaki – support, reinforce)
taupori	population (<i>takenga mai</i> : tau – number; pori – people, tribe)
taurangi	variable
taurangi motukore	continuous variable (<i>kupu kē atu</i> : taurangi whaiwhai)
taurangi motumotu	discrete variable
taurangi rāwekeweke	independent variable (<i>takenga mai</i> : taurangi – variable; rāwekeweke [raweke] – manipulate)
taurangi whakamauru	dependent variable (<i>takenga mai</i> : taurangi – variable; whakamauru – lean upon)
tau tānui	mode (<i>takenga mai</i> : tau – number; tā – print; nui – many <i>kupu kē atu</i> : tauputu)
tau waenga	median (of a data set)
tauwhata	point on a scale (<i>takenga mai</i> : tau – number; whata [āwhata] – scale)
teitei	altitude, height, high, tall (<i>kupu kē atu</i> : tāroaroa [of a person], tiketike)

tihi	1. apex (<i>takenga mai</i> : tihi – summit, top, peak) 2. maximum (of a graph)
tikanga matatika	ethical convention
tīpako ~hia	sample, select, selection (<i>takenga mai</i> : tīpako – pick out, select)
tīpako haukume	skewed sample, non-representative sample (<i>kupu kē atu</i> : tīpako tītaha)
tīpako matapōkere	random sample
tīpako tōtika	representative sample
tītaha	skewed (<i>takenga mai</i> : tītaha – lean to one side, slant)
tītaha tōraro	negatively skewed
tītaha tōrunga	positively skewed
toharite	mean, average (<i>takenga mai</i> : toha [tohatoha] – distribute; rite – alike, corresponding)
tohatoha ~ina	distribute, share
tohatoha ōrite	equal sharing
tōkeke	fair, unbiased (<i>takenga mai</i> : tōkeke – just, impartial)
tuaka	axis (<i>takenga mai</i> : tuaka – midrib of a leaf)
tuaka hangarite	axis of symmetry (<i>kupu kē atu</i> : rārangi hangarite)
tuaka pae	horizontal axis (<i>tohu</i> : tuaka-x)
tuaka pou	vertical axis (<i>tohu</i> : tuaka-y)
tuari	distribution
tuari māori	normal distribution (<i>kupu kē atu</i> : tuari hangarite)
tuari tīhirua	bimodal distribution
tuari tītaha	skewed distribution
tūhuratanga tauanga	statistical investigation
tukutuku	grid
tūtohi	chart, table (of data) (<i>takenga mai</i> : tūtohi – point out, indicate <i>kupu kē atu</i> : papa raraunga)
tūtohi auau	frequency table
tūtohi tatau	tally chart
wēanga	measure of central tendency (<i>takenga mai</i> : wē – the middle)
wehewehe (raraunga)	sort (data)
whakaari raraunga	data display (<i>kupu kē atu</i> : whakaaturanga raraunga)
whakamāori ~tia	interpret
whakapae	hypothesis
whakarōpū ~tanga	group, category
whārangi tārua	blackline master, copymaster
whāruarua	minimum (of a graph) (<i>takenga mai</i> : whāruarua – concave, depressed)

