



# Te Whakaranu Wai Ārani

**Te kaupapa:** Te Hautau, te Ōwehenga me te Pānga Riterite

**Te whenu:** Te Tau: Taumata 4

## Hei whakamārama

He tauira ngohe tēnei, hei aromatawai i te mōhio o te ākonga ki te hautau, te ūwehenga me te pānga riterite. Mā te āta mātakitaki me te āta whakarongo a te pouako ki te mahi a te ākonga, e mōhiotia ai te taumata o te ākonga, ngā wāhi e pakari ana, me ngā wāhi hei whakapakari ake.

I ētahi wā, mā te whakawhitihiti kōrero, mā te paku whakamārama rānei a te pouako, e kite ai te ākonga i te rautaki, i te huarahi rānei hei whakaoti i te ngohe.

E tika ana kia taunga te ākonga ki tēnei mea te whakaoti rapanga, te wetewete i ngā kōrero me ngā tohutohu, te āta whakaaro i te rautaki e hāngai ana, me te tūhonohono anō i ngā maramara mātauranga kei roto i tōna hinengaro. Koirā te āhua o tēnei ngohe aromatawai.

**Me tuku kia mahia tēnei ngohe aromatawai i muri i ngā akoranga e hāngai ana ki te hautau, te ūwehenga me te pānga riterite, kaua e tuku mātao noa iho.**

Kei ēnei pukapuka ētahi kōrero hei āwhina i a koe:

- Te Pukapuka Tuarua o Te Poutama Tau **Te Uui Aromatawai**. Ko ngā kōrero whānui e pā ana ki te aromatawai pāngarau.
- **Whanaketanga Pāngarau: He Aratohu mā te Pouako.** Ko ngā kōrero me ētahi tauira ngohe e hāngai ana ki ngā whanaketanga.
- Te Pukapuka Tuawhitu o Te Poutama Tau **Te Hautau, te Tau ā-Ira me te Ōrau**. Ko ngā kōrero whānui e pā ana ki ngā huatau matua o te hautau.

## Ngā tohutohu

Whakaaturia te kāri, ākene pea me pānui tahi me te ākonga, **kia mārama ai ngā kōrero**.

Hoatu he wā hei whakaoti mā te ākonga i ngā pātai.

Tonoa te ākonga kia whakamārama i āna mahi. Whakaahuangia ‘Te Whārangī Aromatawai mā te Pouako’, hei tuhi māu i āna whakamārama, me ō whakaaro, ō whakataunga aromatawai.

Āta tirohia ngā kōrero kei te whārangī ‘Hei Ārahi i te Aromatawai’ hei āwhina i a koe ki te whakatau i te taumata e hāngai ana ki te otinga a te ākonga. Kei tēnei whārangī te ngako o te pāngarau e hāngai ana ki tēnei ngohe, me ngā tauira whakamārama a ngā ākonga.

### **Me mātua mōhio te ākonga**

- ki te whiriwhiri hautanga
- ki te whiriwhiri ūwehenga
- ki te whakawhiti waeine ngahuru (mL ↔ L)
- ki ngā rautaki wāwāhi tau mō te whakawehe

### **Ngā kupu pāngarau e hāngai ana**

hautanga, L, mL, rōrahi

### **Ngā kupu e hāngai ana ki te horopaki**

hā, kukū, tāhoro, wai ārani, wai māori, whakaranu

### **Ngā rauemi**

- te kāri ngohe

### **Ētahi ngohe whakaako e hāngai ana**

#### **Te Poutama Tau: Pukapuka Tuaono**

- Te Pānga Riterite hei Whakaotī Whakawehenga (wh.88)
- Hākari (wh.92)

#### **Te Poutama Tau: Pukapuka Tuawhitu**

- Pēke Kākano (wh.50)
- Ranunga Peita (wh.87)
- Ranunga Peita Hikohiko (wh.105)

### **He tauira pātai hei kukume whakaaro**

- Whakamāramahia ngā mahi i oti i a koe i tō hinengaro. He aha tō mahi tuatahi? He aha tō mahi tuaruā?
- He aha koe i whiriwhiri ai i tēnā i te tuatahi?
- E mōhio ana koe ki tētahi atu rautaki e hāngai ana ki tēnā pātai?
- Me pēhea te whakatau tata i te otinga?

