TE TĀHUHU O TE MĀTAURANGA
Ministry of Education

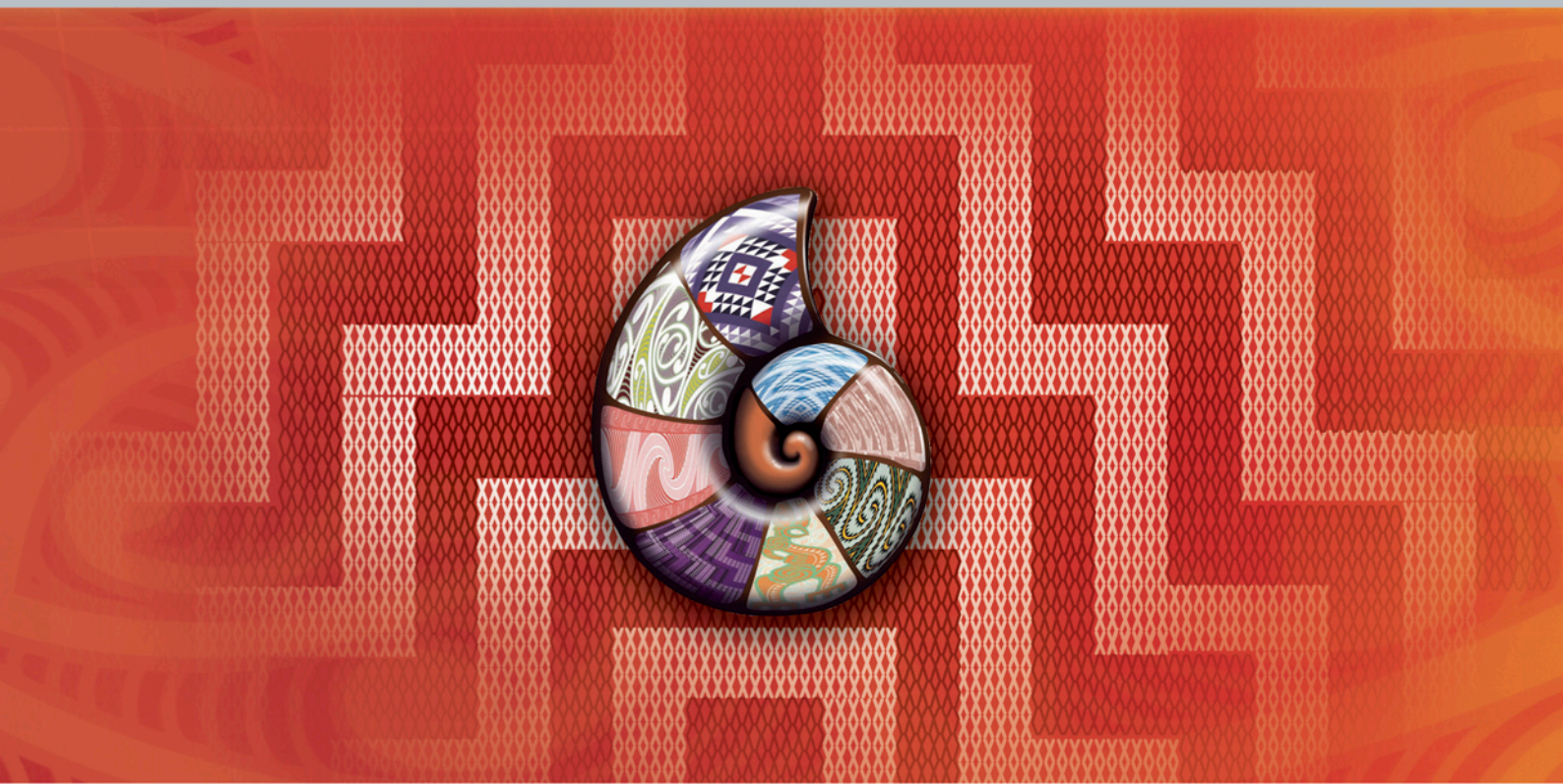
Hei Tautoko i te Marautanga Pāngarau

Te Poutama Tau

Pukapuka Tuatahi

Te Mahere Tau

1 2 3 4 5 6 7 8



Hei Whakamihi

Ka mihi ake ki ngā pouako, ki ngā kaitakawaenga pāngarau, huri noa i te motu, e hāpai nei i ngā kaupapa maha e ora pai ai tō tātou reo rangatira, e eke ai ā tātou tamariki i ngā taumata o te mātauranga. Tēnā koutou i runga i te āhua o ngā whakahoki kōrero i ngā tau kua hori ake nei, hei whakawhanake i tēnei kaupapa a tātou, Te Poutama Tau. Mei kore ake koutou.

Ko ngā kōrero o roto i tēnei pukapuka i pūtakea mai i te pukapuka nei *Book 1, The Number Framework, Revised Edition 2007,* i whakaputaina e Te Pou Taki Kōrero. Otirā he mea whakahou i runga i ngā whakahoki kōrero mai a te hunga e mahi mai ana i ngā kura reo Māori puta noa i te motu.

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Kaihoahoa: He Kupenga Hao i te Reo
Putanga Tawhito 2007 (Na Te Pou Taki Kōrero i whakaputa)
Kaitā: Print Consultants Limited 2011

Nama take 710312
ISBN 978-0-9864690-7-7

Nā Te Tāhuhu o te Mātauranga ngā huruhuru tautoko hei whakaputa mā He Kupenga Hao i te Reo i tēnei pukapuka.
Kua rāhuitia ngā motika katoa kia āta whakaaetia rā anō e te hunga kei a ia te mana tārua.

HE KUPENGA HAO I TE REO

Pouaka Poutāpeta 5301, Papaioea 4441

Ngā Ihirangi

Ngā Kōrero Whakataki 2

Hei Whakamārama 2

Ngā Rautaki Tau me te Mātauranga Tau 3

Ngā Kaupae Rautaki Tau: Hei Whakarāpopoto 4

Ngā Kaupae Rautaki Tau: Hei Whakamārama 5

Kaupae 0: Te Tatau Pitomata 5
Kaupae 1: Te Tatau Pānga Tahi 5
Kaupae 2: Te Tatau Taonga mai i te Kotahi 6
Kaupae 3: Te Tatau ā-Hinengaro mai i te Kotahi 6
Kaupae 4: Te Puanga o te Tatau 6
Kaupae 5: Te Pihinga o te Wāwāhi Tau Tāpiripiri 6
Kaupae 6: Te Puanga o te Wāwāhi Tau Tāpiripiri 7
Kaupae 7: Te Wāwāhi Tau Whakarea 9
Kaupae 8: Te Wāwāhi Tau Pānga Riterite 11

Ngā Kaupae Mātauranga: Hei Whakarāpopoto 13

Te Mahere Tau: Ngā Rautaki 15

Te Mahere Tau: Te Mātauranga 23

Te Mahere Tau: Te Reo Matatini 31

Te Kuputaka 37

Māori → Ingarihi 38
Ingarihi → Māori 41

Ngā Kōrero Whakataki

Ko Te Poutama Tau tētahi kaupapa hei āwhina i ngā pouako o roto i ngā kura reo Māori, ko te whāinga, ko te whakapiki i te mātauranga ngaiotanga e pā ana ki te whenu tau o te pāngarau, o roto i Te Marautanga o Aotearoa. E aro ana Te Poutama Tau ki ngā whāinga matua a te iwi Māori, kia ora tonu te reo, kia tū rangatira hoki ā tātou tamariki mokopuna i roto i te mātauranga. Kei te hāngai hoki ki ngā whāinga a Te Tāhuhu o te Mātauranga me te rautaki a te Kāwanatanga kia whakapikia te reo matatini me te pāngarau i roto i te hapori whānui.

Ko tēnei pukapuka hei tūāpapa mō te kaupapa o Te Poutama Tau, hei whakamārama i ngā kaupae hei kake ake mā te ākonga i tēnei whenu matua o te marautanga pāngarau.

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

- ngā tini wāhanga o te pāngarau;
- ngā āhuatanga ako o te tamaiti;
- ngā uauatanga ka pā ki te tamaiti;
- ngā mātāpono me ngā momo huarahi whakaako;
- te reo e hāngai ana ki te pāngarau – kia māmā, kia mārama, kia Māori tonu te āhua.

Ko te whāinga matua o Te Poutama Tau, he whakapiki i ēnei pūkenga ngaiotanga o te pouako, ā, mā konei e piki anō ai te ekenga taumata a ngā tamariki.

Hei Whakamārama

Ko te iho o Te Poutama Tau, ko Te Mahere Tau e tautohu ana i ngā kaupae hei pikitanga mā te tamaiti, e mātau ai ia ki tēnei mea te tau, ngā rautaki paheko, me te reo e hāngai ana. E hono ana ēnei kaupae ki ngā whāinga paetae o ngā taumata 1 ki te 4 o Te Marautanga Pāngarau o Aotearoa, waihoki e hono ana ki Ngā Whanaketanga Pāngarau. E waru ngā taumata o te marautanga, mai i te Tau 1 ki te Tau 13 o te kura. E iwa ngā whanaketanga e hāngai ana ki ngā tau kura mai i te 1 ki te 8. E iwa anō ngā kaupae o Te Mahere Tau:

Taumata Marautanga	Taumata Whanaketanga	Kaupae Mahere Tau
1	1a	0-2
	1e	3-4
2	2a	5
	2e	5
3	3a	6
	3e	6
4	4a	7
	4e	7-8
5	5a	8

E rua ngā wāhanga o Te Mahere Tau – ko ngā **Rautaki Tau** me te **Mātauranga Tau**. Ki te taha o ngā wāhanga e rua nei ko te **Mahere Reo**, e whakaatu ana i ngā kupu, ngā rerenga kōrero matua, me ngā momo whakaahuahanga e hāngai ana ki ia kaupae.

Mēnā e mātau ana te pouako ki ngā whanaketanga o ngā rautaki tau, o te mātauranga tau, o te reo anō hoki, he māmā ake te whakamahere mahi kia tino hāngai ki ngā hiahia o te ākonga.

Ngā Rautaki Tau me te Mātauranga Tau

Ko ngā **Rautaki Tau**, koirā ngā momo whiriwhiringa ā-hinengaro e whakaoti ai te ākonga i tētahi paheko tau (pērā i te tāpiri, te tango, te whakarea, me te whakawehe).

number operations

Ko te **Mātauranga Tau**, koirā te mātauranga matua hei ako mā te ākonga, pērā i ngā meka matua me te pūnaha uara tū.

basic facts, place value system

E haere tahi ana ngā rautaki tau me te mātauranga tau. Arā te whakataukī, 'Mā whero mā pango ka oti te mahi'. He pērā anō te kōtuitui o te mātauranga tau me ngā rautaki tau. Mā te mātauranga tau o te ākonga e tutuki pai ai āna rautaki. Hei tauira, ki te kore te ākonga e mōhio ki te meka rearua 13 + 13 = 26, ka kore ia e whakamahi i te rautaki whakarearua hei whakaoti i te tāpiritanga 13 + 14 = 27 (arā, 13 + 13 + 1).

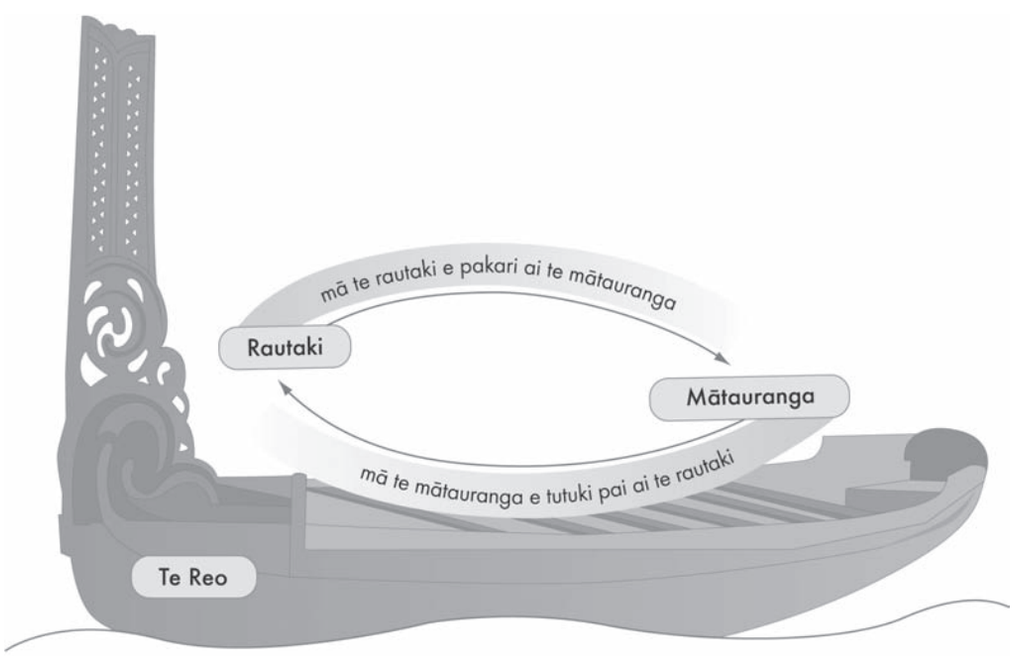
interwoven

double

Mā te whakamahi rautaki tau e pakari ai te mātauranga o te ākonga. Hei tauira, ki te whakamahia te rautaki whakahaurua hei kimi i te hauwhā o tētahi tau, ka mau i te ākonga ngā meka matua mō te whakawehe ki te whā (hei tauira: 28 ÷ 2 = 14, 14 ÷ 2 = 7, nō reira 28 ÷ 4 = 7).

