



TE TĀHUHU O TE MĀTAURANGA

Ministry of Education

Te Poutama Tau

Pukapuka Tuatoru

Te Whakamahere

Ngā Rauemi Tautoko 2008

Te Poutama Tau

Ka mihi ake ki ngā pouako o roto i ngā kura reo Māori puta noa i te motu, e hāpai ana i ngā kaupapa maha e ora pai ai tō tātou reo rangatira, e eke ai ā tātou tamariki i ngā taumata o te mātauranga. He pukapuka tēnei hei āwhina i te kaupapa o Te Poutama Tau, hei whakamārama i ōna tini wāhanga, hei whakaatu hoki i ētahi o ngā mahi whakaako. He mea nui te mātauranga pāngarau i roto i tō tātou ao, he pērā anō hoki i te wā o ngā mātua tīpuna. Nō reira, e tika ana kia eke panuku, eke tangaroa ā tātou tamariki i ngā taumata mōhio o te pāngarau, kia whakamaua kia tina, hui e, taiki e!

Ko te pouako te tino tangata e angitu ai ngā ākonga i roto i ngā mahi pāngarau. He mea nui te mātauranga o te pouako ki ēnei āhuetanga:

- ngā tini wāhanga o te pāngarau;
- te āhua o te ako a te tamaiti;
- ngā uauatanga ka pā ki te tamaiti;
- ngā mātāpono me ngā momo huarahi whakaako;
- te whakairo i te kupu whakaako kia māmā, kia mārama tonu.

Ko te whāinga matua o Te Poutama Tau he whakapiki i ēnei pūkenga mātauranga o ngā pouako, ā, mā konei anō hoki e piki ai te ekenga paetae a ngā tamariki i roto i ngā kura reo Māori.

E whanake haere ana Te Poutama Tau. I takea mai i te kaupapa reo Ingarihi engari, i roto i ngā tau nei, he maha tonu ngā āhuetanga i puta mai i ngā mahi i roto i ngā kura reo Māori kua pā ki te āhua o te tārai i tō tātou waka pāngarau reo Māori. Arā, e mātau haere ana tātou ki:

- te āhua o te whakaaro pāngarau o te tamaiti e ako ana i roto i te reo Māori;
- te āhua tonu o te reo Māori hei whakaako i ngā tini kaupapa o te pāngarau;
- te tautuhi tika i ngā wāhi e ngoikore ana te mātauranga o te tamaiti me ngā huarahi hei kake ake i aua ngoikoretanga;
- te āhua o ngā kaupapa whakapiki pouako e huri ai te āhua o te whakaako i te pāngarau.

Ia tau, ka rangahaua te kaupapa o Te Poutama Tau, ka whakahokia he kōrero arotake mai i ngā kaitakawaenga, mai i ngā tumuaki, i ngā pouako hoki, hei whakawhanake tonu i te kaupapa mō te tau e heke mai ana.

Kua takoto te mānuka, mā tātou katoa e kawē ake. Tēnā tātou katoa.

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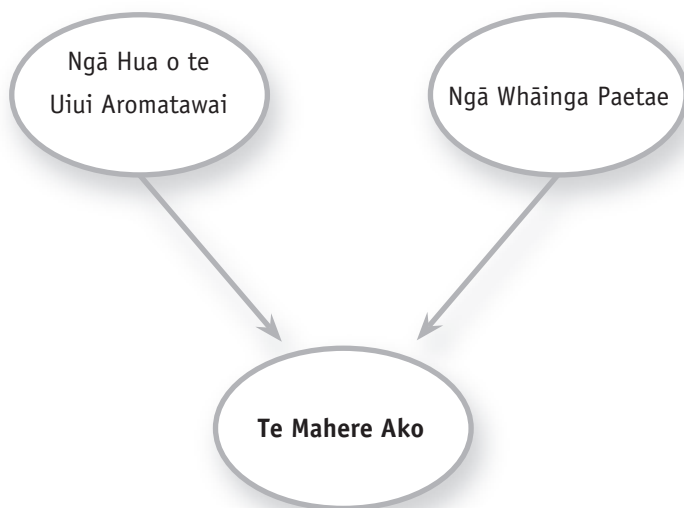
Te Wāhanga 1

Te Whakamārama

E rua ngā kaupapa o tēnei pukapuka:

- te whakarite i ngā hua ka puta i te Uiui Aromatawai (UiuiPT);
- te whakamahere i te hōtaka ako.

E tino hono ana ēnei āhuatanga e rua, me te hono anō ki ngā whāinga paetae o roto i *Pāngarau i roto i te Marautanga o Aotearoa*.



Ko tā te Uiui Aromatawai, he waitohu i te kaupae rautaki me te kaupae mātauranga a te ākonga. Ka noho ēnei me ngā whāinga paetae o *Pāngarau i roto i te Marautanga o Aotearoa* hei pūtake mō te whakamahere i ngā akoranga e hāngai ana ki ngā ākonga.

Te Wāhanga 2

Te Whakamahi i ngā Hua o te Uiui Aromatawai

Te Mātauranga Tau: Ngā Āhuatanga Ngoikore

Ina āta tirohia ngā hua ka puta i ngā pātai mātauranga o te UiuiPT, tērā e kitea ngā āhuatanga o te mātauranga tau e pakari ana ngā ākonga me ngā āhuatanga e ngoikore ana. Ko ngā āhuatanga e ngoikore ana te nuinga o ngā ākonga, koia hei whakaako ki te akomanga katoa – ākene pea i roto i te “wā whakamahana” o ia akoranga.

Kei roto i te Pukapuka Tuawhā o Te Poutama Tau ngā ngohe me ngā mahi whakaako e pā ana ki te mātauranga tau.

Kei ngā whārangi 10–11 o tēnei pukapuka ngā tūtohi hei tuhi i ngā rōpū ākonga mō te whakaako i ngā rautaki tau. Kei ēnei tūtohi tētahi wāhi hei tuhi i ngā āhuatanga e ngoikore ana te nuinga o ngā ākonga.

Mō ētahi ākonga tokomaha, kāore e rite ana te kaupae rautaki me te kaupae mātauranga. Hei tauira, he pakari pea te taha ki ngā rautaki, engari he uua tonu te whakamahi i aua rautaki nā te ngoikore o te mātauranga ki ngā tau nui.

Ngā Rautaki Tau: Te Kaupae e Tika Ana

Ākene pea e whakamahi ana te ākonga i ngā rautaki e hāngai ana ki ētahi kaupae maha. Nō reira, mō te whakarōpū i ngā ākonga, whakatauria te kaupae rautaki e tino whakamahia ana e te ākonga, koia hei waitohu i te rōpū e tika ana mōna.

E hāngai ana ngā kaupae rautaki 1–6 ki te tāpiritanga me te tangohanga, me te whakawhiti o te ākonga mai i ngā rautaki tatau ki ngā rautaki wāwāhi tau. Āta tirohia ngā hua o ngā pātai o te “Tirohanga Poto” ki te whakatau i te kaupae e tika ana.

E tika ana kia matatau te ākonga ki ngā rautaki mō te tāpiritanga me te tangohanga kia taea ai e ia te whakaoti whakareatanga, wehenga hoki.

Mēnā kei te kaupae 5 tētahi ākongā mō ngā rautaki tāpiri, tango hoki, kei te kaupae 6 mō te whakareatanga me te wehenga, e tika ana kia whakatauria te kaupae 5, ka whakapakari i ērā o ngā rautaki i te tuatahi, kātahi ka whakawhiti atu ki te kaupae 6.

Whakatauria te kaupae 7 ki ērā ākongā kua eke atu ki te kaupae 6 mō ngā rautaki tāpiri, tango hoki, ā, e pakari hoki ana ki ngā rautaki whakarea me te wehe.

Whakatauria te kaupae 8 ki ērā ākongā kua eke atu ki te kaupae 6 mō ngā rautaki tāpiri me te tango, te kaupae 7 mō ngā rautaki whakarea me te wehe, ā, e pakari hoki ana ki ngā rautaki whakaoti rapanga e whai wāhi mai ana te hautanga, te ōwehenga, me te pānga riterite.

Te Aromatawai Tonu

E tika ana kia haere tonu te aromatawai i te whanake o te mātauranga me ngā rautaki – ehara i te mea mā te UiuIPT anake e mōhio ai te pouako e pēhea nei te whanake haere o te ākongā. E pai ana kia haere tahi te mahi whakaako me te aromatawai, kia kaua te aromatawai e whakararu, e kōkuhu i te ako.

I te wā e whakaako rōpū ana te pouako e rangona ana ngā whakamārama a ngā ākongā, koia hei aromatawai mā te pouako. I te takanga o te wā, e pai ana te tuku pātai hei “aromatawai poto” i te haere whakamua o te ākongā. Tirohia te UiuIPT mō ngā momo pātai e hāngai ana. Kei runga hoki i te paetukutuku www.nzmaths.co.nz/numeracy/Other%20material/MaoriGloSS.htm ētahi atu pātai rautaki.

Ko tā te pouako, he tuhituhi i ngā hua o tāna mahi aromatawai. Kei ngā whārangi 49–61 te whakarārangi i te mātauranga me ngā rautaki hei ako mā te ākongā i tēnā kaupae, i tēnā.

He wāhi kei aua whārangi hei tuhi mā te pouako i te wā ka tutuki i te ākongā ngā whāinga ako. Raua atu ēnei whārangi ki te kōpae aromatawai a te ākongā, koia hei pūtake mō te tuhi pūrongo ki te whakamōhio i ngā mātua e pēhea ana te haere o te ākongā.

He pai anō hoki te whakamahi i ngā kōrero kei ēnei whārangi (49–61) i te wā ako, ki te whakamōhio atu i ngā ākongā he aha te mea e whakaakona ana. Māna anō e aromatawai mēnā kua tutuki i a ia te whāinga, kei te haere tonu rānei tāna ako.

Te Whakarōpū i ngā Ākongā

Whakarōpūngia ngā ākongā i runga i te kaupae rautaki kua whakatauria mā tēnā, mā tēnā. Tuhia te whakarōpūtanga o ngā ākongā ki tētahi o ngā tūtahi whakarōpū (whārangi 10–11, māu e kōwhiri te whārangi e hāngai ana ki ō ākongā).

Kei a koe te whiriwhiri mō te maha o ngā rōpū, engari he uaua te whakahaere i ngā rōpū maha i te wā kotahi. Mēnā he maha tonu ngā kaupae rautaki a ngā ākongā o roto i te akomanga kotahi, me whakakotahi ētahi o ngā kaupae. Hei tauira, mēnā e whakamahi ana ngā ākongā o te kaupae 4 i te rautaki tatau tonu mō ngā tau māmā noa iho, he pai tonu pea kia mahi tahi rātou me ngā ākongā o te kaupae 3. Hei tauira anō, mēnā e matatau ana ngā ākongā o te kaupae 4 ki te rautaki tatau tonu i rō hinengaro, he pai tonu kia mahi tahi rātou me ngā ākongā o te kaupae 5.

Mēnā he tokomaha ngā ākongā i te kaupae kotahi, he pai pea kia wehea rātou kia rua ngā rōpū, i runga anō i te matatau o ngā ākongā ki te whakamahi i ngā rautaki, me ā rātou kaupae mātauranga. Hei tauira, mēnā e 20 ngā ākongā i te kaupae 4, ā, tokowaru o rātou e whakamahi ana i ō rātou matimati ki te tatau tonu, 12 o rātou e tatau tonu ana i rō hinengaro, he māmā te whakawehe kia rua ngā rōpū.

Te Wāhanga 3

Te Whakamahere Akoranga Pāngarau

Te Whakahaere Rōpū Mahi

E tutuki pai ai te mahi ā-rōpū o te akomanga, me mātua whakaako ngā tamariki:

- kia taunga ki te mahi wehe kē i te pouako, ahakoa e mahi takitahi, takirua ana, e mahi ā-rōpū ana rānei. Mēnā ka taunga ngā tamariki ki te mahi wehe kē, kātahi ka pai te whakaako ā-rōpū. (Arā, i te wā e mahi tahi ana te pouako me tētahi rōpū, e mahi wehe kē ana ērā atu o ngā rōpū, me tā rātou pūmau anō ki te mahi i whakaritea mā rātou.)
- kia taunga ki te whakamahi, ki te tiaki hoki i ngā momo rauemi pāngarau, ina he wāhi nui ki te whakamahi rauemi i roto i ngā akoranga o Te Poutama Tau.

Koia nei ētahi ritenga mahi hei whakatau mā te pouako me āna ākongā, kia pai ai te haere o te wā ako:

- ngā whakahaere mō te whakaako i tētahi ngohe/kēmu hou;
- te huarahi hei whai mā te ākongā mēnā ka raruraru ia, ā, kāore e wātea ana te pouako ki te whakautu i āna pātai;
- te tuku i ngā tohutohu mō te wā ako, arā, he aha te mahi a tēnā rōpū, a tēnā rōpū – e pai ana te whakamahi i tētahi papa tohutohu pāngarau (tirohia whārangi 7);
- te tiro tiro i ngā mahi a ngā ākongā – mēnā kua oti, kua tutuki tā te pouako i tohu ai;
- te tiro tiro mēnā i tika ngā whakautu a ngā ākongā.

He nui ngā hua ka puta mēnā ka mahi takirua ngā ākongā i te wā e mahi wehe kē ana rātou i te pouako. Arā, mā te whakawhitiwhiti kōrero ki te hoa mahi, mā te āwhina a tētahi i tētahi ka tino ū te kaupapa ki te hinengaro. E pai ana mēnā he ōrite te kaupae mahi a tēnā me tēnā a te takirua.

He wā anō e pai ana te mahi takitahi e kite ai te pouako he aha ngā momo rapanga e taea ana e te ākongā i tōna kotahi. Koia nei ētahi momo mahi mā te ākongā takitahi:

- he mahi whakaharatau i ngā rautaki i whakaakona i te wā ako i mua;
- he kēmu, he panga rānei e hāngai ana ki te kaupae rautaki o te ākongā;
- he mahi whakaharatau i te mātauranga tau e hāngai ana ki te kaupae o te ākongā;
- he rapanga hei whakaoti;
- he tuhi rapanga hei whakaoti mā tētahi atu ākongā;
- he whakamahi rauemi hei tūhura i tētahi kaupapa hou.

He Tauira Mahere

E whai ake nei ētahi tauira mō te whakamahere i tētahi akoranga tau. I roto i ēnei tauira e kitea mai ana ēnei āhuatanga:

- te whakaako mātauranga tau ki te katoa o te akomanga;
- te whakaako rautaki tau;
- te whakahaere i ngā rōpū ako;
- te wā whakamahana i te tīmatanga o ia akoranga;
- te wā whakakapi i te akoranga.

E pai ana te whakaako i te katoa o te akomanga mēnā e āhua ngoikore ana ngā ākongā katoa ki tētahi āhuatanga o te mātauranga tau. He māmā te whakahaere, he māmā hoki te whakarite. Hei tauira, ko te whakaako ki te tatau, he ako rānei i ngā meka matua. Kei te pukapuka tuawhā ētahi ngohe me ētahi kēmu mō te whakaako i te mātauranga tau.

Hei tauria tuatahi:

E aro ana tēnei akoranga ki te mātauranga tau anake.

<p>Whakamahana (10 meneti)</p>	<ul style="list-style-type: none"> • Ka whai wāhi mai te akomanga katoa ki ēnei ngohe. Kia poto ngā ngohe. • Ka āta whakamāramatia te whāinga o te ngohe – kia mōhio ai ngā ākonga ki te āhuatanga ngoikore o te mātauranga tau e arotia ana i roto i te ngohe. Hei tauria, ko te ako i ngā tohuta, ko te tatau, ko te whakarōpū, ko ngā meka matua rānei.
<p>Whakapakari (40 meneti)</p>	<ul style="list-style-type: none"> • Ka mahi takirua, takirōpū ngā ākonga, ka mahi tahi rānei te katoa o te akomanga. • Ākene pea ka whakaritea ngā ngohe ki ētahi wāhi o te akomanga, ā, ka huri haere ngā ākonga ki tēnā, ki tēnā o ngā ngohe.
<p>Whakakapi (10 meneti)</p>	<ul style="list-style-type: none"> • He wā whakawhitiwhiti whakaaro mō ngā ngohe. • Ka whakarāpopotohia e te pouako ngā whāinga ako o ngā ngohe, me te hono anō i aua whāinga ki ngā akoranga o mua. • Ka tuku pātai te pouako kia āta whakaaroaro ngā ākonga ki ngā mahi kua oti i a rātou.

He pai te whakarōpū i ngā ākonga mō te whakaako rautaki tau, nā te mea he rerekē ngā momo rautaki e hāngai ana ki ia kaupae. Mā te whakawhitiwhiti

kōrero i roto i ngā rōpū e mārāma ai tētahi ākonga ki ngā rautaki a ētahi atu, e taea ai ngā rautaki te arohaehae, me te whakatau anō i te rautaki e tino māmā ana.

Hei tauria tuarua:

Te whakahaere i ētahi rōpū e toru i te roanga atu o te wiki.

	Rāhina	Rātū	Rāapa	Rāpare	Rāmere
He wā ka mahi tahi te akomanga katoa					
Rōpū 1	I te taha o te pouako		I te taha o te pouako	I te taha o te pouako	He wā: <ul style="list-style-type: none"> • aromatawai • āwhina i te ākonga takitahi • whakaako i tētahi ngohe hou
Rōpū 2	I te taha o te pouako	I te taha o te pouako		I te taha o te pouako	
Rōpū 3		I te taha o te pouako	I te taha o te pouako		I te taha o te pouako

Hei taurira tuatoru:

E aro ana tēnei akoranga ki te whakaako mātauranga ki te akomanga katoa me te whakarōpū anō i ngā ākonga mō te whakaako rautaki.

<p>Whakamahana (10 meneti) Kua oti ngā āhuetanga ngoikore o te mātauranga te tautuhi (mai i ngā hua o te UiuIPT)</p>	<ul style="list-style-type: none"> • Ka whai wāhi mai te akomanga katoa ki ēnei ngohe. Kia poto ngā ngohe. • Ka āta whakamāramatia te whāinga o te ngohe – kia mōhio ai ngā ākonga ki te āhuetanga ngoikore o te mātauranga tau e arotia ana i roto i te ngohe. Hei taurira, ko te ako i ngā tohutu, ko te tatau, te whakarōpū, ngā meka matua rānei.
<p>Tohutohu (2 meneti)</p>	<ul style="list-style-type: none"> • Ka tohua ngā ākonga ki te noho tahi ki ō rātou rōpū. • He pai te tuhi i ngā mahi a ia rōpū ki tētahi papa tuhituhi.
<p>Whakaako Rōpū 1 (15 meneti)</p>	<ul style="list-style-type: none"> • Ka mahi tahi te pouako me te rōpū 1 – ka āta ruku i te hōhonutanga o te kaupapa e whakaakona ana. • Ko tētahi tino āhuetanga o te mātauranga tau te kaupapa o te akoranga, ko te whakaako rautaki rānei kia piki ai te rōpū ki te kaupae o runga ake. • Ka āta whakamāramatia ngā whāinga o te akoranga. • I te mutunga, ka mahi te rōpū i ētahi ngohe hei whakaū i te kaupapa o te akoranga. • Ko ērā atu o ngā ākonga e mahi wehe kē ana i te pouako.
<p>Tohutohu (2 meneti)</p>	<ul style="list-style-type: none"> • Ka whakaritea ngā rōpū ki te huri ki te mahi tuarua. • He pai te tuhi i ngā mahi a ia rōpū ki tētahi papa tuhituhi.
<p>Whakaako Rōpū 2 (15 meneti)</p>	<ul style="list-style-type: none"> • He pērā anō ngā whakahaere mō te whakaako i te rōpū tuatahi. • Ka tohutohua tēnei rōpū kia mōhio ai rātou ki ā rātou mahi mō te rā o muri mai. Arā, he mahi whakaū i te kaupapa o tēnei akoranga.
<p>Whakakapi (15 meneti)</p>	<ul style="list-style-type: none"> • Ka whakaatu i ngā mahi a ngā rōpū, ākonga rānei. • Ka whakawhitiwhiti kōrero mō tētahi o ngā āhuetanga matua o te akoranga i tēnei rā. • Ka whakaaturia tētahi mahi, tētahi kēmu, tētahi ngohe hou rānei hei mahinga wehe kē i te pouako. • Ka tiroirohia ngā mahi kua oti. • Ka tuku pātai te pouako kia āta whakaaroaro ngā ākonga ki ngā mahi kua oti i a rātou. • Ka tuhituhia e ngā ākonga ā rātou mahi mō tēnei rā.

Te Akomanga Kōeke Tini

I roto i ētahi kura reo Māori maha, he whānui tonu ngā kōeke o ngā tamariki i roto i te akomanga kotahi. Arā pea mai i te tau 1 ki te tau 4, mai i te tau 3 ki te tau 8 rānei. He mea nui i roto i ēnei akomanga kia taunga ngā tamariki ki te mahi wehe kē i te pouako, ki te whai i ngā tohutohu mō te mahi i whakaritea, mā tēnā ākongā, mā tēnā, mā tēnā rōpū, mā tēnā.

Ko tā te pouako, he whakarite i ngā mahi e hāngai ana mā ia ākongā, rōpū rānei. Me mārama tonu āna tohutohu kia mōhio ai ngā tamariki he aha ā rātou mahi mō ia rā (he pai te whakamahi i tētahi papa tohutohu pāngarau – tirohia te whakaaturanga i raro nei). Ka huri haere te pouako ki tēnā ākongā, ki tēnā rōpū, ki te whakaako, ki te āwhina, ki te aromatawai, otirā, ki te kukume i ngā whakaaro pāngarau.