## Hei Ārahi i te Aromatawai

## Te Whakarau Wai Ārani: Taumata 4

Te pārāi	Kaupae 6 (Whanaketanga 3a/3e)	Kaupae 7 (Whandketanga 4d/4e)	Kaupae 8 (Whandketanga 4e/5a)
1. He aha ētahi whirihiringa e toru mō te maha o ngā kapu me te rōrahi o te uno ki ia kapu?	Ka whakamahia te tāpiri tāruarua hei whirihiri i ētahi tauwehe o te 2, o te 2,000 rānei. Hei tauira: <b>3a →</b> <ul style="list-style-type: none"> <li>• <math>0.5 + 0.5 + 0.5 + 0.5 = 2</math> (e 4 ngā kapu, 0.5L te rōrahi)</li> <li>• <math>400 + 400 + 400 + 400 = 2,000</math> (e 5 ngā kapu, e 400ml te rōrahi)</li> </ul>	Ka whakamahia ngā meka mōhio me te whakaaro pānga riterite hei whirihiri i ētahi tauwehe o te 2,000 rānei. Hei tauira: <b>4e →</b> <ul style="list-style-type: none"> <li>• <math>4 \times 5 = 20</math>, nō reira, <math>0.4 \times 5 = 2</math> (e 5 ngā kapu, 0.4L te rōrahi)</li> <li>• <math>2 \times 10 = 20</math>, nō reira, <math>200 \times 10 = 2,000</math> (10 ngā kapu, e 200ml te rōrahi)</li> </ul>	Ka whakamahia ngā meka mōhio, me te whakaaro pānga riterite. Hei tauira: <b>4e →</b> <ul style="list-style-type: none"> <li>• <math>2,000 \div 125 = 250</math>, <math>250 + 250 = 500</math>, <math>500 \times 4 = 2,000</math>. Nō reira, 16 ngā kapu, 125ml te rōrahi.</li> </ul>
2. Mēnā 125ml te rōrahi ka iħorongia ki ia ipu, e hia ngā kapu ka taea te whakaki?	Ka whakamahia te tāpiri tāruarua, te rearua rānei. Hei tauira: <b>3a →</b> $125 + 125 = 250, 250 + 250 = 500, 500 + 500 = 1,000, 1,000 + 1,000 = 2,000.$ Nō reira, 16 ngā kapu, 125ml te rōrahi.	Ka whakamahia te rearua me ngā meka mōhio. Hei tauira: <b>4a →</b> $125 + 125 = 250, 250 + 250 = 500, 500 \times 4 = 2,000.$ Nō reira, 16 ngā kapu, 125ml te rōrahi.	Ka whakamahia te rearua me ngā meka mōhio. Hei tauira: <b>4e →</b> $2,000 \div 125 = 16$
3. He aha te hautangā o te wai ārani me te wai māori ki ia ipu?	Ka hurihia te 2L hei ritamano (2,000ml), ka hurihia rānei te 400ml hei rita (0.4L). Ka whakamahia te tāpiri tāruarua hei whirihiri i te hautanga. Hei tauira: <b>3a →</b> $400 + 400 + 400 + 400 + 400 = 2,000, nō reira, ko te 400ml he rite ki te \frac{1}{5} o te 2L. Ko te \frac{1}{5} te hautanga o te wai ārani. E mōhio ana ki te \frac{5}{5} = 1, te 0.2 + 0.8 = 1 rānei, nō reira, e \frac{4}{5} te hautanga o te wai māori, ko te 0.8 rānei.$	Ka hurihia te 2L hei ritamano (2,000ml), ka hurihia rānei te 400ml hei rita (0.4L). Ka whakamahia te whakaaro pānga riterite hei kimi hautanga ōrite. Hei tauira: <b>4a →</b> <ul style="list-style-type: none"> <li>• <math>\frac{400}{2,000} = \frac{200}{1,000} = 0.2, \frac{1}{5}</math> rānei</li> <li>• E mōhio ana ki te <math>\frac{5}{5} = 1</math>, te <math>0.2 + 0.8 = 1</math> rānei, nō reira, e <math>\frac{4}{5}</math> te hautanga o te wai māori, ko te 0.8 rānei.