Ko te **Reo** te waka hei kawe i ngā rautaki tau me te mātauranga tau. Kāore e taea ngā kupu hou, ngā kupu pāngarau motuhake te karo, engari me he mārama te takoto o ngā kupu a te pouako, ā, ka haere tahi te whakamahi rauemi, te hoahoa me te whakaari, kātahi ka mārama anō hoki te ākonga ki te tikanga o te kupu me te kaupapa e ākona ana.

diagram



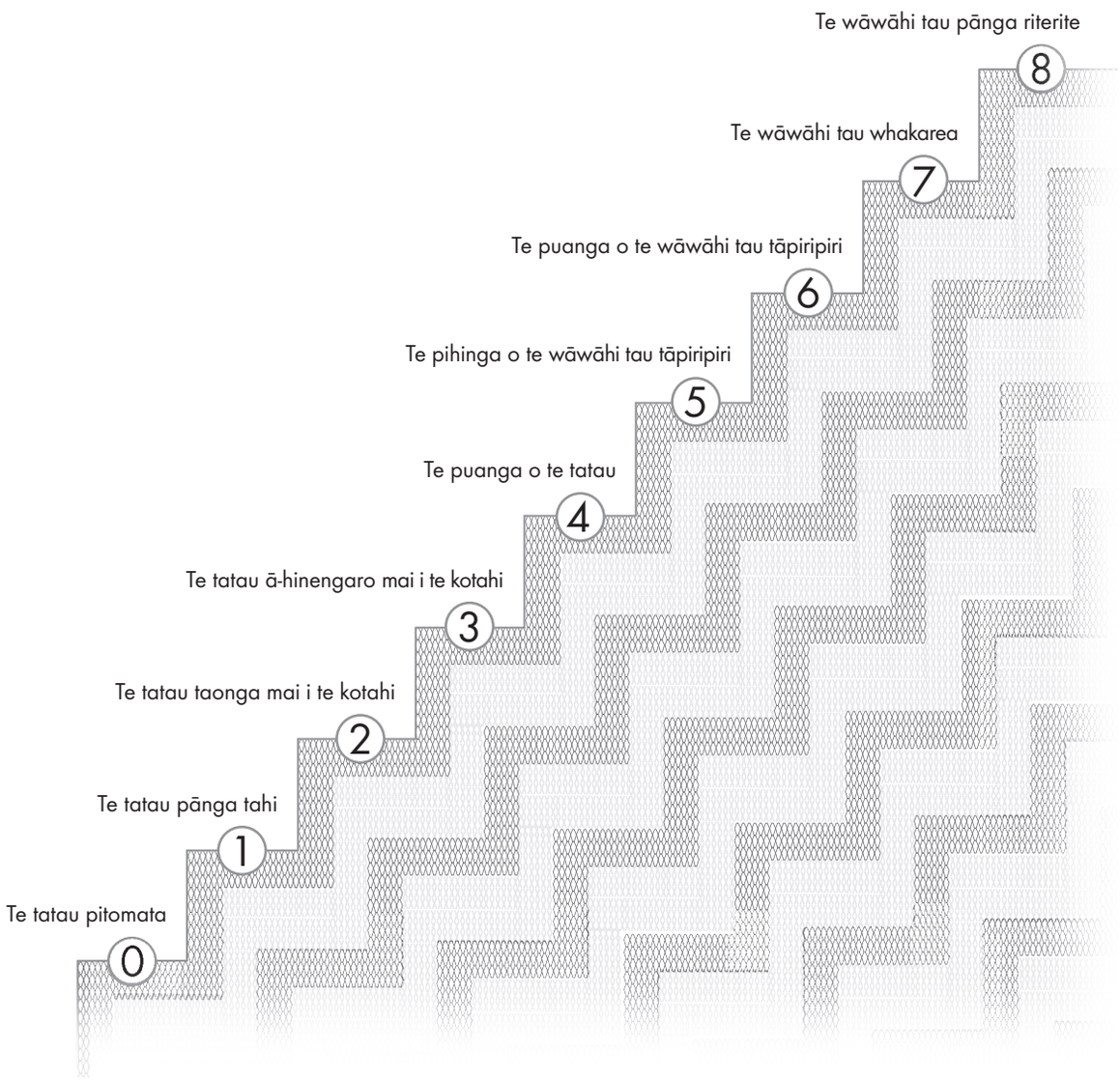
Ngā Kaupae Rautaki Tau: Hei Whakarāpopoto

E whakaaturia ana ngā kaupae rautaki tau ki te poutama kei raro iho nei. Ko ia kaupae, he whanaketanga o te kaupae i mua, ā, he whakawhānui hoki i te mātauranga o te ākonga me ngā rautaki tau hei whakamahi māna. Ina piki haere ngā rautaki tau a te ākonga, ko tāna he whiriwhiri i te rautaki e tino hāngai ana mō te rapanga e whakaoti ana ia.

strategy stage

problem

Ko tētahi mahi a te kaiako, he whakawhanake i ngā rautaki a te ākonga, kia tipu, kia pihi, kia rearea, kia puāwai. Arā, kia mātau haere ia ki ngā rautaki hōhonu.



Kei te whārangi e whai mai ana te hanga o te mahere rautaki. E kitea ana ngā kaupae rautaki e iwa (mai i te 0 ki te 8). Ka whakamahia ēnei rautaki hei whakaoti i ngā momo paheko e toru:

strategy framework

operation

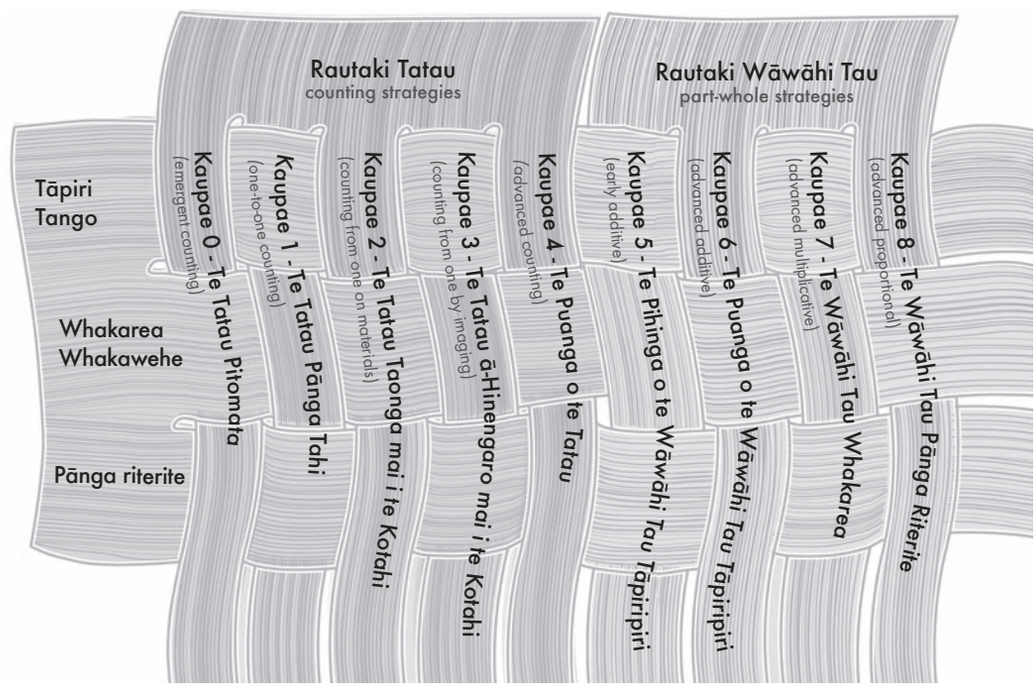
- te tāpiri me te tango
- te whakarea me te whakawehe
- ngā momo paheko pānga riterite (arā ngā momo hautanga)

proportions

E rua ngā momo rautaki tau e kitea ana i te mahere. Ko ngā rautaki tatau (Kaupae 0 ki te 4), ko ngā rautaki wāwāhi tau (Kaupae 5 ki te 8). He mea nui kia mātau te ākonga ki ngā rautaki wāwāhi tau ā tōna wā. Koirā ngā rautaki hei āwhina i a ia ki te kake ake i ngā taumata o te pāngarau. Mēnā e pakari ana ngā rautaki wāwāhi tau o te ākonga, he tino māmā ake tana ako i te whenu taurangi.

counting strategies
part/whole strategies
algebra

Ehara i te mea he ōrite te rahi o ia kaupae, he ōrite rānei te wā hei kake ake mā te tamaiti i tēnā kaupae i tēnā. He wā poto noa iho pea ki ētahi o ngā kaupae tōmua, arā ngā kaupae tatau. He wā roa ake pea ki ngā kaupae wāwāhi tau.



Kei te uhi roto o muri te kōpae ataata e whakaatu ana i ētahi ākonga e whakamārama ana i ā rātou rautaki e hāngai ana ki tēnā kaupae, ki tēnā kaupae o Te Mahere Tau.

Ngā Kaupae Rautaki Tau: Hei Whakamārama

E whai ake nei ētahi tauira o ngā rautaki tau e hāngai ana ki tēnā, ki tēnā o ngā kaupae. Kei te wāhanga Te Mahere Tau: Ngā Rautaki (whārangi 15) te maha noa atu o ngā tauira. Kei runga hoki i te kōpae ataata (kei te uhi muri o te pukapuka) ētahi ākonga e whakaatu ana i ngā āhuatanga o ia kaupae o Te Mahere Tau.

Kaupae 0: Te Tatau Pitomata (emergent counting)

Karekau he rautaki hei tatau i te maha o ngā mea kei roto i tētahi huinga. Ahakoa e mōhio ana ki ētahi kupu tau, kāore i te mārama ki te raupapa o ngā tau, me te pānga tahi o te kupu tau me tētahi o ngā mea e tatauria ana.

Kaupae 1: Te Tatau Pānga Tahi (one-to-one counting)

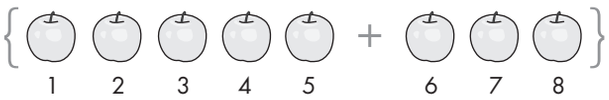
E mōhio ana ki te tatau i te maha o tētahi huinga (tae atu ki te 10), engari kāore e taea te whakaoti rapanga e whai wāhi mai ana te tāpiri, te tango rānei i ētahi huinga (pērā i te tāpiri i te toru ki te whā).

Kaupae 2: Te Tatau Taonga mai i te Kotahi (counting from one with materials)

Ka whirinaki atu ki ētahi mea tūturu hei tatau (pērā i te matimati), koirā hei rautaki whakaoti rapanga tāpiri, rapanga tango rānei. Ka tīmata te tatau i te kotahi, ā, ka tatauria ngā mea katoa o roto i ngā huinga e rua. Hei tauira:

E rima ngā āporo a Hinewai, e toru atu anō ka riro i a ia. E hia katoa ngā āporo ināianei?

Ka tatauria e te ākonga 'tahi, rua, toru, whā, rima, ono, whitu, waru'.



Hei tauira anō: 3 + 4 = ☐
Ka tatauria ētahi matimati e toru ki tētahi ringaringa, me ētahi anō matimati e whā ki tētahi. Kātahi ka tatau anō i ngā matimati katoa mai i te kotahi, tae atu ki te whitu.

Kaupae 3: Te Tatau ā-Hinengaro mai i te Kotahi (counting from one by imaging)

Mēnā he rapanga tāpiri, he rapanga tango rānei, ka puritia ki te hinengaro ngā mea e tāpiria ana, ngā mea e tangohia ana rānei, ka tatau ai. Ka āta kitea te tauira o ngā mea e tatauria ana i rō hinengaro, ā, ka tatau i ngā mea katoa mai i te kotahi.

Kaupae 4: Te Puanga o te Tatau (advanced counting)

Mō te rapanga tāpiri me te rapanga tango, kāore e tatauria ngā mea katoa e tāpiria ana, e tangohia ana rānei. Ka tīmata kē te tatau mai i tētahi o ngā tau e mōhiotia ana. Hei tauira:

8 + 5 = ☐ Ka tīmata te tatau whakamua mai i te 8. Arā, 9, 10, 11, 12, 13.

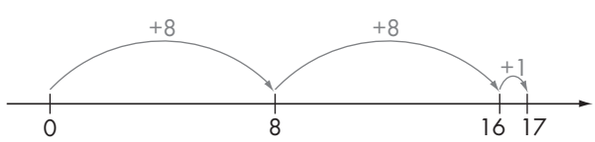
E mōhio hoki ana ki te tatau mawhiti-tekau, mawhiti-rima hoki. Hei tauira:

50 + 30 = ☐ Ka tīmata i te 50, ka tatau mawhiti-tekau kia tae atu ki te 80. Arā, 60, 70, 80.

Kaupae 5: Te Pihinga o te Wāwāhi Tau Tāpiripiri (early additive part whole)

I tēnei kaupae, kua mōhio haere te ākonga ki ngā wāhanga o roto i tētahi tau, me te wāwāhi anō i te tau ki ōna wāhanga māmā hei whakatutuki paheko. E taea ana ngā rautaki te whakaatu ki te rārangi tau. Hei tauira o ngā rautaki e hāngai ana ki tēnei kaupae:

- **Te Meka Mōhio me te Tikanga Paremata** (known facts and compensation)
  He tauira: 8 + 9 = ☐
  8 + 8 + 1 = ☐
  16 + 1 = 17



He tauira whakamārama:
Ka wāwāhia te 9 ki te 8 me te 1. He māmā te tāpiri i te 8 me te 8. Ko te 16 tērā. Ka tāpiria te tahi atu anō kia rite ki te 8 + 9, ka 17.