He wā anō, e pai ana ki te whakakotahi mai i ētahi ākongā, rōpū rānei ki te tiro tiro i te kaupapa kotahi, ahakoa e mahi tonu ana ngā ākongā i ngā kōeke tini. He mea nui anō kia whakaakona ngā ākongā me pēhea te kimi āwhina i te wā e raruraru ana. Arā pea, ka pātai atu ki te pouako ki tētahi “tuakana pāngarau” rānei. Ka haere rānei ki te kimi āwhina mai i wāhi kē, i tangata kē (pērā i te tumuaki o te kura, tētahi o ngā mātua o te kura rānei).

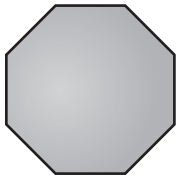
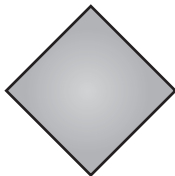
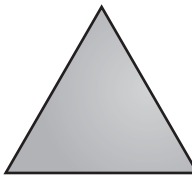
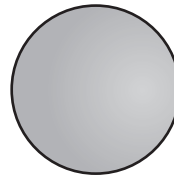
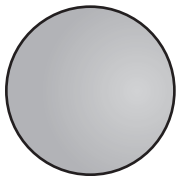
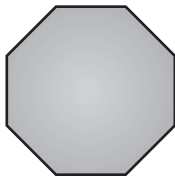
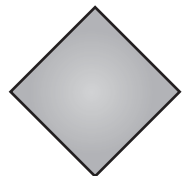
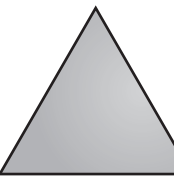
Te Papa Tohutohu Pāngarau

Ko tā te papa tohutohu pāngarau, he whakaatu ki ngā ākongā he aha te mahi a tēnā rōpū, a tēnā, i te roanga atu o tētahi wā ako. I te tauira i raro nei, e rua ngā huringa o ngā rōpū i te wā ako kotahi.

Ko te huringa tuatahi i roto i te wā ako – kia 20 meneti pea te roa.

Ka tuhia ngā mahi ki te papa. Ka nukua ngā āhua, koirā hei tohu i ngā mahi a tēnā rōpū, a tēnā.

Ko te huringa tuarua i roto i te wā ako – kia 20 meneti anō pea te roa.

Mahi Whakamahana			
Mahi Tuatahi			
			
Pouako	Mahi Whakaū	Kēmu	Whakaoti Rapanga
Mahi Tuarua			
			
Pouako	Mahi Whakaū	Kēmu	Whakaoti Rapanga
Mahi Whakakapi			

Ko ngā āhua hei tohu i ngā rōpū. Ka taea te nuku, kia whakapiria atu ki te mahi e hāngai ana.

Te Whakaako Rautaki

He rerekē te mātauranga tau me ngā rautaki tau.

Ko te mātauranga tau, koia ko ngā āhuetanga me pupuri ki roto i te pūmahara o te hinengaro, he māmā noa iho te tiki atu hei whakamahi mā te ākongā. Hei taurira, ko te tatau, ko ngā meka matua, ko te mōhio ki ngā tohu hautau. Kei roto i *Pukapuka Tuawhā: Te Whakaako Mātauranga Tau* ētahi ngohe hei whakapakari i te ākongā ki ēnei āhuetanga o te mātauranga tau.

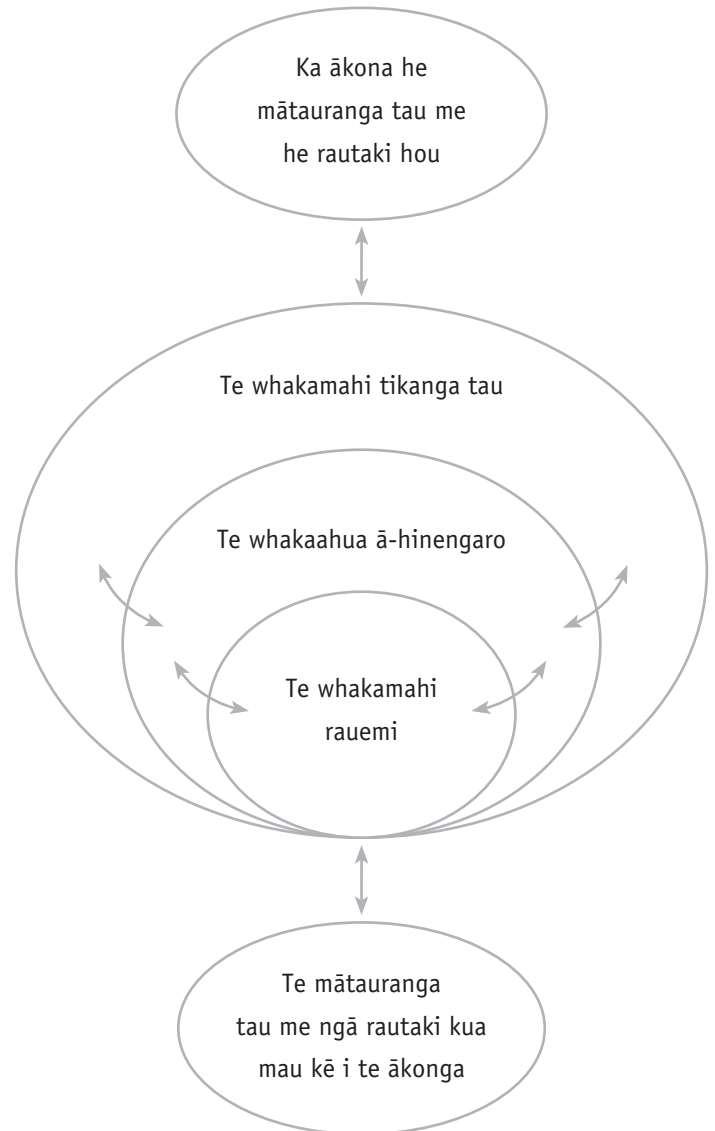
Ko ngā rautaki tau, koia ko te whakamahi i ngā tikanga o te tau hei whakaoti paheko, pērā i te tāpiri, te tango, te whakarea, me te wehe. Kei roto i ēnei pukapuka ētahi ngohe mō te whakaako rautaki:

- *Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū*
- *Pukapuka Tuaono: Te Whakarea Me Te Whakawehe*
- *Pukapuka Tuawhitu: Te Hautau, Te Tau ā-Ira, Me Te Ōrau.*

Hei whakatauiria i te rerekētanga o te mātauranga tau me te rautaki:

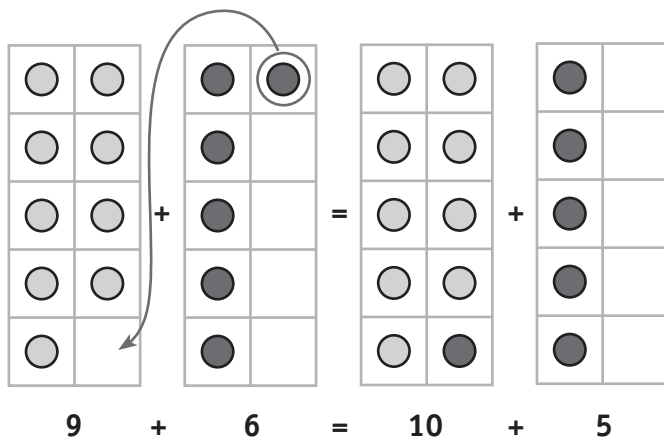
- He meka mātauranga te $3 + 4$ e noho ana ki ō tātou pūmahara – kāore he whakamahinga o te hinengaro hei whakaputa i te otinga $3 + 4 = 7$.
- Kāore te whakautu o $28 + 15$ e noho noa iho ana ki te pūmahara, nō reira me whakamahi tētahi rautaki hei whakaputa i te otinga. Arā pea ka hurihia ki te $30 + 13$, he māmā i nāianei te whakaputa i te otinga $30 + 13 = 43$. Ko te ingoa o tēnei rautaki, ko “te tau māmā me te tikanga paremata” (tirohia Te Poutama Tau *Pukapuka Tuatahi: Te Mahere Tau* – kei reira ngā whakamārama mō te huhua o ngā momo rautaki).

E whai ana ngā Pukapuka Tuarima, Tuaono, me Tuawhitu i tētahi taurira mō te whakaako rautaki. E whakaaturia ana te taurira i konei:



Ko te mātauranga tau me ngā momo rautaki kua mau kē i te ākongā te pūtake o tēnei taurira whakaako, arā, ka tīmata i reira.

Ko te *Whakamahi Rauemi* te hikoi tuatahi. Arā, ka whakaotia ngā rapanga mā te whakamahi rauemi, he māmā te whakaatu me te whakamārama i te rautaki e whakaakona ana. Hei taurira, ka whakamahia he anga tekau hei whakaoti i ngā tāpiritanga pērā i te $9 + 6$, e tino kitea ai te rautaki “te tau māmā me te tikanga paremata”.



Ko te hikoi tuarua o tēnei taurira whakaako, ko te arataki i ngā ākongā ki te *Whakaahua ā-Hinengaro* i te whakamahinga o ngā rauemi. Arā, kāore he rauemi hei rāwekeweke mā te ākongā, engari ka āta whai ia i te whakamahinga o ngā rauemi i roto i tōna hinengaro. I ētahi wā, he āhua uaua tēnei, nō reira e pai ana te hoki whakamuri ki te whakamahi rauemi. He wā anō, ka taea e te ākongā i roto anake i tōna hinengaro.

He pai hoki kia tonoa mā te ākongā e whakamārama te rautaki i whāia e ia i roto i tōna hinengaro. Arā ngā momo pātai pēnei i ēnei:

- He aha te mahi i roto i tō hinengaro?
- I aha koe?
- Whakamāramatia mai tō rautaki.
- He aha tō mahi tuatahi? Tuarua?
- Mēnā he rauemi āu, ka aha koe?
- He aha te huarahi i whāia e koe i roto i tō hinengaro?

Ko te hikoi tuatoru o tēnei taurira whakaako, ko te *Whakamahi Tikanga Tau* hei whakaoti rapanga. Ka tae ana te ākongā ki tēnei wāhanga, ka taea e ia te wāwāhi tau i runga anō i ngā tikanga tau. Ka whakaurua ngā tau nui ki roto i ngā rapanga nā te mea he uaua te whakaoti mā te whakaahua ā-hinengaro. Hei taurira, ko te $29 + 16$. He uaua te āta whakaaro i te whakamahinga o te anga tekau me te whakaneke i ngā porotiti i roto i te hinengaro. Engari ka whai tonu i taua rautaki “te tau māmā me te tikanga paremata”, ka hurihia ki te $30 + 15$, ā, he māmā te whakaoti i rō hinengaro, arā, ka 45.

Mā te whai i tēnei taurira whakaako, ka mau i te ākongā te mātauranga tau me ngā rautaki hou.

He pai tēnei taurira mō te whakaako rautaki hou. Arā, ka whakamahia he rauemi i te tuatahi, ā, ka ārahina ngā ākongā ki te whakamahi i ngā tikanga tau ā tōna wā. Kei a koe anō te whiriwhiri mō te wā e tika ana hei kukume i tō ākongā ki te whakamahi i te whakaahua ā-hinengaro me ngā tikanga tau. Ko tāu, he āta mātakitaki, he āta whakarongo, he āta tuku i ngā pātai e hāngai ana. He mea nui kia tonoa ngā ākongā ki te whakamārama i ā rātau rautaki – mā konei e pakari ai te reo, e pūmau anō ai te rautaki pāngarau.

Ngā Rōpū Whakaako Rautaki Tau (Kaupae 4–8)

Pouako	Whaea Mihi	Kura	TKKM o Awataha	Paheko	Tāpiri/Tango
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Mātauranga Tau Hei Whakapiki	<ul style="list-style-type: none"> Te tau kotahi te rahinga ake, te itinga iho rānei (ki te 999 999) Te raupapa hautahi Te huri hautau nui ake i te kotahi hei tau hanumi Ngā 10, ngā 100, me ngā 1 000 kei roto i tētahi tau (ki te 999 999)
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Kaupae 4: Puanga o te Tatau						Kaupae 5: Pihinga o te Wāwāhi Tau Tāpiripiri					Kaupae 6: Puanga o te Wāwāhi Tau Tāpiripiri					Kaupae 7: Wāwāhi Tau Whakarea					Kaupae 8: Wāwāhi Tau Pānga Riterite				
RTM	RTM	WT	W/UT	MM		RTM	RTM	WT	W/UT	MM	RTM	RTM	WT	W/UT	MM	RTM	RTM	WT	W/UT	MM	RTM	RTM	WT	W/UT	MM
u	a					a	u				a	u				a	u				a	u			
Mikaera	5	5	5	4	3																				
Natahia	5	5	3	4	3																				
Colin	5	4	4	4	3																				
Roimata	5	5	4	4	4																				
Elisa	4	4	4	4	3																				
Ihaka	4	4	5	4	3																				
						Merehira	5	5	5	4	4														
						Piripi	5	4	4	4	4														
						Indira	5	4	5	5	4														
						Joeli	4	4	4	4	4														
						Ngahina	6	5	4	5	4														
						Rupena	5	5	5	4	4														
						Manuera	5	5	5	4	4														
												Nadia	5	5	5	5	5								
												Oriwia	5	5	5	5	6								
												Pene	5	5	5	5	5								
												Quentin	5	5	5	5	5								
																		Rachel	6	6	6	6	6		
																		Somani	6	6	6	5	6		

RTMua = Raupapa Tau Whakamua
 RTMuri = Raupapa Tau Whakamuri
 WT = Whakaingoa Tohautau
 W/UT = Whakarōpū/Uara Tū
 MM = Meka Matua

Te Wāhanga 4

E Aro ki te Reo

Ko te reo te huarahi matua e tutuki pai ai te mahi a te pouako. Nō reira, e tika ana kia āta whakaaro te pouako me pēhea te whakairo i āna kōrero i mua tonu i te wā ako. Arā pea he kimi atu i ngā kupu, i ngā whakamārama, i ngā pātai hei whakamahi māna i roto i tāna akoranga. He mea nui te taurira reo o te pouako, te reo tāruarua o te pouako, e hopukina ai e te ākonga ngā kupu hou o te pāngarau me te āhua o te whakatakoto i te kupu.

Hei taurira, mēnā he akoranga e pā ana ki te rautaki “te tau māmā me te tikanga paremata”, koia nei pea ētahi o ngā kupu me ngā rerenga kōrero e hāngai ana:

$$27 + 15 = \square$$

Taurira Rerenga Kōrero/Pātai	Kupu Matua
Kawea te 27 ki te tau māmā e pātata ana.	tau māmā
Ko te aha te tau māmā e pātata ana?	pātata
He aha e māmā ai te 30?	tau ngahuru
He māmā te tāpiri i tētahi tau ki te tau ngahuru (pērā i te 30).	rārangi tau
Tāpirihia te 3 ki te 27, ka 30. He tau māmā te 30.	kawea
Tāpirihia te 15 ki te 30, ka 45.	
He aha te mahi i nāianei?	
E tika ana kia tangohia te 3 i nāianei.	
Me pēhea te whakaatu i ēnei mahi ki te rārangi tau?	

Ngā Momo Pātai¹

He tauira pātai, tauira tohutohu e whai ake nei, kua wehea ki ngā momo pātai i whakaputaina e Bloom². E ono ngā rōpū o ngā momo pātai e pā ana ki te āhua o te whakamahinga o te hinengaro hei whakautu i te pātai. Ehara i te mea e tū motuhake ana ia rōpū o ngā momo pātai, engari e tūhonohono ana. Mō te pātai kotahi, he rerekē pea te āhua o te whakamahinga o te hinengaro o tēnā ākonga, o tēnā ākonga. Arā pea he pātai whakaputa mahara mō tētahi ākonga, engari he pātai whakamahi mōhiotanga mō tētahi atu.

1. He Pātai Whakaputa Mahara

He pātai whakaputa mahara ēnei e whai ake nei mehemea kua mau i te ākonga ngā meka matua, ngā mōhiotanga rānei e pā ana ki ngā pātai. Arā, he tiki noa atu i te whakautu i te pūmahara. Mehemea kāore anō kia mau i te ākonga ngā meka matua, ngā mōhiotanga rānei, he pātai whakamahi mōhiotanga. Arā, me āta whakamahi tētahi rautaki e kitea ai te otinga o te rapanga:

- Tāpirihia te 5 me te 7.
- E 3 whakareatia ki te 4.
- E hia ngā 5 kei roto i te 25?
- Kōrerohia mai ngā taurea o te 4.
- Raupapahia ēnei hautau mai i te mea iti ki te mea nui.
- He aha te tau kei muri i te 19?
- Whakaingoatia ēnei hautau.

2. He Pātai Whakaputa Mōhiotanga

- Whakamahia tēnei rautaki hei whakaoti i te rapanga.
- Whakamāramatia mai te rautaki i whakamahia e koe hei whakaoti i te rapanga.
- He aha koe i mōhio ai?
- I pēhea koe i mōhio ai?

- He aha te huarahi i whāia e koe hei whakaoti i te rapanga?
- Nāu i aha?
- Me pēhea te whakaoti?
- Me pēhea te raupapa ... (i ngā hautau nei)?
- Whakamāramatia mai te rautaki i whāia e Hine hei whakaoti i te rapanga.
- Whakamahia te anga tekau/anga pirepire/... hei whakamārama i te rautaki.
- Me pēhea te tuhi ki te reo tohu pāngarau?
- He aha te tikanga o te ... (tauraro o te hautau $\frac{3}{4}$)?

3. He Pātai Whakamahi Mōhiotanga

I konei ko ngā mahi whakaoti rapanga, arā, ko tā te ākonga he whakamahi i ōna mōhiotanga, he kimi rautaki hei whakaoti i te rapanga.

- He tāpiri, he tango, he aha rānei te mahi hei whakaoti i te rapanga? He aha ai?
- Ina hurihia te 7 ki te 17, ka pēhea rā te otinga? (Ko te 7 + 8 pea te pātai tuatahi.)
- He aha rā te otinga mehemea ka ... (wehea kia whā ngā wāhanga ōrite)?
- Me pēhea te whakamahi i te rautaki a Hine hei whakaoti i te rapanga?
- Me tīmata koe ki hea?
- He aha te hīkoi tuarua?
- Whakaaturia, whakamāramatia mai rānei ngā hīkoi katoa.
- Tuhia he pikitia hei whakaatu i te rapanga?

4. He Pātai Tātari Mōhiotanga

- He aha te tauira e kitea mai ana? Whakamāramatia mai.
- He aha kei te whakaaturia mai i roto i ngā otinga nei?
- He aha ngā rerekētanga/ritenga o ēnei rautaki?
- He aha pea he ingoa mō tēnā rautaki? He aha ai?

¹ He mea tango mai ēnei tauira kōrero i: Christensen, I. (2004). *Te Reo Pāngarau*. Palmerston North: Te Pūtahi-ā-Toi, Massey University. Whārangi 426–429.

² Tirohia te pukapuka: Anderson, L. and Sosniak, L. (eds.) (1994). *Bloom's Taxonomy: A Forty-year Retrospective*. Chicago: University of Chicago Press.

Te Wāhanga 5

5. He Pātai Arotake Mōhiotanga

- Ko tēhea te rautaki māmā noa iho hei whakaoti i te rapanga? He aha ai?
- Kei te tika rānei tō whakautu? Me pēhea koe e tino mōhio ai?
- He aha i pai ai tēnā rautaki hei whakaoti i te rapanga?
- I tutuki pai tāu mahi whakaoti i te rapanga? He aha ai? He aha i kore ai?
- He aha te mea kua ākona e koe?

6. He Pātai Waihanga Mōhiotanga

- Kimihia mai he huarahi hei whakaoti i te rapanga.
- Titoa mai he rapanga pakitau e whai wāhi mai ana te ... (ōrau).
- Hangaia tētahi ... (mahere/tapawhā mīharo/tauira ...).

He Kōwae Ako

E whai ake nei (whārangi 16–48) he tauira o te whakamahere kōwae ako. E kitea mai ana ngā whāinga ako mō te mātauranga tau me ngā rautaki, me ngā mahi ako e hāngai ana. E pai ake ana kia arohia tētahi whāinga ako kotahi, ētahi whāinga ruarua rānei, kia matatau rā anō te ākongā, kātahi ka aro ki whāinga kē. Kāore he take mēnā he pāpaku noa iho te ako i ngā whāinga maha.

Ko te upoko o ia mahere e whakaatu ana i ētahi kaupae rautaki e rua me te paheko e hāngai ana (tāpiri me te tango, whakarea me te wehe, hautau me te ōwehenga). Ko ngā whāinga e whakaaturia ana e hāngai ana ki te ākongā e rite ana ki te whakawhiti mai i te kaupae o raro ki te kaupae o runga. Kei te hāngai anō hoki ki te ākongā kua eke kē ki te kaupae o runga.

Kei raro nei ngā kōrero mō ia wāhanga o te mahere kōwae ako:

Upoko kōrero – ko ngā kaupae rautaki e hāngai ana.

Te taumata o te marautanga pāngarau e hāngai ana.

Ko ngā paheko e hāngai ana.

Mai i te Tatau Pānga Tahī ki te Tatau Taonga mai i te Kotahi Kaupae 1–2

Te Tāpiri me te Tango
Pāngarau i roto i te Marautanga o Aotearoa Taumata 1

Kia mōhio te ākonga ki tēnei mātauranga tau.

