



# Te Reo Pāngarau 2024

32412 | Te whakamahi pāngarau hei whakaoti rapanga o te ao o te ākonga


Kaupae 1 | Whiwhinga: 10

Taumata 4-5 o Te Marautanga o Aotearoa



Mana Tohu Mātauranga o Aotearoa  
New Zealand Qualifications Authority



A photograph of a tree trunk completely covered in dense, green ivy. The ivy leaves are small and rounded, creating a thick, textured layer over the bark. The background is a soft-focus green forest. Overlaid on the center of the image is white text in a clean, sans-serif font.

**Kei hopu tōu  
ringa ki te aka  
tāepa, engari  
kia mau te aka  
matua**





# TE REO PĀNGARAU

**32412 | Te whakamahi pāngarau hei whakaoti rapanga  
o te ao o te ākonga**

Ngā Whiwhinga 10

(Taumata 4-5 o Te Marautanga o Aotearoa)



NZQA paerewea

32412 putanga 2  
Whārangī 1 of 3

|               |   |                  |           |
|---------------|---|------------------|-----------|
| <b>Ingoa</b>  | <b>Te whakamahi pāngarau hei whakaoti rapanga o te ao o te ākonga</b> |                  |           |
| <b>Kaupae</b> | <b>1</b>  | <b>Whiwhinga</b> | <b>10</b> |

|                |  |
|----------------|--|
| <b>Whāinga</b> | Ko ngā ākonga kua whakawhiwhia ki te paerewa paetae nei, e āhei ana ki te whakamahi pāngarau hei whakaoti rapanga o te ao o te ākonga. |
|----------------|--|

|                     |                                      |
|---------------------|--------------------------------------|
| <b>Whakaraupapa</b> | Core Generic > Work and Study Skills |
|---------------------|--------------------------------------|

|                 |        |
|-----------------|--------|
| <b>Ngā tohu</b> | Paetae |
|-----------------|--------|

### Kōrero whakamārama

- 1 Ko tēnei paerewa, nō te huinga paerewa Reo Matatini me te Pāngarau me mātua kawē mō te New Zealand Certificate of Achievement (NCEA). Ka aromātai tahi tēnei paerewa, te paerewa 32414, *Ka whakamahi i te reo kia tutuki ai tētahi pūtakenga whakawhiti kōrero, tuhituhi hoki* me te paerewa 32413 *Ka mārama, ka tautohu i ngā whakaaro matua o tētahi reo ā-waha, o tētahi reo ā-tā hoki* i ngā pūkenga tūāpapa o te reo matatini me te pāngarau e whai wāhi tonu ai te ākonga ki te ako, ki te mahi, me ērā atu āhuatanga o tōna oranga.
- 2 Mō tēnei paerewa, ko te pāngarau te āheinga o te ākonga ki te whai, ki te whakamahi, ki te whakamāori, te whakawhiwhiti whakaaro pāngarau, me te reo matatini o te pāngarau hoki e taea ai e ngā ākonga te uru atu ki ētahi atu akoranga, whakawhanake i ngā pūkenga nui o te ao whānui, me te uru atu ki ngā mahi me o rātou hāpori. Kei roto hoki i tēnei ko te mārama hoki ki ngā āhuatanga o te ahurea-pāpori.
- 3 E hono ana tēnei paerewa ki ngā tukanga me ngā akoranga tāpua o te Tukutuku Ako – Pāngarau, kei te whārangī ipurangi [ncea.education.govt.nz](http://ncea.education.govt.nz).  
E hono ana hoki ki ngā anga e toru e whai ake nei:
  - Ki te mutunga o taumata 4 me te timatatanga o taumata 5 o te Marautanga Pāngarau.
  - Ki te kaupae 5 o ngā Learning Progressions for Adult Numeracy (LPAN)
  - Ki ngā whāinga o te Tīrewa Ako Pāngarau.
- 4 Me whakaatu māramatanga ngā ākonga ki ngā ngohe aromatawai e whai wāhi mai ana i te putanga ako me ngā whenū: Te Tau me Te Taurangi, Te Ine me Te Āhuahanga, me Te Tauanga.

NZQA paerewea

32412 putanga 2  
Whārangī 2 of 3

- 5 Mā Te Mana Tohu Mātauranga o Aotearoa (NZQA) te aromatawai o tēnei paerewa e whakarite me te māka. Ko ngā huarahi whakaatu taunakitanga, e whai ake nei:
- He kohinga taunakitanga ka puta i ngā marautanga katoa i te roanga o te tau (he Kete Manarua).
  - He Aromatawai Arowhānui, he mea whakarite e NZQA:
    - He aromatawai wā-here
    - He kaupapa whānui.
- 6 Ka taea te whakamahi tātaitai mai i te rārangi tātaitai kua whakamanahia e NZQA.
- 7 Ko *te ao o te ākongā* e hāngai atu ana ki te akoranga, ki te ahurea, ki te pāpori, ki te mahi, ki te kāinga o te ākongā.
- 8 Ko te *tikanga pāngarau*, ko ngā rautaki kua whakamahia e te ākongā te whakaoti rapanga.
- 9 He kupu taka

|                  |                      |
|------------------|----------------------|
| aronga           | meaning, focus       |
| ahurea pāpori    | socio economic       |
| akoranga tapua   | significant features |
| pāheko           | operations           |
| pūāhua           | situation            |
| urupare          | reply, response      |
| tukanga          | process              |
| tukutuku ako     | learning matrix      |
| taurangi         | variable             |
| whaitake         | reasonable           |
| whakamahi        | apply                |
| whakakaupapa     | contextualise        |
| whakaoti rapanga | solve problem        |
| whānuitanga      | range                |
| whakairo whānui  | big ideas            |

- 10 Ngā rauemi

Paekupu – <https://paekupu.co.nz/>.

Te Taura Whiri i te Reo Māori (n.d.) *Te Taura Whiri i te Reo Māori Guidelines for Māori Language Orthography*.

<https://www.tetaurawhiri.govt.nz/assets/Uploads/Corporate-docs/Orthographic-conventions/58e52e80e9/Guidelines-for-Maori-Language-Orthography.pdf>.

Te Tāhuhu o te Mātauranga. (2013). *Te Marautanga o Aotearoa*. Te Poutaki Kōrero. (wh. 24-36).

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## Putanga ako me ngā paearu mahi

### Putanga ako 1

Te whakamahi pāngarau hei whakaoti rapanga o te ao o te ākongā.



NZQA paerewea

32412 putanga 2  
Whārangi 3 of 3**Paearu mahi**

- 1.1 Te whakakaupapa i ngā pūāhua ki ngā tikanga pāngarau.  
Whānuitanga Ko te whiriwhiri i te pāheko, i te whakaahuahanga, i te taurangi, i te tikanga rānei hei whakaoti rapanga.
- 1.2 Te whakamahi i ngā tikanga pāngarau e tika ana ki ngā pūāhua.  
Whānuitanga Ko te whakamahi i ngā tikanga pāngarau e hāngai pū ana ki ngā whakaaro whānui, ki ngā pūāhua hei whakaoti rapanga
- 1.3 Te whakamāori i te whaitake o ngā urupare pāngarau ki ngā pūāhua.  
Whānuitanga Ko te whakamāori i ngā whakaotinga, i ngā putanga, i ngā aronga ki te pūāhua.

|                   |                |
|-------------------|----------------|
| <b>Rā arotake</b> | 31 Tīhema 2026 |
|-------------------|----------------|

**Kōrero arotake me te rā whakamutunga mō te aromatawai o ngā putanga i tautuku**

| Hātepe      | Putanga | Rā whakaputa  | Rā whakamutunga mō te aromatawai |
|-------------|---------|---------------|----------------------------------|
| Rēhītatanga | 1       | 18 Hune 2021  | 31 Tīhema 2024                   |
| Arotakenga  | 2       | 30 Nōema 2023 | N/A                              |

|   |      |
|---|------|
| <b>Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga (CMR)</b> | 0233 |
|---|------|

Ka taea te tiki atu te CMR nei mai i te ipurangi  
<http://www.nzqa.govt.nz/framework/search/index.do>.

**He kōrero mo tēnei paerewa**

Mehemea he whakaaro, he āwangawanga ōu mō te paerewa nei, tēnā koa whakapā mai ki te Tāhuhu o te Mātauranga (Ministry of Education) ([enquiries.national@education.govt.nz](mailto:enquiries.national@education.govt.nz)).

## 32412 | Te whakamahi pāngarau hei whakaoti rapanga o te ao o te ākongā.

### REO PĀNGARAU | PAEREWA 32412

#### He Whakamārama

Mō tēnei paerewa, ko te pāngarau te āheinga o te ākongā ki te whai, ki te whakamahi, ki te whakamāori, te whakawhitiwhiti whakaaro pāngarau, me te reo matatini o te pāngarau hoki e taea ai e ngā ākongā te uru atu ki ētahi atu akoranga, whakawhanake i ngā pūkenga nui o te ao whānui, me te uru atu ki ngā mahi me o rātou hāpori. Kei roto hoki i tēnei ko te mārama ki ngā āhuatanga o te ahurea-pāpori.

Ko te ao o te ākongā e hāngi atu ana ki te ākoranga, ki te ahurea, ki te pāpori, ki te mahi, ki te kainga o te ākongā.