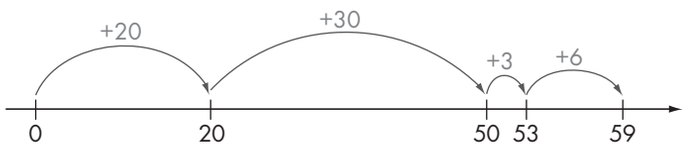
- **Te Wāwāhi Uara Tū** (place value partitioning)

  Hei tauira: 23 + 36 = □

  (20 + 3) + (30 + 6) = □

  (20 + 30) + (3 + 6) = □

  50 + 9 = 59



  He tauira whakamārama:
  Ka wāwāhia te 23 ki ōna tekau me ōna tahi (23 = 20 + 3). Ka wāwāhia te 36 ki ōna tekau me ōna tahi (36 = 30 + 6). Ka tāpiria ngā rōpū o te tekau me ngā rōpū o te tahi (20 + 30 = 50; 3 + 6 = 9). Ka tāpiria ngā tapeke, arā, te 50 me te 9, ka 59.

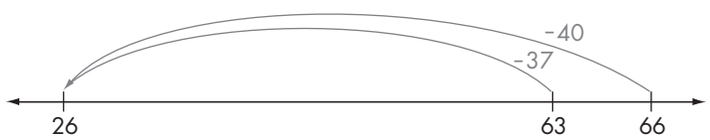
Kaupae 6: Te Puanga o te Wāwāhi Tau Tāpiripiri (advanced additive part whole)

Ina tae ki tēnei kaupae he nui ngā rautaki wāwāhi tau hei kōwhiri mā te ākonga, hei whakatau tata, hei whakaoti māna i ngā rapanga tāpiri me ngā rapanga tango. E mōhio ana ia ki te tūtahitanga o ia tau, he mōhio hoki ki te huhua o ngā momo wāwāhinga o ngā tau. Ka whakamahia ngā meka e mōhiotia ana hei whakaoti i ngā rapanga whakarea māmā me ngā rapanga hautanga māmā. Koia nei ētahi o ngā rautaki o tēnei kaupae:

- **Te Tau Māmā me te Tāpiritanga Ōrite** (easy numbers and equal addition)

  Hei tauira: 63 − 37 = □

  66 − 40 = 26



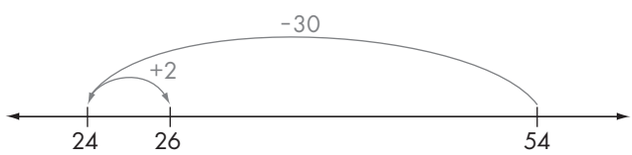
  He tauira whakamārama:
  Ka tāpiria te 3 ki te 37, ka 40, nā te mea he tau māmā te 40, ā, e pātata ana ki te 37.
  Ka tāpiria hoki te 3 ki te 63, kia pūmau tonu te huatango. Ko te 66 − 40 te tangohanga ināianei, he māmā te whakaoti, arā ko te 26. He ōrite ki te otinga o te 63 − 37.

- **Te Tau Māmā, me te Tikanga Paremata** (easy numbers and compensation)

  Hei tauira: 54 − 28 = □

  54 − 30 = 24

  24 + 2 = 26



  He tauira whakamārama:
  Ka tangohia te 30 i te 54, nā te mea he tau māmā te 30, ā, e pātata ana ki te 28. Ko te 24 tērā.
  E 2 te rahinga kē atu o te tango i te 30 i te tango i te 28, nō reira me whakahoki anō taua 2.
  Arā, ko te 24 + 2 = 26.

- **Te Paheko Kōaro** (inverse operation)

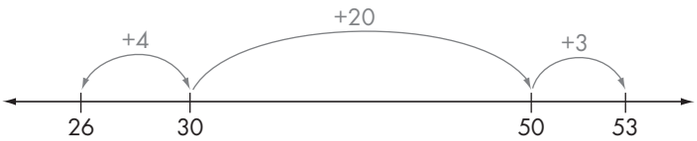
  Hei tauira: 53 − 26 = □

  26 + □ = 53

  26 + (**4 + 20 + 3**) = 53

  26 + **27** = 53

  Nō reira, 53 – 26 = **27**



He tauira whakamārama:
Ka kimihia te tau hei tāpiri atu ki te 26 kia eke ki te 53. Arā, ka huri kōarotia te tangohanga hei tāpiritanga. Tāpiria te aha ki te 26 kia 53? Tāpiria te 4 ki te 26, ka 30. Tāpiria te 20, ka 50. Tāpiria te 3, ka 53. Ko te 27 te tapeke o ngā tau i tāpiria. Nō reira, tangohia te 26 i te 53, ka 27.

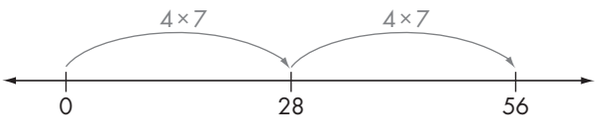
- **Te Whakarearua** (doubling)

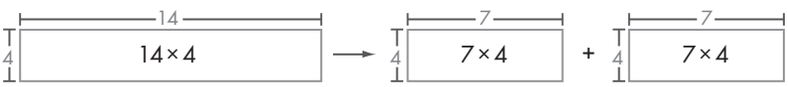
  He rautaki tāpiri tēnei hei whakaoti whakareatanga.

  Hei tauira: 14 × 4 = □

  (7 × 4) + (7 × 4)

  28 + 28 = 56





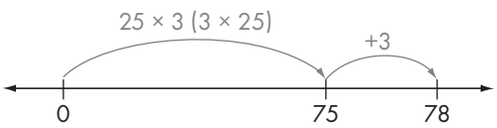
He tauira whakamārama:
Ko te 7 te haurua o te 14. Kia rua ngā whakareatanga o te 7 ki te 4. He meka mōhio te whakareatanga 7 × 4, ka 28. Tāpiria ngā 28 e rua, ka 56.

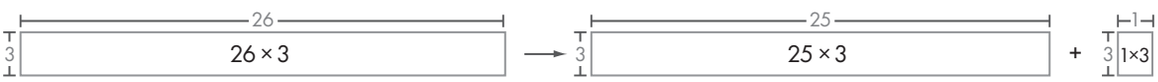
- **Te Tau Māmā me te Tikanga Paremata** (easy numbers and compensation)

  Hei tauira: 3 × 26 = □

  (3 × 25) + 3 = □

  75 + 3 = 78





He tauira whakamārama:
Ka whakareatia te 3 ki te 25, nā te mea he tau māmā te 25, ā, he pātata ki te 26. He meka mōhio te 25 × 3, ko te 75 tērā. Ka tāpiria tētahi 3 atu anō, kia rite ki te 3 × 26.

Kaupae 7: Te Wāwāhi Tau Whakarea (advanced multiplicative)

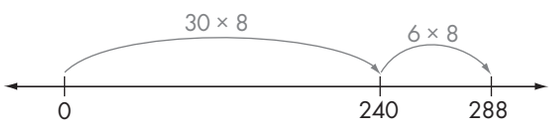
I tēnei kaupae, kua mau i te ākonga te maha o ngā rautaki wāwāhi tau, ā, ko tāna he kōwhiri i te rautaki e hāngai ana hei whakaoti rapanga whakarea, rapanga whakawehe hoki. Ko te paheko kōaro tētahi rautaki e tino kitea ana i tēnei kaupae. Arā, te whakarea hei whakaoti rapanga whakawehe. E mōhio ana te ākonga ki te whakaoti rapanga hautanga mā te whakarea, mā te whakawehe hoki. E mārama ana ki te pānga o ngā tauraro me ngā taurunga o ngā hautau ōrite. Koia nei ētahi o ngā rautaki o tēnei kaupae:

- **Te Wāwāhi Uara Tū** (place value partitioning)

  Hei tauira: $36 \times 8 = \square$

  $(30 \times 8) + (6 \times 8) = \square$

  $240 + 48 = 288$



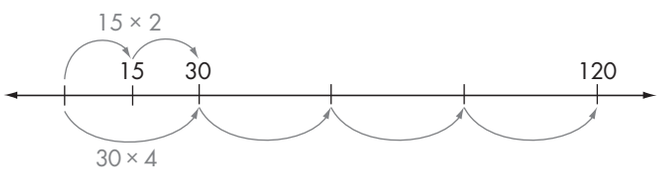
  He tauira whakamārama:
  Ka wāwāhia te 36 ki ōna tekau me ōna tahi, arā, te 30 me te 6. Ka whakareatia ia wāhanga ki te 8. Ko te 30 × 8, ka 240. Ko te 6 × 8, ka 48. Tāpiria ngā otinga, te 240 me te 48, ka 288.

- **Te Wāwāhi Whakarea** (multiplicative partitioning)

  Hei tauira: $15 \times 8 = \square$

  $(15 \times 2) \times 4 = \square$

  $30 \times 4 = 120$



  He tauira whakamārama:
  Ka wāwāhia te whakareatanga '× 8' ki ngā whakareatanga e rua nei, te '× 2' me te '× 4'. Ka whakareatia te 15 ki te 2, ka 30. Kātahi ka whakareatia te 30 ki te 4, ka 120.

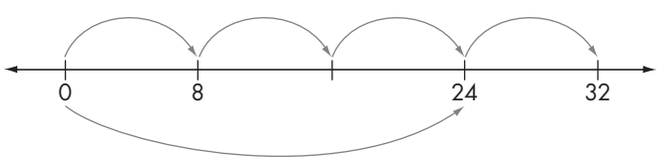
- **Te Whakarea me te Whakawehe hei Whakaoti Rapanga Hautanga**
  (using multiplication and division to solve fraction problems)

  Hei tauira: $\frac{3}{4}$ o te 32 = $\square$

  $3 \times (\frac{1}{4}$ o te 32)

  $3 \times (32 \div 4)$

  $3 \times 8 = 24$

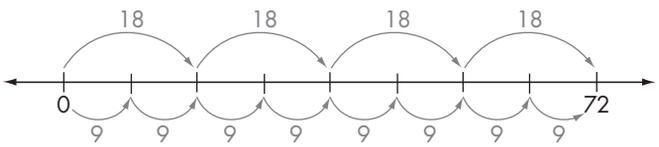


  He tauira whakamārama:
  Whakawehea te 32 ki te 4, ka 8. Koirā te kotahi hauwhā o te 32. Whakareatia tēnei ki te 3, ka 24. Koirā te toru hauwhā o te 32.

- **Te Rearua me te Haurua** (doubling and halving)

Hei tauira: 18 × 4 = □

9 × 8 = 72

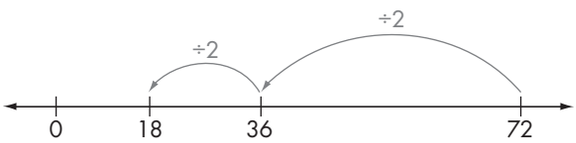


He tauira whakamārama:
E 2 ngā 9 kei roto i te 18. Nō reira e 8 ngā 9 kei roto i ngā 18 e whā. Ka hauruatia te 18, ka 9, ka rearuatia te 4 ka 8. Whakareatia te 9 ki te 8, ka 72.

Hei tauira anō: 72 ÷ 4 = □

(72 ÷ 2) ÷ 2 = □

36 ÷ 2 = 18



He tauira whakamārama:
Whakawehea te 72 ki te 2, ka 36. Whakawehea te 36 ki te 2, ka 18. E rua ngā whakawehenga ki te 2, he ōrite ki te whakawehenga ki te 4.

- **Te Paheko Kōaro me te Wāwāhi Uara Tū** (inverse operation and place value partitioning)

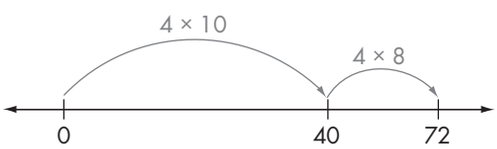
Hei tauira: 72 ÷ 4 = □

4 × □ = 72

40 + 32 = 72

(4 × **10**) + (4 × **8**) = 72

4 × **18** = 72



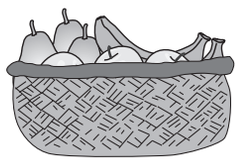
He tauira whakamārama:
Ka huri kōarotia te whakawehenga hei whakareatanga. Whakareatia te 4 ki te aha, ka 72? Wāwāhia te 72 ki te 40 me te 32, nā te mea he tau māmā, ka taea ēnei tau e rua te whakawehe ki te 4. Tekau ngā 4 kei roto i te 40. E waru ngā 4 kei roto i te 32. Nō reira, 18 katoa ngā 4 kei roto i te 72.

- **Te Whakarea hei Whakatairite Hautau, Ōwehenga hoki**
(multiplication to compare fractions and ratios)

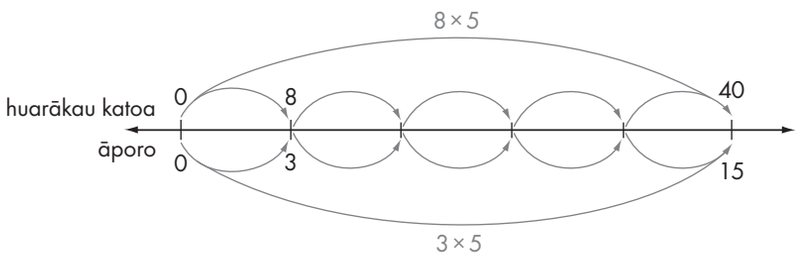
Ka whakamahia e te ākonga o tēnei kaupae te whakarea me te whakawehe hei rautaki whakaoti i ngā rapanga hautanga.

Hei tauira:

Kei te hokona e Rāwiri he kete huarākau. E 8 ngā huarākau kei ia kete, e 3 o ēnei huarākau he āporo. Mēnā e 40 te katoa o ngā huarākau i hokona e Rāwiri, e hia katoa ngā āporo?



$$\frac{3}{8} \overset{\times 5}{\underset{\times 5}{=}} \frac{\square}{40}$$



He tauira whakamārama:
E 3 ngā āporo o roto i ngā hua e 8 o ia kete. Ko te $\frac{3}{8}$ tērā. He ōrite te $\frac{3}{8}$ ki te $\frac{15}{40}$.