Te mātauranga tau kua mau kē i te ākonga (te tāpiri me te tango)	Ngā Ngohe whakaako																		
<p>E mōhio ana te ākonga:</p> <ul style="list-style-type: none"> ki te tatau ā-kākā ki te 10 (ko te iti rawa); ki te raupapa i ngā tau katoa 0–10; ki te kōrero i te raupapatanga kupu tau 0–10, whakamua, whakamuri hoki; ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–10; ki te kōrero wawe ki ngā tauria tau ki te 5, ko ngā tauria matimati hoki. 	<p>Ngā Ngohe whakaako</p> <p><i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau</i></p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Whāriki Tohutau</td> <td>5</td> </tr> <tr> <td>He Anga Tekau</td> <td>6</td> </tr> <tr> <td>Te Kōwhiwhiū Tau</td> <td>14</td> </tr> <tr> <td>Tau Waea</td> <td>13</td> </tr> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> </tbody> </table> <p>Ngōhe Whakarōpū</p> <table border="1"> <tbody> <tr> <td>Takirima</td> <td>63</td> </tr> </tbody> </table> <p>BSM Mō te Tatau Pānga Tahī: Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i>, wh. 8.</p>	Ngohe Tatau	Whārangi	Te Whāriki Tohutau	5	He Anga Tekau	6	Te Kōwhiwhiū Tau	14	Tau Waea	13	Tatauria	34	Whakaaturia Ki Te Rārangi Tau	43	Takirima	63		
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<p>Te mātauranga tau e whakaakona ana (te tāpiri me te tango)</p> <p>E ako ana te ākonga ki te:</p> <ul style="list-style-type: none"> tautuhi i ngā tau katoa, 0–20; kōrero i te raupapatanga kupu tau 0–20, whakamua, whakamuri hoki; kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–20; raupapa i ngā tau 0–20; whakamahī tohu, pikitia, hoahoa hei whakaatu i ngā hua o te mahi tatau me ngā paheko. 	<p>Ngā rauemi whakaako</p> <p><i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau</i></p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Whāriki Tau Tohutau</td> <td>5</td> </tr> <tr> <td>Tau Waea</td> <td>13</td> </tr> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> </tbody> </table> <p>BSM Mō te Tatau Taonga mai i te kotahi: Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i>, wh. 9.</p>	Ngohe Tatau	Whārangi	Te Whāriki Tau Tohutau	5	Tau Waea	13	Tatauria	34	Whakaaturia Ki Te Rārangi Tau	43								
Ngohe Tatau	Whārangi																		
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Whakaaturia Ki Te Rārangi Tau	43																		
<p>Ngā rautaki tau e whakaakona ana</p> <p>E ako ana te ākonga ki te:</p> <ul style="list-style-type: none"> tatau i ngā mea katoa o ētahi huinga hei whakaoti tāpiritanga (ki te 20); tatau i ngā mea katoa o ētahi huinga hei whakaoti tangohanga (mai i te 20). 	<p>Ngā rauemi whakaako</p> <p><i>Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū</i></p> <table border="1"> <thead> <tr> <th>Ngohe</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Porotiti Tāpiri, Porotiti Tango</td> <td>22</td> </tr> <tr> <td>He Tāpiri, He Tango Matimati</td> <td>24</td> </tr> <tr> <td>Te Ngaku Pi Takahurihuri</td> <td>28</td> </tr> <tr> <td>He Tau Māmā Te Rima</td> <td>29</td> </tr> <tr> <td>Whakawhitia Ngā Ringa</td> <td>31</td> </tr> <tr> <td>Tekau Mā Hia Ngā Matimati?</td> <td>34</td> </tr> <tr> <td>Ngā Rōpū O Te Tekau</td> <td>35</td> </tr> <tr> <td>Tatauria Ngā Tāra</td> <td>37</td> </tr> </tbody> </table> <p>BSM Mō te Tatau Taonga mai i te kotahi: Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i>, wh. 9.</p>	Ngohe	Whārangi	Porotiti Tāpiri, Porotiti Tango	22	He Tāpiri, He Tango Matimati	24	Te Ngaku Pi Takahurihuri	28	He Tau Māmā Te Rima	29	Whakawhitia Ngā Ringa	31	Tekau Mā Hia Ngā Matimati?	34	Ngā Rōpū O Te Tekau	35	Tatauria Ngā Tāra	37
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Ngā Rōpū O Te Tekau	35																		
Tatauria Ngā Tāra	37																		

Ko te mātauranga tau e whakaakona ana.

Ko ngā rauemi e hāngai ana ki te mātauranga tau e whakaakona ana.

Ko ngā rauemi e hāngai ana ki ngā rautaki e whakaakona ana.

E taea ana te whakaatu ētahi kōwae ako e rua ki te mahere kotahi. Arā, kia rerekē te tae o te whakamumura i ngā whāinga o tēnā, o tēnā kōwae ako. Kia rua wiki pea te roa i ia kōwae ako, ā, ko te mahere ā-rangi hei whakaatu me pēhea te whakatutuki i ngā whāinga i te roanga atu o aua wiki e rua.

E pai ana kia kaua e tino kiki te āhua o te whakamahere, arā pea ka waiho kia wātea tonu te wā ako pāngarau o te Rāpare me te Rāmere i ia wiki.

Koia nei pea te wā hei whakaoti i ētahi o ngā mahi o te Rāhina, o te Rātū, o te Rāapa, hei tirotiro anō ki ētahi o ngā kaupapa, hei whakaako rānei i tētahi kaupapa i ara mai i te tīmatanga o te wiki.


Kei te paetukutuku www.nzmaths.co.nz/numeracy/NumeracyPA/ tētahi atu kaupapa hei āwhina i te mahi whakamahere pāngarau.

Mai i te Tatau Pitomata ki te Tatau Pānga Tahī Kaupae 0–1

Te Tāpiri me te Tango

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 1

Te mātauranga tau e whakaakona ana (te tāpiri me te tango)	Ngā rauemi whakaako	
<p>E ako ana te ākongā:</p> <ul style="list-style-type: none"> • ki te tautuhi i ngā tau katoa, 0–10; • ki te kōrero i te raupapatanga kupu tau 0–10, whakamua, whakamuri hoki; • ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–10; • ki te raupapa i ngā tau 0–10; • kia mōhio wawe ki ngā tauira tau ki te 5, ko ngā tauira matimati hoki, hei tauira: 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p>	
	Ngohe Tatau	Whārangi
	Te Whāriki Tohutau	5
	He Anga Tekau	6
	Tau Waea	13
	Te Kōwhiwhiu Tau	14
	Tatauria	34
	Whakaaturia Ki Te Rārangi Tau	43
	Ngohe Whakarōpū	
	Takirima	63
	<p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 2.1–2.8 (wh. 18–23)</i></p>	
	<p>BSM Hei whakawhanake ākongā mai i te Tatau Pitomata ki te Tatau Pānga Tahī (Kaupae 0–1): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 6)</p>	
	<p>Mō te Tatau Pānga Tahī (Kaupae 1): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 7)</p>	
	<p>Kōwae Ako nzmaths 10 ngā Poraka: www.nzmaths.co.nz/maori/KowaeAko/10ngaPoraka/TekauNgaPoraka.aspx</p>	

Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako	
<p>E ako ana te ākonga ki te:</p> <ul style="list-style-type: none"> tatau i tētahi huinga taonga 1–10; hanga i tētahi huinga taonga 1–10. 	<p>Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū 2007</p>	
	Ngohe	Whārangi
	He Aha Te Tohatau?	8
	Kia Rite!	9
	He Kēmu Tatau	10
	E Hia I Nāianeī?	10
	Tokohia?	11
	Kia Kaha, Kia Mārire	11
	Tārere	12
	Kī Mua, Kī Muri	13
	Pakipaki	13
	Hīkoia Te Arahanga	15
	Raupapahia	16
	Kei Runga Ake, Kei Raro Iho Rānei?	16
	Pīrorihia Te Mataono Tau	17
	E Hia Ngā Mataono?	17
	He Raupua	18
	Whāngaia Te Arewhana	19
	Keke Huritau	19
	Uhia Te Honu	20
	Kī Te Tekau	20
	<p>BSM Mō te Tatau Pānga Tahi (Kaupae 1): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 7)</p>	


Mai i te Tatau Pānga Tahī ki te Tatau Taonga mai i te Kotahi

Kaupae 1–2

Te Tāpiri me te Tango

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 1

Te mātauranga tau kua mau kē i te ākongā (te tāpiri me te tango)	Ngā rauemi whakaako																		
<p>E mōhio ana te ākongā:</p> <ul style="list-style-type: none"> ki te tatau ā-kākā ki te 10 (ko te iti rawa); ki te raupapa i ngā tau katoa 0–10; ki te kōrero i te raupapatanga kupu tau 0–10, whakamua, whakamuri hoki; ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–10; (mōhio wawe) ki ngā tauira tau ki te 5, ko ngā tauira matimati hoki, hei tauira: 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1" data-bbox="785 488 1464 846"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Whāriki Tohutau</td> <td>5</td> </tr> <tr> <td>He Anga Tekau</td> <td>6</td> </tr> <tr> <td>Tau Waea</td> <td>13</td> </tr> <tr> <td>Te Kōwhiuwhiu Tau</td> <td>14</td> </tr> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> <tr> <th colspan="2">Ngohe Whakarōpū</th> </tr> <tr> <td>Takirima</td> <td>63</td> </tr> </tbody> </table> <p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 2.1–2.8 (wh. 18–23)</i></p> <p>BSM Mō te Tatau Pānga Tahī (Kaupae 1): <i>Tirohia Enriching the Number Framework with Beginning School Mathematics (wh. 8)</i></p>	Ngohe Tatau	Whārangi	Te Whāriki Tohutau	5	He Anga Tekau	6	Tau Waea	13	Te Kōwhiuwhiu Tau	14	Tatauria	34	Whakaaturia Ki Te Rārangi Tau	43	Ngohe Whakarōpū		Takirima	63
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Ngohe Tatau	Whārangi																		
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Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako	
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> tatau i ngā mea katoa o ētahi huinga hei whakaoti tāpiritanga (ki te 20); tatau i ngā mea katoa o ētahi huinga hei whakaoti tangohanga (mai i te 20). 	<p>Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū 2007</p>	
	Ngohe	Whārangi
	Porotiti Tāpiri, Porotiti Tango	22
	He Tāpiri, He Tango Matimati	24
	Te Ngaku Pī Takahuri	28
	He Tau Māmā Te Rima	29
	Whakawhitia Ngā Ringaringa	31
	Tekau Mā Hia Ngā Matimati?	34
	Ngā Rōpū O Te Tekau	35
	Tatauria Ngā Tāra	37
<p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 2.34–2.40 (wh. 43–52)</i></p> <p>BSM <i>Mō te Tatau Taonga mai i te Kotahi (Kaupae 2): Tirohia Enriching the Number Framework with Beginning School Mathematics (wh. 9)</i></p>		

Mai i te Tatau Taonga mai i te Kotahi ki te Tatau ā-Hinengaro mai i te Kotahi Kaupae 2–3

Te mātauranga tau kua mau kē i te ākongā (te tāpiri me te tango)
<p>E mōhio ana te ākongā:</p> <ul style="list-style-type: none"> • ki te tautuhi i ngā tau katoa, 0–20; • ki te kōrero i te raupapatanga kupu tau 0–20, whakamua, whakamuri hoki; • ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–20; • ki te raupapa i ngā tau 0–20.

Te Tāpiri me te Tango

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 1

Ngā rauemi whakaako	
<i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</i>	
Ngohe Tatau	Whārangi
Tau Waea	13

Te mātauranga tau e whakaakona ana (te tāpiri me te tango)
<p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> • ki te tautuhi i ngā tau katoa, 0–20 (ko te iti rawa); • ki te kōrero i te raupapatanga kupu tau 0–20, whakamua, whakamuri hoki (ko te iti rawa); • ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–20 (ko te iti rawa); • ki te raupapa i ngā tau 0–20 (ko te iti rawa). <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā tauhono me te 5, arā: <ul style="list-style-type: none"> – 5 + 1, 5 + 2, 5 + 3, 5 + 4, 5 + 5; • kia mōhio wawe ki ngā tauhono o te 5, me ngā tauhono o te 10, arā: <ul style="list-style-type: none"> – 0 + 5, 1 + 4, 2 + 3, 3 + 2, 4 + 1, 5 + 0; – 0 + 10, 1 + 9, 2 + 8, 3 + 7, 4 + 6 ... ; • kia mōhio wawe ki ngā tauira tau ki te 10, pērā i ngā tau rearua me ngā tauira matimati; • ki te whakamahi tohu, pikitia, hoahoa hei whakaatu i ngā hua o te mahi tatau me ngā paheko.

Ngā rauemi whakaako	
<i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</i>	
Ngohe Tatau	Whārangi
Te Whāriki Tohutu	5
Te Kōwhiwhiu Tau	14
Tatauria	34
Raupapahia Ngā Kāri	37
Te Tau Ki Mua, Te Tau Ki Muri	39
Whakaaturia Ki Te Rārangi Tau	43
Ngohe Whakarōpū	
Takirima	63
Te Anga Pīrepire Me Te Whakarōpū Takirima	93
Ngā Tauhono O Te Tekau	96
He Pūtahi Pāngarau	
<i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 2.9–2.33 (wh. 24–42)</i>	
BSM	
Mō te Tatau ā-Hinengaro mai i te Kotahi (Kaupae 3): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 11)	
Kōwae Ako nzmaths	
Tāhei Tau Punarua: www.nzmaths.co.nz/maori/KowaeAko/LO/TeheiTaupunarua.aspx	

Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako	
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> tatau ā-hinengaro i ngā mea katoa o ētahi huinga hei whakaoti tāpiritanga (ki te 20), tangohanga hoki; tatau ā-hinengaro i ngā mea katoa o ētahi huinga hei whakaoti tangohanga (mai i te 20). 	<p>Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū 2007</p>	
	Ngohe	Whārangi
	Te Ringa Kotahi	38
	Anga Tekau	40
	Ngā Ringa E Rua	41
	Te Whakaahua Ā-Hinengaro Me Te Anga Tekau	43
	E Hia Kei Te Huna?	45
	He Matimati Maha	46
	Ngā Tau Tāpiri O Te Tekau	47
	Kawea Ki Te Rima, Ki Tua Atu (1)	50
	Kawea Ki Te Rima, Ki Tua Atu (2)	52
	Tekau Ngā Rare Ki Te Pākete Kotahi	53
	<p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 2.34–2.40</i> (wh. 43–52)</p>	
	<p>BSM Mō te Tatau ā-Hinengaro mai i te Kotahi (Kaupae 3): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 11)</p>	
	<p>Kōwae Ako nzmaths Ngā Tikanga o te Tekau: www.nzmaths.co.nz/maori/Te%20Tekau/TeTekau.aspx</p>	

Mai i te Tatau Taonga mai i te Kotahi ki te Tatau ā-Hinengaro mai i te Kotahi Kaupae 2–3

Te Whakarea, te Wehe, me te Hautau Pāngarau i roto i te Marautanga o Aotearoa Taumata 1

<p>Te mātauranga tau kua mau kē i te ākongā (te whakarea, te wehe, me te hautau)</p> <p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> • ki te tautuhi i ngā tau katoa 0–20 (ko te iti rawa); • ki te kōrero i te raupapatanga kupu tau 0–20, whakamua, whakamuri hoki (ko te iti rawa); • ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–20 (ko te iti rawa); • ki te raupapa i ngā tau 0–20 (ko te iti rawa). <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā tau rearua ki te 10. 	<p>Ngā rauemi whakaako</p> <p><i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</i></p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Whāriki Tohutau</td> <td>5</td> </tr> <tr> <td>Te Kōwhiwhi Tau</td> <td>14</td> </tr> <tr> <td>Raupapahia Ngā Kāri</td> <td>37</td> </tr> <tr> <td>Te Tau Ki Mua, Te Tau Ki Muri</td> <td>39</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> </tbody> </table>	Ngohe Tatau	Whārangi	Te Whāriki Tohutau	5	Te Kōwhiwhi Tau	14	Raupapahia Ngā Kāri	37	Te Tau Ki Mua, Te Tau Ki Muri	39	Whakaaturia Ki Te Rārangi Tau	43				
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<p>Te mātauranga tau e whakaakona ana (te whakarea, te wehe, me te hautau)</p> <p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> • ki ngā raupapatanga tatau mawhiti-2, mawhiti-5 0–20. <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā tauira tau ki te 10, pērā i ngā tau rearua me ngā tauira matimati; • kia mōhio wawe ki ngā tau rearua ki te 10; • ki te whakamahi tohu, pikitia, hoahoa hei whakaatu i ngā hua o te mahi tatau me ngā paheko. 	<p>Ngā rauemi whakaako</p> <p><i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</i></p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td>Tatau Māwhitiwhiti I Te Rārangi Tau</td> <td>35</td> </tr> <tr> <td>Ararā!</td> <td>36</td> </tr> <tr> <th>Ngohe Whakarōpū</th> <td></td> </tr> <tr> <td>Takirima</td> <td>63</td> </tr> <tr> <td>He Anga Pirepire</td> <td>66</td> </tr> <tr> <td>Ngā Tauhono O Te Tekau</td> <td>96</td> </tr> </tbody> </table>	Ngohe Tatau	Whārangi	Tatauria	34	Tatau Māwhitiwhiti I Te Rārangi Tau	35	Ararā!	36	Ngohe Whakarōpū		Takirima	63	He Anga Pirepire	66	Ngā Tauhono O Te Tekau	96
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Tohatoha Ōrite	6																

Mai i te Tatau ā-Hinengaro mai i te Kotahi ki te Puanga o te Tatau Kaupae 3–4

Te mātauranga tau kua mau kē i te ākongā (te tāpiri me te tango)	Ngā rauemi whakaako														
<p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te tautuhi i ngā tau katoa 0–20 (ko te iti rawa); ki te kōrero i te raupapatanga kupu tau 0–20, whakamua, whakamuri hoki (ko te iti rawa); ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–20 (ko te iti rawa); ki te raupapa i ngā tau 0–20 (ko te iti rawa). <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā tauira tau ki te 10, pērā i ngā tau rearua me ngā tauira matimati. 	<p>Ngā rauemi whakaako</p> <p><i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</i></p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Whāriki Tohuta</td> <td>5</td> </tr> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <th>Ngohe Whakarōpū</th> <td></td> </tr> <tr> <td>Takirima</td> <td>63</td> </tr> <tr> <td>He Anga Pirepire</td> <td>66</td> </tr> <tr> <td>Ngā Tauhono O Te Tekau</td> <td>96</td> </tr> </tbody> </table> <p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 2.9–2.33 (wh. 24–42)</i></p> <p>BSM Mō te Tatau ā-Hinengaro mai i te Kotahi (Kaupae 3): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 11)</p>	Ngohe Tatau	Whārangi	Te Whāriki Tohuta	5	Tatauria	34	Ngohe Whakarōpū		Takirima	63	He Anga Pirepire	66	Ngā Tauhono O Te Tekau	96
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<p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te kōrero i te raupapatanga kupu tau 0–100, whakamua, whakamuri hoki (ko te iti rawa); ki te kōrero i te tau kei mua, kei muri hoki i tētahi tau 0–100 (ko te iti rawa); ki te tautuhi i ngā tau katoa 0–100 (ko te iti rawa). <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā tauhono me te 10, arā: <ul style="list-style-type: none"> $10 + 1, 10 + 2, 10 + 3 \dots$; kia mōhio wawe ki ngā tekau kei roto i tētahi tau ngahuru, arā: <ul style="list-style-type: none"> $20 = 10 \times 2, 30 = 10 \times 3, 40 = 10 \times 4 \dots$; kia mōhio wawe ki ngā tau rearua ki te 20 me ngā haurua e hāngai ana; ki te tuhi whārite hei whakaatu i ngā tātaitanga ā-hinengaro i ngā paheko tāpiri, tango hoki. 	<p>Ngā rauemi whakaako</p> <p><i>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</i></p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Ngā Tauhono Me Te Tekau, Me Ngā Tau Ngahuru</td> <td>8</td> </tr> <tr> <td>Te Kōwhiwhiu Tau</td> <td>14</td> </tr> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td>Raupapahia Ngā Kāri</td> <td>37</td> </tr> <tr> <td>Te Tau Ki Mua, Te Tau Ki Muri</td> <td>39</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> <tr> <td>Whiriwhiria Te Tau</td> <td>44</td> </tr> <tr> <td>Te Paparau Me Te Puka Mano</td> <td>46</td> </tr> <tr> <td>He Aho Pirepire</td> <td>48</td> </tr> <tr> <th>Ngohe Whakarōpū</th> <td></td> </tr> <tr> <td>He Anga Pirepire</td> <td>66</td> </tr> <tr> <td>He Tau Mati-Rua</td> <td>67</td> </tr> <tr> <td>Ki Te Tekau</td> <td>89</td> </tr> <tr> <td>Rearua</td> <td>91</td> </tr> <tr> <td>Honohono Tau</td> <td>94</td> </tr> <tr> <td>He Anga Tekau</td> <td>95</td> </tr> </tbody> </table> <p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 3.1–3.5 (wh. 53–58), Hei Mahi 3.14–3.19 (wh. 74–78), Hei Mahi 6.1–6.14 (wh. 91–109)</i></p> <p>BSM Mō te Puanga o te Tatau (Kaupae 4): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 12)</p> <p>Kōwae Ako nzmths Te Uara Tū: www.nzmaths.co.nz/maori/Te%20Uara%20TuTeUaraTu.aspx</p> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuatahi, Taumata 2, wh. 4–5</i></p>	Ngohe Tatau	Whārangi	Ngā Tauhono Me Te Tekau, Me Ngā Tau Ngahuru	8	Te Kōwhiwhiu Tau	14	Tatauria	34	Raupapahia Ngā Kāri	37	Te Tau Ki Mua, Te Tau Ki Muri	39	Whakaaturia Ki Te Rārangi Tau	43	Whiriwhiria Te Tau	44	Te Paparau Me Te Puka Mano	46	He Aho Pirepire	48	Ngohe Whakarōpū		He Anga Pirepire	66	He Tau Mati-Rua	67	Ki Te Tekau	89	Rearua	91	Honohono Tau	94	He Anga Tekau	95
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Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako	
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> whakaoti rapanga tāpiri mā te tatau tonu i rō hinengaro, māi i te tau nui (ka whakamahia he rauemi hei āwhina mēnā e hiahiatia ana); whakaoti rapanga tango mā te tatau whakamuri i rō hinengaro (ka whakamahia he rauemi hei āwhina mēnā e hiahiatia ana); whakaoti rapanga tāpiri me te tango mā te tatau tonu ā-tahi, mawhiti-10 hoki. Hei tauira: <ul style="list-style-type: none"> $43 + 32 \rightarrow 43, 53, 63, 73, 74, 75.$ 	<p>Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū 2007</p>	
	Ngohe	Whārangi
	Papariki Tau	56
	Ngaku Tau	59
	Ruku Pāua	61
	Poraka Pekepeke	64
	Tatau Ake I Te Tau Nui	65
	Tatau Ake	67
	Tatau Whakamuri	69
	Tāpirihia Tekau	71
	Tangohia Tekau	73
	Ngā Tekau Me Ngā Tahi E Ngaro Ana	82
	Te Puka Mano	85
	<p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 3.6–3.20 (wh. 59–79)</i></p>	
	<p>BSM Mō te Puanga o te Tatau (Kaupae 4): <i>Tirohia Enriching the Number Framework with Beginning School Mathematics (wh. 12)</i></p>	
	<p>He Tau Anō Te Tau! <i>Ngā Meka Matua, Taumata 2–3, wh. 1, 3, 5, 21</i> <i>Ngā Tau, Taumata 2–3, wh. 1</i> <i>Ngā Meka Matua, Taumata 3, wh. 1</i></p>	

Mai i te Tatau ā-Hinengaro mai i te Kotahi ki te Puanga o te Tatau Kaupae 3–4

Te mātauranga tau kua mau kē i te ākongā (te whakarea, te wehe, me te hautau)

E mōhio ana te ākongā ki ēnei mahi tatau:

- ki te tatau mawhiti-2, mawhiti-5, whakamua, whakamuri hoki 0–20.