#### Te hononga ki Te Tīrewa Ako Pāngarau (He mea tango i 'Te Tukutuku ako mō te Pāngarau')

1. Ko te tere me te tāwariwari ki te whakaotioti rapanga e kawea ai he paheko tau, te mārama ki te rahi tauriterite o aua tau, me te whakamārama i te otinga i runga anō i te horopaki.  
(Te Whakaaro Tāpiri; Whāinga 10, Whakaaro Whakarea Whāinga 9 & 10)
2. Ko te mōhio ki ngā rau pānga o te pāngarau, me te whakamahi i aua pānga.  
(Te Taura me te panga Whāinga 6 & 7)
3. Ko te mārama ki ngā āhuatanga o te mokowā me te whakaahuahanga o ngā taonga, me te whakamahi i aua āhuatanga.  
(Te Āhuahanga; Whāinga 8 & 9)
4. Ko te mārama me te whakamahi i ngā pūnaha hei whakarite i ngā tūwāhi me te tātai ara haere.  
(Te Āhuahanga; Whāinga 8 & 9)
5. Ko te whakamahi i ngā tau me ngā waeine hei ine, hei whakaahua i ngā taonga me ngā pāpono hei rahinga, me te whakaawhiwhitanga tika mō te horopaki.  
(Te Ine; Whāinga 6 & 7)
6. Ko te mārama ki ngā tikanga tauanga, raraunga.  
(Te Tauanga; Whāinga 8)
7. Ko te whakamahi i te tūponotanga hei whakamāori i ngā pūāhua e mau mai ana he āhuatanga tūpono.  
(Te Tūponotanga; Whāinga 5)

Kei te **whārangi 11** te mahere e whakamārama ana i ngā pukenga, i ngā mahi ka taea e ngā ākongā.

## Te Aromatawai

E hono ana tēnei paerewa ki ngā tukanga me ngā akoranga tāpua o te Tukuruku Ako – Pāngarau, kei te whārangi ipurangi [ncea.education.govt.nz](http://ncea.education.govt.nz).

E hono ana hoki ki ngā anga e toru e whai ake nei:

- Ki te mutunga o taumata 4 me te timatatanga o taumata 5 o [Te Marautanga Pāngarau](#).
- Ki te kaupae 5 o ngā [Learning Progressions for Adult Numeracy \(LPAN\)](#).
- Ki ngā whāinga o te Tīrewa Ako Pāngarau.

Me whakaatu māramatanga ngā ākonga ki ngā ngohe aromatawai e whai wāhi mai ana i te putanga ako o te Paerewa me ngā Whenu Pāngarau:

### Te Ine me Te Āhuahanga

- Te Ine
- Te Hanga
- Te Wāhi me te Ahunga
- Te Panoni

### Te Tau me Te Taurangi

- Te Mātauranga Tau
- Ngā Rautaki Tau
- Te Taurira me te Pānga

### Te Tauanga.

- Te Tūhuratanga Tauanga
- Te Tūponotanga



# He Mahere hei arahi i te Kaiako

Paerewa 31412 | Te whakamahi pāngarau hei whakaoti rapanga o te ao o te ākonga.

Kaupae 1 | Whiwhinga 10

Kura/Whareako Paetoru Nama MOE: \_\_\_\_\_

Ākonga NSN: \_\_\_\_\_

| Ngā Paearu Mahi |   | Tūmahi<br>(Te ingoa o te ngohe/tūmahi i puta ai te taunakitanga) | Ngā Taunakitanga  | Kua tutuki  |
|-----------------|---|--|---|---|
| 1.1             | Te whakakaupapa i ngā pūāhua ki ngā tikanga pāngarau.             |  | <input type="checkbox"/> paheko<br><input type="checkbox"/> taurangi<br><br><input type="checkbox"/> whakaahuahanga<br><input type="checkbox"/> tikanga hei whakaoti rapanga.<br><b>Whiriwhiri kia kōtahi, nui ake rānei.</b> | <input type="checkbox"/> Āe<br><input type="checkbox"/> Kāo |
| 1.2             | Te whakamahi i ngā tikanga pāngarau e tika ana ki ngā pūāhua.     |  | Whakamahi i ngā tikanga Pāngarau e hāngi pū ana ki:<br><input type="checkbox"/> ngā whakaaro nui<br><input type="checkbox"/> ngā pūāhua hei whakaoti rapanga.<br><b>Te katoa.</b>   | <input type="checkbox"/> Āe<br><input type="checkbox"/> Kāo |
| 1.3             | Te whakamāori i te whaitake o ngā urupare pāngarau ki ngā pūāhua. |  | Whakamāori i ngā:<br><input type="checkbox"/> whakaotinga<br><input type="checkbox"/> putanga<br><input type="checkbox"/> aronga ki ngā pūāhua.<br><b>Te katoa.</b>   | <input type="checkbox"/> Āe<br><input type="checkbox"/> Kāo |

| Tūmahi<br>(Te ingoa o te ngohe/tūmahi i puta ai i te taunakitanga) |                   | Tuhia he Āe / ✓ ki ngā whenu Pāngarau kua tutukihia (te katoa) |                      |                     |     |          |         |             |
|--|-------------------|--|----------------------|---------------------|-----|----------|---------|-------------|
|  |                   | Te Ine   | Te hanga & Te Pānoni | Te Wāhi & Te Āhunga | Tau | Taurangi | Tauanga | Tūponotanga |
| Tauira   | Te hararei ki hea | ✓  |                      | ✓                   | ✓   |          |         | ✓           |
| 1  |                   |  |                      |                     |     |          |         |             |
| 2  |                   |  |                      |                     |     |          |         |             |
| 3  |                   |  |                      |                     |     |          |         |             |

Tāpirihia he kape anō ina hiahiatia. Me eke te Ākonga ki ngā Paearu mahi katoa kia whiwhi ai tēnei Paerewa.

- Whakamaua ngā ngohe/tūmahi i whakamahia hei whakaputa taunakitanga.
- Tuhia ngā whakaaro pāngarau kua tutukihia i ia ngohe/tūmahi.
- Whakamaua ngā taunakitanga kua oti i te ākonga.

**Te whakatūturutanga a te kaiako:**

Tēnei au te whakatūturu nei i te tika o ngā pārongo e mau mai ana ki te pukauhi nei; nā te ākonga ake ngā taunakitanga, kāore i nui te āwhina atu a tētahi i a ia.