Ingarihi → Māori

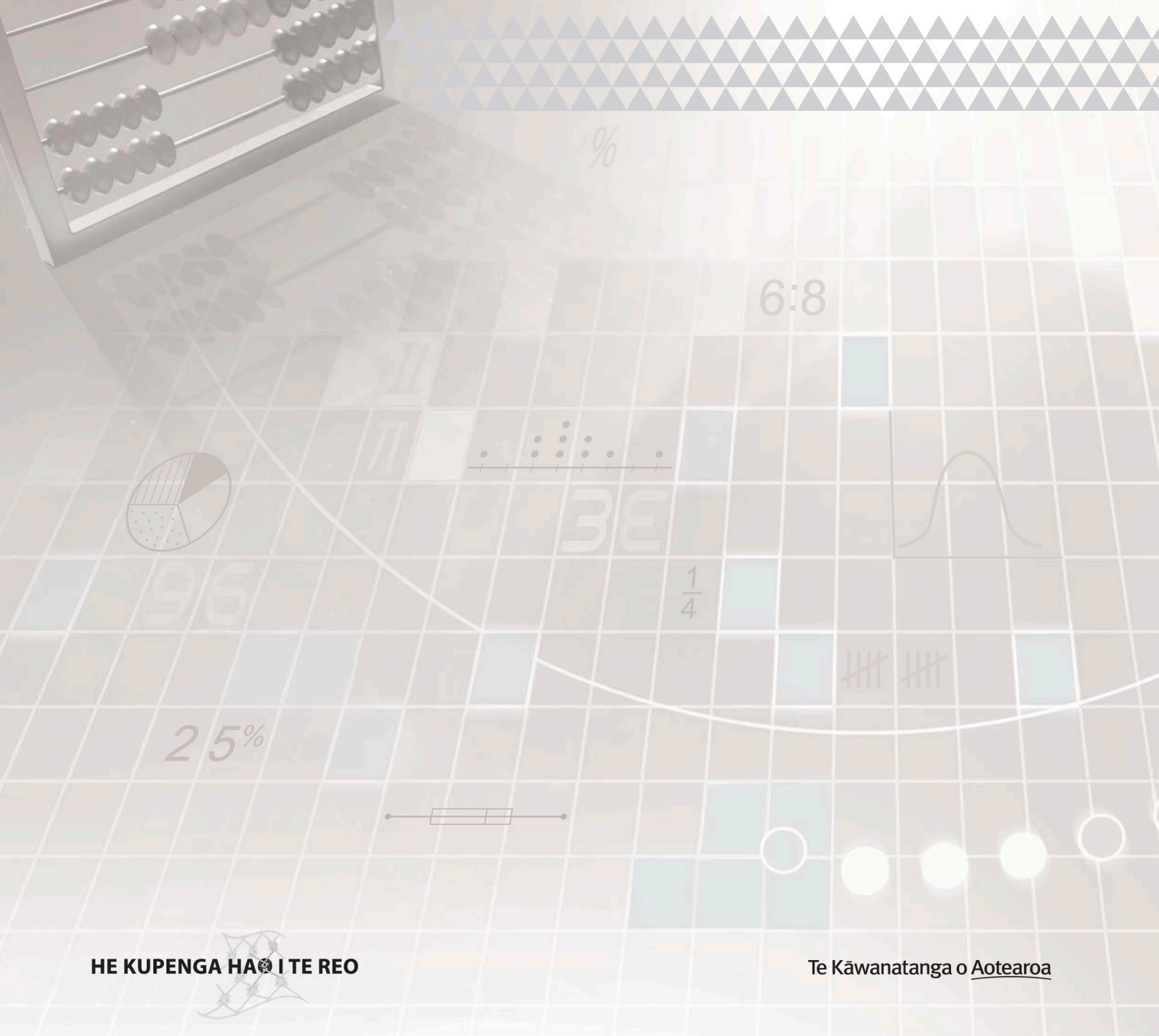
analyse	tātari
anonymous vote, secret ballot	pōti huna
assert, assertion	tāpae ~tanga kōrero (<i>takenga mai</i> : tāpae – place before a person, present; kōrero – talk)
average, mean	toharite (<i>takenga mai</i> : toha [tohatoha] – distribute; rite – alike, corresponding)
axis	tuaka (<i>takenga mai</i> : tuaka – midrib of a leaf)
axis of symmetry	tuaka hangarite (<i>kupu kē atu</i> : rārangi hangarite)
bar graph	kauwhata pou
bias, biased	haukume (<i>takenga mai</i> : haukume – pull)
bimodal distribution	tuari tihirua
bivariate data	raraunga matarua
box and whisker graph, boxplot	kauwhata kauamo
category, group	rōpū, whakarōpū ~tanga
category of data	rōpū raraunga
cluster	rāpoi (<i>takenga mai</i> : rāpoi – swarm, cluster, assemble)
column	pou (<i>kupu kē atu</i> : rārangi poutū [vertical line])
composite	hiato (<i>takenga mai</i> : hiato – be gathered together)
composite bar graph	kauwhata pou hiato (<i>takenga mai</i> : kauwhata pou – bar graph; hiato – be gathered together)
composite stem and leaf graph	kauwhata rautō hiato
computer programme	hōtaka rorohiko
computer spreadsheet	ripanga rorohiko
confidential, private	matatapu
conjecture	tāiringa kōrero (<i>takenga mai</i> : tāiri – be suspended; kōrero – talk)
continuous	motukore (<i>takenga mai</i> : motu – severed, broken off; kore – not, negative)
continuous data	raraunga motukore
continuous variable	taurangi motukore (<i>kupu kē atu</i> : taurangi whaiwhai)
copymaster	whārangi tārua
correlation	ine pānga
critique	arohaehae
curve	kōpiko
data	raraunga (<i>takenga mai</i> : rarau – lay hold of)
data card	kāri raraunga
data collection	kohikohi raraunga (<i>takenga mai</i> : kōhure – outstanding, conspicuous <i>kupu kē atu</i> : tāpua)