E mōhio ana te ākongā ki ēnei mahi whakarōpū:

- kia mōhio wawe ki ngā tauira tau ki te 10, pērā i ngā tau rearua me ngā tauira matimati hoki;
- kia mōhio wawe ki ngā taurua ki te 10.

Te mātauranga tau e whakaakona ana (te whakarea, te wehe, me te hautau)

E ako ana te ākongā ki ēnei mahi tatau:

- ki te kōrero i ngā raupapatanga tatau whakamua, whakamuri hoki, mawhiti-2, mawhiti-5, mawhiti-10 0–100;
- ki te tautuhi i ngā tohu mō ngā haurua, ngā hauwhā, ngā hauroru, me ngā haurima.

E ako ana te ākongā ki ēnei mahi whakarōpū:

- kia mōhio wawe ki ngā 10 kei roto i ngā tau ngahuru, hei tauira:
 - e 4 ngā tekau kei roto i te 40.

Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- whakaoti rapanga whakarea mā te tatau mawhiti-2, mawhiti-5, mawhiti-10 i rō hinengaro, hei tauira:
 - $5 \times 4 \rightarrow 5, 10, 15, 20$ (ka whakamahia he matimati hei taki i te tatau mēnā e hiahiatia ana);
- kimi mai i ngā hautanga māmā o ētahi āhua me ētahi roa (ko ngā haurua me ngā hauwhā hei tīmatanga);
- kimi mai i te hautanga o tētahi tau mā te tohatoha ōrite i ngā mea tūturu, engari ka whanake ake ki te tohatoha ā-hinengaro, ki te whakamahi rānei i te tatau māwhitiwhiti, hei tauira:
 - $\frac{1}{4}$ o te 12, ka wehea kia 4 ngā rōpū ōrite, mā te tatau mawhiti-3 rānei (3, 6, 9, 12).

Te Whakarea, te Wehe, me te Hautau

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 2

Ngā rauemi whakaako

Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007

Ngohe Whakarōpū	Whārangi
Takirima	63
Ngā Meka Tāpiritanga Ki Te Anga Pirepire	93
Ngā Tauhono O Te Tekau	96

Ngā rauemi whakaako

Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007

Ngohe Tatau	Whārangi
He Wehenga Hautanga	18
Tatauria	34
Tatau Māwhitiwhiti I Te Rārangi Tau	35
Ararā!	36
Tātaitai	40

Kōwae Ako nzmths

Tuitui Tukutuku:

www.nzmaths.co.nz/maori/tuitui_tukutuku.aspx

Ngā rauemi whakaako

Pukapuka Tuaono: Te Whakarea Me Te Whakawehe 2008

Ngohe	Whārangi
He Ngaku Tau	12

Pukapuka Tuawhiti: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007

Ngohe	Whārangi
Tohatoha Ōrite	6

BSM

Mō te Puanga o te Tatau (Kaupae 4): Tirohia *Enriching the Number Framework with Beginning School Mathematics* (wh. 13)

He Tau Anō Te Tau!

Ngā Meka Matua, Taumata 2–3, wh. 8, 9 (whakareatanga)

Ngā Tau, Taumata 2–3, wh. 17, 18 (hautanga)

Mai i te Te Puanga o te Tatau ki te Pihinga o te Wāwāhi Tau Tāpiripiri Kaupae 4–5

Te Tāpiri me te Tango

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 2

Te mātauranga tau kua mau kē i te ākongā (te tāpiri me te tango)	Ngā rauemi whakaako														
<p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā tauhono me te 10, arā: <ul style="list-style-type: none"> – $10 + 1, 10 + 2, 10 + 3 \dots$; • kia mōhio wawe ki ngā tauhono o te 20, arā: <ul style="list-style-type: none"> – $0 + 20, 1 + 19, 2 + 18, 3 + 17 \dots$; • kia mōhio wawe ki ngā 10 kei roto i tētahi tau ngahuru, hei tauira: <ul style="list-style-type: none"> – e 8 ngā tekau kei roto i te 80; • kia mōhio wawe ki ngā tau rearua ki te 20 me ngā haurua e hāngai ana. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Ngā Tauhono Me Te Tekau, Me Ngā Tau Ngahuru</td> <td>8</td> </tr> <tr> <th colspan="2">Ngohe Whakarōpū</th> </tr> <tr> <td>Ki Te Tekau</td> <td>89</td> </tr> <tr> <td>Rearua</td> <td>91</td> </tr> <tr> <td>Honohono Tau</td> <td>94</td> </tr> <tr> <td>He Anga Tekau</td> <td>95</td> </tr> </tbody> </table> <p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 3.1–3.5 (wh. 53–58), Hei Mahi 3.14–3.19 (wh. 74–78), Hei Mahi 6.1–6.14 (wh. 91–109)</i></p> <p>BSM Mō te Puanga o te Tatau (Kaupae 4): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 14)</p> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuatahi, Taumata 2, wh. 4–5</i></p>	Ngohe Tatau	Whārangi	Ngā Tauhono Me Te Tekau, Me Ngā Tau Ngahuru	8	Ngohe Whakarōpū		Ki Te Tekau	89	Rearua	91	Honohono Tau	94	He Anga Tekau	95
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Te mātauranga tau e whakaakona ana (te tāpiri me te tango)	Ngā rauemi whakaako																																		
<p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> • ki te tautuhi i ngā tau katoa 0–1 000; • ki te kōrero i ngā raupapatanga kupu tau 0–1 000, whakamua, whakamuri hoki, mawhiti-1, mawhiti-10, mawhiti-100; • ki te kōrero i te tau kotahi, tekau, kotahi rau te rahinga ake, te itinga iho rānei i tētahi tau 0–1 000; • ki te raupapa i ngā tau 0–1 000. <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā rōpū o te 10 kei roto i tētahi tau mati-3, hei tauira: <ul style="list-style-type: none"> – e 34 ngā tekau kei roto i te 342; • kia mōhio wawe ki ngā 10 me ngā rau kei roto i ngā rau me ngā mano; • kia mōhio wawe ki ngā meka tāpiri me te tango ki te 20; • ki te whakaawhiwhi tau mati-3 ki te 10, ki te 100 rānei e pātata ana; • ki te tautuhi i ngā tau ngahuru, ko te 100 te tapeke ina tāpirihia, hei tauira: <ul style="list-style-type: none"> – $10 + 90, 20 + 80, 30 + 70 \dots$ 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Kōwhiwhiu Tau</td> <td>14</td> </tr> <tr> <td>He Whare Uara Tū</td> <td>16</td> </tr> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td>Raupapahia Ngā Kāri</td> <td>37</td> </tr> <tr> <td>Kāri Pere</td> <td>37</td> </tr> <tr> <td>Te Tau Ki Mua, Te Tau Ki Muri</td> <td>39</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> <tr> <td>Whiriwhiria Te Tau</td> <td>44</td> </tr> <tr> <td>Te Paparau Me Te Puka Mano</td> <td>46</td> </tr> <tr> <td>He Aho Pirepire</td> <td>48</td> </tr> <tr> <td>Te Tau Nui Rawa Atu</td> <td>49</td> </tr> <tr> <th colspan="2">Ngohe Whakarōpū</th> </tr> <tr> <td>He Anga Pirepire</td> <td>66</td> </tr> <tr> <td>He Tau Mati-Rua</td> <td>67</td> </tr> <tr> <td>E Pātata Ana Ki Te 100</td> <td>68</td> </tr> <tr> <td>Piki Ake, Heke Iho</td> <td>69</td> </tr> </tbody> </table>	Ngohe Tatau	Whārangi	Te Kōwhiwhiu Tau	14	He Whare Uara Tū	16	Tatauria	34	Raupapahia Ngā Kāri	37	Kāri Pere	37	Te Tau Ki Mua, Te Tau Ki Muri	39	Whakaaturia Ki Te Rārangi Tau	43	Whiriwhiria Te Tau	44	Te Paparau Me Te Puka Mano	46	He Aho Pirepire	48	Te Tau Nui Rawa Atu	49	Ngohe Whakarōpū		He Anga Pirepire	66	He Tau Mati-Rua	67	E Pātata Ana Ki Te 100	68	Piki Ake, Heke Iho	69
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	Whiriwhiria Te Tau	72
	Huria Te Tau	73
	He Ara Paheko Tau	101
	He Kāri Tāpirihanga	102
	<p>He Pūtahi Pāngarau <i>He Mātauranga Tau: Mā te Pouako, Hei Mahi 7.1–7.14</i> (wh. 110–135)</p> <p>BSM Mō te Pihinga o te Wāwāhi Tau Tāpiripiri (Kaupae 5): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 15)</p> <p>Kōwae Ako nzmaths: Tāhei Tāpiripiri: www.nzmaths.co.nz/maori/KowaeAko/LO/TaheiTapiripiri.aspx Te Tau Māmā me te Tikanga Paremata: www.nzmaths.co.nz/maori/KowaeAko/Mama/Mama.aspx</p> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuatahi</i>, Taumata 2, wh. 1 <i>Te Tau: Pukapuka Tuarua</i>, Taumata 2, wh. 2, 4–6 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi</i>, Taumata 2–3, wh. 1 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua</i>, Taumata 2–3, wh. 6</p>	

Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako											
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> whakaoti rapanga tāpiri, tango hoki i rō hinengaro mā te whakamahi meka matua e mōhioia ana, hei tauira: <ul style="list-style-type: none"> $8 + 7 = 8 + 8 - 1$ (tau rearua); $8 + 7 = (5 + 3) + (5 + 2) = 5 + 5 + 5$ (tau rima); $8 + 7 = 10 + 5$ (kaweā ki te 10); whakaoti rapanga tāpiri, tango hoki e whai wāhi mai ana he tau mati-2, mati-3, mā te whakamahi i ngā rōpū o te 10 me te 100, hei tauira: <ul style="list-style-type: none"> $43 + 25 = (40 + 20) + (3 + 5)$ (wāwāhi uara tū); $43 + 25 = (43 + 20) + 5$ (wāwāhi uara tū); $39 + 26 = 40 + 25$ (tau māmā me te tikanga paremata). 	<p>Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū 2007</p> <table border="1"> <thead> <tr> <th>Ngohe</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Ki Te Tekau</td> <td>87</td> </tr> <tr> <td>Wāwāhia, Tangohia</td> <td>91</td> </tr> <tr> <td>Whakawhiti Atu I Te Tau Ngahuru</td> <td>94</td> </tr> <tr> <td>Wāwāhia, Ka Tāpiri Ai</td> <td>98</td> </tr> </tbody> </table>		Ngohe	Whārangi	Ki Te Tekau	87	Wāwāhia, Tangohia	91	Whakawhiti Atu I Te Tau Ngahuru	94	Wāwāhia, Ka Tāpiri Ai	98
	Ngohe	Whārangi										
Ki Te Tekau	87											
Wāwāhia, Tangohia	91											
Whakawhiti Atu I Te Tau Ngahuru	94											
Wāwāhia, Ka Tāpiri Ai	98											
	<p>BSM Mō te Pihinga o te Wāwāhi Tau Tāpiripiri (Kaupae 5): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 15)</p> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuatahi</i>, Taumata 2, wh. 2–3, 6–11, 16, 22–24 <i>Te Tau: Pukapuka Tuarua</i>, Taumata 2, wh. 1, 3, 7–15 <i>Ngā Meka Matua</i>, Taumata 2–3: wh. 12, 15, 19 <i>Te Tau: Pukapuka Tuarua</i>, Taumata 2–3, wh. 2 <i>Ngā Meka Matua</i>, Taumata 3: wh. 4, 5, 6, 7, 8 <i>Te Tau</i>, Taumata 3, wh. 19 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi</i>, Taumata 2–3, wh. 4, 22–23 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua</i>, Taumata 2–3, wh. 6–7, 17 <i>Te Tau: Pukapuka Tuatahi</i>, Hononga, wh. 1–2, 6–8, 15–17</p>											

Mai i te Te Puanga o te Tatau ki te Pihinga o te Wāwāhi Tau Tāpiripiri Kaupae 4–5

Te Whakarea, te Wehe, me te Hautau Pāngarau i roto i te Marautanga o Aotearoa Taumata 2

Te mātauranga tau kua mau kē i te ākongā (te whakarea, te wehe, me te hautau)	Ngā rauemi whakaako															
<p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te kōrero i ngā raupapatanga kupu tau mawhiti-2, mawhiti-5, mawhiti-10, whakamua, whakamuri hoki 0–100; ki te tautuhi i ngā tohu mō ngā haurua, hautoru, hauwhā, haurima, hautekau (ko te iti rawa). <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā 10 kei roto i tētahi tau ngahuru, hei tauira: <ul style="list-style-type: none"> e 4 ngā 10 kei roto i te 40. 	<p>Pukapuka Tuaono: Te Whakarea Me Te Whakawehe 2008 Tirohia “Te Mātauranga Matua” me “Ngā Kaupapa Matua” wh. 18–19</p> <p>Pukapuka Tuawhītu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007 Tirohia “Mātauranga Matua” me “Ngā Kaupapa Matua” wh. 10–11</p>															
Te mātauranga tau e whakaakona ana (te whakarea, te wehe, me te hautau)	Ngā rauemi whakaako															
<p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te kōrero i ngā raupapatanga kupu tau mawhiti-2, mawhiti-3, mawhiti-5, mawhiti-10, whakamua, whakamuri hoki 0–100 (ko te iti rawa); ki te tautuhi i ngā tohu mō ngā haurua, hautoru, hauwhā, haurima, hautekau, ko ngā hautanga nui ake i te 1 hoki; ki te raupapa i ngā hautau he ōrite te tauraro, hei tauira: <ul style="list-style-type: none"> $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$. <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā rōpū o te 2 kei roto i ngā tau ki te 20, ngā rōpū o te 5 kei roto i ngā tau ki te 50, ngā rōpū o te 10 kei roto i ngā tau ki te 1 000; kia mōhio wawe ki ngā meka whakarea me te wehe mō te 2, te 5, me te 10; ki te tuhi whārite, hoahoa hoki hei whakaatu i ngā tātaitanga ā-hinengaro i ngā paheko whakarea. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1" data-bbox="787 936 1461 1211"> <thead> <tr> <th data-bbox="787 936 1313 976">Ngohe Tatau</th> <th data-bbox="1313 936 1461 976">Whārangi</th> </tr> </thead> <tbody> <tr> <td data-bbox="787 976 1313 1016">He Wehenga Hautanga</td> <td data-bbox="1313 976 1461 1016">18</td> </tr> <tr> <td data-bbox="787 1016 1313 1057">Whakaaturia Te Hautau Ki Te Papa Tīrau</td> <td data-bbox="1313 1016 1461 1057">19</td> </tr> <tr> <td data-bbox="787 1057 1313 1097">Tatauria</td> <td data-bbox="1313 1057 1461 1097">34</td> </tr> <tr> <td data-bbox="787 1097 1313 1137">Tatau Māwhitiwhiti I Te Rārangi Tau</td> <td data-bbox="1313 1097 1461 1137">35</td> </tr> <tr> <td data-bbox="787 1137 1313 1178">Ararā!</td> <td data-bbox="1313 1137 1461 1178">36</td> </tr> <tr> <td data-bbox="787 1178 1313 1218">Tātaitai</td> <td data-bbox="1313 1178 1461 1218">40</td> </tr> </tbody> </table> <p>Kōwae Ako nzmaths Hautau: www.nzmaths.co.nz/maori/Hautau.aspx Papa Pūkeko: www.nzmaths.co.nz/maori/Papa%20Pukeko/papa%20_pukeko.aspx</p>		Ngohe Tatau	Whārangi	He Wehenga Hautanga	18	Whakaaturia Te Hautau Ki Te Papa Tīrau	19	Tatauria	34	Tatau Māwhitiwhiti I Te Rārangi Tau	35	Ararā!	36	Tātaitai	40
Ngohe Tatau	Whārangi															
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Whakaaturia Te Hautau Ki Te Papa Tīrau	19															
Tatauria	34															
Tatau Māwhitiwhiti I Te Rārangi Tau	35															
Ararā!	36															
Tātaitai	40															

Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- whakaoti rapanga whakarea mā te tāpiri tāruarua, mā te meka mōhio me te tikanga paremata rānei (ko te iti rawa ko ngā rapanga e whai wāhi mai ana ngā taurea o te 2, o te 3, o te 4, o te 5, o te 10);
- whakaoti rapanga wehe mā te tāpiri tāruarua, mā te meka mōhio me te tikanga paremata rānei, kia pēnei te āhua o ngā rapanga wehe:
 - te tohatoha – hei tauira, ko te tohatoha i ngā rare 16 ki ētahi hoa tokowhā;
 - te whakarōpū – hei tauira, ka whakarōpūngia ngā rare 16 kia 4 ngā rare ki ia pākete;
- kimi mai i ngā hautanga o ētahi āhua me ētahi roa, ka whai wāhi mai ko ngā hautau nui ake i te 1, hei tauira:
 - ko te $\frac{5}{2}$ o tētahi porowhita;
- raupapa hautau mai i te iti ki te rahi;
- kimi mai i te hautanga o tētahi huinga mā te tatau māwhitiwhiti, mā te tāpiri tāruarua, mā te meka mōhio me te tikanga paremata rānei, hei tauira:
 - $4 + 4 + 4 = 12$, nō reira $\frac{1}{3}$ o te $12 = 4$.

Ngā rauemi whakaako

Pukapuka Tuaono: Te Whakarea Me Te Whakawehe 2008

Ngohe	Whārangi
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Tūtohi Tukutuku Kararehe	25
Tohaina Kia Ōrite	29
Mataono Honohono	32
Mā Te Rua, Mā Te Rima, Mā te Tekau	35

Pukapuka Tuawhītu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007

Ngohe	Whārangi
Pihikete	12
Kararehe	15
He Hautanga Porowhita	18
Manu Hiakai	24

BSM

Mō te Pihinga o te Wāwāhi Tau Tāpiripiri (Kaupae 5): Tirohia *Enriching the Number Framework with Beginning School Mathematics* (wh. 15–16)

Kōwae Ako nzmths

Papa Whakarea:

www.nzmaths.co.nz/maori/KowaeAko/LO/PapaWhakarea5.aspx

He Tau Anō Te Tau!