Te rā: \_\_\_\_\_

Te kaiako: \_\_\_\_\_

## Whakaatu ai ngā ākongā kei te paearu i ngā tukanga pāngarau, tukanga tauanga ki ngā mahi e whai ake nei:

|   | <p align="center"><b>Hei whakamāramatanga i te paearu (hei āwhina i ngā kaiwhakarite ngohe):<br/>Ka taea e te ākongā te:</b></p>   | <p align="center"><b>Nō waho atu o te paearu ēnei<br/>e whai atu nei:</b></p>   |
|---|--|---|
| <p><b>1. Ka wānanga, ka whakawhitiwhiti whakaaro ā-pāngarau nei.</b></p>  | <ul style="list-style-type: none"> <li>whakamahi i te reo pāngarau motuhake (i ngā kupu/kīanga, i te wetereo, i ngā tikanga kupu) e hāngai ana ki te pūāhua</li> <li>whakawhitiwhiti whakaaro pāngarau ki ngā kupu motuhake, ki te wetereo, ki ngā tikanga kupu. Ka whakawhitiwhitia hoki ki ngā hanga kē atu me ngā whakaahuahanga rerekē hei whakapuaki tika i ngā ariā pāngarau</li> <li>whakamahi i ngā whakaahuahanga – ā-waha nei, ā-tuhituhi nei, ā-ataata nei – hei whakamārama, hei kauhau i te ariā pāngarau.</li> </ul>   |   |
| <p><b>2. Ka whakahoropaki i te pūāhua.</b></p>  | <ul style="list-style-type: none"> <li>whakawhāitihia te pūāhua kia tutuki ai ngā matenga o te whānau, o te hapori, o te hapū, o te iwi</li> <li>tautohu i ngā whakaaro ahurea-pāpori e noho tūāpapa mai ana ki ngā tini horopaki, ki ngā tini pūāhua</li> <li>tautohu i ngā uara me ngā waiaro e pā ana ki ngā whakataunga pāngarau</li> <li>tautohu i ngā tikanga me ngā mātauranga e hāngai ana.</li> </ul>   |   |
| <p><b>3. Ka tere, ka tāwariwari te whakaotioti rapanga e kawea ai he paheko tau, ka mārama ki te rahi tauriterite o aua tau, ka mārama hoki ki te otinga, me te tika o taua otinga e hāngai ana ki te horopaki.</b></p> | <ul style="list-style-type: none"> <li>whiriwhiri i te aronga tātai tika, ahakoa ko te tuhituhi, ko te mahi ā-hinengaro, ā-matihiko rānei</li> <li>whakamahi i ngā tau oti (tae noa ki ngā piriona), ki ngā hautau, ki ngā tau-ā-ira (tae noa ki te mati-ā-ira tuatoru), ki ngā ōrau, ki ngā tau tōpū</li> <li>whakaoti i ngā rapanga e mau mai ana ngā pāpātanga, ngā taupāpātanga, ngā taupū e kaha ana te puta ake</li> <li>whakamahi i te huamoni tūpā</li> <li>tātai toharite (ko te tau tānui, ko te tau waenga anō hoki).</li> </ul>  | <ul style="list-style-type: none"> <li>ko te whakarea me te wehewehe i ngā hautau</li> <li>ko ngā taupū tōraro me ngā taupū hautau</li> <li>ko ngā āhuatanga taupū, ko ngā pāpātanga whakawhiti</li> <li>ko ngā rapanga ōrautanga hoki whakamuri</li> <li>ko te huamoni whakaputu.</li> </ul> |
| <p><b>4. Ko te mōhio me te whakamahi i ngā rau pānga (rārangi nei, taupū ngāwari nei, pānga poutama nei).</b></p>   | <ul style="list-style-type: none"> <li>whakaahuahia hei kauwhata, hei ture ā-kupu rānei, ā, ko te tātai i ngā uara o te pānga e huna ana</li> <li>whakamahi i ngā taupū ngāwari hei tohu i ngā pūāhua e pāpā noa nei ki te tangata i āna kawenga o ia rā, hei taurira, ko te urutā, ko te tupuranga o te taupori, ko te whakamātaotao matū.</li> </ul>   | <ul style="list-style-type: none"> <li>ko ngā pānga rārangi kore, me ngā pānga taupūtanga</li> <li>ko ngā pānga poutama e whakamahia nuitia ana, hei taurira, ko ngā pāpātanga utu mō ngā tūnga motukā.</li> </ul>  |
| <p><b>5. Ko te mārama me te whakamahi i ngā hanga mokowā me ngā whakaahuahanga taonga.</b></p>  | <ul style="list-style-type: none"> <li>mōhio ki te hangarite me te panoni</li> <li>panoni e.g. te whakarahi, te whakaata, te huri, me te neke hei hoahoa ki te whakatutuki i tētahi kaupapa</li> <li>tūhonohono i ngā whakaahuahanga taonga ngāwari, ahu-2 nei, ahu-3 nei.</li> </ul>  | <ul style="list-style-type: none"> <li>ko te whakamahi i ngā motuhanga.</li> </ul>  |
| <p><b>6. Ko te mārama me te whakamahi i ngā pūnaha hei whakaterere hei whakatau wāhi, hei whakatau ahunga.</b></p>  | <ul style="list-style-type: none"> <li>tātai i te ara haere i waenga i ngā tūwāhi, hei whakaatu i te tūwāhi me te ahunga</li> <li>tāwariwari i te pūnaha e tūhura ai rātou i ēnei mahi i roto i tētahi pūāhua</li> </ul>   | <ul style="list-style-type: none"> <li>kāore e whakamahia ana ngā ahunga pērā i te UTT (te uru mā tonga ki te tonga)</li> <li>ngā ahunga.</li> </ul>  |
| <p><b>7. Ko te whakamahi i ngā tau me ngā waeine hei ine, hei whakaahua i ngā taonga hei rahinga, me te whakaawhiwhitanga e tika ana mō te horopaki.</b></p>  | <ul style="list-style-type: none"> <li>whakamahi me te whakamāori i ngā putanga o te ine, tae atu ki ngā wātaka me ngā kauwhata wā.</li> <li>āta whiriwhiri i ngā waeine tika me te whakawhitiwhiti i waenga i ngā waeine ngahuru mō te mea e inea ana.</li> <li>whakaotioti i ngā rapanga ine i ngā horopaki whaitake             <ul style="list-style-type: none"> <li>ko te paenga</li> <li>ko te rōrahi (poro-tapawhā hāngai anake)</li> <li>ko te horahanga (tapawhā hāngai, tapawhā whakarara, tapatoru)</li> <li>ko te papatipu</li> <li>ko te paemahana.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>ko ngā inenga porohita.</li> </ul>   |
| <p><b>8. Ko te mārama me te wānanga i te tauanga me ngā raraunga.</b></p>   | <ul style="list-style-type: none"> <li>mōhio me te whakamahi i ngā whakaari raraunga hei tūhura pātai, ngā tāpae mō ngā pūāhua whakarāpopoto, ngā pūāhua whakariterite hoki me ngā pūāhua houanga</li> <li>whakamāori i ngā whakaari raraunga mā te whakamahi i te hora, i te rāpoipoi, i te auautanga, i te wēanga, i ngā mōwaho</li> <li>arotake i ngā tāpaetanga kōrero me ngā whakaahuahanga a tangata kē i runga i te āhua o ngā raraunga i kitea.</li> </ul>   | <ul style="list-style-type: none"> <li>ko te tipakopako</li> <li>ko te hīkaro mai i te tipako ki te taupori</li> <li>ko te tātai toharite</li> <li>ko te kohikohi me te whakariterite raraunga (ina tūpono ara ake tētahi atu mea pēnei, me tāpiri ki te rārangi nei).</li> </ul>             |
| <p><b>9. Ko te whakamahi i te tūponotanga hei whakamāori i ngā pūāhua e whai wāhi mai ana.</b></p>  | <ul style="list-style-type: none"> <li>mōhio ki ngā āhuatanga tūpono o ia rā, pērā i ngā tūraru me ngā tūwehe</li> <li>whakamahi i te reo o te tūponotanga hei whakaahua i ngā putanga.</li> </ul>   | <ul style="list-style-type: none"> <li>ko te mahi i ngā whakamātau me te whakatairite ki ngā taurira ā-ariā.</li> </ul>   |

## Whakaatu ai ngā ākongā kei te paearu i ngā tukanga pāngarau, tukanga tauanga ki ngā mahi e whai ake nei:

|  | <b>Hei whakamāramatanga i te paearu (hei āwhina i ngā kaiwhakarite ngohe):<br/>Ka taea e te ākongā te:</b>   | <b>Nō waho atu o te paearu ēnei<br/>e whai atu nei:</b>   |
|--|--|---|
| <b>1. Ka wānanga, ka whakawhitiwhiti whakaaro ā-pāngarau nei.</b>  | <ul style="list-style-type: none"> <li>whakamahi i te reo pāngarau motuhake (i ngā kupu/kīanga, i te wetereo, i ngā tikanga kupu) e hāngai ana ki te pūāhua</li> <li>whakawhitiwhiti whakaaro pāngarau ki ngā kupu motuhake, ki te wetereo, ki ngā tikanga kupu. Ka whakawhitiwhitia hoki ki ngā hanga kē atu me ngā whakaahuahanga rerekē hei whakapuaki tika i ngā ariā pāngarau</li> <li>whakamahi i ngā whakaahuahanga – ā-waha nei, ā-tuhituhi nei, ā-ataata nei – hei whakamārama, hei kauhau i te ariā pāngarau.</li> </ul>   |   |
| <b>2. Ka whakahoropaki i te pūāhua.</b>  | <ul style="list-style-type: none"> <li>whakawhāitihia te pūāhua kia tutuki ai ngā matenga o te whānau, o te hapori, o te hapū, o te iwi</li> <li>tautohu i ngā whakaaro ahurea-pāpori e noho tūāpapa mai ana ki ngā tini horopaki, ki ngā tini pūāhua</li> <li>tautohu i ngā uara me ngā waiaro e pā ana ki ngā whakataunga pāngarau</li> <li>tautohu i ngā tikanga me ngā mātauranga e hāngai ana.</li> </ul>   |   |
| <b>3. Ka tere, ka tāwariwari te whakaotioti rapanga e kawea ai he paheko tau, ka mārama ki te rahi tauriterite o aua tau, ka mārama hoki ki te otinga, me te tika o taua otinga e hāngai ana ki te horopaki.</b> | <ul style="list-style-type: none"> <li>whiriwhiri i te aronga tātaitai tika, ahakoa ko te tuhituhi, ko te mahi ā-hinengaro, ā-matihiko rānei</li> <li>whakamahi i ngā tau oti (tae noa ki ngā piriona), ki ngā hautau, ki ngā tau-ā-ira (tae noa ki te mati-ā-ira tuatoru), ki ngā ōrau, ki ngā tau tōpū</li> <li>whakaoti i ngā rapanga e mau mai ana ngā pāpātanga, ngā taupāpātanga, ngā taupū e kaha ana te puta ake</li> <li>whakamahi i te huamoni tūpā</li> <li>tātai toharite (ko te tau tānui, ko te tau waenga anō hoki).</li> </ul>   | <ul style="list-style-type: none"> <li>ko te whakarea me te wehewehe i ngā hautau</li> <li>ko ngā taupū tōraro me ngā taupū hautau</li> <li>ko ngā āhuatanga taupū, ko ngā pāpātanga whakawhiti</li> <li>ko ngā rapanga ōroutanga hoki whakamuri</li> <li>ko te huamoni whakaputu.</li> </ul> |
| <b>4. Ko te mōhio me te whakamahi i ngā rau pānga (rārangi nei, taupū ngāwari nei, pānga poutama nei).</b>   | <ul style="list-style-type: none"> <li>whakaahuahia hei kauwhata, hei ture ā-kupu rānei, ā, ko te tātai i ngā uara o te pānga e huna ana</li> <li>whakamahi i ngā taupū ngāwari hei tohu i ngā pūāhua e pāpā noa nei ki te tangata i āna kawenga o ia rā, hei taura, ko te urutā, ko te tupuranga o te taupori, ko te whakamātaotao matū.</li> </ul>   | <ul style="list-style-type: none"> <li>ko ngā pānga rārangi kore, me ngā pānga taupūtanga</li> <li>ko ngā pānga poutama e whakamahia nuitia ana, hei taura, ko ngā pāpātanga utu mō ngā tūnga motukā.</li> </ul>  |
| <b>5. Ko te mārama me te whakamahi i ngā hanga mokowā me ngā whakaahuahanga taonga.</b>  | <ul style="list-style-type: none"> <li>mōhio ki te hangarite me te panoni</li> <li>panoni e.g. te whakarahi, te whakaata, te huri, me te neke hei hoahoa ki te whakatutuki i tētahi kaupapa</li> <li>tūhonohono i ngā whakaahuahanga taonga ngāwari, ahu-2 nei, ahu-3 nei.</li> </ul>  | <ul style="list-style-type: none"> <li>ko te whakamahi i ngā motuhanga.</li> </ul>  |
| <b>6. Ko te mārama me te whakamahi i ngā pūnaha hei whakatere hei whakatau wāhi, hei whakatau ahunga.</b>  | <ul style="list-style-type: none"> <li>tātai i te ara haere i waenga i ngā tūwāhi, hei whakaatu i te tūwāhi me te ahunga</li> <li>tāwariwari i te pūnaha e tūhura ai rātou i ēnei mahi i roto i tētahi pūāhua</li> </ul>   | <ul style="list-style-type: none"> <li>kāore e whakamahia ana ngā ahunga pērā i te UTT (te uru mā tonga ki te tonga)</li> <li>ngā ahunga.</li> <li>ko ngā inenga porohita.</li> </ul>   |
| <b>7. Ko te whakamahi i ngā tau me ngā waeine hei ine, hei whakaahua i ngā taonga hei rahinga, me te whakaawhiwhitanga e tika ana mō te horopaki.</b>  | <ul style="list-style-type: none"> <li>whakamahi me te whakamāori i ngā putanga o te ine, tae atu ki ngā wātaka me ngā kauwhata wā.</li> <li>āta whiriwhiri i ngā waeine tika me te whakawhitiwhiti i waenga i ngā waeine ngahuru mō te mea e inea ana.</li> <li>whakaotioti i ngā rapanga ine i ngā horopaki whaitake             <ul style="list-style-type: none"> <li>ko te paenga</li> <li>ko te rōrahi (poro-tapawhā hāngai anake)</li> <li>ko te horahanga (tapawhā hāngai, tapawhā whakarara, tapatoru)</li> <li>ko te papatipu</li> <li>ko te paemahana.</li> </ul> </li> </ul> |   |
| <b>8. Ko te mārama me te wānanga i te tauanga me ngā raraunga.</b>   | <ul style="list-style-type: none"> <li>mōhio me te whakamahi i ngā whakaari raraunga hei tūhura pātai, ngā tāpae mō ngā pūāhua whakarāpopoto, ngā pūāhua whakariterite hoki me ngā pūāhua houanga</li> <li>whakamāori i ngā whakaari raraunga mā te whakamahi i te hora, i te rāpoipo, i te auautanga, i te wēanga, i ngā mōwaho</li> <li>arotake i ngā tāpaetanga kōrero me ngā whakaahuahanga a tangata kē i runga i te āhua o ngā raraunga i kitea.</li> </ul>  | <ul style="list-style-type: none"> <li>ko te tīpakopako</li> <li>ko te hīkaro mai i te tīpako ki te taupori</li> <li>ko te tātai toharite</li> <li>ko te kohikohi me te whakariterite raraunga (ina tūpono ara ake tētahi atu mea pēnei, me tāpiri ki te rārangi nei).</li> </ul>             |
| <b>9. Ko te whakamahi i te tūponotanga hei whakamāori i ngā pūāhua e whai wāhi mai ana.</b>  | <ul style="list-style-type: none"> <li>mōhio ki ngā āhuatanga tūpono o ia rā, pērā i ngā tūraru me ngā tūwehe</li> <li>whakamahi i te reo o te tūponotanga hei whakaahua i ngā putanga.</li> </ul>   | <ul style="list-style-type: none"> <li>ko te mahi i ngā whakamātau me te whakatairite ki ngā taura ā-ariā.</li> </ul>   |