Kaupae 8: Te Wāwāhi Tau Pānga Riterite (advanced proportional)

I tēnei kaupae, ka whiriwhiri te ākonga i te rautaki e tino whaihua ana, mai i āna rautaki maha, hei whakatau tata, hei whakaoti rapanga hautau, rapanga ōwehenga hoki. Ka whai wāhi mai ko te whakarea me te whakawehe tau ā-ira, ko ngā tātaitanga ōrau, ko ngā tauwehe pātahi hoki.

Ka mārama te ākonga ki tēnei mea te pāpātanga, arā, he pānga whakarea kei waenganui i te rahi o ētahi taurangi e rua, pērā i te utu tapeke me te taumaha o te kai e hokona ana ($/kg).

Hei whakatauira i ētahi o ngā rautaki e hāngai ana ki tēnei kaupae:

- **Te Kimi i te Pānga Whakarea** (finding the multiplicative relationship)
  Hei tauira:

  Mēnā e 28 ngā rēmana hei mahi i ngā ipu wai rēmana e 21, e hia ngā ipu ka puta i ngā rēmana e 8?

  E taea ana tēnei rapanga te whakaatu ki te tūtohi, te whakaatu hoki hei ōwehenga:

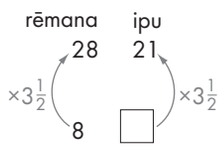
rēmana	ipu
28	21
8	$\square$

28 : 21 = 8 : $\square$

E rua ngā pānga whakarea o tēnei rapanga, e kitea mai ana i te tūtohi me te whakaaturanga ōwehenga:

Te pānga whakarea kei waenganui i te maha o ngā rēmana, arā, ngā rēmana e 28, me ngā rēmana e 8.

E tika ana kia ōrite te pānga kei waenganui i te maha o ngā rēmana, me te pānga kei waenganui i te maha o ngā ipu:



Ina whakareatia te 8 ki te $3\frac{1}{2}$, ka 28. Kia pērā anō te pānga whakarea kei waenganui i ngā ipu. Arā, whakareatia te aha ki te $3\frac{1}{2}$ ka 21?

$3\frac{1}{2} \times 8 = 28$

$3\frac{1}{2} \times \square = 21$

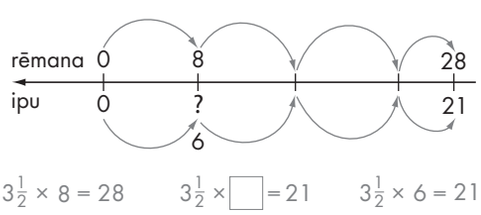
Ko te 6 te whakautu:

$3 \times 6 = 18$

$\frac{1}{2} \times 6 = 3$

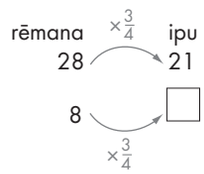
$18 + 3 = 21$

E taea ana te whakaatu ki te rārangi tau matarua:



Te pānga whakarea kei waenganui i ngā rēmana me ngā ipu, arā, e 28 ngā rēmana, e 21 ngā ipu.

E tika ana kia ōrite te pānga o ngā rēmana me te maha o ngā ipu mō ia mahinga wai rēmana:



Ina whakareatia te 28 ki te $\frac{3}{4}$, ka 21. Nō reira mēnā e 8 ngā rēmana, kia ōrite anō te pānga whakarea. Arā:

$\frac{3}{4} \times 28 = 21$

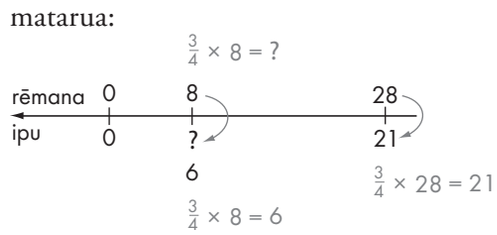
$\frac{3}{4} \times 8 = \square$

Ko te 6 te whakautu:

$\frac{1}{4} \times 8 = 2$

$\frac{3}{4} \times 8 = 6$

E taea ana te whakaatu ki te rārangi tau matarua:



- **Te Whakamahi Hautau hei Kimi Ōrau** (using fractions to find percentages)

Hei tauira:

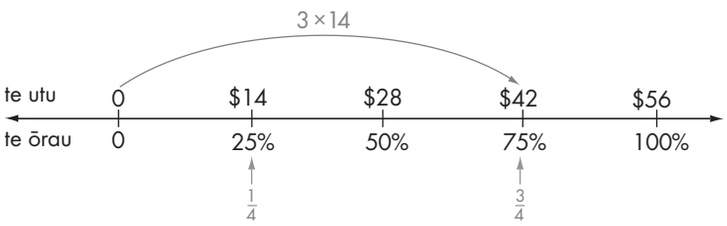
E $56 te utu mō tētahi kaka hākinakina. Mēnā e 25% te whakahekenga, e hia te utu hei hoko i te kaka hākinakina nei?

He orite te 25% ki te $\frac{1}{4}$. Koirā te whakahekenga utu.
Nō reira, ko te $\frac{3}{4}$ o te $56 te utu hei hoko i te kaka hākinakina.

Ka kimihia te $\frac{1}{4}$ o te 56, ko te 14.
(Ākene pea ka whakamahia te rautaki haurua: $56 \div 2 = 28$, $28 \div 2 = 14$)

Ka whakareatia te $\frac{1}{4}$ o te 56 ki te 3, hei tātai i te $\frac{3}{4}$. Arā, $14 \times 3 = 42$. E $42 ka utua mō te kaka hākinakina.

E taea ana te whakaatu ki te rārangi tau matarua:



Ngā Kaupae Mātauranga: Hei Whakarāpopoto

Ko te wāhanga tuarua o Te Mahere Tau, ko te mātauranga tau hei ako mā te tamaiti i ia kaupae, e tutuki pai i a ia ngā rautaki tau. Mēnā e pakari ana te mātauranga tau o te tamaiti, he māmā ake tana whakamahi rautaki tau hei whakaoti paheko ka hua mai i ngā rapanga.

number knowledge
number strategy

E rima ngā wehenga o te mātauranga tau e kitea ana i Te Mahere Tau:

- Te Raupapa Tau (arā, te tatau whakamua me te tatau whakamuri) — number sequence
- Te Whakaingoa Tohutau — numeral identification
- Ngā Tau Hautanga — fractional numbers
- Te Uara Tū me te Whakarōpū — place value & grouping
- Ngā Meka Matua — basic facts

Kāore e herea ana te mātauranga tau ki te kaupae rautaki kotahi, engari ka pā ki ngā kaupae rautaki maha, ā, ka whanake haere. Hei tauira, ko ngā tau ā-ira. Ka ako te tamaiti ki te pānui, ki te tuhituhi tau ā-ira i mua noa atu i tana ako i ngā rautaki whakaoti paheko tau ā-ira.

He tino hirahira ētahi o ngā wehenga mātauranga tau e whanake ai te tamaiti me tana āhei ki te whakatutuki rautaki tau. Koia nei te mātauranga tūāpapa, e pakari ai te tamaiti ā tōna wā – ko tana mōhio ki te pūnaha uara tū hei tauira.

foundation

Ko te wāhi ki te tuhituhi, hei āwhina i ngā whakaaroaro a te tamaiti, hei āwhina i ngā whakawhitiwhitinga kōrero hoki. Ko ngā tuhituhi ōpaki a te tamaiti hei āwhina i a ia ki te pupuri i ngā tau kei roto i tana hinengaro me te rautaki e whai ana ia, hei āwhina hoki ki te whakamārama i tana rautaki ki tētahi atu. **E ai ki ngā rangahau, kaua te tamaiti e whakaakona ki ngā hātepe ōkawa hei whakaoti paheko tau, kia mau rā anō i a ia ngā rautaki wāwāhi tau ā-hinengaro**. Mēnā he tōmua te whakaako i ngā hātepe ōkawa, ka kore ia e pakari, e hiahia rānei ki te whakamahi rautaki ā-hinengaro, ā, ka kore e tino whanake tana mārama ki ngā āhuatanga whānui, hōhonu hoki o tēnei mea te tau. Ā tōna wā ko ngā hātepe ōkawa me te tātaitai hei rākau whakaoti paheko mā te tamaiti. Mā te whakamahi i te tātaitai, i te rorohiko rānei e huri ai te aro a te tamaiti ki te huatau matua, ki ngā tauira matua o roto i te rapanga, nā te mea he māmā noa iho te whakaoti i te tātaitanga. I konei ka whai wāhi mai ngā tau nui ka hua mai i ngā rapanga pāngarau o roto i te ao tūturu.

formal recording
formal algorithm
part-whole mental strategies
calculator
main idea

He whānui te mātauranga e pā ana ki te tatau. Hei tauira, ko te tatau māmā i ngā tauoti, whakamua, whakamuri hoki. Ko te tatau māwhitiwhiti, ko te āta kite anō i ngā tauira i roto i ngā taupū o te tekau, i ngā tau ā-ira, i ngā hautau anō hoki.

whole number, skip counting
power/exponent

He tino hirahira ngā meka matua. Mā te whakamahi rautaki e kite ai te ākonga i ngā meka matua, ā, mā konei e tino mau ai ki te pūmahara o te tamaiti. Ina mau ki te pūmahara, ka wātea hei whakamahi mā te tamaiti i roto i āna rautaki tau. He whānui tonu ngā meka matua hei pupuri mā te tamaiti ki tana pūmahara – ko ngā meka tāpiri/tango, ko ngā meka whakarea/whakawehe, ko ngā tau rearua, ko ngā huringa hautau hei ōrau, hei hautanga ā-ira, me ētahi atu.

Te Mahere Tau: Ngā Rautaki

Te Mahere Tau: Ngā Rautaki

Rautaki Tatau	Ngā Momo Paheko			
	Kaupae	**Tāpiri / Tango**	**Whakarea / Whakawehe**	**Pānga Riterite**
	0	**Tatau Pitomata** • Kāore e mōhio ana ki te tatau i ngā mea o roto i tētahi huinga, te hanga rānei i tētahi huinga, tae atu ki te 10. • Ahakoa e mōhio ana ki ētahi kupu tau, kāore i te mārama ki te raupapa o ngā tau, me te pānga tahi o te kupu tau me te mea e tatauria ana.		
	1	**Tatau Pānga Tahi** • Ka tatauria ngā mea o roto i tētahi huinga. • Kāore e mōhio ana ki te hanga huinga hei whakaoti tāpiritanga māmā, tangohanga māmā rānei.	**Tatau Pānga Tahi** • Ka tatauria ngā mea o roto i tētahi huinga. • Kāore e mōhio ana ki te hanga huinga hei whakaoti whakareatanga māmā, whakawehenga māmā rānei.	**Tohatoha Ōrite Kore** • Kāore e mōhio ana ki te whakawehe i tētahi āhua, i tētahi huinga rānei, kia rua, kia whā rānei ngā wāhanga ōrite.
	2	**Tatau mai i te Kotahi** • Ka tatauria ngā mea katoa o ngā huinga taonga ōkiko hei whakaoti tāpiritanga, tangohanga hoki. Hei tauira: ✓ 5 + 4, ka tatauria 1, 2, 3, 4, 5, 6, 7, 8, 9 • Ka hiahiatia he rauemi (he taonga ōkiko) hei āwhina, pērā i te matimati.	**Tatau mai i te Kotahi** • Ka tatau pānga tahi hei whakaoti rapanga whakarea māmā, whakawehe māmā hoki. • Ka hiahiatia he rauemi (he taonga ōkiko) hei āwhina, pērā i te porotiti.	**Tohatoha Ōrite** • Ka hiahiatia he rauemi (he taonga ōkiko) hei whakawehe i tētahi āhua, i tētahi huinga rānei ki ētahi wāhanga ōrite. • Ka tohaina tētahi huinga ki ētahi wāhanga ōrite. • Ka whakamahia te hangarite hei whakahaurua i tētahi āhua.

Rautaki Tatau	Ngā Momo Paheko			
	Kaupae	**Tāpiri / Tango**	**Whakarea / Whakawehe**	**Pānga Riterite**
	3	**Tatau mai i te Kotahi** • Ka āta kitea ā-hinengaro ngā mea e tāpiria ana (e tangohia ana rānei), ka tatau ai i te katoa. • Kāore e mārama ana ki te tikanga o te tekau, ā, ka tatauria ngā mea katoa o ētahi huinga hei whakaoti i ngā tāpiritanga/tangohanga matimaha.	**Tatau mai i te Kotahi** • Ka āta kitea ā-hinengaro ngā mea e whakareatia ana (e whakawehea ana rānei), ā, ka tatauria te katoa. Hei tauira: ✓ 4 × 2, ka tatauria 1, **2**, 3, **4**, 5, **6**, 7, **8** • Ka whakawhirinaki tonu ki ngā rauemi (taonga ōkiko) hei whakaoti rapanga e whai wāhi mai ana ngā tau nui.	**Tohatoha Ōrite** • Mā te whakamahi rauemi (taonga ōkiko), mā te āta kite ā-hinengaro rānei ka whakawehea tētahi āhua, tētahi huinga rānei ki ētahi wāhanga ōrite hei whakaoti rapanga māmā perā i te $\frac{1}{2}$ o te 8. • Ka tohaina tētahi huinga ki ētahi wāhanga ōrite. • Ka whakamahia te hangarite hei whakawehe i tētahi āhua ki ōna haurua, ki ōna hauwhā, ki ōna hauwaru hoki.
	4	**Tatau Tonu** • Ka tatau whakamua, whakamuri rānei hei whakaoti tāpiritanga/tangohanga māmā. Hei tauira: ✓ 8 + 5, ka tatauira 9, 10, 11, 12, 13 ✓ 52 − 4, ka tatauria 51, 50, 49, 48 • Ka whakamahia he rauemi (taonga ōkiko) i te tuatahi, kātahi ka mārama ki te tatau i ngā mea e kitea ā-hinengaro ana. • Ka tatau ā-tahi (pērā i te 38, 39, 40, …), ā-tekau (pērā i te 56, 66, 76, …), ka tatau ā-tahi, ā-tekau hoki rānei (pērā i te 34, 44, 54, 55, 56, 57) hei whakaoti tāpiritanga/tangohanga.	**Tatau Māwhitiwhiti** • Ka tatau māwhitiwhiti hei whakaoti whakareatanga. Hei tauira: ✓ 5 × 4, ka tatauria 5, 10, 15, 20 • Ākene pea ka whakamahia he rauemi ōkiko, pērā i te matimati, hei āwhina i te tatau, ka puritia te tatau ki rō hinengaro rānei.	