Whakareatanga:

Te Tau: Pukapuka Tuatahi, Taumata 2, wh. 12–15, 19

Te Tau: Pukapuka Tuarua, Taumata 2, wh. 16–19

Ngā Meka Matua, Taumata 2–3, wh. 10, 14, 20, 22

Ngā Tau, Taumata 2–3, wh. 13

Hautanga:

Te Tau: Pukapuka Tuatahi, Taumata 2, wh. 17–18, 21

Te Tau: Pukapuka Tuarua, Taumata 2, wh. 20–21, 24

Ngā Tau, Taumata 2–3, wh. 9

Te Tau, Taumata 3, wh. 9

Te Tau: Pukapuka Tuatahi, Hononga, wh. 20–24

Mai i te Pihinga o te Wāwāhi Tau Tāpiripiri ki te Puanga o te Wāwāhi Tau Tāpiripiri Kaupae 5–6

Te Tāpiri me te Tango

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 2–3

Te mātauranga tau kua mau kē i te ākongā (te whakarea, te wehe, me te hautau)	Ngā rauemi whakaako														
<p>E mōhio ana te ākongā ki ēnei mahi tataua:</p> <ul style="list-style-type: none"> ki te tautuhi i ngā tau katoa 0–1 000; ki te kōrero i ngā raupapatanga kupu tau 0–1 000, whakamua, whakamuri hoki, mawhiti-1, mawhiti-10, mawhiti-100; ki te kōrero i te tau kotahi, tekau, kotahi rau te rahinga ake, te itinga iho rānei i tētahi tau 0–1 000; ki te raupapa i ngā tau 0–1 000. <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā rōpū o te 10 kei roto i tētahi tau mati-3; kia mōhio wawe ki ngā 10 me ngā rau kei roto i ngā rau me ngā mano; kia mōhio wawe ki ngā meka tāpiri me te tango ki te 20; ki te whakaawhiwhi tau mati-3 ki te 10, ki te 100 rānei e pātata ana. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Tatauria</td> <td>34</td> </tr> <tr> <td colspan="2">Ngohe Whakarōpū</td> </tr> <tr> <td>He Anga Pirepire</td> <td>66</td> </tr> <tr> <td>He Tau Mati-Rua</td> <td>67</td> </tr> <tr> <td>He Ara Paheko Tau</td> <td>101</td> </tr> <tr> <td>He Kāri Tāpiritanga</td> <td>102</td> </tr> </tbody> </table> <p>BSM Mō te Pihinga o te Wāwāhi Tau Tāpiripiri (Kaupae 5): Tirohia <i>Enriching the Number Framework with Beginning School Mathematics</i> (wh. 15–16)</p> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuatahi</i>, Taumata 2, wh. 2, 4–6</p>	Ngohe Tatau	Whārangi	Tatauria	34	Ngohe Whakarōpū		He Anga Pirepire	66	He Tau Mati-Rua	67	He Ara Paheko Tau	101	He Kāri Tāpiritanga	102
Ngohe Tatau	Whārangi														
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Te mātauranga tau e whakaakona ana (te tāpiri me te tango)	Ngā rauemi whakaako																																								
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Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- kōwhiri i te rautaki e tino hāngai ana mai i te whānuitanga o ngā rautaki, hei whakaoti ā-hinengaro i ngā rapanga tāpiri me te tango, hei taurira:
 - tikanga paremata: $632 - 179 \rightarrow 632 - 180 + 1$;
 - wāwāhi uara tū: $273 - 106 \rightarrow (273 - 100) - 6$;
 - tau noho pai: $47 + 86 + 53 \rightarrow 47 + 53 + 86$;
 - huri kōaro: $903 - 798 \rightarrow 798 + \square = 903$;
 - tāpiritanga ōrite: $754 - 529 \rightarrow 755 - 530$;
 - wāwāhitanga: $82 - 48 \rightarrow (70 + 12) - (40 + 8)$;
- whakamahi i te pene me te pepa, te tātaitai rānei hei whakaoti tāpiri me te tango mēnā he nui rawa, he uaua rānei ngā tau.

Ngā rauemi whakaako

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Pukapuka Tuawaru: Te Aroā Tikanga Tau Me Te Whakaaro Taurangi 2006

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He Tau Anō Te Tau!

Ngā Meka Matua, Taumata 2–3, wh. 4

Ngā Meka Matua, Taumata 3, wh. 9

Ngā Tau, Taumata 2–3, wh. 6, 18, 20

Te Tau: Pukapuka Tuarua, Taumata 3, wh. 1–3

Te Tau: Pukapuka Tuatoru, Taumata 3, wh. 4–8, 10

Te Tau, Taumata 3–4, wh. 13–14

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua, Taumata 2–3, wh. 2–3, 8–10, 12–13, 16, 18–19

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi, Taumata 3, wh. 2–4

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua, Taumata 3, wh. 2–5, 8–10

Te Tau: Pukapuka Tuatahi, Hononga, wh. 9–10, 18–19

Te Tau: Pukapuka Tuarua, Hononga, wh. 8, 10–12, 15

Te Mātauranga Tau: Pukapuka Tuatahi, Hononga, wh. 15

Mai i te Pihinga o te Wāwāhi Tau Tāpiripiri ki te Puanga o te Wāwāhi Tau Tāpiripiri Kaupae 5–6

Te Whakarea me te Wehe

Pāngarau i roto i te Marautanga o Aotearoa
Taumata 2–3

Te mātauranga tau kua mau kē i te ākongā (te whakarea me te wehe)	Ngā rauemi whakaako				
<p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te kōrero i ngā raupapatanga kupu tau mawhiti-2, mawhiti-3, mawhiti-5, mawhiti-10, whakamua, whakamuri hoki 0–100 (ko te iti rawa). <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā rōpū o te 2 kei roto i ngā tau ki te 20, ngā rōpū o te 5 kei roto i ngā tau ki te 50, ngā rōpū o te 10 kei roto i ngā tau ki te 1 000; kia mōhio wawe ki ngā meka whakarea me te wehe mō te 2, te 5, me te 10; kia mōhio wawe ki ngā rōpū o te 10 kei roto i tētahi tau mati-3, hei tauira: <ul style="list-style-type: none"> e 72 ngā tekau kei roto i te 726; kia mōhio wawe ki ngā 10 me ngā 100 kei roto i ngā tau rau me ngā tau mano, hei tauira: <ul style="list-style-type: none"> 600 = 10 x 60; 3 000 = 100 x 30. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Tatauria</td> <td>34</td> </tr> </tbody> </table> <p>Pukapuka Tuaono: Te Whakarea Me Te Whakawehe 2008 Tirohia “Te Mātauranga Matua” me “Te Kaupapa Matua” wh. 41</p>	Ngohe Tatau	Whārangi	Tatauria	34
Ngohe Tatau	Whārangi				
Tatauria	34				

Te mātauranga tau e whakaakona ana (te whakarea me te wehe)	Ngā rauemi whakaako																						
<p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā rōpū o te 2, o te 3, o te 5, o te 10 kei roto i ngā tau ki te 100, me ngā toenga hoki, hei tauira: <ul style="list-style-type: none"> e 5 ngā 4 kei roto i te 23, e 3 e toe ana; kia mōhio wawe ki ngā rōpū o te 10, o te 100 kei roto i tētahi tau mati-4, hei tauira: <ul style="list-style-type: none"> e 673 ngā tekau kei roto i te 6 738; e 40 ngā rau kei roto i te 4 035; kia mōhio ki ngā meka matua katoa mō te whakarea; ki te tuhi whārite whakarea me te wehe, ki te tuhi hoahoa hoki hei whakaatu i ngā tātaitanga ā-hinengaro. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Tatau Māwhitiwhiti I Te Rārangi Tau</td> <td>35</td> </tr> <tr> <td>Ararā!</td> <td>36</td> </tr> <tr> <td>Tātaitai</td> <td>40</td> </tr> <tr> <th>Ngohe Whakarōpū</th> <td></td> </tr> <tr> <td>Huria Te Tau</td> <td>73</td> </tr> <tr> <td>Whakawhitia Ngā Paparanga Uara Tū</td> <td>74</td> </tr> <tr> <td>Whakakorea</td> <td>98</td> </tr> <tr> <td>Whiriwhiria Te Paheko</td> <td>99</td> </tr> <tr> <td>Whakareatia</td> <td>100</td> </tr> <tr> <td>He Ara Paheko Tau</td> <td>101</td> </tr> </tbody> </table>	Ngohe Tatau	Whārangi	Tatau Māwhitiwhiti I Te Rārangi Tau	35	Ararā!	36	Tātaitai	40	Ngohe Whakarōpū		Huria Te Tau	73	Whakawhitia Ngā Paparanga Uara Tū	74	Whakakorea	98	Whiriwhiria Te Paheko	99	Whakareatia	100	He Ara Paheko Tau	101
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Whakakorea	98																						
Whiriwhiria Te Paheko	99																						
Whakareatia	100																						
He Ara Paheko Tau	101																						

Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- whakaoti rapanga whakarea me te wehe mā te whakamahi i ngā meka mōhio me te whānuitanga o ngā rautaki, hei tauira:
 - whakarearua: $14 \times 6 \rightarrow (7 \times 6) \times 2$;
 - tikanga paremata: $9 \times 7 \rightarrow 10 \times 7 - 7$;
 - huri kōaro: $56 \div 8 \rightarrow 8 \times \square = 56$;
 - tau māmā me te paremata: $26 \times 4 \rightarrow 25 \times 4 + 4$;
- whakarea ki te 10, ki te 100, ki te 1 000, ki tētahi atu taurea rānei o te 10;
- huri kōaro i ngā tau e whakareatia ana hei whakamāmā, hei tauira:
 - $3 \times 26 \rightarrow 26 \times 3$;
- whakaoti rapanga wehe mā te:
 - tohatoha ōrite;
 - kimi i te maha o ngā rōpū ōrite.

Ngā rauemi whakaako

Pukapuka Tuaono: Te Whakaako Whakareatanga Me Te Wehenga 2008

Ngōhe	Whārangi
Moni Whakawhitihiti	42
Whakareatia Ki Te Rima	46
Whakareatia Ki Te Tekau	50
Parematatia	54
Huri Kōaro I Te Whakareatanga	58
Peke Roa	63
Hurihia Te Wehenga Hei Whakareatanga	69

He Tau Anō Te Tau!

Ngā Meka Matua, Taumata 2–3, wh. 11, 13, 15, 17, 18, 23–24

Ngā Tau, Taumata 2–3, wh. 14–16

Ngā Meka Matua, Taumata 3, wh. 10–12, 15–19, 21–24

Te Tau, Taumata 3, wh. 7

Te Tau: Pukapuka Tuatoru, Taumata 3, wh. 9, 11, 14–15, 19

Ngā Meka Matua, Taumata 3–4, wh. 20

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi, Taumata 2–3, wh. 6–7, 14–15

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua, Taumata 3, wh. 1, 4–5

Te Tau: Pukapuka Tuatahi, Hononga, wh. 3–5, 9, 11–13

Te Tau: Pukapuka Tuarua, Hononga, wh. 2–3

Te Mātauranga Tau: Pukapuka Tuatahi, Hononga, wh. 1, 7–9

Mai i te Pihinga o te Wāwāhi Tau Tāpiripiri ki te Puanga o te Wāwāhi Tau Tāpiripiri Kaupae 5–6

Te Hautau me te Tau ā-ira

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 3

Te mātauranga tau kua mau kē i te ākongā (te hautau me te tau ā-ira)	Ngā rauemi whakaako																																													
<p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te tautuhi i ngā tohu mō ngā haurua, hatoru, hauwhā, haurima, hautekau, ka whai wāhi mai ko ngā hautanga nui ake i te 1; ki te raupapa i ngā hautau he ōrite te tauraro, hei tauira: <ul style="list-style-type: none"> $\frac{2}{5}, \frac{4}{5}, \frac{7}{5}$. <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā rōpū o te 2 kei roto i ngā tau ki te 20, ngā rōpū o te 5 kei roto i ngā tau ki te 50, ngā rōpū o te 10 kei roto i ngā tau ki te 1 000. kia mōhio wawe ki ngā meka whakarea me te wehe mō te 2, te 5, me te 10. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1" data-bbox="788 488 1455 651"> <thead> <tr> <th data-bbox="788 488 1313 528">Ngohe Tatau</th> <th data-bbox="1313 488 1455 528">Whārangi</th> </tr> </thead> <tbody> <tr> <td data-bbox="788 528 1313 568">He Wehenga Hautanga</td> <td data-bbox="1313 528 1455 568">18</td> </tr> <tr> <td data-bbox="788 568 1313 609">Whakaaturia Te Hautau Ki Te Papa Tīrau</td> <td data-bbox="1313 568 1455 609">19</td> </tr> <tr> <td data-bbox="788 609 1313 651">Tatauria</td> <td data-bbox="1313 609 1455 651">34</td> </tr> </tbody> </table> <p>Pukapuka Tuawhitu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007 Tirohia “Mātauranga Matua” me “Ngā Kaupapa Matua” wh. 27–28</p>		Ngohe Tatau	Whārangi	He Wehenga Hautanga	18	Whakaaturia Te Hautau Ki Te Papa Tīrau	19	Tatauria	34																																				
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Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako	
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> whakamahi i te whānuitanga o ngā rautaki whakarea me te wehe hei kimi i te hautanga o tētahi tauoti, hei tauira: <ul style="list-style-type: none"> $\frac{1}{3}$ o te 27 → $27 \div 3$; whakamahi whakareatanga, wehenga rānei hei whakatairite i te rahi o tētahi hautau me tētahi tauoti, hei tauira: <ul style="list-style-type: none"> ko te whakanoho i te $\frac{17}{3}$ ki tētahi rārangi tau mai i te 0 ki te 10; whakamahi i te haurua tāruarua me ngā meka whakarea hei whakaoti wehenga e whai wāhi mai ana te hautanga, hei tauira: <ul style="list-style-type: none"> $7 \div 4 \rightarrow 1 + \frac{1}{2} + \frac{1}{4} = 1\frac{3}{4}$; whakamahi whakarea, wehe rānei hei kimi ōwehenga ōrite, hei whakaoti rapanga ōwehenga māmā, hei tauira: <ul style="list-style-type: none"> 2:3 → 10:15; whakamahi hangarite, horahanga, rōrahi hei kimi i ngā hautanga māmā o ngā āhua ahu-2, ngā roa, me ngā āhua ahu-3. 	<p>Pukapuka Tuawhītu: Te Hautau Te Tau ā-Ira, Te Ōrau 2007</p>	
	<p>Ngohe</p>	<p>Whārangi</p>
	<p>Keke Hurītau</p>	<p>29</p>
	<p>Poraka Hautau</p>	<p>31</p>
	<p>Pēke Kākano</p>	<p>34</p>
	<p>Tereina</p>	<p>37</p>
	<p>Pukapuka Tuawaru: Te Aroā Tikanga Tau me te Whakaaro Taurangi 2006</p>	
	<p>Ngohe</p>	<p>Whārangi</p>
	<p>Ngā Hautanga I Roto I Te Tahī</p>	
	<p>He Tau Anō Te Tau!</p>	
	<p><i>Te Tau: Pukapuka Tuarua, Taumata 2, wh. 22–23</i></p>	
	<p><i>Ngā Tau, Taumata 2–3, wh. 20–24</i></p>	
	<p><i>Te Tau, Taumata 3, wh. 10–11</i></p>	
	<p><i>Te Tau: Pukapuka Tuatoru, Taumata 3, wh. 20–23</i></p>	
	<p><i>Te Tau, Taumata 3–4, wh. 3</i></p>	
	<p><i>Te Tau: Pukapuka Tuatahi, Hononga, wh. 20–21</i></p>	
	<p><i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi, Taumata 2–3, wh. 2–3, 17</i></p>	
	<p><i>Te Tau: Pukapuka Tuatahi, Hononga, wh. 1, 20–24</i></p>	

Mai i te Puanga o te Wāwāhi Tau Tāpiripiri ki te Wāwāhi Tau Whakarea Kaupae 6–7

Te mātauranga tau kua mau kē i te ākongā (te tāpiri me te tango)	Ngā rauemi whakaako																				
<p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te tautuhi i ngā tau ā-ira kia 3 ngā mati whaiira; ki te tautuhi i ngā tohu katoa mō te hautau, arā, ko ngā hautekau, ko ngā haurau, ngā haumano hoki, me ngā hautau nui ake i te 1. <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā hautekau me ngā haurau kei roto i ngā tau ā-ira kia 2 ngā mati whaiira, hei tauira: <ul style="list-style-type: none"> e 31 ngā hautekau kei roto i te 3.14; e 314 ngā haurau kei roto i te 3.14; ki te whakaawhiwhi tau ā-ira (ko te nui rawa kia 2 ngā mati whaiira) ki te tauoti e pātata ana. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Tau Ki Mua, Te Tau Ki Muri</td> <td>39</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> <tr> <td>Te Paparau Me Te Puka Mano</td> <td>46</td> </tr> <tr> <td>He Aho Pirepire</td> <td>48</td> </tr> <tr> <td>Te Tau Nui Rawa Atu</td> <td>49</td> </tr> <tr> <th colspan="2">Ngohe Whakarōpū</th> </tr> <tr> <td>Whiriwhiria Te Tau</td> <td>72</td> </tr> <tr> <td>He Aho Pirepire</td> <td>97</td> </tr> <tr> <td>Whakakorea</td> <td>98</td> </tr> </tbody> </table> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuarua, Hononga, wh. 4, 16</i></p>	Ngohe Tatau	Whārangi	Te Tau Ki Mua, Te Tau Ki Muri	39	Whakaaturia Ki Te Rārangi Tau	43	Te Paparau Me Te Puka Mano	46	He Aho Pirepire	48	Te Tau Nui Rawa Atu	49	Ngohe Whakarōpū		Whiriwhiria Te Tau	72	He Aho Pirepire	97	Whakakorea	98
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Te mātauranga tau e whakaakona ana (te tāpiri me te tango)	Ngā rauemi whakaako																								
<p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te kōrero i ngā raupapatanga kupu tau ā-ira whakamua, whakamuri hoki, mō ngā haumano, haurau, hautekau, me ngā tauoti 1, 10, 100 ..., ahakoa tīmata ki tēhea tauoti; ki te kōrero i te tau kotahi haumano, kotahi haurau, kotahi hautekau, kotahi, tekau, kotahi rau ... te rahinga ake, te itinga iho rānei i tētahi tauoti; ki te raupapa i ngā tau ā-ira kia 3 ngā mati whaiira. <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā 10, ngā 100, me ngā 1 000 kei roto i tētahi tau mati-7; ki te whakaawhiwhi tauoti, tau ā-ira hoki (kia 2 ngā mati whaiira) ki te tahi, ki te hautekau rānei e pātata ana; ki te tuhi whārite, ki te tuhi hoahoa hoki hei whakaatu i ngā tātāitanga ā-hinengaro (pērā i te rārangi tau wātea); ki te whakaoti i ngā tuhinga ōkawa mō te tāpiri me te tango tauoti. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Kōwhiwhiu Tau</td> <td>14</td> </tr> <tr> <td>He Whare Uara Tū</td> <td>16</td> </tr> <tr> <td>Raupapahia Ngā Kāri</td> <td>37</td> </tr> <tr> <td>Kāri Pere</td> <td>37</td> </tr> <tr> <td>Raupapahia</td> <td>43</td> </tr> <tr> <td>Whiriwhiria Te Tau</td> <td>44</td> </tr> <tr> <th colspan="2">Ngohe Whakarōpū</th> </tr> <tr> <td>E Pātata Ana Ki Te 100</td> <td>68</td> </tr> <tr> <td>Piki Ake, Heke Iho</td> <td>69</td> </tr> <tr> <td>Huria Te Tau</td> <td>73</td> </tr> <tr> <td>Whakaawhiwhia Ki Te Tekau</td> <td>80</td> </tr> </tbody> </table> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuatoru, Taumata 3, wh. 3</i> <i>Te Tau: Pukapuka Tuarua, Taumata 3–4, wh. 10</i> <i>Te Tau: Pukapuka Tuarua, Hononga, wh. 17–19</i> <i>Te Tau: Pukapuka Tuatoru, Taumata 4, wh. 13, 15, 22, 24</i> <i>Te Tau: Pukapuka Tuawhā, Taumata 4, wh. 12–13, 24</i></p>	Ngohe Tatau	Whārangi	Te Kōwhiwhiu Tau	14	He Whare Uara Tū	16	Raupapahia Ngā Kāri	37	Kāri Pere	37	Raupapahia	43	Whiriwhiria Te Tau	44	Ngohe Whakarōpū		E Pātata Ana Ki Te 100	68	Piki Ake, Heke Iho	69	Huria Te Tau	73	Whakaawhiwhia Ki Te Tekau	80
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Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- whakamahi i te whānuitanga o ngā rautaki ā-hinengaro hei whakaoti i ngā rapanga tāpiri me te tango i te tauoti me te tau ā-ira, hei tauira:
 - te tau māmā me te tikanga paremata:
 $3.1 - 2.79 \rightarrow (3.1 - 2.8) + 0.01$;
 - te wāwāhi uara tū: $3.06 + 2.7 \rightarrow (3.06 + 2) + 0.7$;
 - te huri kōaro me te āhuatanga tātai kōaro:
 $6.7 - 4.9 \rightarrow 4.9 + \square = 6.7$; $2.3 + 4.8 \rightarrow 4.8 + 2.3$;
 - te tāpiritanga ōrite: $4.2 - 2.8 \rightarrow 4.4 - 3.0$;
 - te wāwāhitanga: $7.1 - 2.8 \rightarrow (6 + 1.1) - 2.8$;
 - te whakamahi tau tōraro: $64 - 38 \rightarrow 4 - 8 = -4$,
 $60 - 30 = 30$, $30 - 4 = 26$;
- whakamahi i te tau toharite me ngā tauwehe pātahi (tauoti), hei tauira:
 - $81 - 27 = 9 \times 9 - 3 \times 9 = 6 \times 9$;
 - $28 + 30 + 32 = 30 \times 3 = 90$;
- tāpiri me te tango i ngā hautau e whai pānga ana mā te wāwāhitanga, hei tauira:
 - $\frac{2}{3} + \frac{5}{6} = 1\frac{3}{6} = 1\frac{1}{2}$;
- whakamahi i te pene me te pepa, te tātātai rānei hei tāpiri, hei tango hoki i ngā tauoti me ngā tau ā-ira, mēnā he nui rawa, he uua rānei ngā tau.