</li> </ul>	Ka whakamahia te 2L hei ritamano (2,000ml), ka hurihia rānei te 400ml hei rita (0.4L). Ka whakamahia te whakaaro pānga riterite hei kimi hautanga ōrite. Hei tauira: <b>4e →</b> <ul style="list-style-type: none"> <li>• <math>2,000 \div 400 = 5</math> rānei</li> <li>• E mōhio ana ki te <math>\frac{5}{5} = 1</math>, te <math>0.2 + 0.8 = 1</math> rānei, nō reira, e <math>\frac{4}{5}</math> te hautanga o te wai māori, ko te 0.8 rānei.</li> </ul>
4. Mēnā e hiahia ana a Niwa ki te whakarau i te 9L o te uno, he pēhea neite rōrahi o te wai ārani me te rōrahi o te wai māori hei whakarau māna? E whai ana ia kia pērā tonu te kaha o te ārani o te uno.	Ka whakamahia te hautangā me te whakarearea, te whakawehi rānei. Hei tauira: <b>4a →</b> <ul style="list-style-type: none"> <li>• <math>\frac{1}{5}</math> te hautangā o te wai ārani:</li> <li>• <math>\frac{1}{5} \times 9 = 9 \div 5 = 1\frac{4}{5}</math> L</li> <li>• <math>\frac{1}{5} \times 9 = \frac{5}{5} + \frac{4}{5} = 1\frac{4}{5}</math> L</li> </ul>	Ka whakamahia te hautangā me te whakarearea, te whakawehi rānei. Hei tauira: <b>4e →</b> <ul style="list-style-type: none"> <li>• <math>9 \div 5 = 1.8 = 7.2</math> L</li> <li>• <math>9,000 - 1,800 = 7,200</math> ml</li> </ul>	Ka whakamahia te whakatirite ūwehenga ōrite. Hei tauira: <b>4e →</b> <ul style="list-style-type: none"> <li>• <math>300:1,500 = 1:5</math> 400:1,600 = 1:4</li> <li>• Nō reira, he ngoikore ake te hā o te ārani (nā te rāhi ake o te wai māori)</li> <li>• <math>\frac{300}{1,800} = \frac{1}{6}</math> te hautangā wai ārani</li> <li>• <math>\frac{400}{2,000} = \frac{1}{5}</math> te hautangā wai ārani</li> <li>• He nui ake te <math>\frac{1}{5}</math> i te <math>\frac{1}{6}</math>, nō reira, he ngoikore ake te hā o te ārani.</li> </ul>
5. Mēnā ka whakaraua te 300ml wai ārani me te 1.5L wai māori, he kaha ake, he ōrite, he ngoikore ake rānei te hā o te ārani?			

## Te Whārangi Aromatawai mā te Pouako

Te Whakaranu Wai Ārani: Taumata 4

Te pātai	Ngā aromatawai a te pouako
1. He aha ētahi whiriwhiringa e toru mō te maha o ngā kapu me te rōrahi o te unu ki ia kapu?	
2. Mēnā 125mL te rōrahi ka tāhorongia ki ia ipu, e hia ngā kapu ka taea te whakaki?	
3. He aha te hautanga o te wai ārani me te wai māori ki ia ipu?	
4. Mēnā e hiahia ana a Niwa ki te whakaranu i te 9L o te unu, he pēhea nei te rōrahi o te wai ārani me te rōrahi o te wai māori hei whakaranu māna? E whai ana ia kia pērā tonu te kaha o te ārani o te unu.	
5. Mēnā ka whakaranua te 300mL wai ārani me te 1.5L wai māori, he kaha ake, he ūrite, he ngoikore ake rānei te hā o te ārani?	