Rautaki Wāwāhi Tau	Ngā Momo Paheko			
	Kaupae	**Tāpiri / Tango**	**Whakarea / Whakawehe**	**Pānga Riterite**
	5	**Tāpiritanga / Tangohanga Māmā** • Ka whakamahia ētahi rautaki ā-hinengaro whāiti hei whakaoti tāpiritanga / tangohanga. • Ka whakamahia ngā meka mōhio hei tātai i te otinga. Kua tīmata te wāwāhi tau ki ōna wāhanga māmā hei whakaoti rapanga matimaha. Hei tauira: ✓ 8 + 7 = 8 + 8 − 1 (ko te rearua 8 + 8 te meka mōhio) ✓ 8 + 7 = (8 + 2) + (7 - 2) = 10 + 5 = 15 (te hanga i te tekau) ✓ 43 + 25 = (40 + 20) + (3 + 5) = 68 (te wāwāhi uara tū) ✓ 39 + 26 = 40 + 25 = 65 (te tau māmā me te tikanga paremata) ✓ 84 − 8 = 84 − 4 − 4 = 76 (te hoki whakamuri ki te 10 tata)	**Tāpiritanga Tāruarua** • Ka whakamahia he meka whakarea mōhio me te tāpiritanga tāruarua hei whakaoti rapanga whakarea, rapanga whakawehe rānei. Hei tauira: ✓ 4 × 6 = (6 + 6) + (6 + 6) = 12 + 12 = 24 ✓ 20 ÷ 4 = 5 nā te mea 5 + 5 = 10, 10 + 10 = 20	**Tāpiritanga hei Whiriwhiri Hautanga** • Ka whakamahia te haurua, te rearua me ngā meka tāpiritanga mōhio hei tātai ā-hinengaro i te hautanga o tētahi tau, hei whakaoti rānei i ngā whakawehenga whai toenga. Hei tauira: ✓ $\frac{1}{3}$ o te 12 = 4 nā te mea 4 + 4 + 4 = 12 ✓ Ka whakawehea ngā poro tiakareti e 7 kia ōrite te whiwhinga a ngā tāngata tokowhā (7 ÷ 4), mā te tohatoha i tētahi poro tiakareti ki ia tangata, kātahi ka tohatoha i te haurua, kātahi ko te hauwhā.

Rautaki Wāwāhi Tau	Ngā Momo Paheko			
	Kaupae	**Tāpiri / Tango**	**Whakarea / Whakawehe**	**Pānga Riterite**
	6	• Ka kōwhiria, ka whakamahia ētahi rautaki ā-hinengaro whānui hei whakatau tata, hei whakaoti tāpiritanga/tangohanga. Hei tauira: ✓ $63 - 39 = (63 - 40) + 1 = 24$ (te tau māmā me te tikanga paremata) ✓ $63 - 39 \rightarrow 39 + 20 + 4 = 63$, nō reira $63 - 39 = 24$ (te huri kōaro) ✓ $63 - 39 \rightarrow 64 - 40 = 24$ (te tāpiritanga ōrite) ✓ $78 - 56 = (70 - 50) + (8 - 6) = 22$ (te wāwāhi uara tū) ✓ $324 - 86 = 324 - 100 + 14 = 238$ (te tau māmā me te tikanga paremata)	• Ka whakamahia he meka mōhio me ngā rautaki ā-hinengaro hei whakaputa otinga ki ngā whakareatanga / whakawehenga. Hei tauira: ✓ $4 \times 8 = 2 \times 16 = 32$ (te haurua me te rearua) ✓ $9 \times 6 = 10 \times 6 - 6 = 54$ (te tau māmā me te tikanga paremata) ✓ $63 \div 7 = 9$ nā te mea $9 \times 7 = 63$ (te paheko kōaro)	• Ko te whakahaurua tāruarua me ngā meka whakarea/whakawehe mōhio, hei whiriwhiri i te hautanga o tētahi huinga, o tētahi āhua rānei; hei huri i te tau hanumi; hei whakaoti whakawehenga whai toenga. • Ka whakamahia te tāruaruatanga hei whakaoti rapanga ōwehenga māmā, rapanga pāpātanga māmā hoki. Hei tauira: ✓ $\frac{1}{3}$ o te 36 $\rightarrow$ $\mathbf{10} \times 3 = 30$, e 6 te toenga $\mathbf{2} \times 3 = 6$ $\mathbf{10} + \mathbf{2} = 12$ ✓ $\frac{16}{3} = 5\frac{1}{3}$ (nā te mea $5 \times 3 = 15$, kotahi te toenga). ✓ Ka whakawehea ngā poro tiakareti e 8 kia ōrite te whiwhinga a ngā tāngata tokotoru ($8 \div 3$), mā te tohatoha kia 2 ngā poro tiakareti ki ia tangata me te whakawehe i ngā poro tiakareti e 2 e toe ana ki te 3. Arā, $2 + \frac{1}{3} + \frac{1}{3} = 2\frac{2}{3}$. ✓ $2:3 \rightarrow 4:6 \rightarrow 6:9 \rightarrow 8:12 \ldots$

Rautaki Wāwāhi Tau	Ngā Momo Paheko			
	Kaupae	**Tāpiri / Tango**	**Whakarea / Whakawehe**	**Pānga Riterite**
	7	• Ka kōwhiria, ka whakamahia ētahi rautaki ā-hinengaro whānui ki te whakatau tata, ki te whakaoti tāpiritanga / tangohanga e whai wāhi mai ana te tau ā-ira, te tau tōpū, me te hautau. • Ka whakamahia te whakarea me te whakawehe hei whakaoti tāpiritanga / tangohanga tauoti. Hei tauira: ✓ $3.2 + 1.95 = 3.2 + 2 - 0.05 = 5.2 - 0.05 = 5.15$ (te tau māmā me te tikanga paremata) ✓ $6.03 - 5.8 = \square \rightarrow 6.03 - 5 - 0.8 = 1.03 - 0.8 = 0.23$ (te wāwāhi uara tū) ✓ $6.03 - 5.8 = \square \rightarrow 5.8 + \square = 6.03 \rightarrow 5.8 + (0.2 + 0.03) = 6.03 \rightarrow 5.8 + 0.23 = 6.03$ (te huri kōaro) ✓ $\square + 3.98 = 7.04 \rightarrow 3.98 + \square = 7.04 \rightarrow 3.98 + (0.02 + 3 + 0.04) = 7.04 \rightarrow 3.98 + 3.06 = 7.04$ (te tātai kōaro) ✓ $\frac{3}{4} + \frac{5}{8} = \left(\frac{3}{4} + \frac{2}{8}\right) + \frac{3}{8} = 1\frac{3}{8}$ (te wāwāhi hautau) ✓ $81 - 36 = (9 \times 9) - (4 \times 9) = 5 \times 9 = 45$ (te whakamahi taurea) ✓ $28 + 33 + 27 + 30 + 32 = 5 \times 30 = 150$ (te whakamahi toharite) ✓ ${}^{+}7 - {}^{-}3 = {}^{+}7 + {}^{+}3 = 10$ (te paheko ōrite mō ngā tau tōraro)	• Ka kōwhiria, ka whakamahia ētahi rautaki ā-hinengaro whānui ki te whakatau tata, ki te whakaoti rapanga whakarea / whakawehe. • Ko te wāwāhi tauwehe tētahi o ngā rautaki whakarea. He wāwāhinga tāpiri, he wāwāhinga whakarea rānei. • Ko te huri kōaro hei whakareatanga tētahi o ngā rautaki whakawehe. Hei tauira: ✓ $24 \times 6 = (20 \times 6) + (4 \times 6)$ (te wāwāhi uara tū) ✓ $24 \times 6 = (25 \times 6) - 6$ (te tau māmā me te tikanga paremata) ✓ $81 \div 9 = 9$, nō reira $81 \div 3 = 3 \times 9 = 27$ (te pānga riterite) ✓ $4 \times 25 = 100$, nō reira $92 \div 4 = 25 - 2 = 23$ (te huri kōaro, te tau māmā me te tikanga paremata) ✓ $201 \div 3 \rightarrow 100 \div 3 = 33$ t1 (toenga = 1), $200 \div 3 = 66$ t2, nō reira $201 \div 3 = 67$ (te tau māmā me te meka mōhio)	• Ka whakamahia ētahi rautaki whakarea / whakawehe whānui ki te whakatau tata, ki te whakaoti rapanga e whai wāhi mai ana te hautau me te ōwehenga. Ka tino honoa te hautanga me te whakawehenga. • Ka tātaihia he hautanga ōrite māmā. • Ka huri i te hautau hei hautanga ā-ira, hei ōrau rānei. Hei tauira: ✓ $11 \div 3 = \frac{11}{3} = 3\frac{2}{3}$ ✓ $13 \div 5 = (10 \div 5) + (3 \div 5) = 2\frac{3}{5}$ ✓ $\frac{5}{6}$ o te 24 $\rightarrow \frac{1}{6}$ o te 24 = 4, $\rightarrow 4 \times 5 = 20$ ✓ $\frac{5}{6}$ o te 24 $\rightarrow \frac{1}{6}$ o te 24 = 4, $\rightarrow 24 - 4 = 20$ ✓ $3:5 = \square:40, \rightarrow 5 \times 8 = 40, \rightarrow 3 \times 8 = 24$, nō reira $3:5 = 24:40$ ✓ $\frac{3}{4} = \frac{75}{100} = 75\% = 0.75$

Ngā Momo Paheko

Kaupae	Tāpiri / Tango	Whakarea / Whakawehe	Pānga Riterite
8	• Ka whakamahia ētahi rautaki wāwāhi tau ā-hinengaro whānui ki te whakatau tata, ki te whakaoti tāpiritanga / tangohanga e whai wāhi mai ana te hautau me te hautanga ā-ira. • Ka kōtuia te ōwehenga me te hautanga, me ētahi rahinga rerekē. • Ko te wāwāhi i te hautau me te tahi, ko te whiriwhiri hautau ōrite ētahi o ngā rautaki. Hei tauira: ✓ $2\frac{3}{4} - 1\frac{2}{3} = 1 + \left(\frac{3}{4} - \frac{2}{3}\right) = 1 + \left(\frac{9}{12} - \frac{8}{12}\right) = 1\frac{1}{12}$ (te hautau ōrite) ✓ Ina honoa tētahi huinga porotiti 20 (ko te 2:3 te ōwehenga o ngā mea whero ki ngā mea kōwhai), me tētahi huinga porotiti 60 (ko te 8:7 te ōwehenga o ngā mea whero ki ngā mea kōwhai), ko te 1:1 te ōwehenga whakamutunga: 20 porotiti: 2:3 (whero 8, kōwhai 12) 60 porotiti: 8:7 (whero 32, kōwhai 28) 80 porotiti: **1:1** (whero 40, kōwhai 40)	• Ka kōwhiria, ka whakamahia ētahi rautaki ā-hinengaro whānui ki te whakatau tata, ki te whakaoti whakareatanga / whakawehenga hautau, hautanga ā-ira hoki. • Ka whakamahia he rautaki ā-hinengaro ki te whakaoti whakawehenga tau ā-ira māmā. • Koia nei ētahi o ngā rautaki: ko te wāwāhi tau ā-ira; ko te whakatairite i ngā wāhanga ki te tahi; ko te huri tau ā-ira hei hautau, hautau hei tau ā-ira; ko te mārama anō ki te rahi o te tau me tōna pānga ki te otinga. Hei tauira: ✓ $3.6 \times 0.75 = \frac{3}{4} \times 3.6$ $= (\frac{1}{4} \times 3.6) \times 3$ $= 0.9 \times 3$ $= 2.7$ (te huri tau ā-ira hei hautau me te tātai kōaro) ✓ $\frac{2}{3} \times \frac{3}{4} = \square \rightarrow \frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$, nō reira $\frac{2}{3} \times \frac{1}{4} = \frac{2}{12}$, nō reira $\frac{2}{3} \times \frac{3}{4} = \frac{2 \times 3}{3 \times 4} = \frac{6}{12} = \frac{1}{2}$ ✓ $7.2 \div 0.4 \rightarrow 7.2 \div 0.8 = 9$, nō reira $7.2 \div 0.4 = 18$ (te rearua, te haurua me te uara tū)	• Ka kōwhiria, ka whakamahia ētahi rautaki ā-hinengaro whānui ki te whakatau tata, ki te whakaoti rapanga e whai wāhi mai ana te hautau me te ōwhenga. Ka whai wāhi mai ko ngā rautaki nei; te whakamahi tauwehe pātahi; te whakatairite me te huri hautau, tau ā-ira, ōrau; te kimi pānga kei waenganui i ngā taurangi o tētahi ōwehenga, o tētahi pāpātanga rānei. Hei tauira: ✓ $6:9 = \square:24 \rightarrow 6 \times 1\frac{1}{2} = 9 \rightarrow \square \times 1\frac{1}{2} = 24 \rightarrow \square = 16$ (te whakatairite ōwehenga) ✓ $6:9 = \square:24 \rightarrow 9 \times 2\frac{2}{3} = 24 \rightarrow 6 \times 2\frac{2}{3} = \square \rightarrow \square = 16$ (te whakatairite ōwehenga) ✓ 65% o te 24 → 50% o te 24 = 12, 10% o te 24 = 2.4, nō reira 5% o te 24 = 1.2. Hui katoa, 50% + 10% + 5% = 65% → 12 + 2.4 + 1.2 = 15.6 (te wāwāhi ōrau)

Te Mahere Tau: Te Mātauranga

Te Mahere Tau: Te Mātauranga

Kaupae	Te Raupapa Tau (tatau whakamua, tatau whakamuri)	Te Whakaingoa Tohutau	Ngā Tau Hautanga	Te Uara Tū me te Whakarōpū	Ngā Meka Matua
0	Kāore e mōhio ana ki te raupapa o ngā tau mai i te 1 ki te 10.	Kāore e mōhio ana ki ngā tohutau mai i te 0 ki te 10.	Kāore e mōhio ana ki ngā tohu me ngā tikanga o ngā hautau.	Kāore e taea ngā mea o roto i ētahi huinga e rua te tatau.	Kāore e taea te whakaputa wawe ngā meka tāpiritanga mō te 5 me te 10.
1	Ka whakahua i te raupapa whakamuri o ngā tau mai i te 10 ki te 0, engari kāore e mōhio ana ki te tau kei mua tonu, kei muri tonu rānei i ngā tau.	E mōhio ana ki ngā tohutau mai i te 0 ki te 10.			
2	E mōhio ana ki te tau kei mua tonu, kei muri tonu rānei i ngā tau 1 ki te 10, kāore e hoki ki tētahi tau i raro iho, ki tētahi tau nui ake rānei ka tatau anō ai*.	E mōhio ana ki ngā tohutau mai i te 0 ki te 20.		Ka tatau ā-tahi i ngā mea katoa kei roto i tētahi huinga. Kāore e whakamahi i te tekau hei wae tatau. E mōhio ana ki ngā tauira tau o roto i te 5, pērā i ngā tauira matimati. E mōhio ana ki ngā tauhono o roto i te 5, pērā i te 4 + 1 me te 3 + 2.	Ka whakaputa wawe i ngā meka tāpiritanga, tangohanga hoki mō ngā tau 0 ki te 5.