E whakaatu ana te hoahoa nei i te raranga tahi o ngā aho *Reo Matatini o te Pāngarau*, ngā aho *Tukanga*, ngā aho *Whakaaro Pāngarau* me ngā aho *Ahurea Pāpori*.

### Ngā Whakaaro Whānui: Te Reo Matatini o te Pāngarau

Te whakaaro whaitake me te whakawhitiwhiti kōrero, ā pāngarau nei, ki te reo Māori.

### Ngā Whakaaro Whānui: Ngā Horopaki Ahurea Pāpori

Te tauhou me te whakamāori i ngā hanga ahurea-pāpori i ngā pūāhua/horopaki pāngarau, tae atu ki te tūhonohono i te pāngarau, te ahurea, me te hapori.



### Ngā Whakaaro Whānui: Ngā Tukanga

- Te whakakaupapa i ngā pūāhua ki ngā tikanga pāngarau.
- Te whakamahi i ngā tikanga pāngarau ki ngā tini pūāhua whaitake.
- Te whakamāori me te arotake i te whaitake o ngā pūāhua pāngarau.

### Ngā Whakaaro Whānui: Pāngarau

- Ngā Paheko Tau.
- Te Ine me te Āhuahanga.
- Ngā Tauira me ngā Pānga.
- Te Tauanga me te Tūponotanga.



# Ko ngā whakaaro raranga o te Pāngaru me te ahurea (He kōrero whakamārama nō Te Tukutuku Ako mō te Pāngarau).

| NGĀ WHENU              |                                      | Ngā Whanaketanga 5a  | Ngā Ariā Pāngarau   |
|------------------------|--------------------------------------|--|---|
|                        |                                      | Te Whāinga Paetae  | Ngā Whāinga   |
| Te Ine me Te Ahuahanga | Te Ine<br>Te Hanga                   | Ko te waihanga i te āhua rānei, i te hoahoa rānei mō tētahi āhua, hei wāhanga mō te mokowā taiao. Tērā pea ka waihangatia, ka whakamaheretia rānei he tauira ā-hinengaro, ka meahia rānei hei waitohu.   | Tautuhia ai, whakarōpūhia ai ngā hanga, tae atu ki ngā āhua me ngā tauira, i runga anō i ngā āhuatanga o tēnā, o tēnā, arā, i runga i ngā pānga o roto i ngā āhua me ngā tauira, pērā me te hangarite me ngā panoni.<br>Ko te mārama me te whakamahi āhua mokowā me ngā whakaaturanga o ngā taonga.                     |
|                        | Te Wāhi me te Ahuahanga              | Ko te torotoro i te taiao o te tangata me te whakariterite i ngā ariā me ngā tohu o taua taiao ki ngā tauira, ki ngā hoahoa, ki ngā whakaahua, ki ngā kupu, ki te aha, ki te aha.  | Ko te mārama me te whakamahi i ngā pūnaha hei tautohu i te pūwahi me te tātai ara haere.  |
|                        | Te Panoni                            | Ko te whakatātai āhua kia pai ai te whakatairiterite, te whakamahi i te tinana, i ngā taura/aho hei taputapu ine ki ngā waeine, ki ngā kupu ine.   | Ko te whakamahi i ngā tau me ngā waeine hei ine, hei whakaahua i ngā taonga me ngā pāpono hei rahinga, me te whakaawhiwhitanga tika mō te horopaki.   |
| Te Tau me te Taurangi  | Te Mātauranga Tau<br>Ngā Rautaki Tau | Te whakamahi tikanga ahurea hei whakatairiterite, hei whakaraupapa. Ko te whakamāori anō i te reo motuhake o te pāngarau, ōna pūnaha tatau, ōna ingoa, ōna tikanga tatau, me te whakamahi i ngā āhuatanga wetereo o te Māori me te whai wāhi mai o te reo ā-iwi. | Hanga ai ngā pūnaha tau hei whakatau i te maha o ngā rōpū rānei, o ngā taonga rānei, o ngā wāhanga o ngā taonga rānei. Ko te tere me te tāwariwari ki te whakaotioti rapanga e kawea ai he paheko tau, te mārama ki te rahi tauriterite o aua tau, me te whakamārama i te otinga i runga anō i te horopaki.             |
|                        | Te Tauira me te Pānga                | Ahakoia te whenua, he nui ngā momo tauira e haere ana. He nui hoki ngā pānga kei waenganui i tēnā, i tēnā āhuatanga o te taiao.  | Ko te hononga kei waenga i ētahi taurangi e rua. Mā te kupu, mā te tūtohi, mā te whārite, mā te takirua raupapa, mā te kauwhata rānei e whakaatu te pānga o tētahi taurangi ki tētahi. Ka whakaaturia te pānga kei waenganui i ngā tau, ngā inenga me ngā kīanga ki ngā tohu/kīanga rite, ki ngā tohu/kīanga rite kore. |
| Te Tauanga             | Te tuhurutanga Tauanga               | Ko te rapu i ngā huarahi hei whakaatu i te āhuatanga o ngā putaputa āhua, ahakoia he whakapono, he wairua, he pūtaiao rānei.   | Ko te kohikohi, te whakaatu me te tātari raraunga e pā ana ki tētahi kaupapa kia puta he māramatanga mō taua kaupapa. Ko te arotake kia mōhiotia ai ngā āhuatanga whaihua me ngā āhuatanga kāore e tino whaihua ana.  |
|                        | Te Tūponotanga                       |  | Ko te tūponotanga, he matapae, he ine rānei mehemea ka hua ake tētahi āhuatanga, kāore rānei. Ka taea te kimi tūponotanga mā te tūponotanga tātai, mā te whakamātautau rānei.   |