Ngā rauemi whakaako

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Ngā Meka Matua: Pukapuka Tuawhā, Taumata 3–4, wh. 19

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Te Mātauranga Tau: Pukapuka Tuatahi, Hononga, wh. 15, 21

Te Mātauranga Tau: Pukapuka Tuarua Taumata 4, wh. 1, 7–8, 11

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi, Taumata 3, wh. 16–17

Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua, Taumata 3, wh. 24

Mai i te Puanga o te Wāwāhi Tau Tāpiripiri ki te Wāwāhi Tau Whakarea Kaupae 6–7

Te Whakarea me te Wehe Pāngarau i roto i te Marautanga o Aotearoa Taumata 3

Te mātauranga tau kua mau kē i te ākongā (te whakarea me te wehe)	Ngā rauemi whakaako																			
<p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā rōpū o te 2, o te 3, o te 5, o te 10 kei roto i ngā tau ki te 100, me ngā toenga hoki, hei tauira: <ul style="list-style-type: none"> – e 34 ngā rua kei roto i te 69, kotahi e toe ana; • kia mōhio wawe ki ngā rōpū o te 10, o te 100 kei roto i tētahi tau mati-4, hei tauira: <ul style="list-style-type: none"> – e 567 ngā tekau kei roto i te 5 672; – e 23 ngā rau kei roto i te 2 306; • kia mōhio ki ngā meka matua katoa mō te whakarea; • ki te tuhi whārite whakarea me te wehe, ki te tuhi hoahoa hoki hei whakaatu i ngā tātāitanga ā-hinengaro. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1" data-bbox="787 495 1458 696"> <thead> <tr> <th data-bbox="787 495 1313 533">Ngohe Whakarōpū</th> <th data-bbox="1313 495 1458 533">Whārangi</th> </tr> </thead> <tbody> <tr> <td data-bbox="787 533 1313 571">Whakakorea</td> <td data-bbox="1313 533 1458 571">98</td> </tr> <tr> <td data-bbox="787 571 1313 609">Whiriwhiria Te Paheko</td> <td data-bbox="1313 571 1458 609">99</td> </tr> <tr> <td data-bbox="787 609 1313 647">Whakareatia</td> <td data-bbox="1313 609 1458 647">100</td> </tr> <tr> <td data-bbox="787 647 1313 696">He Ara Paheko Tau</td> <td data-bbox="1313 647 1458 696">101</td> </tr> </tbody> </table> <p>Pukapuka Tuaono: Te Whakarea Me Te Whakawehe 2008 Tirohia “Te Mātauranga Matua” me “Te Kaupapa Matua”, wh. 74–76</p>		Ngohe Whakarōpū	Whārangi	Whakakorea	98	Whiriwhiria Te Paheko	99	Whakareatia	100	He Ara Paheko Tau	101								
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Te Whakarea Hei Whakaoti Wehenga	102																			
He Kāri Whakarea	105																			

Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- whakaoti rapanga whakarea, wehe hoki mā te whakamahi i ngā meka mōhio me te whānuitanga o ngā rautaki, hei tauira:
 - tau māmā me te tikanga paremata:
 $96 \div 4 = (100 \div 4) - 1$;
 - huri kōaro me te āhuetanga tātai kōaro:
 $4 \div 7 \rightarrow 7 \times \square = 84$; $6 \times 2.37 \rightarrow 2.37 \times 6$;
 - rearua me te haurua, reatoru me te hautoru:
 $3 \times 27 = 9 \times 9$;
 - wāwāhitanga: $201 \div 3 \rightarrow (99 \div 3) + (99 \div 3) + (3 \div 3)$;
- whakaoti rapanga wehe e whai toenga ana me te tuhi i te otinga hei hautau, hei tau ā-ira, hei tauoti me te toenga rānei, hei tauira:
 - $76 \div 5 = 15\frac{1}{5}$, 15.2, 15 t1 rānei;
- whakamahi i ngā tuhinga ōkawa, te tātaitai rānei mēnā he nui rawa, he uaua rānei ngā tau.

Ngā rauemi whakaako

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Te Tau: Pukapuka Tuarua, Taumata 3–4, wh. 1–5, 9, 22–24
Te Tau: Pukapuka Tuatoru, Taumata 3–4, wh. 7–10, 12–14
Ngā Meka Matua, Taumata 3–4, wh. 3, 12–13, 15–17
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Te Tau: Pukapuka Tuarima, Taumata 4, wh. 1, 2, 5, 17
Te Mātauranga Tau: Pukapuka Tuatahi, Hononga, wh. 1–3, 10–12, 14, 17, 20, 23–24
Te Mātauranga Tau: Pukapuka Tuarua, Taumata 4, wh. 2, 16, 24

Mai i te Puanga o te Wāwāhi Tau Tāpiripiri ki te Wāwāhi Tau Whakarea Kaupae 6–7

Te Hautau, te Tau ā-ira, te Ōwehenga, me te Pānga Riterite Pāngarau i roto i te Marautanga o Aotearoa Taumata 3

Te mātauranga tau kua mau kē i te ākongā (te hautau, te tau ā-ira, te ōwehenga, me te pānga riterite)	Ngā rauemi whakaako																
<p>E mōhio ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te tautuhi i ngā tau ā-ira kia 3 ngā mati whaiira; ki te tautuhi i ngā tohu mō ngā hautau katoa, ka whai wāhi mai ko ngā hautekau, ngā haurau, ngā haumano, me ngā hautanga nui ake i te 1; ki te kōrero mai i te raupapatanga kupu whakamua, whakamuri hoki mō ngā haurua, hauwhā, hauroru, haurima, hautekau; ki te raupapa i ngā hautahi o ngā haurua, hauroru, hauwhā, haurima, hautekau, hei tauira (iti ki te rahi): <ul style="list-style-type: none"> $\frac{1}{10}, \frac{1}{5}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}$. <p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā hautekau me ngā haurau kei roto i ngā tau ā-ira e rua ngā mati whaiira, hei tauira: <ul style="list-style-type: none"> e 456 ngā hautekau kei roto i te 45.67; 134 ngā haurau kei roto i te 1.34; ki te whakaawhiwhi i ngā tau e rua ngā mati whaiira ki te tauoti e pātata ana. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngōhe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>He Wehenga Hautanga</td> <td>18</td> </tr> <tr> <td>Raupapahia</td> <td>43</td> </tr> <tr> <td>Whakaaturia Ki Te Rārangi Tau</td> <td>43</td> </tr> <tr> <td>Whiriwhiria Te Tau</td> <td>44</td> </tr> <tr> <td>He Aho Pirepire</td> <td>48</td> </tr> <tr> <th>Ngōhe Whakarōpū</th> <td></td> </tr> <tr> <td>Huria Te Tau</td> <td>73</td> </tr> </tbody> </table> <p>Pukapuka Tuawhitu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007 Tirohia “Mātauranga Matua” me “Te Kaupapa Matua”, wh. 41–42</p> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuarua</i>, Hononga, wh. 9, 20 <i>Te Tau: Pukapuka Tuatoru</i>, Taumata 4, wh. 2–3 <i>Te Tau: Pukapuka Tuarima</i>, Taumata 4, wh. 16</p>	Ngōhe Tatau	Whārangi	He Wehenga Hautanga	18	Raupapahia	43	Whakaaturia Ki Te Rārangi Tau	43	Whiriwhiria Te Tau	44	He Aho Pirepire	48	Ngōhe Whakarōpū		Huria Te Tau	73
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Huria Te Tau	73																

Te mātauranga tau e whakaakona ana (te hautau, te tau ā-ira, te ōwehenga, me te pānga riterite)	Ngā rauemi whakaako																																										
<p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> ki te raupapa i ngā tau ā-ira kia 3 ngā mati whaiira, hei tauira: <ul style="list-style-type: none"> $6.25 < 6.3$; ki te raupapa i ngā hautau, arā, ko ngā haurua, ngā hauwhā, ngā hauroru, ngā haurima, me ngā hautekau, hei tauira: <ul style="list-style-type: none"> $\frac{2}{3} > \frac{3}{5}$; kia mōhio wawe ki ngā hautau ōrite mō ngā haurua, ngā hauroru, ngā hauwhā, ngā haurima, me ngā hautekau, ka whai wāhi mai ko ngā tauraro 100 me 1 000, hei tauira: <ul style="list-style-type: none"> $\frac{3}{4} = \frac{75}{100}$; kia mōhio wawe ki ngā huringa hautau ↔ tau ā-ira ↔ ōrau mō ngā haurua, ngā hauroru, ngā hauwhā, ngā haurima, me ngā hautekau, hei tauira: <ul style="list-style-type: none"> $\frac{2}{5} = 0.4 = 40\%$; ki te tuhi whārite, hoahoa hoki hei whakaatu i ngā tātaitanga ā-hinengaro (pērā i te rārangi tau wātea); ki te whakaawhiwhi tauoti, tau ā-ira (kia 2 ngā mati whaiira) ki te tauoti, ki te hautekau rānei e pātata ana. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngōhe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Te Kōwhiwhiū Tau</td> <td>14</td> </tr> <tr> <td>He Whare Uara Tū</td> <td>16</td> </tr> <tr> <td>Whakaaturia Te Hautau Ki te Papa Tīrau</td> <td>19</td> </tr> <tr> <td>He Hautau Anō Ki Te Papa Tīrau</td> <td>22</td> </tr> <tr> <td>Ngā Hautahi-Kore</td> <td>23</td> </tr> <tr> <td>He Pākete Rare</td> <td>24</td> </tr> <tr> <td>Te Pānuī Hautau Ā-Ira</td> <td>26</td> </tr> <tr> <td>Te Moni Me Te Hautanga Ā-Ira</td> <td>30</td> </tr> <tr> <td>Raupapahia Ngā Kāri</td> <td>37</td> </tr> <tr> <td>Kāri Pere</td> <td>37</td> </tr> <tr> <td>Tātaitai</td> <td>40</td> </tr> <tr> <td>Kei A Wai Te Keke Nui?</td> <td>51</td> </tr> <tr> <td>Ngā Hautanga Ki Te Rārangi Tau</td> <td>54</td> </tr> <tr> <td>Ko Wai Ka Toa?</td> <td>57</td> </tr> <tr> <th>Ngōhe Whakarōpū</th> <td></td> </tr> <tr> <td>Piki Ake, Heke Iho</td> <td>69</td> </tr> <tr> <td>Kia Whaitake Te Whakaawhiwhi</td> <td>81</td> </tr> <tr> <td>Rārangi Tau Ā-Ira</td> <td>83</td> </tr> <tr> <td>He Mati Nukunuku</td> <td>84</td> </tr> <tr> <td>Hautau Ōrite Huhua</td> <td>87</td> </tr> </tbody> </table> <p>He Tau Anō Te Tau! <i>Te Tau: Pukapuka Tuarua</i>, Taumata 3, wh. 20–21 <i>Te Tau: Pukapuka Tuarua</i>, Taumata 3–4, wh. 15 <i>Te Tau: Pukapuka Tuatoru</i>, Taumata 4, wh. 1–4, 17–19 <i>Te Tau: Pukapuka Tuarima</i>, Taumata 4, wh. 11, 19–23 <i>Te Tau: Pukapuka Tuarua</i>, Hononga, wh. 21, 24</p>	Ngōhe Tatau	Whārangi	Te Kōwhiwhiū Tau	14	He Whare Uara Tū	16	Whakaaturia Te Hautau Ki te Papa Tīrau	19	He Hautau Anō Ki Te Papa Tīrau	22	Ngā Hautahi-Kore	23	He Pākete Rare	24	Te Pānuī Hautau Ā-Ira	26	Te Moni Me Te Hautanga Ā-Ira	30	Raupapahia Ngā Kāri	37	Kāri Pere	37	Tātaitai	40	Kei A Wai Te Keke Nui?	51	Ngā Hautanga Ki Te Rārangi Tau	54	Ko Wai Ka Toa?	57	Ngōhe Whakarōpū		Piki Ake, Heke Iho	69	Kia Whaitake Te Whakaawhiwhi	81	Rārangi Tau Ā-Ira	83	He Mati Nukunuku	84	Hautau Ōrite Huhua	87
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Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako	
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> • whakamahi i te whānuitanga o ngā rautaki whakarea me te wehe, ā-hinengaro, hei whakaoti rapanga e whai wāhi mai ana te hautau, te tau ā-ira, te ōrau, te ōwehenga, me te pānga riterite, hei taurira: <ul style="list-style-type: none"> – te kimi mai i te hautau, te tau ā-ira, te ōrau e ōrite ana: $\frac{3}{4} = 0.75 = 75\%$; – te whakamahi hautahi: $\frac{5}{8}$ o te 72 $\rightarrow (\frac{1}{8}$ o te 72) \times 5; – te wāwāhi uara tū: $3.4 \times 6 \rightarrow (3 \times 6) + (0.4 \times 6)$; – te tau māmā me te tikanga paremata: $6.3 \times 2.9 \rightarrow (6.3 \times 3) - (6.3 \times 0.1) \rightarrow 18.9 - 0.63 = 18.27$. 	<p>Pukapuka Tuawhītu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007</p>	
	Ngohe	Whārangi
	Te Papa Hautanga Ā-Ira	49
	<p>He Tau Anō Te Tau!</p> <p><i>Te Tau</i>, Taumata 3, wh. 12–14 <i>Te Tau</i>, Taumata 3, wh. 5, 18–19, 22–24 <i>Te Tau: Pukapuka Tuarua</i>, Taumata 3, wh. 2, 24 <i>Te Tau: Pukapuka Tuatoru</i>, Taumata 3, wh. 12–14, 16, 18–21 <i>Te Tau: Pukapuka Tuarua</i>, Taumata 3–4, wh. 4–6, 11, 15–19, 24 <i>Te Tau: Pukapuka Tuatoru</i>, Taumata 3–4, wh. 4–7, 9–12, 22–24 <i>Ngā Meka Matua</i>, Taumata 3, wh. 22–23 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi</i>, Taumata 2–3, wh. 8–13, 16, 20 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua</i>, Taumata 2–3, wh. 20–24 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi</i>, Taumata 3, wh. 10–13, 18, 20 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua</i>, Taumata 3, wh. 6–7, 21–23 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuatahi</i>, Taumata 3–4, wh. 8–9, 12–19 <i>Te Mātauranga Tau Me Te Whakaaro Taurangi: Pukapuka Tuarua</i>, Taumata 3–4, wh. 10–15, 18–23 <i>Te Mātauranga Tau: Pukapuka Tuatahi</i>, Hononga, wh. 6, 16, 19, 22 <i>Te Mātauranga Tau: Pukapuka Tuarua</i>, Taumata 4, wh. 4, 6, 10, 18–19, 22–23</p>	

Mai i te Puanga o te Wāwāhi Tau Tāpiripiri ki te Wāwāhi Tau Whakarea Kaupae 6–7

Te Tauira Tau me te Pānga

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 2–3

Te mātauranga tau kua mau kē i te ākongā (te tauira tau me te pānga)	Ngā rauemi whakaako																			
<p>E mōhio ana te ākongā:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā meka matua katoa mō te whakarea me te wehe; • kia mōhio wawe ki ngā rōpū o te 10 me te 100 kei roto i ngā tau mati-4, hei tauira: <ul style="list-style-type: none"> – e 721 ngā tekau kei roto i te 7 214; – e 93 ngā rau kei roto i te 9 325. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th data-bbox="787 501 1313 539">Ngohe Tatau</th> <th data-bbox="1313 501 1456 539">Whārangi</th> </tr> </thead> <tbody> <tr> <td data-bbox="787 539 1313 577">Tatau Māwhitiwhiti I Te Rārangi Tau</td> <td data-bbox="1313 539 1456 577">35</td> </tr> <tr> <td data-bbox="787 577 1313 616">Ararā!</td> <td data-bbox="1313 577 1456 616">36</td> </tr> <tr> <td data-bbox="787 616 1313 654">Tātaimai</td> <td data-bbox="1313 616 1456 654">40</td> </tr> <tr> <th colspan="2" data-bbox="787 654 1313 692">Ngohe Whakarōpū</th> </tr> <tr> <td data-bbox="787 692 1313 730">Huria Te Tau</td> <td data-bbox="1313 692 1456 730">73</td> </tr> <tr> <td data-bbox="787 730 1313 768">Whakawhitia Ngā Paparanga Uara Tū</td> <td data-bbox="1313 730 1456 768">74</td> </tr> <tr> <td data-bbox="787 768 1313 806">Te Whakarea Hei Whakaoti Wehenga</td> <td data-bbox="1313 768 1456 806">102</td> </tr> <tr> <td data-bbox="787 806 1313 844">He Kāri Whakarea</td> <td data-bbox="1313 806 1456 844">105</td> </tr> </tbody> </table>		Ngohe Tatau	Whārangi	Tatau Māwhitiwhiti I Te Rārangi Tau	35	Ararā!	36	Tātaimai	40	Ngohe Whakarōpū		Huria Te Tau	73	Whakawhitia Ngā Paparanga Uara Tū	74	Te Whakarea Hei Whakaoti Wehenga	102	He Kāri Whakarea	105
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Te mātauranga tau e whakaakona ana (te tauira tau me te pānga)	Ngā rauemi whakaako																			
<p>E ako ana te ākongā:</p> <ul style="list-style-type: none"> • kia mōhio wawe ki ngā rōpū o te 10, o te 100, o te 1 000 kei roto i ngā tau tae atu kia 7 ngā mati; • kia mōhio wawe ki ngā meka matua mō te whakarea me te wehe, tae atu ki te 10 x 10; • ki te tuhi whārite, ki te tuhi hoahoa hoki hei whakaatu i ngā tātaimanga ā-hinengaro (pērā i te rārangi tau wātea); • ki te whakaoti i tētahi tuhinga ōkawa hei whakarea, wehe rānei i tētahi tauoti mati-3 mā tētahi tauoti mati-1; • ki te whakaoti i te whakamātautau hei tiro tiro mēnā e taea ana tētahi tau te wehe ki te 2, te 3, te 5, te 9, te 10 rānei; • kia mōhio wawe ki ngā tau pūrua me ngā pūtakerua ki te 100, hei tauira: <ul style="list-style-type: none"> – $7^2 = 49$; – $\sqrt{64} = 8$. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th data-bbox="787 1003 1313 1041">Ngohe Tatau</th> <th data-bbox="1313 1003 1456 1041">Whārangi</th> </tr> </thead> <tbody> <tr> <td data-bbox="787 1041 1313 1079">Kāri Pere</td> <td data-bbox="1313 1041 1456 1079">37</td> </tr> </tbody> </table>		Ngohe Tatau	Whārangi	Kāri Pere	37														
Ngohe Tatau	Whārangi																			
Kāri Pere	37																			

Ngā rautaki tau e whakaakona ana	Ngā rauemi whakaako									
<p>E ako ana te ākongā ki te:</p> <ul style="list-style-type: none"> • tiro tiro mēnā he tau toitū he tau noa rānei tētahi tau; • whakaoti rapanga e whai wāhi mai ana te raupapa, te tāpiri, me te tango tau tōpū; • kimi mai i ngā taupū me ngā pūtakerua o tētahi tau, arā, ko te pūrua me te pūtoru hoki; • whakamahi huarea hei whakaoti rapanga; • whakatau i te ture whānui hei kimi mai i te huānga ngaro o tētahi raupapatanga tau tāruarua, raupapatanga taonga tāruarua rānei, hei tauira: <ul style="list-style-type: none"> – ture tāruarua: 6, 10, 14, 18 ... (+ 4 ki te tau o mua); – ture pānga: <table border="0" style="margin-left: 20px;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr> <td>4</td><td>7</td><td>10</td><td>13</td></tr> </table> • (whakareatia te tau o runga ki te 3 ka tāpiri ai i te 1); • whakaatu, ki te whakamāori hoki i ngā pānga mā te whakamahi whārite, tūtohi, kauwhata hoki; • whakaoti rapanga tau, kotahi, nui ake rānei ngā taurangi; • raupapatanga tika o ngā paheko, hei tauira: <ul style="list-style-type: none"> – $3 + 4 \times 5 = 3 + 20 = 23$; – $(3 + 4) \times 5 = 35$. 	1	2	3	4	4	7	10	13	<p>Pukapuka Tuawaru: Te Aroā Tikanga Tau Me Te Whakaaro Taurangi 2006</p>	
1	2	3	4							
4	7	10	13							
	<p>Ngohe</p> <p>Te Raupapa Paheko Tau</p>	<p>Whārangi</p> <p>37</p>								
	<p>He Tau Anō Te Tau!</p> <p><i>Te Tau, Pukapuka Tuatoru, Taumata 4, wh. 4, 20–21</i></p> <p><i>Te Tau: Pukapuka Tuawhā, Taumata 4, wh. 1–7 (tau toitū)</i></p> <p><i>Te Tau: Pukapuka Tuawhā, Taumata 4, wh. 8–13, 15, 21 (tau tōpū)</i></p> <p><i>Te Tau: Pukapuka Tuawhā, Taumata 4, wh. 14, 16–20, 22–24</i></p> <p><i>Te Tau: Pukapuka Tuarima, Taumata 4, wh. 10 (pū me ngā pūtakerua)</i></p> <p><i>Te Taurangi, Taumata 3–4, wh. 1–24</i></p> <p><i>Te Mātauranga Tau: Pukapuka Tuarua, Taumata 4, wh. 5, 9, 12</i></p> <p><i>Te Taurangi: Pukapuka Tuatahi, Hononga, wh. 1–24</i></p> <p><i>Te Taurangi: Pukapuka Tuarua, Taumata 4, wh. 1–9, 11–13, 15, 20–21</i></p> <p><i>Te Taurangi: Pukapuka Tuatoru, Taumata 4, wh. 1–7, 10–17, 20–21</i></p> <p><i>Te Taurangi: Pukapuka Tuawhā, Taumata 4+, wh. 6–7</i></p>									

Mai i te Wāwāhi Tau Whakarea ki te Wāwāhi Tau Pānga Riterite Kaupae 7–8

Te Hautau, te Tau ā-ira, te Ōwehenga, me te Pānga Riterite Pāngarau i roto i te Marautanga o Aotearoa Taumata 4