*Hei tauira, ka hoki ki te tatau i te 1, 2, 3, 4, 5, hei whakaputa i te 6, te tau kei muri tonu.

Kaupae	Te Raupapa Tau (tatau whakamua, tatau whakamuri)	Te Whakaingoa Tohutau	Ngā Tau Hautanga	Te Uara Tū me te Whakarōpū	Ngā Meka Matua
3	E mōhio ana ki te tau kei mua tonu, kei muri tonu rānei i tētahi o ngā tau 1 ki te 20, kāore e hoki ki tētahi tau i raro iho, ki tētahi tau nui ake rānei ka tatau anō ai*. E mōhio ana ki te tatau mawhiti-2, mawhiti-5, whakamua, whakamuri hoki, mai i te 0 ki te 20. E mōhio ana ki te raupapa i ngā tau 0 ki te 20.	E mōhio ana ki ngā tohutau mai i te 0 ki te 100.	E mōhio ana ki te tohu mō te haurua.	E mōhio ana ki ngā tauhono me te 5, pērā i te 5 + 1 me te 5 + 2, tae atu ki te 5 + 5. E mōhio ana ki ngā tauhono o roto i te 10, pērā i te 5 + 5 me te 6 + 4. E mōhio ana ki ngā tauhono me te 10, pērā i te 10 + 2 me te 10 + 7. E mōhio ana ki ngā tauira tau pērā i ngā tau rearua me ngā tauira matimati ki te 10.	E mōhio ana ki ngā tau rearua ki te 10, pērā i te 3 + 3 me te 6 + 6.
4	E mōhio ana ki te tau kei mua tonu, kei muri tonu rānei i ngā tau 1 ki te 100, kāore e hoki ki tētahi tau i raro iho, ki tētahi tau nui ake rānei ka tatau anō ai*. E mōhio ana ki te tatau mawhiti-2, mawhiti-5, mawhiti-10 whakamua, whakamuri hoki, mai i te 0 ki te 100. E mōhio ana ki te raupapa i ngā tau 0 ki te 100.	E mōhio ana ki ngā tohutau mai i te 0 ki te 1 000.	E mōhio ana ki ngā tohu me ētahi whakaahuahanga mō ngā haurua me ngā hauwhā.	Ka tatau mawhiti-10, me te mōhio anō ki te tikanga o ngā tau ngahuru ki te 100, pērā i ngā rōpū e 6 o te 10 kei roto i te 60. E mōhio ana ki ngā tauhono o roto i te 20, pērā i te 12 + 8 me te 6 + 14.	Ka whakaputa wawe i ngā meka matua nei: • ngā meka tāpiritanga, tangohanga hoki mō ngā tau 0 ki te 10; • ngā meka rearua me ngā huarua e whai pānga ana mō ngā tau 0 ki te 20, pērā i te 6 + 6, te 9 + 9, me te $\frac{1}{2}$ o te 14; • ngā tāpiritanga o ngā tau ngahuru, tae atu ki te 100, pērā i te 30 + 70 me te 60 + 30; • te tāpiri me te tango i te 10.

*Hei tauira, ka hoki ki te tatau i te 1, 2, 3, 4, 5, hei whakaputa i te 6, te tau kei muri tonu.

Kaupae	Te Raupapa Tau (tatau whakamua, tatau whakamuri)	Te Whakaingoa Tohutau	Ngā Tau Hautanga	Te Uara Tū me te Whakarōpū	Ngā Meka Matua
5	E mōhio ana ki ngā kupu, ngā tohutau me te raupapa o ngā tau mai i te 0 ki te 1,000. E mōhio ana ki te tau he kotahi, he tekau, he kotahi rau rānei, te nui ake, te iti ake rānei i ngā tau 0 ki te 1,000. E mōhio ana ki te tatau mawhiti-2, mawhiti-3, mawhiti-5, mawhiti-10 whakamua, whakamuri hoki, mai i te 0 ki te 100. E mōhio ana ki te raupapa i ngā tau 0 ki te 1,000.	E mōhio ana ki ngā tohutau mai i te 0 ki te 10,000, arā, te pānui, te whakahua me te tuhi i ngā tau. E mōhio ana ki ngā tohutau mō te nuinga o ngā hautau noa.	E mōhio ana ki ngā tohu me ētahi whakaahuahanga mō ngā haurua, ngā hautoru, ngā hauwhā, ngā haurima me ngā hautekau, tae atu ki ngā hautau nui ake i te kotahi. E mōhio ana ki te raupapa hautau mēnā he ōrite te tauraro, pēnei i te $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$, $\frac{5}{4}$.	E mōhio ana ki ngā rōpū tauhono o roto i te 100, pērā i te 49 + 51, te 25 + 75, me te 35 + 65. E mōhio ana ki ngā rōpū o te 2 kei roto i ngā tau mai i te 0 ki te 20. Hei tauira, e 8 ngā rōpū o te 2 kei roto i te 17. E mōhio ana ki ngā rōpū o te 5 kei roto i ngā tau mai i te 0 ki te 50. Hei tauira, e 9 ngā rōpū o te 5 kei roto i te 47. E mōhio ana ki ngā rōpū o te 10 kei roto i tētahi tau matitoru. Hei tauira, e 76 ngā 10 kei roto i te 763. E mōhio ana ki ngā rōpū o te 100 kei roto i ngā tau rau me ngā tau mano. Hei tauira: • e 8 ngā 100 kei roto i te 800 • e 40 ngā rau kei roto i te 4,000 Ka whakaawhiwhia ngā tauoti matitoru ki te 10, ki te 100 rānei e pātata ana. Hei tauira: • 566 → 570 (te 10 e pātata ana) • 566 → 600 (te 100 e pātata ana)	Ka whakaputa wawe i ngā meka matua nei: • ngā meka tāpiritanga mō ngā tau 0 ki te 20; • ngā meka tangohanga mō ngā tau 0 ki te 10; • ngā meka whakareatanga mō te 2, te 5 me te 10, me ngā meka whakawehenga e whai pānga ana; • ngā tāpiritanga o ngā tau rau, tae atu ki te 1,000, pērā i te 400 + 600 me te 200 + 700.

Kaupae	Te Raupapa Tau (tatau whakamua, tatau whakamuri)	Te Whakaingoa Tohutau	Ngā Tau Hautanga	Te Uara Tū me te Whakarōpū	Ngā Meka Matua
6	E mōhio ana ki ngā kupu, ngā tohutau me te raupapa o ngā tau mai i te 0 ki te 1,000,000. E mōhio ana ki te tau he kotahi, he tekau, he kotahi rau, he kotahi mano rānei, te nui ake, te iti ake rānei i ngā tau 0 ki te 1,000,000. E mōhio ana ki te raupapa i ngā tau 0 ki te 1,000,000. E mōhio ana ki te tatau whakamua, whakamuri hoki i ngā haurua, ngā hautoru, ngā hauwhā, ngā haurima me ngā hautekau. Hei tauira, $\frac{1}{3}$, $\frac{2}{3}$, 1, $\frac{4}{3}$, $\frac{5}{3}$ ... E mōhio ana ki te raupapa whakamua, whakamuri hoki i ngā tau ā-ira (hautekau, haurau).	E mōhio ana ki ngā tohutau mai i te 0 ki te 1,000,000, arā, te pānui, te whakahua me te tuhi i ngā tau. E mōhio ana ki ngā tohutau mō ngā tau ā-ira (kia 3 ngā mati ā-ira). E mōhio ana ki ngā tohu hautau noa, tae atu ki ngā haumano me ngā hautau nui ake i te kotahi.	E mōhio ana ki te raupapa hautau waetahi, pērā i te $\frac{1}{10}$, $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$. E mōhio ana ki te tikanga o te taurunga me te tauraro o tētahi hautau hei tohu i tōna rahi. E mōhio ana ki ngā tohu me ētahi whakaahuahanga mō ngā tau ā-ira (kia 3 ngā mati ā-ira).	E mōhio ana ki ngā tauhono o roto i te 1,000, pērā i te 240 + 760, me te 498 + 502. E mōhio ana ki ngā rōpū o te 2, o te 3, o te 5 o te 10 hoki kei roto i ngā tau mai i te 0 ki te 100. Hei tauira, e 5 ngā 3 kei roto i te 17, me te 2 e toe ana. E mōhio ana ki ngā rōpū o te 10 me te 100 kei roto i tētahi tau matiwhā. Hei tauira, e 456 ngā 10 kei roto i te 4,562, me te 2 e toe ana. E mōhio ana ki ngā rōpū o te hautekau me te haurau kei roto i tētahi tau ā-ira (kia 2 ngā mati ā-ira). Hei tauira, e 72 ngā hautekau kei roto i te 7.2. Ka whakaawhiwhia ngā tauoti ki te 10, ki te 100, ki te 1,000 rānei e pātata ana. Ka whakaawhiwhia ngā tau ā-ira ki te tauoti e pātata ana. Hei tauira: • 6.49 → 6 • 19.91 → 20	Ka whakaputa wawe i ngā meka matua nei: • ngā meka tāpiritanga, tangohanga hoki mō ngā tau 0 ki te 20, pērā i te 9 + 5 me te 13 − 7; • ngā meka whakareatanga tae atu ki te 10 × 10, me ētahi o ngā meka whakawehenga e whai pānga ana; • ngā whakareatanga ki te 10, ki te 100 me te 1,000, pērā i te 10 × 100 = 1,000 me te 32 × 100 = 3,200.

Kaupae	Te Raupapa Tau (tatau whakamua, tatau whakamuri)	Ngā Tau Hautanga	Te Uara Tū me te Whakarōpū	Ngā Meka Matua
7	E mōhio ana ki ngā kupu, ngā tohutau me te raupapa o ngā tau, tae atu kia toru ngā mati ā-ira, me te huinga tau tōraro hoki. E mōhio ana ki te tau he kotahi haumano, he kotahi haurau, he kotahi hautekau, he kotahi, he tekau, he kotahi rau, he kotahi mano rānei, te nui ake, te iti ake rānei i tētahi tauoti. E mōhio ana ki te raupapa tau ā-ira, kia toru ngā mati ā-ira. Hei tauira, he nui ake te 6.3 i te 6.25. E mōhio ana ki te raupapa hautau, pēnei i te haurua, te hautoru, te hauwhā, te haurima, te hauwaru me te hautekau. Hei tauira, he nui ake te $\frac{3}{4}$ i te $\frac{2}{3}$.	E mōhio ana ki ngā hautau ōrite. Hei tauira $\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{75}{100} = \frac{750}{1,000} = 0.75 = 75\%$ E mōhio ana ki ngā whakawhitinga hautau noa ⟷ tau ā-ira ⟷ ōrau mō ngā haurua, ngā hautoru, ngā hauwhā, ngā haurima me ngā hautekau. Hei tauira, $2\frac{2}{5} = 2.4 = 240\%$.	E mōhio ana ki ngā rōpū o ngā tau 1 – 10 kei roto i ngā tau tae atu ki te 100, me te toenga anō hoki. Hei tauira, e 7 ngā 9 kei roto i te 68, me te 5 anō e toe mai ana. E mōhio ana ki ngā rōpū o te 10, o te 100, o te 1,000 kei roto i tētahi tau, tae atu kia 7 ngā mati. Hei tauira, e 4,756 ngā 10 kei roto i te 47,562. Ka whakaawhiwhia ngā tauoti me ngā tau ā-ira (kia 2 ngā mati ā-ira) ki te tauoti, ki te hautekau rānei e pātata ana. Hei tauira: • 16.49 → 16.5 (te hautekau e pātata ana) • 16.49 → 16 (te tahi e pātata ana)	Ka whakaputa wawe i ngā meka whakawehenga matua e hāngai ana ki ngā meka whakareatanga tae atu ki te 10 × 10. E mōhio ana ki ngā whakawhānuitanga o ngā meka whakareatanga matua, kia whai wāhi mai he tau ā-ira, he taupūtanga rānei o te 10. Hei tauira: • 3 × 0.8 = 2.4 • 630 ÷ 7 = 90 E mōhio ana ki ngā ture whakawehe mō te 2, te 3, te 5, te 9 me te 10. Hei tauira, e taea ana te 471 te whakawehe ki te 3 nā te mea ko te 12 te tapeke o ōna mati (4 + 7 + 1), ā, e taea ana te 12 te whakawehe ki te 3. E mōhio ana ki ngā tau pūrua tae atu ki te 100 me ngā pūtakerua e hāngai ana. Hei tauira, $7^2 = 49$, $\sqrt{49} = 7$. Ka tautohua ngā tauwehe o tētahi tau tae atu ki te 100. Hei tauira, {1, 2, 3, 4, 6, 9, 12, 18, 36} = ngā tauwehe o te 36. E mōhio ana ki te tikanga o te tau toitū, ā, ka tautohua ngā tau toitū kei raro i te 100. Ka tautohua ngā taurea pātahi o ētahi tau e rua, tae atu ki te 10. Hei tauira, {35, 70, 105 ...} = ngā taurea pātahi o te 5 me te 7.