# Ngā Whakaaro Tukanga (He kōrero whakamārama nō 'Te Tukutuku Ako mō te Pāngarau')

| Paearu Mahi 1.1  | Paearu Mahi 1.2   | Paearu Mahi 1.3   |
|--|---|---|
| <p><b>Whakaaro Tukanga 1:</b><br/>Te whakakaupapa i ngā pūāhua ki ngā tikanga pāngarau.</p>  | <p><b>Wakaaro Tukanga 2:</b><br/>Te whakamahi i ngā tikanga pāngarau ki ngā tini pūāhua whaitake.</p>   | <p><b>Whakaaro Tukanga 3:</b><br/>Te whakamāori me te arotake i te whaitake o ngā pūāhua pāngarau.</p>  |
| <p>Ngā Akoranga Tāpua:</p> <ul style="list-style-type: none"> <li>ko te tautuhi i ngā tikanga pāngarau e tika ana hei whakatutuki i ngā wero o ngā tini pūāhua;</li> <li>ko te whakakaupapa me te whai i te mahere hei whakamahi i ngā tikanga pāngarau;</li> <li>ko te whiriwhiri i ngā whakaahuhanga pāngarau e tika ana, arā, ngā kauwhata, ngā tūtohi, ngā hoahoa, ngā whārite, ngā kīanga.</li> </ul> | <p>Ngā Akoranga Tāpua:</p> <ul style="list-style-type: none"> <li>ko te whiriwhiri me te whakahāngai i ngā ariā pāngarau me ngā ariā tauanga;</li> <li>ko te whiriwhiri me te whakamahi i te aronga tātai/aronga tauanga e tika ana (tae atu ki ngā tātairanga matihiko);</li> <li>ko te whai i te taumata o te tika e hāngai ana ki te pūāhua (tae atu ki te whakawhiwhitanga).</li> </ul> | <p>Ngā Akoranga Tāpua:</p> <ul style="list-style-type: none"> <li>ko te arohaehae i te whaitakenga o ngā whakaotinga, o ngā putanga, o ngā aronga, me te whakaaroaro ki ngā tikanga i kōwhiria hei whakatutuki i te mahi;</li> <li>ko te tāpae i ngā whakataunga whai taunakinga;</li> <li>ko te whakamahi arohaehae whakawā e pā ana ki ngā kōrero i runga i ngā whakaaro pāngarau/tauanga.</li> </ul> |

| <p><b>Te Reo Matatini o te Pāngarau</b><br/>Te whakaaro whaitake me te whakawhiwhiti kōrero, ā-pāngarau nei, ki te reo Māori.</p>   | <p><b>Ngā Horopaki Ahurea-pāpori</b><br/>Te tautohu me te whakamāori i ngā hanga ahurea-pāpori i ngā pūāhua/horopaki pāngarau, tae atu ki te tūhonohono i te pāngarau, te ahurea, me te hāpori (hei tauira, mā roto mai i tētahi anga hangarite ahurea).</p>   |
|---|--|
| <p>Ngā Akoranga Tāpua:</p> <ul style="list-style-type: none"> <li>ko te tautuhi whakawhiwhiti kōrero o ngā tikanga pāngarau ki ngā kupu motuhake, ki te wetereo, ki te tikanga kupu e hāngi ana ki te pūāhua;</li> <li>ko te whakawhiwhiti kōrero o ngā tikanga pāngarau ki ngā rautaki maha hei kōrerorero whakaaro pāngarau (ā-tuhituhi, ā-waha, ā-ataata);</li> <li>ko te whakamahi i ngā whakaahuhanga pāngarau motuhake a Māori ake, hei whakaatu auaha nei, tōtika nei, i ngā ariā pāngarau.</li> </ul> | <p>Ngā Akoranga Tāpua:</p> <ul style="list-style-type: none"> <li>ko te whakatau atu me te tūhono i te pāngarau ki ngā horopaki ahurea-pāpori;</li> <li>ko te tautohu i ngā whakaaro ahurea-pāpori e noho tūāpapa mai ana ki ngā tini horopaki/pūāhua. Hei tauira: <ul style="list-style-type: none"> <li>ko ngā waiaro, ngā whakaaro me ngā uara taketake o ngā tāngata kei roto i aua pūāhua.</li> <li>ko ngā painga me ngā wero ka pā ki ngā tāngata me ngā whānau kei roto i tētahi pūāhua pāngarau.</li> <li>ko te pānga ki a Papatūānuku o te whakahāngaitanga atu o te pāngarau ki te pūāhua.</li> </ul> </li> <li>ko te mārama ki te tikanga o te mātauranga Māori me te ahurea-pāpori kei roto i te pūāhua pāngarau;</li> <li>ko te whakahoropaki i te pūāhua - hei tauira, ki ngā kawenga o ia rā, ki ngā mahi a te kirirarau i te hāpori, ki te mahi - e puta ai he whakataunga i runga i te mārama, e pai ake ai rānei te orange o ngā tāngata.</li> </ul> |

# NGĀ ARA TOHU HEI ĀWHINA I TE KAIKO

He āwhina ēnei whārangi i te kaiako, ā, he tūhono i ngā mahere me ngā rauemi whakaako i **Ngā Whanaketanga (Taumata 4-5)** ki

## Ngā Whenu Pāngarau:

- i. Te Ine me te Āhuahanga
- ii. Te Tau me te Taurangi
- iii. Te Tauanga



*He mea tango i ngā pukapuka a te Tāhūhū.*





# WHENU: Te Ine me te Āhuahanga NGĀ WHANAKETANGA (Taumata 5) - Te Ine me te Hanga

| Whāinga Paetae  | Whanaketanga 5a<br>Ngā Whainga   |   | Taurira Mahi  |
|---|--|---|---|
| <p><b>Te Ine</b></p> <ol style="list-style-type: none"><li>1. Ka whakaoti rapanga whaitake:<ul style="list-style-type: none"><li>• ka kōwhiri, ka whakamahi i ngā waeine, ngā taputapu me ngā āwhata e hāngai ana mō te roa, te horahanga, te rōrahi (kītanga), te papatipu (taumaha), te paemahana, te koki me te wā</li><li>• ka whakawhitiwhiti waeine</li></ul></li><li>2. Ka whakaputa, ka whakamahi hoki i ngā ture hei tātai i te paenga me te horahanga o tētahi taparau</li><li>3. Ka whakaputa, ka whakamahi hoki i ngā ture hei tātai i te rōrahi o tētahi poro</li><li>4. Ka mārama ki te whaitakenga o tētahi inenga</li></ol> <p><b>Te Hanga</b></p> <ol style="list-style-type: none"><li>1. Ka whakaputa, ka whakamahi i ngā tikanga koki o te rārangi pūtahi, te rārangi whakarara me te taparau</li><li>2. Ka whakamahi taputapu ki te waihanga taparau māmā</li><li>3. Ka tuhi raumata tōtika hei hanga matarau māmā</li><li>4. Ka tuhi i ngā momo hoahoa hei whakaatu āhua ahu-3</li><li>5. Ka whakamahi ōwehenga pākoki me te ture a Pythagoras ki te whakaoti rapanga e whai wāhi mai ana te tapatoru hāngai.</li></ol> | <p>Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:</p> <ul style="list-style-type: none"><li>• ngā ture hei tātai tapa, paenga, horahanga, koki, horahanga mata, rōrahi hoki o ngā āhua whānui.</li><li>• ngā tikanga koki o te rārangi pūtahi, te rārangi whakarara, me ngā taparau.</li></ul> | <p>He taurira ēnei o ngā āhutanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:</p> <ul style="list-style-type: none"><li>• te whakamahi i te ture a Pythagoras.</li><li>• te tikanga o te koki tauroto, te koki tauaro, te koki taurite me te koki tauwhiti.</li></ul> | <p>Mai i te pukapuka <a href="#">He Aratohu mā te Pouako</a>:</p> <ul style="list-style-type: none"><li>• Te Ine me te Hanga 5a Rapanga 7 (Whārangi 31).</li><li>• Te Ine me te Hanga 5a Rapanga 8.</li></ul> |

## WHANAKETANGA 5a

### Te Ine

| Ngā Whāinga   |  |                       |
|---|--|-----------------------|
| Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:  | He tauira ēnei o ngā āhuatanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga: | <sup>7</sup> formulae |
| <ul style="list-style-type: none"> <li>ngā ture<sup>7</sup> hei tātai tapa, paenga, horahanga, koki, horahanga mata, rōrahi hoki o ngā āhua whānui</li> </ul> | <ul style="list-style-type: none"> <li>te whakamahi i te ture a Pythagoras</li> </ul>      |                       |

### Te Reo Matatini o te Pāngarau

| Hei tauira kupu  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>ture tātai</li> <li>mati ā-ira</li> </ul> | <ul style="list-style-type: none"> <li>pūtakerua</li> <li>tātaitai</li> </ul> | <ul style="list-style-type: none"> <li>tāroa</li> <li>pūrua</li> </ul> |

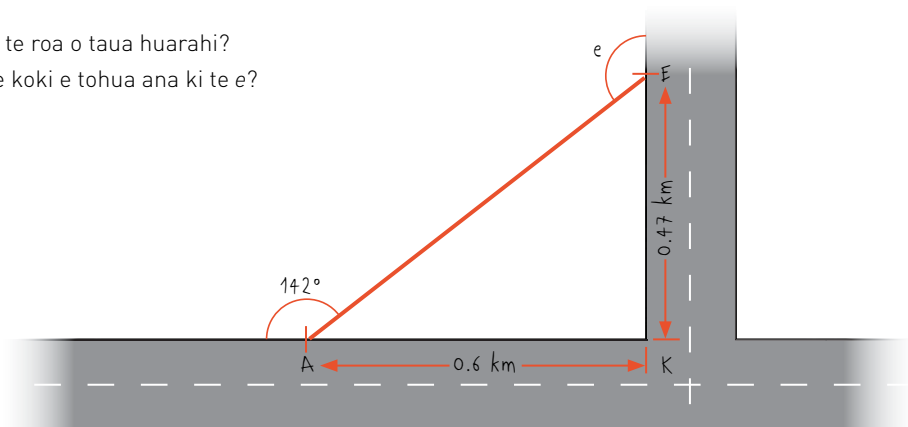
### He Tauira Rapanga

#### Te Ine me te Hanga 5a

#### Rapanga 7

He mahere tēnei o tētahi kokonga huarahi. E whakaarohia ana kia hangaia he huarahi torotika mai i te A ki te E (te rārangi whero).