Te mātauranga tau kua mau kē i te ākongā (te hautau, te tau ā-ira, te ōwehenga, me te pānga riterite)	Ngā rauemi whakaako																									
<p>E mōhio ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> ki te raupapa i ngā tau ā-ira kia 3 ngā mati whaiira, hei tauira (iti ki te rahi): <ul style="list-style-type: none"> – 6.213, 6.25, 6.3; ki te raupapa i ngā hautau, arā, ko ngā haurua, hauwhā, hatoru, haurima, me ngā hautekau; kia mōhio wawe ki ngā hautau ōrite mō ngā haurua, hatoru, hauwhā, haurima, hautekau, ka whai wāhi mai ko ngā taurau 100 me 1 000, hei tauira: <ul style="list-style-type: none"> – $\frac{4}{5} = \frac{800}{1000}$; kia mōhio wawe ki ngā huringa hautau ↔ tau ā-ira ↔ ōrau mō ngā haurua, hatoru, hauwhā, haurima, hautekau, hei tauira: <ul style="list-style-type: none"> – $\frac{5}{4} = 1.25 = 125\%$; ki te tuhi whārite, hoahoa hoki hei whakaatu i ngā tātaitanga ā-hinengaro (pērā i te rārangi tau wātea); ki te whakaawhiwhi tauoti, tau ā-ira (kia 2 ngā mati whaiira) ki te tauoti, ki te hautekau rānei e pātata ana. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1" data-bbox="785 495 1456 936"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr><td>He Whare Uara Tū</td><td>16</td></tr> <tr><td>He Hautau Anō Ki Te Papa Tīrau</td><td>22</td></tr> <tr><td>Ngā Hautahi-Kore</td><td>23</td></tr> <tr><td>He Pākete Rare</td><td>24</td></tr> <tr><td>Te Pānui Hautau Ā-Ira</td><td>26</td></tr> <tr><td>Raupapahia Ngā Kāri</td><td>37</td></tr> <tr><td>Kāri Pere</td><td>37</td></tr> <tr><td>Tātaitai</td><td>40</td></tr> <tr><td>Raupapahia</td><td>43</td></tr> <tr><td>Whiriwhiria Te Tau</td><td>44</td></tr> <tr><td>Ngā Hautanga Ki Te Rārangi Tau</td><td>54</td></tr> </tbody> </table> <p>Pukapuka Tuawhitu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007 Tirohia “Mātauranga Matua” me “Ngā Kaupapa Matua” wh. 60–61</p> <p>He Tau Anō Te Tau! Te Tau: Pukapuka Tuarua, Hononga, wh. 21, 24 Te Tau: Pukapuka Tuatoru, Taumata 3–4, wh. 1, 4, 17–19 Te Tau: Pukapuka Tuarima, Taumata 4, wh. 11, 19, 23</p>		Ngohe Tatau	Whārangi	He Whare Uara Tū	16	He Hautau Anō Ki Te Papa Tīrau	22	Ngā Hautahi-Kore	23	He Pākete Rare	24	Te Pānui Hautau Ā-Ira	26	Raupapahia Ngā Kāri	37	Kāri Pere	37	Tātaitai	40	Raupapahia	43	Whiriwhiria Te Tau	44	Ngā Hautanga Ki Te Rārangi Tau	54
Ngohe Tatau	Whārangi																									
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Te mātauranga tau e whakaakona ana (te hautau, te tau ā-ira, te ōwehenga, me te pānga riterite)	Ngā rauemi whakaako																											
<p>E ako ana te ākongā ki ēnei mahi tatau:</p> <ul style="list-style-type: none"> ki te kōrero i ngā raupapatanga kupu tau ā-ira whakamua, whakamuri hoki, mō ngā haumano, haurau, hautekau, tahi, tekau, ahakoa tīmata ki tēhea tau ā-ira; ki te raupapa i ngā hautau, ngā tau ā-ira me ngā ōrau. <p>E ako ana te ākongā ki ēnei mahi whakarōpū:</p> <ul style="list-style-type: none"> kia mōhio wawe ki ngā hautekau, haurau, haumano kei roto i ngā tau ā-ira, kia 3 ngā mati whaiira, hei tauira: <ul style="list-style-type: none"> – e 456 ngā haurau kei roto i te 4.56; – e 6 792 ngā haumano kei roto i te 6.792; kia mōhio wawe ki te whakarea, ki te wehe rānei i tētahi tauoti, tau ā-ira rānei ki tētahi taupū o te 10, hei tauira: <ul style="list-style-type: none"> – $3.46 \times 100 = 346$; – $52.7 \div 100 = 0.527$; kia mōhio wawe ki ngā huringa hautau ↔ tau ā-ira ↔ ōrau mō ngā hautanga e whakamahia ana i ia rā, pērā i te hauwaru, te hautekau me te haurua-tekau, hei tauira: <ul style="list-style-type: none"> – $\frac{3}{8} = 0.375 = 37.5\%$; ki te tuhi whārite hei whakaatu i ngā tātaitanga ā-hinengaro; ki te whakatutuki i ngā tuhinga ōkawa mō te tāpiri mō te tango hoki i ngā tauoti me ngā tau ā-ira kia 3 ngā mati whaiira; ki te whakarea me te wehe i tētahi tauoti, tau ā-ira rānei mā tētahi tau mati-1; ki te whakarea me te wehe i tētahi tauoti mati-3, mati-4 hoki mā tētahi tauoti mati-2. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1" data-bbox="785 1323 1456 1839"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr><td>He Hautau Anō Ki Te Papa Tīrau</td><td>22</td></tr> <tr><td>Ngā Hautahi-Kore</td><td>23</td></tr> <tr><td>He Pākete Rare</td><td>24</td></tr> <tr><td>Te Pānui Hautau Ā-Ira</td><td>26</td></tr> <tr><td>Te Moni Me Te Hautanga Ā-Ira</td><td>30</td></tr> <tr><td>Te Tikanga Nui O Te Kore</td><td>33</td></tr> <tr><td>Kei A Wai Te Keke Nui?</td><td>51</td></tr> <tr><td>He Nui Ake Te Hauwhā I Te Haurua!</td><td>52</td></tr> <tr><td>Ko Wai Ka Toa?</td><td>57</td></tr> <tr><td>Raupapa Hautau</td><td>58</td></tr> <tr><td>Hautanga Ōrite</td><td>60</td></tr> <tr><td>Te Whakaawhiwhi Hautau Hei Ōrau</td><td>61</td></tr> </tbody> </table>		Ngohe Tatau	Whārangi	He Hautau Anō Ki Te Papa Tīrau	22	Ngā Hautahi-Kore	23	He Pākete Rare	24	Te Pānui Hautau Ā-Ira	26	Te Moni Me Te Hautanga Ā-Ira	30	Te Tikanga Nui O Te Kore	33	Kei A Wai Te Keke Nui?	51	He Nui Ake Te Hauwhā I Te Haurua!	52	Ko Wai Ka Toa?	57	Raupapa Hautau	58	Hautanga Ōrite	60	Te Whakaawhiwhi Hautau Hei Ōrau	61
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Raupapa Hautau	58																											
Hautanga Ōrite	60																											
Te Whakaawhiwhi Hautau Hei Ōrau	61																											

Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- kōwhiri rautaki mai i te whānuitanga o ngā rautaki ā-hinengaro hei whakaoti rapanga e whai wāhi mai ana te hautau, te tau ā-ira, te ōrau, te ōwehenga, me te pānga riterite, hei tauira:
 - te huri kōaro ki te kimi hautau, tau ā-ira, ōrau:
 $13.6 \div 0.4 = \square \rightarrow 0.4 \times \square \rightarrow = 13.6;$
 - te whakamahi ōwehenga ōrite mā te kimi tauwehe pātahi: $28 \div 42 = \square \% \rightarrow \frac{28}{42} = \frac{4}{6} = \frac{2}{3} = 66.6\%;$
 - te pānga riterite i waenganui i ētahi inenga:
 $12:15 = \square :25 \rightarrow 12 = \frac{4}{5} \text{ o te } 15 \rightarrow \frac{4}{5} \text{ o te } 25 = 20;$
 - te rearua me te haurua, te reatoru me te hautoru ...:
 $7.2 \div 0.3 \rightarrow 8 \times 0.9 = 7.2 \rightarrow 24 \times 0.3 = 7.2;$
 - te huri ōwehenga \rightarrow hautanga:
 $3:5 \text{ o roto i te } 96 \rightarrow 3:5 = \frac{3}{8} \rightarrow \frac{3}{8} \text{ o te } 96 = 36,$
 nō reira $3:5 = 36:60;$
 - te tātaitanga pāpātanga: $75 \text{ km/h} \rightarrow$ ka oti te 300 km i roto i te 4 hāora;
 - te tāpiri hautau he rerekē te tauraro:
 $\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12}.$

Ngā rauemi whakaako

Pukapuka Tuarima: Te Tāpiritanga, Te Tangohanga, Me Te Uara Tū 2007

Ngohe	Whārangi
Honoa Ngā Ōwehenga	171

Pukapuka Tuaono: Te Whakarea Me Te Whakawehe 2008

Ngohe	Whārangi
Mā Te Tauwehe	129

Pukapuka Tuawhitu: Te Hautau, Te Tau ā-Ira, Te Ōrau 2007

Ngohe	Whārangi
Ringa Tītere	62
He Ranunga Peita	66
Te Whētui Hautau, Tau Ā-Ira	71
Hautau Tāpiripiri, Hautau Tangotango	75

Pukapuka Tuawaru: Te Aroā Tikanga Tau me te Whakaaro Taurangi 2006

Ngohe	Whārangi
Te Whakatau Tata I Ngā Hautau	43
Te Hautau Ōrite	46
He Hautau Nui Ake I Te Kotahi	50
He Rārangi Hautau	53
Te Āwhata Rārangi Tau	55
Te Whakaawhiwhi Tauoti	58
He Hautau, He Tau Ā-Ira Whakahēhē	61
Te Whakaawhiwhi Tau Ā-Ira	62
Te Whakawehe Hautau	65
Te Whakawehe Hautau Uaua	68
Te Whakarea Hautau Ki Te Tauoti	69
Te Whakarea I Te Hautau Ki Te Hautau	71
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Te Whakatau Tata I Te Whakareatanga Tau Ā-Ira, Whakawehenga Tau Ā-Ira	77
Tātaitanga Ōrau	78
Te Whakatau Tata I Te Ōrau	79
He Rautaki Matarua Hei Whakaoti Rapanga Ōrau	81
He Rautaki Matatahi Hei Whakaoti Rapanga Ōrau	83
E Hia Ka Toe Mai?	94
Te Whakamahi Toenga	96
Te Whakarea Hautanga Ā-Ira	107

He Tau Anō Te Tau!

Ngā Tau, Taumata 2–3, wh. 19, 21

Ngā Meka Matua, Taumata 3–4, wh. 21, 24

Te Tau: Pukapuka Tuarua, Taumata 3–4, wh. 6–8, 17

Te Tau: Pukapuka Tuatoru, Taumata 4, wh. 5–6, 11, 14, 20–21

Te Tau: Pukapuka Tuarima, Taumata 4, wh. 8–9, 14–15, 20–22

Te Tau: Pukapuka Tuaono, Taumata 4+, wh. 10–11, 17, 21

Te Mātauranga Tau: Pukapuka Tuarua, Taumata 4, wh. 13–15, 20–21

Mai i te Wāwāhi Tau Whakarea ki te Wāwāhi Tau Pānga Riterite Kaupae 7–8

Te Taura Tau me te Pānga

Pāngarau i roto i te Marautanga o Aotearoa

Taumata 4

Te mātauranga tau kua mau kē i te ākongā (te tauira tau me te pānga)	Ngā rauemi whakaako								
<p>E mōhio ana te ākongā:</p> <ul style="list-style-type: none"> ki te raupapa tau tōpū, hei tauira (iti ki te rahi): <ul style="list-style-type: none"> $-34, -7, 4$; ki ngā tau pūrua me ngā pūtakerua ki te 100 hei tauira: <ul style="list-style-type: none"> $9^2 = 81$; $\sqrt{49} = 7$; ki ngā meka matua mō te whakarea (ki te 10×10) me ngā meka wehe e hāngai ana; ki te tuhi whārite hei whakaatu tātaitanga; ki te whakaoti i te whakamātautau hei tiroiro mēnā e taea ana tētahi tau te wehe ki te 2, te 3, te 5, te 9, te 10 rānei. 	<p>Pukapuka Tuawhā: Te Whakaako Mātauranga Tau 2007</p> <table border="1"> <thead> <tr> <th>Ngohe Tatau</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>Kāri Pere</td> <td>37</td> </tr> </tbody> </table>	Ngohe Tatau	Whārangi	Kāri Pere	37				
Ngohe Tatau	Whārangi								
Kāri Pere	37								
Te mātauranga tau e whakaakona ana (te tauira tau me te pānga)	Ngā rauemi whakaako								
<p>E ako ana te ākongā:</p> <ul style="list-style-type: none"> ki te raupapa tau tōpū me ngā tau ā-ira tōrunga, tōraro hoki, hei tauira (iti ki te rahi): <ul style="list-style-type: none"> $-35.6, -4.1, 0.2$; kia mōhio wawe ki ngā tau pūrua me ngā pūtakerua ki te 100 hei tauira: <ul style="list-style-type: none"> $9^2 = 81$; $\sqrt{49} = 7$; kia mōhio wawe ki ngā tau toitū ki te 20 (ko te iti rawa); ki te huri i ngā tauoti hei tau tānga ngahuru, hei tauira: <ul style="list-style-type: none"> $45\,000 = 4.5 \times 10^4$; ki te kimi mai i te tauwehe pātahi nui rawa o ētahi tau e rua ki raro i te 100; ki te kimi mai i te taurea pātahi iti rawa o ētahi tau e rua ki raro i te 10; ki te whakamahi i ngā tikanga wehe mō te 2, te 3, te 4, te 5, te 6, te 8, me te 10; kia mōhio wawe ki ngā taupū māmā o ngā tau ki te 10. 	<p>Pukapuka Tuawaru: Te Aroā Tikanga Tau me te Whakaaro Taurangi 2006</p> <table border="1"> <thead> <tr> <th>Ngohe</th> <th>Whārangi</th> </tr> </thead> <tbody> <tr> <td>He Tikanga Tuhi I Ngā Tau Nui</td> <td>110</td> </tr> <tr> <td>Te Tauwehe Pātahi Nui Rawa Atu</td> <td>112</td> </tr> <tr> <td>Te Taurea Pātahi Iti Rawa Atu</td> <td>114</td> </tr> </tbody> </table> <p>He Tau Anō Te Tau! <i>Te Tau</i>, Taumata 3–4, wh. 22, 23 <i>Te Tau: Pukapuka Tuatoru</i>, Taumata 3–4, wh. 22–23 <i>Te Tau: Pukapuka Tuawhā</i>, Taumata 4, wh. 24</p>	Ngohe	Whārangi	He Tikanga Tuhi I Ngā Tau Nui	110	Te Tauwehe Pātahi Nui Rawa Atu	112	Te Taurea Pātahi Iti Rawa Atu	114
Ngohe	Whārangi								
He Tikanga Tuhi I Ngā Tau Nui	110								
Te Tauwehe Pātahi Nui Rawa Atu	112								
Te Taurea Pātahi Iti Rawa Atu	114								

Ngā rautaki tau e whakaakona ana

E ako ana te ākongā ki te:

- tuhi i tētahi tau hei whakareatanga tau toitū (whakatauwehe toitū), hei tauira:
 - $30 = 2 \times 3 \times 5$;
- whakaoti rapanga e whai wāhi mai ana te tāpiri, te tango, me te whakarea tau tōpū;
- whakaoti rapanga e whai wāhi mai ana te taupū, pērā i te tipuranga taupū, te whakarea i ngā taupū o te pūtaka ōrite (hei tauira, $16 \times 8 = 24 \times 23 = 27$), te whakatau tata, me te kimi mai i te pūtakerua o tētahi tauoti;
- whakamahi tau e takea mai ana i tētahi tau atu i te 10;
- whakatau i te ture hei kimi mai i ngā huānga ngaro o tētahi raupapatanga tau tāruarua, raupapatanga taonga tāruarua rānei, ka whai wāhi mai ko ngā tauira rārangi-kore, hei tauira:
 - ture tāruarua: $1 \quad 4 \quad 9 \quad 16 \quad 25$
 $\quad \quad \quad +3 \quad +5 \quad +7 \quad +9$
 - ture pānga: $1 \quad 2 \quad 3 \quad 4$
 $\quad \quad \quad 2 \quad 4 \quad 8 \quad 16$
 (taupūtia te 2 ki te tau o runga);
- whakaatu, ki te whakamāori hoki i ngā pānga mā te whakamahi kiānga taurangi, whārite, tūtohi, kauwhata hoki;
- whakaoti rapanga tau kotahī, nui ake rānei, ngā taurangi, ko ngā whārite whai pū (reta) hoki, hei tauira:
 - $r = (4 \times t) + 3$. Mēnā $r = 51$, he aha te t ?

Ngā rauemi whakaako

Pukapuka Tuawaru: Te Aroā Tikanga Tau me te Whakaaro Taurangi 2006

Ngohe	Whārangi
Te Pūrua	85
Te Pūtakerua	88
Te Pūtoru Me Te Pūtaketoru	90
Te Tau Tōraro Me Te Tangohanga	93
He Tau Toitū	98

He Tau Anō Te Tau!

Te Tau: Pukapuka Tuaono, Taumata 4+, wh. 2–3, 7 (tau toitū)

Te Tau: Pukapuka Tuaono, Taumata 4+, wh. 4–5, 8, 18–20 (pū me ngā pūtakerua)

Te Tau: Pukapuka Tuaono, Taumata 4+, wh. 6, 9 (ngā ture noa)

Te Tau: Pukapuka Tuaono, Taumata 4+, wh. 12–13 (taupū)

Te Tau: Pukapuka Tuaono, Taumata 4+, wh. 14–16, 22–24 (tau tōpū)

Te Taurangi: Pukapuka Tuarua, Taumata 4, wh. 10, 14, 16–19, 22–24

Te Taurangi: Pukapuka Tuatoru, Taumata 4, wh. 8–9, 18–19, 22–24


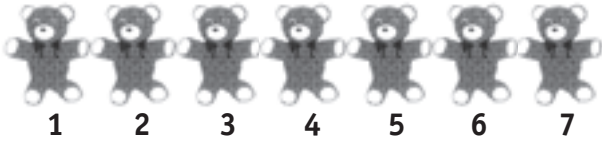
Te Taurangi: Pukapuka Tuawhā, Taumata 4+, wh. 1–5, 8–24

Te Wāhanga 6









Ngā Tauākī Ako mō ia Kaupae

I takea mai ēnei tauira tauākī i te Mahere Tau me ōna whakamārama i te Pukapuka Tuatahi.







Kaupae 0: Tatau Pitomata

E ako ana ahau ki te ...		Rā whakatutuki	
Mātauranga	<ul style="list-style-type: none"> pānui 	i ngā tau ki te 10. Hei tauira: 2 rua, 7 whitu ...	
	<ul style="list-style-type: none"> tatau 	whakamua ki te 10. Arā: 1, 2, 3, 4, 5 ...	
	<ul style="list-style-type: none"> tatau 	whakamuri mai i te 10. Arā: 10, 9, 8, 7, 6 ...	
	<ul style="list-style-type: none"> kōrero 	i te tau o muri i tētahi tau. Hei tauira: 5, <u> </u>	
	<ul style="list-style-type: none"> kōrero 	i te tau o mua i tētahi tau. Hei tauira: <u> </u> , 4	
	<ul style="list-style-type: none"> raupapa 	i ngā tau ki te 5. Hei tauira: 2, 3, 5	
Rautaki	<ul style="list-style-type: none"> tatau 	i tētahi huinga taonga. Hei tauira: <div style="text-align: center;">  </div>	
	<ul style="list-style-type: none"> hanga 	i tētahi huinga taonga. Hei tauira: <div style="text-align: center;">  </div>	





Kaupae 1: Tatau Pānga Tahī

E ako ana ahau ki te ...		Rā whakatutuki	
Mātauranga	<ul style="list-style-type: none"> pānui 	i ngā tau ki te 10. Hei tauira: 3 toru, 9 iwa ...	
	<ul style="list-style-type: none"> tatau 	whakamua ki te 10. Arā: 1, 2, 3, 4, 5 ...	
	<ul style="list-style-type: none"> tatau 	whakamuri mai i te 10. Arā: 10, 9, 8, 7, 6 ...	
	<ul style="list-style-type: none"> kōrero 	i te tau o muri i tētahi tau. Hei tauira: 4, 5, 6, <u> </u> 	
	<ul style="list-style-type: none"> kōrero 	i te tau o mua i tētahi tau. Hei tauira: <u> </u> 3, 4, 5 	
	<ul style="list-style-type: none"> raupapa 	i ngā tau ki te 10. Hei tauira: 1, 2, 4, 7, 8	
	<ul style="list-style-type: none"> mātauranga 	o ngā tauira tau ki te 5. Hei tauira: <div style="display: flex; justify-content: space-around; align-items: center;">    </div>	
Rautaki	<ul style="list-style-type: none"> honohono 	i ētahi huinga taonga. Hei tauira: <div style="display: flex; justify-content: center; align-items: center;">  me  </div>	
	<ul style="list-style-type: none"> wāwāhi 	i tētahi huinga taonga. Hei tauira: <div style="display: flex; justify-content: center; align-items: center;">  </div>	



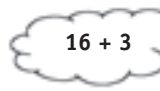

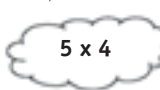
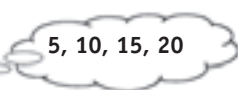
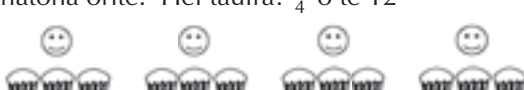
Kaupae 2: Tatau Taonga mai i te Kotahi