data display	whakaari raraunga (<i>kupu kē atu</i> : whakaaturanga raraunga)
database	pātengi raraunga (<i>kupu kē atu</i> : putu raraunga)
dataset	huinga raraunga
dependent variable	taurangi whakamauru (<i>takenga mai</i> : taurangi – variable; whakamauru – lean upon)
difference (in subtraction)	huatango (<i>takenga mai</i> : hua – outcome, product; tango – subtract)
discrete	motumotu (<i>takenga mai</i> : motumotu – divided into isolated portions)
discrete data	raraunga motumotu
discrete variable	taurangi motumotu
distinctive	kōhure
distribute, share	tohatoha ~ina
distribution	tuari
dot graph, dot plot	kauwhata ira (<i>takenga mai</i> : kauwhata – graph; kauamo – pole of a ladder)
element, member (of a set)	huānga (<i>takenga mai</i> : huānga – relative, member of the same hapū)
equal sharing	tohatoha ōrite
ethical convention	tikanga matatika
ethics	matatika (<i>takenga mai</i> : matatika - right, straight)
evidence	taunaki ~tanga (<i>takenga mai</i> : taunaki – support, reinforce)
example, pattern	tauirā
fluctuate, fluctuation	manei ~tanga (<i>takenga mai</i> : manei – waver, vacillate <i>kupu kē atu</i> : mānenei)
frequency table	tūtohi auau
function, relation	pānga (<i>takenga mai</i> : pā – connected with <i>kupu kē atu</i> : hononga)
gradient, slope	rōnaki (<i>takenga mai</i> : rōnaki – sloping, slanting)
graph	kauwhata (<i>takenga mai</i> : kauwhata – stage or frame)
grid	tukutuku
group, category	whakarōpū ~tanga, rōpū
grouped data	raraunga whakarōpū
height (of a person)	tāroaroa
histogram	kauwhata pouhere (<i>takenga mai</i> : kauwhata pou – bar graph; here – tie, bind)
horizontal	huapae (<i>kupu kē atu</i> : pae, whakapae)
horizontal axis	tuaka pae (<i>tohu</i> : tuaka- <i>x</i>)
hypothesis	whakapae
independent variable	taurangi rāwekeweke (<i>takenga mai</i> : taurangi – variable; rāwekeweke [raweke] – manipulate)
interpret	whakamāori ~tia
inter-quartile range	ine hauwhātanga

intersect	pātahi
intersection set	huinga pātahi
irregular	hikuwaru (<i>takenga mai</i> : hikuwaru – crooked, asymmetrical)
justify	parahau ~tia (<i>takenga mai</i> : parahau – protection, defence)
line graph	kauwhata rārangi
lower quartile	hauwhā raro
maximum (of a data set)	mōrahi
maximum (of a graph)	tīhi (<i>takenga mai</i> : tīhi – summit, top, peak)
mean, average	toharite (<i>takenga mai</i> : toha [tohatoha] – distribute; rite – alike, corresponding)
measure of central tendency	wēanga (<i>takenga mai</i> : wē – the middle)
median (of a data set)	tau waenga (<i>takenga mai</i> : tau – number; whata [āwhata] – scale)
member (of a set), element	huānga (<i>takenga mai</i> : huānga – relative, member of the same hapū)
minimum (of a data set)	mōkito (<i>takenga mai</i> : mōkito [mōkitokito] – minute, small)
minimum (of a graph)	whāruarua (<i>takenga mai</i> : whāruarua – concave, depressed)
mode	tau tānui (<i>takenga mai</i> : tau – number; tā – print; nui – many <i>kupu kē atu</i> : tauputu)
multivariate category data	raraunga rōpū matatini
multivariate data	raraunga matatini
negative correlation	ine pānga tōraro
negatively skewed	tītaha tōraro
non-representative sample	tīpako haukume (<i>kupu kē atu</i> : tīpako tītaha)
normal distribution	tuari māori (<i>kupu kē atu</i> : tuari hangarite)
one-to-one relationship	pānga tahi
outlier	mōwaho (<i>takenga mai</i> : mōwaho – on the outside)
overlap	inaki
pattern, example	tauirā
percent	ōrau (<i>takenga mai</i> : ō – of, belonging to; rau – hundred <i>kupu kē atu</i> : paihēneti)
picture graph, pictograph	kauwhata whakaahua (<i>kupu kē atu</i> : kauwhata pikitia)
pie graph	kauwhata porowhita
plan	mahere
point on a scale	tauwhata
population	taupori (<i>takenga mai</i> : tau – number; pori – people, tribe)
positive correlation	ine pānga tōrunga
positively skewed	tītaha tōrunga
predict	matapae ~hia
private, confidential	matatapu