- E hia manomita te roa o taua huarahi?
- E hia te rahi o te koki e tohua ana ki te e?



- Kia tika te whakamahi i te ture a Pythagoras hei tātai i te tāroa o te tapatoru, me te whakamārama i ngā mahi:

Ko tā te ture a Pythagoras e mea ana, ko te tapeke o ngā pūrua o ngā tapa poto, he rite ki te pūrua o te tapa roa o tētahi tapatoru hāngai. Arā:

$$a^2 + e^2 = i^2$$

$$0.6^2 + 0.47^2 = AE^2$$

$$0.76 = AE \text{ (mā te tātaitai, kia 2 ngā mati ā-ira)}$$

- Kia tika hoki te whiriwhiri i te koki e, me tētahi whakamārama pēnei:

E 38° te koki KAE nā te mea ko te 180 te tapeke o ngā koki o tētahi rārangi torotika (142 + 38 = 180).

Nō reira, e 52° te koki KEA nā te mea 180 te tapeke o ngā koki o tētahi tapatoru (38 + 90 + 52 = 180).

Nō reira 128° te koki e, nā te mea 180 te tapeke o ngā koki i te rārangi torotika (52 + 128 = 180).



**WHENU: Te Ine me te Āhuahanga  
NGĀ WHANAKETANGA (Taumata 5) - Te Wāhi, te Ahunga, me te Pānoni**

| <b>Whāinga Paetae</b>   | <b>Whanaketanga 5a<br/>Ngā Whainga</b>  |   | <b>Tauira Mahi</b>   |
|---|---|---|--|
| <p><b>Te Wāhi me te Ahunga</b></p> <p>1. Ka whakaatu, ka whakamārama, ka whakamahi i te wāhi noho (taunga) o tētahi mea, me te ahunga:</p> <ul style="list-style-type: none"><li>• ngā tōpito</li><li>• ngā koki o te kāpehu</li><li>• ngā āhuatanga o te taiao</li><li>• te tukutuku (takirua raupapa)</li><li>• te mahere</li></ul> <p><b>Te Panoni</b></p> <p>1. Ka tautuhi, ka whakamārama, ka whakamahi i te hangarite o tētahi āhua ahu-2, āhua ahu-3.</p> <p>2. Ka tautuhi, ka whakamārama, ka whakamahi i ngā āhuatanga pūmau o ngā panoni.</p> | <p>Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:</p>   | <p>He tauira ēnei o ngā āhutanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:</p>  | <p>Mai i te pukapuka <a href="#">He Aratohu mā te Pouako</a>:</p> <ul style="list-style-type: none"><li>• Te Wāhi, te Ahunga me te Panoni 5a Rapanga 9 (Whārangī 32)</li><li>• Te Wāhi, te Ahunga me te Panoni 5a Rapanga 10 (Whārangī 33)</li></ul> |
|   | <ul style="list-style-type: none"><li>• te hangarite o ngā koki o ngā rārangi pūtahi, ngā rārangi whakarara, ngā taparau, me ngā matarau.</li><li>• te whakaatu me te whakamārama panoni ki te papa kauwhata.</li></ul> | <ul style="list-style-type: none"><li>• te whakamahi pere hei whakaatu nekehanga.</li><li>• te whakamahi mahere me ōna āhuatanga katoa (pērā i te tukutuku me te āwhata) hei whakaahua huarahi.</li></ul> |  |

## WHANAKETANGA 5a

### Te Wāhi, te Ahunga, me te Panoni

| Ngā Whāinga  |  |  |
|--|--|--|
| Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:   | He tauira ēnei o ngā āhuatanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:   | <sup>13</sup> symmetry<br><sup>14</sup> intersecting lines<br><sup>15</sup> parallel lines |
| <ul style="list-style-type: none"> <li>te hangarite<sup>13</sup> o ngā koki o ngā rārangi pūtahi<sup>14</sup>, ngā rārangi whakarara<sup>15</sup>, ngā taparau, me ngā matarau</li> <li>te whakaatu me te whakamārama panoni ki te papa kauwhata.</li> </ul> | <ul style="list-style-type: none"> <li>te whakamahi pere<sup>16</sup> hei whakaatu nekehanga</li> <li>te whakamahi mahere me ōna āhuatanga katoa (pērā i te tukutuku<sup>17</sup> me te āwhata<sup>18</sup>) hei whakaahua huarahi.</li> </ul> | <sup>16</sup> vector<br><sup>17</sup> grid<br><sup>18</sup> scale                          |

### Te Reo Matatini o te Pāngarau

| Hei tauira kupu  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li>pere</li> <li>mātātuhi</li> <li>ahopou</li> </ul> | <ul style="list-style-type: none"> <li>rārangi whakarara</li> <li>mātāoroko</li> <li>āwhata</li> </ul> | <ul style="list-style-type: none"> <li>rārangi pūtahi</li> <li>ahopae</li> </ul> |
| Hei tauira whakaahuahanga  |  |  |
| <ul style="list-style-type: none"> <li>he mahere āwhata</li> </ul>                       | <ul style="list-style-type: none"> <li>te pere</li> </ul>  | <ul style="list-style-type: none"> <li>te papa kauwhata</li> </ul>               |

### He Tauira Rapanga

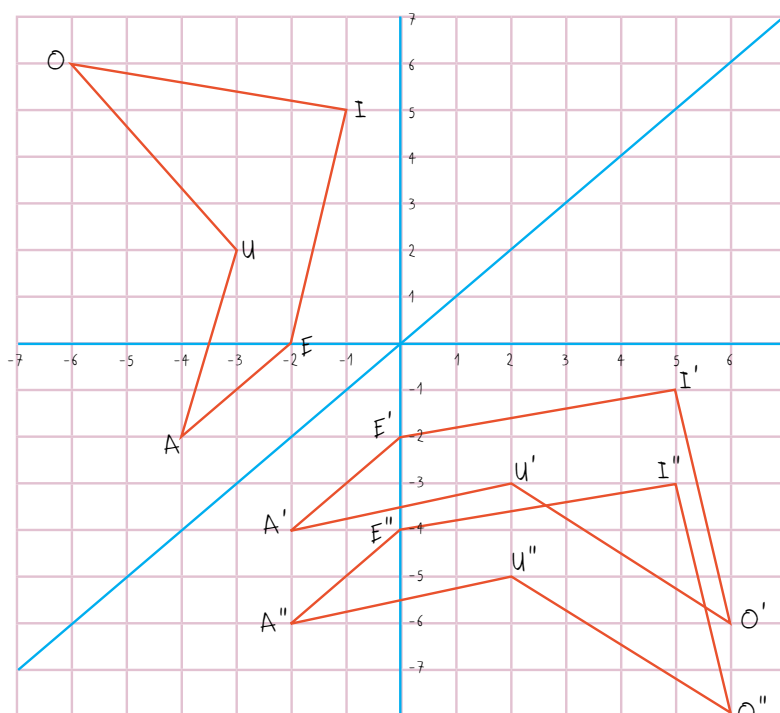
Te Wāhi, te Ahunga, me te Panoni 5a

#### Rapanga 9

**Rauemi:** He pepa tukutuku.

Ka mahi takirua ngā ākonga. Mā ia ākonga e tuhi tētahi āhua tapa torotika ki te papa kauwhata, me ngā panoni e rua o taua āhua. Kātahi ka whakamōhio atu ki te hoa i ngā pūwāhi o ngā akitu o te āhua me tōna mātātuhi i muri i ngā panoni e rua. Ko tā te hoa, he āta whiriwhiri i ngā panoni e rua. Hei tauira:

Koia nei te āhua, tōna mātātuhi me ngā panoni e rua (ka whakaatanga i te rārangi  $y = x$ , kātahi ka nekea whakararo kia rua):



Kia tika te whakaatu pūwāhi (takirua raupapa). Kia tika hoki te whiriwhiri me te whakamārama i ngā panoni.