Kaupae	Te Raupapa Tau (tatau whakamua, tatau whakamuri)	Ngā Tau Hautanga	Te Uara Tū me te Whakarōpū	Ngā Meka Matua
8	Ahakoa te tau ā-ira hei tau tīmatanga, ka tatau whakamua, whakamuri hoki: mawhiti-haumano, mawhiti-haurau, mawhiti-hautekau, ā-tahi, mawhiti-tekau, mawhiti-rau, mawhiti-mano. E mōhio ana ki te tau he kotahi haumano, he kotahi haurau, he kotahi hautekau, he kotahi, he tekau, he kotahi rau, he kotahi mano rānei, te nui ake, te iti ake rānei i tētahi tau ā-ira.	E mōhio ana ki te raupapa hautau, tau ā-ira, ōrau anō hoki, ahakoa he rerekē pea te tauraro. Hei tauira: • $\frac{2}{5} < \frac{7}{16}$ • $\frac{5}{8} > 61\%$	E mōhio ana ki ngā rōpū o te $\frac{1}{10}$, o te $\frac{1}{100}$, o te $\frac{1}{1,000}$ kei roto i tētahi tau ā-ira, tae atu kia 3 ngā mati ā-ira. Hei tauira: • $45.6 = \frac{456}{10}$ • $9.03 = \frac{903}{100}$ • $2.74 = \frac{2,740}{1,000}$ E mōhio ana ki te tikanga o te whakarea, o te whakawehe rānei i tētahi tau ā-ira ki tētahi taupū o te 10. Hei tauira: • $4.5 \times 100 = 450$ • $67.3 \div 10 = 6.73$ Ka whakaawhiwhia ngā tau ā-ira ki te 100, te 10, te 1, te $\frac{1}{10}$, te $\frac{1}{100}$ rānei e pātata ana. Hei tauira: • 5,234.6 ⟶ 5,200 (te rau e pātata ana) • 5,234.6 ⟶ 5,235 (te tahi e pātata ana)	Ka whakaputa wawe i ngā whakawhitinga hautau noa ⟷ tau ā-ira ⟷ ōrau. Hei tauira: • $\frac{9}{8} = 1.125 = 112.5\%$ E mōhio ana ki ngā ture whakawehe mō te 2, te 3, te 4, te 5, te 6, te 8, te 9 me te 10. Hei tauira: • E taea ana te 5,632 te whakawehe ki te 8, nā te mea e taea ana ngā mati whakamutunga e toru (te 632) te whakawehe ki te 8. • E taea ana te 756 te whakawehe ki te 9, nā te mea e taea ana te tapeke o ōna mati (7 + 5 + 6) te whakawehe ki te 9. E mōhio ana ki ngā taupū māmā o ngā tau 1 ki te 10. Hei tauira: • $2^4 = 16$ • $5^3 = 125$ Ka tautohua ngā tauwehe pātahi o ngā tau 0 ki te 100, te tauwehe pātahi nui rawa atu hoki. Hei tauira, {1, 2, 4, 8, 16} = ngā tauwehe pātahi o te 48 me te 64. Ka tautohua te taurea pātahi iti rawa atu o ngā tau 0 ki te 10. Hei tauira, 24 = te taurea pātahi iti rawa atu o te 6 me te 8.

Te Mahere Tau: Te Reo Matatini

Te Mahere Tau: Te Reo Matatini

Kaupae	Tauira Kupu Matua	Tauira Momo Rautaki	Tauira Whakamārama	Tauira Momo Tuhituhi
0 – 2	Ngā kupu tau 1 ki te 20, tatau whakamua, tatau whakamuri, tauhono, rearua, haurua, ōrite, tāpiri, huinga, rōpū.	• te tatau pānga tahi • te tatau taonga mai i te kotahi (hei whakaoti tāpiritanga)	• Nāku i tatau ngā taonga katoa kei roto i ngā huinga e rua.	• Ngā tohutau e hāngai ana ki ngā huinga taonga 1 ki te 10. • Ngā momo pikitia hei whakaatu i ngā taonga o tētahi huinga. • Ngā whārite māmā hei whakaatu tāpiritanga. Hei tauira, 3 + 2 = 5. • Te rārangi tau hei whakaatu tatauranga. • Te anga tekau hei whakaatu tau.
3 – 4	Ngā kupu tau 1 ki te 100, tatau māwhitiwhiti, tatau mawhiti-2 .., tatau ake, taukehe, taurua, tango, tohatoha, whārite, whakarea, whakawehe, hauwhā, otinga, mati, tātaitai.	• te tatau ā-hinengaro (hei whakaoti tāpiritanga, tangohanga) • te tatau ake • te tatau māwhitiwhiti (hei whakaoti whakareatanga) • te tohatoha ōrite (hei whakaoti whakawehenga)	• Nāku ngā taonga i whakaahua i roto i taku hinengaro i a au e tatau ana. • 12 kei tēnā huinga, nō reira ka tīmata au i te 12, ka tatau ake. • E 4 ngā rōpū o te 2, nō reira ka tatau mawhiti-2. E 4 ngā tatauranga mawhiti-2, ka tae ake ki te 8. • I tohaina ngā taonga kia ōrite te maha ki ia huinga.	• Ngā whārite hei whakaatu i ngā paheko tau e whā (+, −, ×, ÷). • Ngā tohu haurua, hauwhā. • Te rārangi tau hei whakaatu tāpiritanga, tangohanga. • Te anga tekau hei whakaatu tāpiritanga, tangohanga.

Kaupae	Tauira Kupu Matua	Tauira Momo Rautaki	Tauira Whakamārama	Tauira Momo Tuhituhi
5	Ngā kupu tau 1 ki te 10,000, wāwāhi, rautaki, tau māmā, hautau, tāpiri tāruarua, uara tū, meka matua.	• te tau māmā me te tikanga paremata • te wāwāhi uara tū (hei whakaoti tāpiritanga) • te whakamahi meka mōhio • te tāpiri tāruarua	• 39 + 26 Tāpiria te 1 ki te 39, ka 40. He tau māmā te 40. E 25 atu anō hei tāpiri atu, ka 65. • 43 + 25 Wāwāhia ngā tau ki ngā tekau me ngā tahi. Tāpiria ngā tekau, ka 60. Tāpiria ngā tahi, ka 8. Hui katoa, ka 68. • 63 − 8 Tangohia te 3, ka 60. He tau māmā te 60. E 5 atu anō hei tango atu, ka 55. • 8 + 7 Ko te 16 te rearua o te 8. Tangohia te 1, ka 15. • $\frac{1}{4} \times 12$ Hauruatia te 12, ka 6. Hauruatia te 6, ka 3. Nō reira ko te 3 te hauwhā o te 12. • 5 × 4 5, 10, 15, 20.	• Te rārangi tau wātea. • Ngā momo pikitia hei whakaatu rautaki paheko tau. • Ngā whārite e whai wāhi mai ana te hautau. Hei tauira: $\frac{1}{2}$ o te 18 = 9 • He raupapatanga whārite hei whakaatu rautaki. Hei tauira: 43 + 25 = 40 + 20 + 3 + 5 = 60 + 8 = 68
6	Ngā kupu tau 1 ki te 1,000,000, ngā kupu whakahua tau ā-ira, huatango, tau ā-ira, mati ā-ira, rahinga ake, whakareatanga ake, ōrau, whakatau tata, whakaawhiwhi.	• te tāpiritanga ōrite • te paheko kōaro • te whakarearua me te whakahaurua	• 63 − 37 Tāpiria te 3 ki ia tau hei whakamāmā i te tau tango, arā, 66 – 40. Ka noho pūmau tonu te huatango o ngā tau. • 53 − 26 Hurihia hei tāpiritanga, arā, 26 + □ = 53. Ka tāpiri haerehia ngā tau māmā kia tae atu ki te 53. Arā, 26 + **4** + **20** + **3** = 53. Hui katoa, e 27 i tāpiria atu. • 28 × 5 Whakareatia te 28 ki te 10 nā te mea he tau māmā te 10, ka 280. Hauruatia te 280, ka 140. • 4 × 16 Hauruatia te 16, ka whakarea ai ki te 4, ka 32. Whakarearuatia tēnei, ka 64.	• Ngā momo whakaahuahanga hautanga. Hei tauira: ✓ porowhita hautau ✓ papa hautau ā-ira ✓ rārangi tau ā-ira • Te rārangi tau matarua. • Te tohu ōrau. • Te tukutuku me te tapawhā hāngai hei whakaatu whakareatanga. • Te hātepe whakatepou hei whakaoti tāpiritanga, tangohanga, tae atu ki ngā tau mati-4 (me te whakamārama anō i te rautaki o roto i te hātepe).

Kaupae	Tauira Kupu Matua	Tauira Momo Rautaki	Tauira Whakamārama	Tauira Momo Tuhituhi
7	Ngā kupu tauoti me ngā kupu hautanga, tau tōrunga, tau tōraro, tauwehe, taurea, ōwehenga, pāpātanga, taurangi.	• te wāwāhi uara tū (hei whakaoti whakareatanga) • te whakamahi hautau waetahi • te whakarea me te whakawehe whai pānga	• 45 × 23 Wāwāhia ngā tau ki ngā tekau me ngā tahi (40 + 5) × (20 + 3). Whakareatia ia wāwāhitanga 40 × 20 + 40 × 3 + 5 × 20 + 5 × 3. • $\frac{5}{6} \times 24$ Ka whiriwhiria te $\frac{1}{6}$ o te 24 mā te whakawehe i te 24 ki te 6, ka 4. Whakareatia te 4 ki te 5 hei whiriwhiri i te $\frac{5}{6}$ o te 24, ka 20. • 3 × 27 Ka reatorutia te 3, ka 9, ka hautorutia te 27, ka 9. Ko te 9 × 9 te whakareatanga e ōrite ana, ka 81.	• Te tohu ōwehenga. • Te tohu tau tōraro, tau tōrunga hoki. • Te tohu pāpātanga. • He raupapatanga whārite hei whakaatu rautaki. Hei tauira: 15% o te 68 = 10% o te 68 + 5% o te 68 = 6.8 + 3.4 = 10.2 • He tūtohi ōwehenga. Hei tauira: 10 : 15 1 : 1.5 4 : 6 • He whārite taurangi hei whakaatu pānga. Hei tauira: ✓ $u = 4 \times \bar{a}$ (u = utu, $\bar{a}$ = taumaha āporo) ✓ $H = \frac{1}{2} \times p \times t$ (H = horahanga, p = pūtake, t = teitei) • Te hātepe ōkawa hei whakaoti whakareatanga (mā te tau mati-1) me te whakawehenga (mā te tau mati-1), me te whakamārama anō i te rautaki o roto i te hātepe.

Kaupae	Tauira Kupu Matua	Tauira Momo Rautaki	Tauira Whakamārama	Tauira Momo Tuhituhi
8	taupū, pūrua, pūtoru .., pūtakerua, tau tōpū, tānga ngahuru	• te whakawhitiwhiti hautanga • te whakamahi hautau ōrite • te whakamahi pānga whakarea	• $\frac{3}{4} - \frac{2}{3}$ Hurihia ngā hautau kia ōrite te tauraro, Arā, ko te $\frac{9}{12} - \frac{8}{12}$. He ōrite te $\frac{9}{12}$ me te $\frac{3}{4}$, he ōrite hoki te $\frac{2}{3}$ me te $\frac{8}{12}$. • 75% o te 3.6 Hurihia te 75% ki te hautau e ōrite ana, arā, te $\frac{3}{4}$. Whiriwhiria te $\frac{1}{4}$ o te 3.6, ko te 0.9 tērā (he meka mōhio te $4 \times 9 = 36$). Whakareatia te 0.9 ki te 3, ka 2.7, ko te 75% tērā o te 3.6. • $6:9 = \square:24$ Ko te 6 te $\frac{2}{3}$ o te 9. Nō reira kia pērā anō te pānga o te $\square$ ki te 24. Ko te 16 te $\frac{2}{3}$ o te 24. Nō reira ko te 16:24 te ōwehenga e ōrite ana.	• Te whānuitanga o ngā momo whakaahuahanga hei whakaatu rautaki whakaoti paheko tau. • He raupapatanga whārite hei whakaatu rautaki. Hei tauira: 75% o te 3.6 $= \frac{3}{4} \times 3.6$ $= 3 \times (\frac{1}{4} \times 3.6)$ $= 3 \times 0.9$ $= 2.7$ • He rārangi tau wātea hei whakatairite ōwehenga, pāpātanga hoki. • Te hātepe ōkawa hei whakaoti whakawehenga e whai toenga ana, me te whakamārama anō i te rautaki o roto i te hātepe. • Te hātepe ōkawa hei whakaoti whakareatanga ki te tau matirua, me te whakamārama anō i te rautaki o roto i te hātepe.