qualitative data	raraunga kounga
quantitative data	raraunga tatau
quartile	hauwhā ~tia ~tanga
random	matapōkere (<i>takenga mai</i> : matapōkere – blindly, at random, in the dark <i>kupu kē atu</i> : kapo noa, tupurangi)
random sample	tīpako matapōkere
range	inenga whānui
raw data	raraunga taketake
relation, function	pānga (<i>takenga mai</i> : pā – connected with <i>kupu kē atu</i> : hononga)
representative sample	tīpako tōtika
review	arotake
row	kapa (<i>kupu kē atu</i> : rārangi huapae [horizontal line])
sample, select, selection	tīpako ~hia (<i>takenga mai</i> : tīpako – pick out, select)
scale	āwhata
scatter graph	kauwhata marara
secret ballot, anonymous vote	pōti huna
sector (of a circle)	pewanga
select, selection, sample	tīpako ~hia (<i>takenga mai</i> : tīpako – pick out, select)
share, distribute	tohatoha ~ina
skewed	tītaha (<i>takenga mai</i> : tītaha – lean to one side, slant)
skewed distribution	tuari tītaha
skewed sample, non-representative sample	tīpako haukume (<i>kupu kē atu</i> : tīpako tītaha)
slope, gradient	rōnaki (<i>takenga mai</i> : rōnaki – sloping, slanting)
sort (data)	wehewehe (raraunga)
spread of data	hora raraunga
spreadsheet	ripanga (<i>takenga mai</i> : ripa – row, rank, line)
stacked bar graph	kauwhata pou whakaapaapa (<i>takenga mai</i> : kauwhata pou – bar graph; whakaapaapa – stack)
statistical investigation	tūhuratanga tauanga
statistics	tauanga
stem and leaf graph	kauwhata rautō (<i>takenga mai</i> : kauwhata – graph; rau – leaf; tō – stem)
strip graph	kauwhata tāhei (<i>takenga mai</i> : kauwhata – graph; tāhei – band, stripe)
symmetrical, symmetry	hangarite (<i>takenga mai</i> : hanga – shape; rite – alike, corresponding)
systematic	nahanaha (<i>takenga mai</i> : nahanaha – well arranged, in good order)
table (of data)	tūtohi (<i>takenga mai</i> : tūtohi – point out, indicate <i>kupu kē atu</i> : papa raraunga)

tally chart	tūtohi tatau
tally in fives	tārima ~hia (<i>takenga mai</i> : tā – print; rima – five)
time series data	raraunga houanga (<i>takenga mai</i> : raraunga – data; houanga – an interval of time <i>kupu kē atu</i> : raraunga takanga wā)
trend	ia
unbiased	tōkeke (<i>takenga mai</i> : tōkeke – just, impartial)
univariate data	raraunga matatahi
upper quartile	hauwhā runga
variable	taurangi (<i>takenga mai</i> : taurangi – variable)
Venn diagram	hoahoa huinga
vertical	poutū (<i>kupu kē atu</i> : pou pou)
vertical axis	tuaka pou (<i>tohu</i> : tuaka-y)
vote	pōti



HE KUPENGA HA  I TE REO

Te Kāwanatanga o Aotearoa