## WHANAKETANGA 5a

Te Wāhi, te Ahunga, me te Panoni 5a

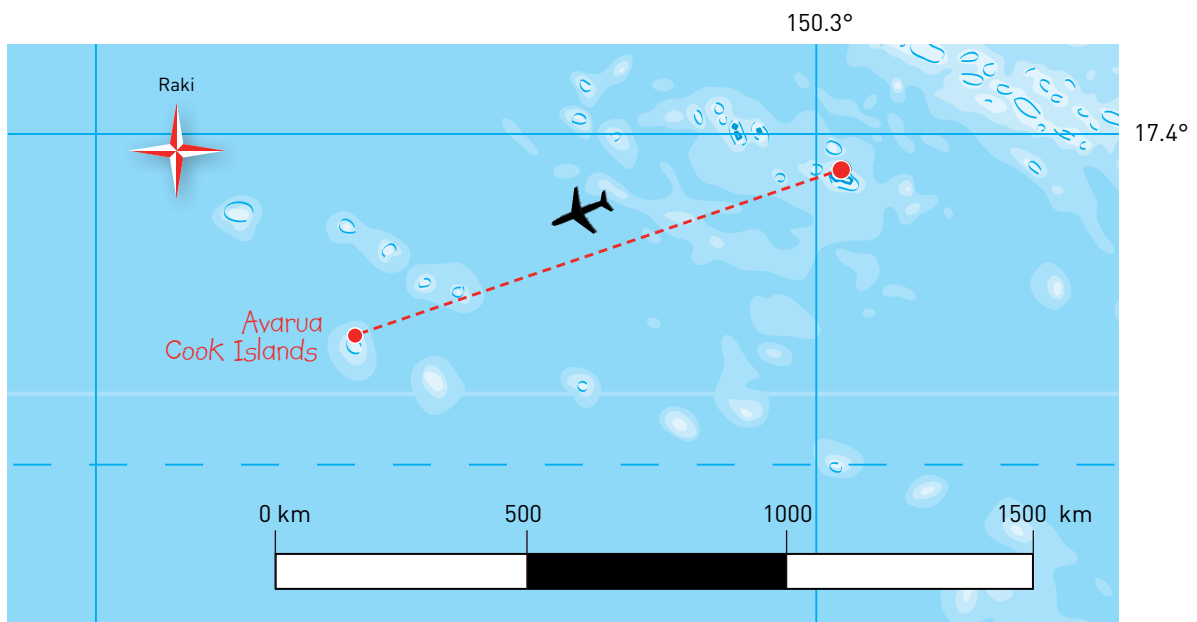
### Rapanga 10

**Rauemi:** He pukapuka mahere, he rūri, he ine-koki.

Ka mahi takirua ngā ākonga. Mā ia ākonga e whiriwhiri ētahi tāone e rua i tētahi mahere. Kātahi ka whakamōhio atu ki te hoa i te wāhi noho o tētahi o ngā tāone (mā te whakamahi i tōna ahopae me tōna ahopou) me te ahunga, te tawhiti hoki o te tāone tuarua. Ko tā te hoa, he kimi i te tāone tuatahi, me te whiriwhiri anō i te tāone tuarua.

Kia tika te whakamahi i te ahopae me te ahopou, te āwhata o te mahere, ngā ahunga o te kāpehu me te ine-koki hei whakamārama, hei whiriwhiri i ngā tāone. Hei taurira:

- I rere atu au i te tāone e pātata ana ki te haukotinga o te ahopae  $17.4^\circ$  ki te tonga me te ahopou  $150.3^\circ$  ki te uru. E  $252^\circ$  te ahunga o taku wakarererangi,  $1,000\text{km}$  te tawhiti. Ka tau atu ki hea?





# WHENU: Te Tau me te Taurangi NGĀ WHANAKETANGA (Taumata 5) - Te Tau

| Whāinga Paetae   | Whanaketanga 5a<br>Ngā Whainga   |   | Taurira Mahi   |
|--|--|---|--|
| <p><b>Te Mātauranga Tau</b></p> <p>1. Ka mōhio ki ngā tikanga o te taupū me te tānga ngahuru.</p> <p><b>Ngā Rautaki Tau</b></p> <p>1. Ka kōwhiri, ka whakamārama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wāhi mai ana te tau tōpū, te hautau, te tau ā-ira, te ōrau, te ōwehenga, te pāpātanga, me te taupū:</p> <ul style="list-style-type: none"><li>• rautaki tatau,</li><li>• rautaki tāpiripiri,</li><li>• rautaki whakarea,</li><li>• rautaki pānga riterite.</li></ul> <p>2. Ka mārama ki te whaitakenga o te otinga.</p> <p>3. Ka whiriwhiri tauwehe pātahi, taurea pātahi hoki.</p> | <p>Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:</p>  | <p>He taurira ēnei o ngā āhutanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:</p>   | <p>Mai i te pukapuka <i>He Aratohu mā te Pouako</i>:</p> <ul style="list-style-type: none"><li>• Te Tau 5a Rapanga 1</li><li>• Te Tau 5a Rapanga 2</li><li>• Te Tau 5a Rapanga 3</li><li>• Te Tau 5a Rapanga 4</li><li>• Te Tau 5a Rapanga 5</li></ul> |
|  | <ul style="list-style-type: none"><li>• ngā tau tōpū me ngā tau hautanga.</li><li>• te kōwhiri i te rautaki paheko tau e tino hāngai ana ki te horopaki.</li></ul> | <ul style="list-style-type: none"><li>• ngā tikanga me te whakamahinga o te tānga ngahuru hei tohu i ngā tau tino nui, tino iti hoki.</li><li>• ngā momo hātepe whakaoti paheko hautau.</li></ul> |  |



## WHENU: Te Tau me te Taurangi NGĀ WHANAKETANGA (Taumata 5) - Te Taurira me te Pānga

| Whāinga Paetae  | Whanaketanga 5a<br>Ngā Whainga  |   | Taurira Mahi   |
|---|---|---|--|
| <ol style="list-style-type: none"><li>1. Ka tuhi whārite rārangi ki te whakatauirā pūāhua whaitake, ka whakaoti hoki i te whārite.</li><li>2. Ka whakawhānui i ngā tikanga o roto i ngā rautaki tau hei tūāpapa mō ngā tikanga taurangi.</li><li>3. Ka whakaatu i te ōritenga o ngā ture e hāngai ana ki tētahi pānga rārangi kotahi.</li><li>4. Ka rāwekeweke kīanga i runga i ngā tikanga taurangi.</li><li>5. Ka whakaatu pānga rārangi, pānga pūrua, pānga taupū ki te kauwhata hei whakatauirā i tētahi pūāhua whaitake.</li></ol> | Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:                              | He taurira ēnei o ngā āhutanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:  | <p>Mai i te pukapuka <a href="#">He Aratohu mā te Pouako</a>:</p> <ul style="list-style-type: none"><li>• Te Taurira me te Pānga 5a Rapanga 6 (Whārangi 30).</li></ul> |
|   | <ul style="list-style-type: none"><li>• te whārite me te kauwhata rārangi hei whakaatu pānga.</li></ul> | <ul style="list-style-type: none"><li>• te tikanga o ngā haukotinga tuaka me te rōnaki o tētahi kauwhata rārangi, me te puta o ēnei i rō whārite.</li></ul> |  |

## WHANAKETANGA 5a

### Te Taura me te Pānga

| Ngā Whāinga   |   |   |
|---|---|---|
| Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:                              | He taura ēnei o ngā āhuatanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:   | <sup>5</sup> axis intercept<br><sup>6</sup> slope |
| <ul style="list-style-type: none"> <li>te whārite me te kauwhata rārangi hei whakaatu pānga.</li> </ul> | <ul style="list-style-type: none"> <li>te tikanga o ngā haukotinga tuaka<sup>5</sup> me te rōnaki<sup>6</sup> o tētahi kauwhata rārangi, me te puta o ēnei i rō whārite.</li> </ul> |   |

### Te Reo Matatini o te Pāngarau

| Hei taura kupu   |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>rōnaki</li> <li>tuaka pae</li> <li>whārite</li> </ul> | <ul style="list-style-type: none"> <li>haukotinga-y</li> <li>tuaka pou</li> <li>taurangi</li> </ul> | <ul style="list-style-type: none"> <li>haukotinga-x</li> <li>ture</li> <li>kauwhata rārangi</li> </ul> |

### He Taura Rapanga

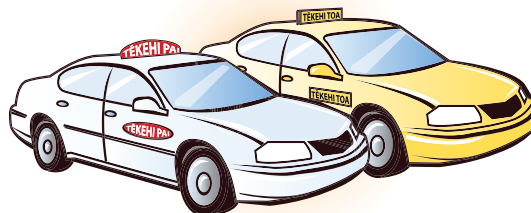
#### Te Taura me te Pānga 5a

#### Rapanga 6

E rua ngā kamupene tēkehi (waka tonu). Koia nei ngā utu:

- Tēkehi A: \$5.00 mō te tonu me te \$3.00 mō ia manomita.
- Tēkehi E: \$3.00 mō te tonu me te \$4.00 mō ia manomita.

- Tuhia he ture ā-kupu hei tātai i ngā utu mō ngā tēkehi e rua nei.
- Tuhia he whārite hei tātai i ngā utu mō ngā tēkehi nei.
- Whakaaturia ngā whārite e rua ki tētahi kauwhata rārangi.
- He aha te rōnaki o ia kauwhata?
- Ko tēhea te tēkehi he māmā ake te utu? Whakamāramatia mai.



Kia tika te tuhi i ngā ture e rua nei:

Tēkehi A: Whakareatia te maha o ngā manomita ki te 3, ka tāpiri i te 5 hei tātai i te utu.

Tēkehi E: Whakareatia te maha o ngā manomita ki te 4, ka tāpiri i te 3 hei tātai i te utu.