E ako ana ahau ki te ...		Rā whakatutuki	
Mātauranga	<ul style="list-style-type: none"> pānui 	i ngā tau ki te 20. Hei tauira: 13 tekau mā toru	
	<ul style="list-style-type: none"> tatau 	whakamua ki te 20. Arā: 1, 2, 3, 4, 5 ...	
	<ul style="list-style-type: none"> tatau 	whakamuri mai i te 20. Arā: 20, 19, 18, 17, 16 ...	
	<ul style="list-style-type: none"> kōrero 	i te tau o muri i tētahi tau (0–20). Hei tauira: 4, 5, 6, <u> </u> , ... 11, 12, 13, <u> </u>	
	<ul style="list-style-type: none"> kōrero 	i te tau o mua i tētahi tau (0–20). Hei tauira: <u> </u> , 4, 5, 6 ... <u> </u> , 11, 12, 13	
	<ul style="list-style-type: none"> raupapa 	i ngā tau ki te 20. Hei tauira: 4, 7, 8, 13, 17, 18	
	<ul style="list-style-type: none"> pānui 	i ngā hautau $\frac{1}{2}$ me te $\frac{1}{4}$.	
	<ul style="list-style-type: none"> mātauranga 	o ngā rōpū tau o roto i te 5 (ngā tauhono o te 5). Hei tauira: <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	
	<ul style="list-style-type: none"> mātauranga 	o ngā rōpū tau e whai wāhi mai ana te 5 (ngā tauhono me te 5). Hei tauira: <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	
Rautaki	<ul style="list-style-type: none"> whakaoti rapanga tāpiri, rapanga tango, ki te 10 	mā te tatau i ngā taonga katoa o ngā huinga. Hei tauira: <div style="display: flex; justify-content: center; align-items: center; gap: 10px;">  me  </div> <div style="display: flex; justify-content: center; align-items: center; gap: 10px;"> 3 + 2 </div>	

Kaupae 3: Tatau ā-Hinengaro mai i te Kotahi

		E ako ana ahau ki te ...	Rā whakatutuki
Mātauranga	• pānui	i ngā tau ki te 20. Hei tauira: 19 tekau mā iwa	
	• tatau	whakamua ki te 20. Hei tauira: 12, 13, 14, 15, 16 ...	
	• tatau	whakamuri mai i te 20. Hei tauira: 17, 16, 15, 14, 13 ...	
	• kōrero	i te tau o muri i tētahi tau (0–20). Hei tauira: 14, 15, 16, 	
	• kōrero	i te tau o mua i tētahi tau (0–20). Hei tauira:  , 17, 18, 19	
	• raupapa	i ngā tau ki te 20, mai i te mea iti ki te mea nui. Hei tauira: 9, 13, 14, 17, 20	
	• mātauranga	o ngā hautau $\frac{1}{2}$ me te $\frac{1}{4}$.	
	• mātauranga	o ngā rōpū tau o roto i te 10 (ngā tauhono o te 10). Hei tauira: 5 + 5 6 + 4 3 + 7	
	• mātauranga	o ngā tau rearua ki te 10. Hei tauira: 2 + 2 3 + 3 4 + 4 5 + 5	
	• mātauranga	uara tū o ngā tau mai i te 10 ki te 19 (ngā tauhono me te 10). Hei tauira: 17 = 10 + 7, 13 = 10 + 3	
	Rautaki	• tatau māwhitiwhiti whakamua	mawhiti-2. Hei tauira: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 mawhiti-5. Hei tauira: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 mawhiti-10. Hei tauira: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
• whakaoti rapanga tāpiri, rapanga tango, ki te 10		mā te tatau i ngā taonga katoa i roto i taku hinengaro. Hei tauira: 	
• tohatoha ōrite i tētahi huinga taonga		hei whakahaurua, hei whakahauwhā i tētahi huinga. Hei tauira: $\frac{1}{4}$ o te 12 	

Kaupae 4: Te Puanga o te Tatau

		E ako ana ahau ki te ...	Rā whakatutuki
Mātauranga	• pānui	i ngā tau ki te 100. Hei tauira: 17, 26, 38, 47, 53, 74, 86, 99	
	• tatau	whakamua mai i tētahi tau i raro i te 100. Hei tauira: 34, 35, 36 ...	
	• tatau	whakamuri mai i tētahi tau i raro i te 100. Hei tauira: 47, 46, 45 ...	
	• kōrero	i te tau o muri i tētahi tau (0–100). Hei tauira: 54, 55, 56, 	
	• kōrero	i te tau o mua i tētahi tau (0–100). Hei tauira:  , 73, 74, 75	
	• raupapa	i ngā tau ki te 100. Hei tauira: 22, 26, 34, 45, 73	
		i ngā tau ki te 1 000. Hei tauira: 347, 381, 639, 702	
	• tatau	whakamua, whakamuri hoki, mawhiti-2, mawhiti-5, mawhiti-10.	
	• pānui	i ngā hautahi. Arā: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{10}$.	
	• mātauranga	o ngā tekau i roto i ngā tau ngahuru. Hei tauira: $60 = 10 \times 6$, $30 = 10 \times 3$	
	• mātauranga	o ngā rōpū o te tekau i roto i te 100. Hei tauira: $30 + 70 = 100$	
	• mātauranga	o ngā tau rearua me ngā haurua ki te 20. Hei tauira: $3 + 3$ $6 - 3$ $\frac{1}{2}$ o te 6 $7 + 7$ $14 - 7$ $\frac{1}{2}$ o te 14	
Rautaki	• whakaoti rapanga tāpiri, rapanga tango	mā te tatau ā-hinengaro whakamua, whakamuri rānei, mai i te tau nui. Hei tauira:  	
	• whakaoti rapanga whakarea	mā te tatau mawhiti-2, mawhiti-5, mawhiti-10 rānei. Hei tauira:  	
	• kimi i te haurua me te hauwhā o tētahi huinga	mā te tohatoha ōrite. Hei tauira: $\frac{1}{4}$ o te 12 	

Kaupae 5: Te Pihinga o te Wāwāhi Tau Tāpiripiri

E ako ana ahau ki te ...		Rā whakatutuki	
Mātauranga	<ul style="list-style-type: none"> pānui 	i ngā tau ki te 1 000. Hei tauira: 333, 479, 983	
	<ul style="list-style-type: none"> tatau 	whakamua mawhiti-1, mawhiti-10, mawhiti-100 ki te 1 000.	
	<ul style="list-style-type: none"> tatau 	whakamuri mawhiti-1, mawhiti-10, mawhiti-100 ki te 1 000.	
	<ul style="list-style-type: none"> kōrero 	i te tau 1, 10, 100 rānei te nui ake, mō ngā tau ki te 1 000.	
	<ul style="list-style-type: none"> kōrero 	i te tau 1, 10, 100 rānei te iti iho, mō ngā tau ki te 1 000.	
	<ul style="list-style-type: none"> raupapa 	i ngā tau ki te 1 000. Hei tauira: 1, 58, 376, 837	
		i ngā tau ki te 10 000. Hei tauira: 4, 81, 639, 3 502	
	<ul style="list-style-type: none"> pānui 	i ngā hautahi. Arā: $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}, \frac{1}{5}, \frac{1}{10}$.	
	<ul style="list-style-type: none"> raupapa 	i ngā hautau he ōrite te tauraro. Hei tauira: $\frac{1}{4} < \frac{3}{4}$	
	<ul style="list-style-type: none"> tatau māwhitiwhiti 	mawhiti-3 whakamua, whakamuri hoki. Arā: 3, 6, 9, 12, 15 ... 30	
<ul style="list-style-type: none"> whakaawhiwhi 	i ngā tau mati-3 ki te 10, ki te 100 rānei e pātata ana. Hei tauira: 246 → 250 (te 10 e pātata ana)		
<ul style="list-style-type: none"> mātauranga 	meka tāpiritanga matua ki te 20. Hei tauira: $12 + 8 = 20, 11 + 9 = 20$		
Rautaki	<ul style="list-style-type: none"> whakaoti rapanga tāpiri, rapanga tango i rō hinengaro 	mā te: <ul style="list-style-type: none"> whakamahi tau rearua, hei tauira: $8 + 7 = 8 + 8 - 1$; whakamahi i te rima, hei tauira: $8 + 7 = 5 + 3 + 5 + 2$; whakamahi i te 10, hei tauira: $8 + 7 = 10 + 5$; whakamahi i te 10 me te tikanga paremata, hei tauira: $19 + 6 = 20 + 5$; whakamahi i te uara tū, hei tauira: $33 + 16 = 30 + 10 + 3 + 6$. 	
	<ul style="list-style-type: none"> whakaoti rapanga whakarea 	mā te: <ul style="list-style-type: none"> tāpiri tāruarua i ngā rua: $2 \times 4 = 2 + 2 + 2 + 2$; tāpiri tāruarua i ngā toru: $3 \times 5 = 3 + 3 + 3 + 3 + 3$; tāpiri tāruarua i ngā whā: $4 \times 3 = 4 + 4 + 4$; tāpiri tāruarua i ngā rima: $5 \times 5 = 5 + 5 + 5 + 5 + 5$; tāpiri tāruarua i ngā 10: $10 \times 3 = 10 + 10 + 10$. 	
	<ul style="list-style-type: none"> kimi i te hautanga o tētahi tau 	mā te whakamahi tāpiritanga tāruarua, tangohanga tāruarua rānei. Hei tauira: $\frac{1}{3}$ o te 12 = $4 + 4 + 4$	

Kaupae 6: Te Puanga o te Wāwāhi Tau Tāpiripiri

Mātauranga	E ako ana ahau ki te ...		Rā whakatutuki
	• pānui, ki te raupapa hoki	i ngā tau ki te 1 000 000. Hei tauira: 1 374, 89 765, 763 104	
	• pānui	i ngā tau ā-ira ki ngā mati ā-ira e toru. Hei tauira: 0.764, 0.14, 0.8	
	• pānui	i ngā tohu hautau katoa. Hei tauira: $1 \frac{1}{3}, \frac{4}{5}, \frac{13}{5}$	
	• whakahua	i te tau 1 000 te nui ake, te iti iho rānei.	
	• mātauranga e pā ana ki	ngā 10 me ngā 100 i roto i ngā tau mati-4.	
	• raupapa	i ngā hautau he rerekē te tauraro. Hei tauira: $\frac{1}{4}, \frac{2}{3}, \frac{4}{5}$	
	• mātauranga e pā ana ki	ngā tauhono o te 1 000. Hei tauira: 240 + 760	
	• mātauranga e pā ana ki	ngā rōpū o te rua, o te toru, o te rima, o te tekau i roto i ngā tau ki te 100 me ngā toenga (mēnā he toenga). Hei tauira: e rima ngā 3 kei roto i te 17, e 2 te toenga	
	• whakaawhiwhi	i ngā tauoti ki te 10, ki te 100, ki te 1 000 e pātata ana. Hei tauira: 5 508 → 6 000 (te 1 000 e pātata ana)	
	• mātauranga e pā ana ki	ngā meka tangohanga. Hei tauira: $16 - 9 = 7$	
	• mātauranga e pā ana ki	ngā meka whakareatanga. Hei tauira: $7 \times 8 = 56$	
• tuhituhi	i te otinga o ngā tātaitanga ki te rārangi tau wātea me ngā momo tuhinga ōkawa.		

	E ako ana ahau ki te ...	Rā whakatutuki	
Rautaki	<ul style="list-style-type: none"> whakaoti rapanga tāpiri, rapanga tango 	<p>mā te:</p> <ul style="list-style-type: none"> tau māmā me te tikanga paremata, hei tauira: $725 - 389 = 725 - 400 + 11 = 336$; uara tū, hei tauira: $376 + 431 = 300 + 400 + 70 + 30 + 6 + 1 = 807$; tau māmā, hei tauira: $35 + 37 + 65 = (35 + 65) + 37 = 100 + 37 = 137$; paheko kōaro, hei tauira: $814 - 789 = \square \rightarrow 789 + \square = 814$; tāpiritanga ōrite, hei tauira: $72 - 37 \rightarrow 75 - 40$ (tāpirihia te 3 ki ngā tau e rua); wāwāhitanga, hei tauira: $83 - 28 \rightarrow (70 + 13) - 28 = 55$. 	
	<ul style="list-style-type: none"> whakaoti rapanga whakarea 	<p>mā te:</p> <ul style="list-style-type: none"> whakarearua: $2 \times 6 = 12$, nō reira $4 \times 6 = 24$; meka mōhio: $2 \times 6 = 12$, nō reira $3 \times 6 = 12 + 6 = 18$; paheko kōaro: $7 \times 4 = 28$, nō reira $28 \div 4 = 7$; pānga riterite: $3 \times 12 = 6 \times 6$ (te rearua me te haurua), $24 \div 4 = 6$, nō reira $24 \div 8 = 3$. 	
	<ul style="list-style-type: none"> whakaoti rapanga hautau 	<p>mā te:</p> <ul style="list-style-type: none"> whakamahi meka whakarea, meka wehe mōhio hoki: $\frac{1}{3}$ o te 36 $\rightarrow 3 \times 12 = 36$, nō reira $\frac{1}{3}$ o te 36 = 12; tohatoha ōrite: $5 \div 3 = 1 + \frac{1}{3} + \frac{4}{5}$ (te tohatoha tāruarua). 	

Kaupae 7: Te Wāwāhi Tau Whakarea

E ako ana ahau ki te ...		Rā whakatutuki
Mātauranga	• tatau	whakamua, whakamuri hoki mā te 0.001, mā te 0.01, mā te 0.1.
	• mātauranga e pā ana ki	ngā rōpū o te 10, o te 100, o te 1 000 rānei i roto i tētahi tau ki ngā tau mati-7.
	• mātauranga e pā ana ki	ngā hautau ōrite me ngā ōwehenga ōrite mō ngā haurua, ngā hautoru, ngā hauwhā, ngā haurima, me ngā hautekau, mēnā ko te 10, te 100, te 1 000 rānei te tauraro. Hei tauira: $\frac{1}{4} = \frac{25}{100}$.
	• whakaawhiwhi	i ngā tauoti me ngā tau ā-ira ki te tahi, ki te hautekau rānei e pātata ana.
	• whakaputa wawe	i ngā meka whakarea ki te 10×10 , i ngā meka wehe ki te $100 \div 10$.
	• whakaputa wawe	i ngā huringa hautau \leftrightarrow tau ā-ira \leftrightarrow ōrau mō ngā haurua, ngā hautoru, ngā hauwhā, ngā haurima, ngā hautekau. Hei tauira: $\frac{3}{4} = 0.75 = 75\%$
	• whakamahi	i ngā ture wehe mō te 2, te 3, te 5, te 9, me te 10. Hei tauira: Ka taea te 245 te wehe mā te 5 nā te mea he 5 te mati ki te wāhi o ngā tahi.
	• mātauranga e pā ana ki	ngā tau pūrua ki te 100 me ngā pūtakerua e hāngai ana. Hei tauira: $7^2 = 49$ $\sqrt{49} = 7$
	• tautuhi	i ngā tauwehe o ngā tau ki te 100. Hei tauira: ko ngā tauwehe o te 35 = {1, 5, 7, 35}
	• kimi	i ngā taurea pātahi o ngā tau ki te 10. Hei tauira: ko ngā taurea pātahi o te 3 me te 7 = {21, 42, 63 ...}

E ako ana ahau ki te ...	Rā whakatutuki
<p>• whakaoti rapanga tāpiri, rapanga tango</p>	<p>mā te:</p> <ul style="list-style-type: none"> tau māmā me te tikanga paremata, hei tauira: $3.2 + 1.95 \rightarrow 3.2 + 2 - 0.5$; wāwāhi uara tū, hei tauira: $8.65 - 4.2 = (8 - 4) + (0.6 - 0.2) + 0.05$ me $8.65 - 4.2 = 8.65 - 4 = 4.65, 4.65 - 0.2 = 4.45$; huri me te paheko kōaro, hei tauira: $6.03 - 5.8 = \square \rightarrow 5.8 + \square = 6.03$ (huri kōaro) me $\square + 3.98 = 7.04 \rightarrow 3.98 + \square = 7.04$; tāpiritanga ōrite, hei tauira: $7.24 - 3.8 \rightarrow 7.44 - 4.0 = 3.44$ (tāpirihia te 0.2 ki ia tau); whakamahi tau tōraro, hei tauira: $6.4 - 2.5 \rightarrow (6 - 2) + (0.4 - 0.5) = 4 + -0.1 = 3.9$; wāwāhitanga, hei tauira: $9.25 - 6.83 \rightarrow 8.125 - 6.83 = 2.42$; toharite me te tauwehe pātahi, hei tauira: $27 + 33 + 31 + 29 = 4 \times 30$; tāpiri me te tango tau tōraro, hei tauira: $-4 - -3 = -1$ huatau ōrite māmā, hei tauira: $\frac{3}{4} + \frac{3}{8} = \frac{6}{8} + \frac{3}{8} = \frac{9}{8} = 1\frac{1}{8}$.
<p>• whakaoti rapanga whakarea</p>	<p>mā te:</p> <ul style="list-style-type: none"> tau māmā me te tikanga paremata, hei tauira: $6 \times 998 \rightarrow (6 \times 1\ 000) - (6 \times 2)$ me $56 \div 4 = (60 \div 4) - 1 = 14$; wāwāhi uara tū, hei tauira: $28 \times 7 \rightarrow (20 \times 7) + (8 \times 7) = 140 + 56 = 196$ me $72 \div 4 \rightarrow (40 \div 4) + (32 \div 4) = 10 + 8 = 18$; paheko kōaro, hei tauira: $96 \div 6 \rightarrow 6 \times \square = 96$; āhuatanga tātai kōaro, hei tauira: $17 \times 6 \rightarrow 6 \times 17$; pānga riterite, hei tauira: $4 \times 18 \rightarrow 8 \times 9$ (2 x 36 rānei); tuhituhi ōkawa, whakamahi tātaitai rānei mēnā he uaua ngā tau; whakarea tāruarua, mā te tauwehe rānei, hei tauira: $144 \div 8 \rightarrow 72 \div 4 \quad 36 \div 2 = 18$; kimi i te toenga i ngā rapanga wehe, hei tauira: $54 \div 7 = 7 \text{ t}5$.

Rautaki	E ako ana ahau ki te ...	Rā whakatutuki
	<ul style="list-style-type: none"> whakaoti rapanga hautau, tau ā-ira, ōwehenga, pānga riterite hoki 	<p>mā te:</p> <ul style="list-style-type: none"> whakamahi hautahi, hei tauira: $\frac{4}{9} \times 18 \rightarrow (\frac{1}{9} \times 18) \times 4$; wāwāhi uara tū, hei tauira: $3.4 \times 8 \rightarrow (3 \times 8) + (0.4 \times 8) = 24 + 3.2 = 27.2$; tau māmā (hautau rānei) me te tikanga paremata, hei tauira: $\frac{3}{8} \times 28 \rightarrow \frac{1}{2} \times \frac{3}{4} \times 28$ me $1.9 \times 3.4 \rightarrow (2 \times 3.4) - (0.1 \times 3.4)$; hautau ōrite me te ōwehenga, hei tauira: $40\% \text{ o te } 35 \rightarrow \frac{2}{5} \text{ o te } 35 = 14$.

Kaupae 8: Te Wāwāhi Tau Pānga Riterite

E ako ana ahau ki te ...		Rā whakatutuki
Mātauranga	<ul style="list-style-type: none"> tatau 	whakamua, whakamuri hoki mā te 0.001, mā te 0.01, mā te 0.1, mā te 1, te 10 ...
	<ul style="list-style-type: none"> whakahua 	i te tau 0.001, 0.01, 0.1 te nui ake, te iti iho rānei i tētahi tau ā-ira.
	<ul style="list-style-type: none"> raupapa 	i ngā hautau, ngā tau ā-ira, me ngā ōrau. Hei tauira: 40%, 0.5, $\frac{3}{5}$
	<ul style="list-style-type: none"> mātauranga e pā ana ki 	ngā hautekau, ngā haurau, ngā haumano i roto i tētahi tau, kia toru ngā mati whaiira. Hei tauira: ngā hautekau i roto i te 45.6
	<ul style="list-style-type: none"> mātauranga e pā ana ki 	te whakarea me te wehe i tētahi tauoti, tau ā-ira rānei ki tētahi taupū o te 10. Hei tauira: 4.5×100 me $67.3 \div 10$
	<ul style="list-style-type: none"> whakaawhiwhi 	i ngā tau ā-ira ki te 100, te 10, te 1, te hautekau, te haurau rānei e pātata ana.
	<ul style="list-style-type: none"> whakaputa wawe 	i ngā huringa hautau \leftrightarrow tau ā-ira \leftrightarrow ōrau mō ngā hautanga e tino whakamahia ana. Hei tauira: $\frac{1}{8} = 0.125 = 12.5\%$
	<ul style="list-style-type: none"> mātauranga e pā ana ki 	ngā taupū māmā o ngā tau ki te 10. Hei tauira: $2^3 = 8$
	<ul style="list-style-type: none"> whakamahi 	i ngā ture wehe mō te 2, te 3, te 4, te 5, te 6, te 8, te 9, me te 10. Hei tauira: ka taea te 276 te wehe mā te 3 nā te mea $2 + 7 + 6 = 15$
	<ul style="list-style-type: none"> tautuhi 	i ngā tauwehe pātahi o ētahi tau takirua i raro i te 100, ko te tauwehe pātahi nui rawa hoki.
<ul style="list-style-type: none"> tautuhi 	i te taurea pātahi iti rawa o ngā tau takirua i raro i te 10. Hei tauira: ko te taurea pātahi iti rawa o te 6 me te 8 = 24	

	E ako ana ahau ki te ...	Rā whakatutuki
Rautaki	<ul style="list-style-type: none"> whakaoti rapanga tāpiri, tango, whakarea, wehe, e whai wāhi mai ana te hautau me te tau ā-ira 	
	<ul style="list-style-type: none"> kimi 	
	<ul style="list-style-type: none"> whakaoti rapanga ōwehenga, pāpātanga, pānga riterite hoki 	