Te Kuputaka

Māori → Ingarihi

anga tekau	tens frame
hangarite	symmetry (*takenga mai:* hanga – shape; rite – alike, corresponding)
hātepe ōkawa	formal algorithm
hātepe whakatepou	vertical algorithm (*kupu kē atu:* hātepe poutū)
hautau waetahi	unit fraction
hoahoa	diagram (*takenga mai:* hoahoa – plan of a house)
huatango	difference (between two numbers) (*takenga mai:* hua – outcome, product; tango – subtract)
huatau	concept, idea
huinga	set (*takenga mai:* hui – come together, congregate)
kaupae	stage (step on a ladder)
kōaro	inverse
kōtuitui	interwoven
Mahere Tau	Number Framework
mātauranga ngaiotanga	professional knowledge
mātauranga tau	number knowledge
mati ā-ira	decimal place (*kupu kē atu:* mati whaiira)
matitahi	single digit
meka matua	basic fact
meka mōhio	known fact
(rauemi) ōkiko	concrete materials
ōrau	percent (*tohu:* % *takenga mai:* ō – of, belonging to; rau – hundred *kupu kē atu:* paihēneti)
otinga	result (*takenga mai:* oti – finished, completed *kupu kē atu:* hua)
ōwehenga	ratio (*tohu:* : *takenga mai:* ō – of, belonging to; wehe – detach, divide)
paheko kōaro	inverse operation
paheko tau	number operation
pānga	relationship (*takenga mai:* pā – connected with *kupu kē atu:* hononga)
pānga riterite	proportional
pānga tahi	one-to-one relationship
pānga tāpiripiri	additive relationship
pānga whakarea	multiplicative relationship
pāpātanga	rate (*tohu:* / *takenga mai:* pā – connected with)
paremata	compensate
porotiti	counter (*takenga mai:* porotiti – disc)
porowhita hautau	fraction circle
pūnaha uara tū	place value system

pūrua	square (of a number) (*tohu:* ^{2}, ^{3}, $^{\cdots}$)
pūtakerua	square root (*tohu:* $\sqrt{\ }$)
rahinga ake	(amount) bigger than (*kupu kē atu:* nui)
rapanga tau	number problem (*takenga mai:* rapa – seek, look for)
rārangi tau matarua	double number line
rārangi tau wātea	open number line
raupapatanga tau	number sequence
raupapatanga whārite	equation sequence
rautaki	strategy (*takenga mai:* rau [rauhanga] – cunning, resourceful; taki – lead, bring along)
rautaki ā-hinengaro	mental strategy
rautaki tatau	counting strategy
rautaki tau	number strategy
rautaki wāwāhi tau	part-whole strategy
tānga ngahuru	standard form (*takenga mai:* tā – print; ngahuru – ten)
taonga ōkiko	physical object
tapeke	total
tāpiritanga ōrite	equal addition
tāpiritanga tāruarua	repeated addition
tātaitai	calculator
tatau ake	count on
tatau mawhiti-rua	count in twos (*takenga mai:* tatau – count; mawhiti – leap, skip)
tatau mawhiti-tekau	count in tens (*takenga mai:* tatau – count; mawhiti – leap, skip)
tatau māwhitiwhiti	skip count (*takenga mai:* tatau – count; mawhiti – leap, skip *kupu kē atu:* kaute kōhitihiti)
tatau whakamua	count foward
tatau whakamuri	count backward
tau ā-ira	decimal number
tau hanumi	mixed number (*takenga mai:* tau – number; hanumi – be mixed)
tauhono	addend (number being added)
tauhono me te 5	groupings with 5 (adding a number to 5 e.g. 5 + 3)
tauhono o te 5	groupings within 5 (numbers that add to 5 e.g. 4 + 1)
taukehe	odd number (*takenga mai:* tau – number; kehe – an odd number in counting)
tau māmā	easy number, tidy number
tauoti	whole number (*takenga mai:* tau – number; oti – finished, complete)
taupū	power, indice (*takenga mai:* tau – number; pū – heap, stack *kupu kē atu:* pū)
taurangi	1. algebra (*takenga mai:* taurangi - variable) 2. variable
tauraro	denominator (*takenga mai:* tau – number; raro – below, under)

tau rata	compatible number (*takenga mai:* tau – number; rata – familiar, friendly)
taurea	multiple (*takenga mai:* tau –number; rea [whakarea] – multiply)
taurea pātahi	common multiple
taurua	even number (*takenga mai:* tau –number; rua – two)
taurunga	numerator (*takenga mai:* tau –number; runga – above)
tautohu	identify
tau toitū	prime number (*takenga mai:* tau – number; toitū – undisturbed, untouched)
tau tōpū	integer (*takenga mai:* tau – number; tōpū – assembled in a body)
tau tōraro	negative number (*tohu:* $^{-}$ *takenga mai:* tau – number; tō – that of; raro – below)
tau tōrunga	positive number (*tohu:* $^{+}$ *takenga mai:* tau – number; tō – that of; runga – above)
tauwehe	factor (*takenga mai:* tau – number; wehe – divide)
tauwehe pātahi	common factor
toharite	mean, average (*takenga mai:* toha [tohatoha] – distribute; rite – alike, corresponding)
tohutau	numeral (*takenga mai:* tohu – symbol; tau –number)
tūāpapa	foundation
tukutuku	grid
ture whakawehe	divisibility rule
tūtahi	whole (*kupu kē atu:* katoa)
tūtohi ōwehenga	ratio table
uara tū	place value
waeine	unit of measurement (*takenga mai*: wae – divide, part, portion; ine – measure)
wae tatau	counting unit (*takenga mai*: wae – divide, part, portion; tatau – count)
wāwāhi	partition, break down (a number) (*kupu kē atu:* wāhi ~a)
wāwāhi uara tū	place value partitioning
whakaahuahanga	representation
whakaawhiwhi	round (*takenga mai:* whaka – causative prefix, to make; āwhiwhi – near, approximate)
whakahaurua	halve
whakaoti rapanga	problem solving
whakarearua	make double
whakareatanga ake	times bigger than
whakatau tata	estimate (*takenga mai:* whakatau – conclude; tata – near)
whakawehenga whai toenga	division with remainder
whārite	equation (*takenga mai:* whārite – balance by an equivalent)
whārite taurangi	algebraic equation

Ingarihi → Māori

addend (number being added)	**tauhono**
additive relationship	**pānga tāpiripiri**
algebra	**taurangi** (*takenga mai:* taurangi – variable)
algebraic equation	**whārite taurangi**
average, mean	**toharite** (*takenga mai:* toha [tohatoha] – distribute; rite – alike, corresponding)
basic fact	**meka matua**
bigger than (amount)	**rahinga ake** (*kupu kē atu:* nui)
break down (a number), partition	**wāwāhi** (*kupu kē atu:* wāhi ~a)
calculator	**tātaitai**
common factor	**tauwehe pātahi**
common multiple	**taurea pātahi**
compatible number	**tau rata** (*takenga mai:* tau – number; rata – familiar, friendly)
compensate	**paremata**
concept, idea	**huatau**
concrete materials	**(rauemi) ōkiko**
count backward	**tatau whakamuri**
count foward	**tatau whakamua**
count in tens	**tatau mawhiti-tekau** (*takenga mai:* tatau – count; mawhiti – leap, skip)
count in twos	**tatau mawhiti-rua** (*takenga mai:* tatau – count; mawhiti – leap, skip)
count on	**tatau ake**
counter	**porotiti** (*takenga mai:* porotiti – disc)
counting strategy	**rautaki tatau**
counting unit	**wae tatau** (*takenga mai*: wae – divide, part, portion; tatau – count)
decimal number	**tau ā-ira**
decimal place	**mati ā-ira** (*kupu kē atu:* mati whaiira)
denominator	**tauraro** (*takenga mai:* tau – number; raro – below, under)
diagram	**hoahoa** (*takenga mai:* hoahoa – plan of a house)
difference (between two numbers)	**huatango** (*takenga mai:* hua – outcome, product; tango – subtract)
divisibility rule	**ture whakawehe**
division with remainder	**whakawehenga whai toenga**
double number line	**rārangi tau matarua**
easy number, tidy number	**tau māmā**
equal addition	**tāpiritanga ōrite**
equation	**whārite** (*takenga mai:* whārite – balance by an equivalent)
equation sequence	**raupapatanga whārite**
estimate	**whakatau tata** (*takenga mai:* whakatau – conclude; tata – near)

even number	**taurua** (*takenga mai:* tau – number; rua – two)
factor	**tauwehe** (*takenga mai:* tau –number; wehe – divide)
formal algorithm	**hātepe ōkawa**
foundation	**tūāpapa**
fraction circle	**porowhita hautau**
grid	**tukutuku**
groupings with 5 (adding a number to 5 e.g. 5 + 3)	**tauhono me te 5**
groupings within 5 (numbers that add to 5 e.g. 4 + 1)	**tauhono o te 5**
halve	**whakahaurua**
identify	**tautohu**
indice, power	**taupū** (*takenga mai:* tau – number; pū – heap, stack *kupu kē atu:* pū)
integer	**tau tōpū** (*takenga mai:* tau – number; tōpū – assembled in a body)
interwoven	**kōtuitui**
inverse	**kōaro**
inverse operation	**paheko kōaro**
known fact	**meka mōhio**
make double	**whakarearua**
mean, average	**toharite** (*takenga mai:* toha [tohatoha] – distribute; rite – alike, corresponding)
mental strategy	**rautaki ā-hinengaro**
mixed number	**tau hanumi** (*takenga mai:* tau – number; hanumi – be mixed)
multiple	**taurea** (*takenga mai:* tau – number; rea [whakarea] – multiply)
multiplicative relationship	**pānga whakarea**
negative number	**tau tōraro** (*tohu:* ¯ *takenga mai:* tau – number; tō – that of; raro – below)
Number Framework	**Mahere Tau**
number knowledge	**mātauranga tau**
number operation	**paheko tau**
number problem	**rapanga tau** (*takenga mai:* rapa – seek, look for)
number sequence	**raupapatanga tau**
number strategy	**rautaki tau**
numeral	**tohutau** (*takenga mai:* tohu – symbol; tau – number)
numerator	**taurunga** (*takenga mai:* tau – number; runga – above)
odd number	**taukehe** (*takenga mai:* tau – number; kehe – an odd number in counting)
one-to-one relationship	**pānga tahi**
open number line	**rārangi tau wātea**
partition, break down (a number)	**wāwāhi** (*kupu kē atu:* wāhi ~a)
part-whole strategy	**rautaki wāwāhi tau**
percent	**ōrau** (*tohu:* % *takenga mai:* ō – of, belonging to; rau – hundred *kupu kē atu:* paihēneti)

physical object	**taonga ōkiko**
place value	**uara tū**
place value partitioning	**wāwāhi uara tū**
place value system	**pūnaha uara tū**
positive number	**tau tōrunga** (*tohu:* + *takenga mai:* tau – number; tō – that of; runga – above)
power, indice	**taupū** (*takenga mai:* tau – number; pū – heap, stack *kupu kē atu:* pū)
prime number	**tau toitū** (*takenga mai:* tau – number; toitū – undisturbed, untouched)
problem solving	**whakaoti rapanga**
professional knowledge	**mātauranga ngaiotanga**
proportional	**pānga riterite**
rate	**pāpātanga** (*tohu:* / *takenga mai:* pā – connected with)
ratio	**ōwehenga** (*tohu:* : *takenga mai:* ō – of, belonging to; wehe – detach, divide)
ratio table	**tūtohi ōwehenga**
relationship	**pānga** (*takenga mai:* pā – connected with *kupu kē atu:* hononga)
repeated addition	**tāpiritanga tāruarua**
representation	**whakaahuahanga**
result	**otinga** (*takenga mai:* oti – finished, completed *kupu kē atu:* hua)
round	**whakaawhiwhi** (*takenga mai:* whaka – causative prefix, to make; āwhiwhi – near, approximate)
set	**huinga** (*takenga mai:* hui – come together, congregate)
single digit	**matitahi**
skip count	**tatau māwhitiwhiti** (*takenga mai:* tatau – count; mawhiti – leap, skip *kupu kē atu:* kaute kōhitihiti)
square (of a number)	**pūrua** (*tohu:* ^{2}, ^{3},$^{\cdots}$)
square root	**pūtakerua** (*tohu:* $\sqrt{\ }$)
stage (step on a ladder)	**kaupae**
standard form	**tānga ngahuru** (*takenga mai:* tā – print; ngahuru – ten)
strategy	**rautaki** (*takenga mai:* rau [rauhanga] – cunning, resourceful; taki – lead, bring along)
symmetry	**hangarite** (*takenga mai:* hanga – shape; rite – alike, corresponding)
tens frame	**anga tekau**
tidy number, easy number	**tau māmā**
times bigger than	**whakareatanga ake** (*kupu kē atu:* hātepe poutū)
total	**tapeke**
unit fraction	**hautau waetahi**
unit of measurement	**waeine** (*takenga mai*: wae – divide, part, portion; ine – measure)
vertical algorithm	**hātepe whakatepou**
whole	**tūtahi** (*kupu kē atu:* katoa)
whole number	**tauoti** (*takenga mai:* tau – number; oti – finished, complete)

Te Kōpae Ataata o Te Poutama Tau

Kei runga i te kōpae ataata nei ngā whakaari o ētahi ākonga mai i te tau 1 ki te tau 8 o te kura tuatahi, e whakaatu ana i ngā kaupae rautaki o Te Mahere Tau.

I hangaia tēnei kōpae ataata hei āwhina i te kaupapa o Te Poutama Tau, otirā hei whakapakari i te mahi whakaako pāngarau i roto i ō tātou kura reo Māori huri noa i Aotearoa. E mihi ana ki te hunga ākonga, ki ngā kura, ki ngā kaitakawaenga me ngā pouako i whai wāhi mai ki te āwhina i tēnei kaupapa.

Pukapuka Tuatahi

1 2 3 4 5 6 7 8

HE KUPENGA HAO I TE REO

Te Kāwanatanga o Aotearoa