Kia tika te tuhi i ngā whārite e rua nei:

Tēkehi A:  $u = 3k + 5$

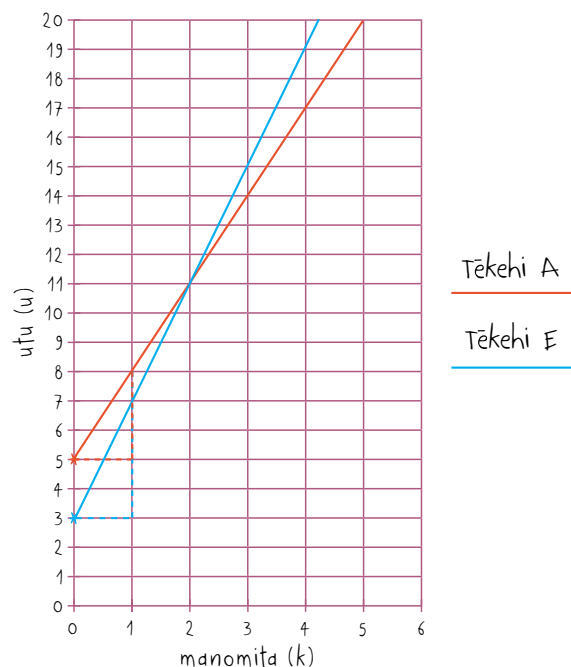
Tēkehi E:  $u = 4k + 3$

Kia tika te whakaatu i ngā whārite ki te kauwhata, mā te tautohu i te haukotinga-y me te whiriwhiri i te rōnaki o ia whārite:

Tēkehi A: Haukotinga-y = 5, Rōnaki = 3

Tēkehi E: Haukotinga-y = 3, Rōnaki = 4

He ōrite te utu o ngā tēkehi e rua nei mēnā e 2 km te tawhiti o te haere. Ki raro i te 2 km, ko te Tēkehi E te mea he māmā te utu. Ki runga ake i te 2 km, ko te Tēkehi A te mea he māmā te utu.





# WHENU: Te Tauanga NGĀ WHANAKETANGA (Taumata 5) - Te Tauanga

| Whāinga Paetae   | Whanaketanga 5a<br>Ngā Whainga  |   | Taurira Mahi  |
|--|---|---|---|
| <p><b>Te Tūhuratanga Tauanga</b></p> <p>1. Ka whai i ngā tikanga mō te tūhuratanga tauanga ki te whakamahere, ki te whakatutuki tirohanga tauanga, whakamātau tauanga hoki:</p> <ul style="list-style-type: none"><li>• ka whakatakoto pātai, tāpaetanga kōrero rānei.</li><li>• ka whakatau i ngā taurangi hei ine me ngā waeine e hāngai ana</li><li>• ka whakatau i te tukanga kohikohi raraunga</li><li>• ka kohikohi raraunga</li><li>• ka wehewehe raraunga</li><li>• ka āta whakaaro ki ngā take e taurangi ai ngā raraunga</li><li>• ka kōwhiri i ngā whakaari raraunga e whaitake ana, me te wehewehe anō i ngā raraunga e kitea ai ngā taurira, ngā ia, ngā pānga me ngā taurangitanga o ngā raraunga whakarōpū matatini</li><li>• ka whakatairite i ngā tīpako me te hono anō o ngā tīpako ki ngā taupori, mā te whakamahi i ngā inenga wēanga me te hora o ngā raraunga</li><li>• ka whakaputa pūrongo mō te pātai i tūhuratia</li></ul> <p>2. Ka arotake i ngā tukanga tauanga o tētahi tūhuratanga:</p> <ul style="list-style-type: none"><li>• te tukanga whai tīpako o te whiriwhiri i ngā inenga wēanga me te hora o ngā raraunga.</li><li>• te tika o ngā kōrero ka puta i te tūhuratanga.</li></ul> | <p>Ka whakaoti rapanga te ākongā, ka whakamārama otinga, e whai wāhi mai ana:</p> | <p>He taurira ēnei o ngā āhutanga me mātua mōhio te ākongā e tutuki ai tana whakaoti rapanga:</p> | <p>Mai i te pukapuka <a href="#">He Aratohu mā te Pouako</a>:</p> <ul style="list-style-type: none"><li>• Te Tauanga 5a Rapanga 11 (Whārangī 35).</li></ul> |

## WHANAKETANGA 5a

### Te Tauanga

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

### Te Reo Matatini o te Pāngarau

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

### He Tauira Rapanga

#### Te Tauanga 5a

#### Rapanga 11

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

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

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

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

**Kia mōhio te ākonga ki:**

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



**WHENU: Te Tauanga  
NGĀ WHANAKETANGA (Taumata 5) - Te Tūponotanga**

| <b>Whāinga Paetae</b>   | <b>Whanaketanga 5a<br/>Ngā Whainga</b>   |  | <b>Tauira Mahi</b>   |
|---|--|--|--|
| <p>5. Ka tūhura pūāhua tūponotanga papatahi, papa-maha hoki:</p> <ul style="list-style-type: none"><li>• ka whakamahi hautau, ōwehenga hoki ki te matapae, ki te whakamārama i ngā tuari raraunga ka puta i tētahi whakamātau tūponotanga.</li><li>• ka whakatau i te whaitake o te taurangitanga e kitea mai ana i ngā raraunga o tētahi whakamātau tūponotanga.</li></ul> | <p>Ka whakaoti rapanga te ākongā, ka whakamārama otinga, e whai wāhi mai ana:</p>      | <p>He tauira ēnei o ngā āhutanga me mātua mōhio te ākongā e tutuki ai tana whakaoti rapanga:</p> | <p>Mai i te pukapuka <a href="#">He Aratohu mā te Pouako</a>:</p> <ul style="list-style-type: none"><li>• Te Tūponotanga 5a Rapanga 12 (Whārangi 22)</li></ul> |
|   | <ul style="list-style-type: none"><li>• tētahi pūāhua tūponotanga papa-maha.</li></ul> | <ul style="list-style-type: none"><li>• te tātahi tūponotanga o tētahi pāpono raupapa.</li></ul> |  |

## WHANAKETANGA 5a

### Te Tūponotanga

| Ngā Whāinga   |  |   |
|---|--|---|
| Ka whakaoti rapanga te ākonga, ka whakamārama otinga, e whai wāhi mai ana:                          | He tauira ēnei o ngā āhuetanga me mātua mōhio te ākonga e tutuki ai tana whakaoti rapanga:                   | <sup>27</sup> multi-level<br><sup>28</sup> combined event |
| <ul style="list-style-type: none"> <li>tētahi pūāhua tūponotanga papa-maha<sup>27</sup>.</li> </ul> | <ul style="list-style-type: none"> <li>te tātai tūponotanga o tētahi pāpono raupapa<sup>28</sup>.</li> </ul> |   |

### Te Reo Matatini o te Pāngarau

| Hei tauira kupu  |
|--|
| <ul style="list-style-type: none"> <li>pāpono raupapa</li> <li>hoahoa rākau</li> <li>matapōkere</li> </ul> |
| Hei tauira whakaahuhanga   |
| <ul style="list-style-type: none"> <li>he hoahoa rākau</li> </ul>  |

### He Tauira Rapanga

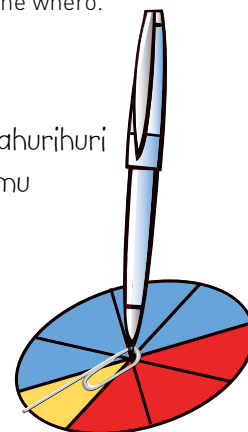
#### Te Tūponotanga 5a

#### Rapanga 12

Nā Wiremu i hanga tētahi pūrere takahurihuri, nā Māia hoki tētahi i hanga. E tohe ana a Wiremu he nui ake te tūponotanga ka tau tana pūrere ki te rohe whero i te tūponotanga ka tau te pūrere a Māia ki te rohe whero.

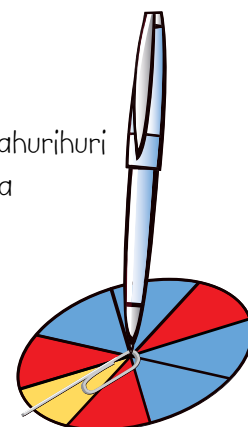
- He pēhea nei ō whakaaro ki te tohenga nei a Wiremu? Whakamāramatia mai he aha i pērā ai ō whakaaro.
- Whakamātauria tēnei tohenga a Wiremu. Tuhia he pūrongo mō tō whakamātau.

te pūrere takahurihuri  
a Wiremu



- Kia whaitake te matapae me te whakamārama. Hei tauira:
  - He ōrite te tūponotanga ka tau ki te rohe whero i ia pūrere takahurihuri, nā te mea he  $\frac{3}{8}$  te hautanga whero o ia porowhita.
  - He nui ake pea te tūponotanga ka tau ki te rohe whero i te pūrere a Māia, nā te noho wehe o ngā hauwaru whero e toru.
  - He nui ake pea te tūponotanga ka tau ki te rohe whero i te pūrere a Wiremu, nā te piri tahi o ngā hauwaru whero e toru.

te pūrere takahurihuri  
a Māia



- Kia tika te whakarite me te whakatutuki i te whakamātau tūponotanga. Arā pea:
  - Kia maha ngā takahurihanga o ia pūrere (ki te takiwā pea o te 50 te itinga iho), me te whakamārama mēnā he iti noa iho ngā takahurihanga, he nui kē atu te tūponotanga ka tītaha ngā putanga.
  - Ka whakaaturia ngā putanga ki tētahi tūtohi, tētahi kauwhata rānei.
  - Ka puta he whakataunga i te tohenga a Wiremu i runga i ngā putanga o te whakamātau.