



NGĀ PUKA RAPANGA PĀNGARAU TAUNAKI

Ine

TAU 7-8

Pukapuka Kaiako

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Tūmahi 1

Whakataua te roa o te _____ me te hopu i te wae
whakataua tata me te inenga.
Whakataua tata -

Whakamahia he utauta ine hei ine i te roanga me te tāhopu i te tataua
inenga me te wae inenga.
Inenga -

Tahuri i te inenga ki tētahi wae kē.
Tahuringa inenga -
Tahuringa inenga -

Tukuruatia me ētahi atu tūemi e rima.

Hei āwhina i te kaiako

I te wā o te whakarewatanga, hoatu ki ngā ākonga ngā utauta inenga
rerekē (ngā tauine ngahuru me ngā ine rīpene) hei titiro me te kōrerorero.
Tonoa rātou kia titiro ki te tauine mita, ki te ine rīpene rānei me ngā
tohu. He aha te tohu o ngā tau? He aha ngā tohu tāpiri i waenganui i te
henimita? Kīia ko ngā mirimita he henimita kua wehea ki ngā wāhanga
tekau, ā, ka tuhia hei mm. E hia ngā mirimita i roto i te henimita? Ka aha
mēnā ka inea koe ki ngā wae rerekē? Whakangāwari i a rātou kia mōhio
ko te iti ake o te wae, ko te nui ake o te tataua inenga, ā, ko te tuarua.

Me whai tauine henimita, he tauine mita, me ngā ine rīpene.

Tonoa ngā ākonga kia ine i ngā momo ahanoa huri noa i te akomanga
kei raro iho i te mita, i waenganui i te 2 – 5 m me te neke atu i te 5 m te
roa.

Tūmanako kia hopu ngā ākonga mā te tuhi inenga tika, kia tika hoki te
ine mā te whakamahi i ngā wae whāranu (hei tauira, mita me ngā
henimita).

Whakangāwari i ngā ākonga ki te tahuri i waenga i ngā wae ngahuru
rerekē me te tūhono i tēnei ki te māramatanga o te pūtake tekau.

Mō te tūmahi takitahi, tapahia ngā tauine pakaru mai i te tātauira
kaitārua.

Wā toha

Tīpakohia ngā ākonga hei tiritiri ko wai e āhei ana ki te ine tika i ngā ahanoa
mā te whakamahi i ngā utauta inenga, ki te tahuri hoki i waenga i ngā wae
tau oti.

Whakaaro Matua

He maha ngā huanga ka
taea e mātou te ine tae
atu ki te roa, te papatipu,
te wā, te horahanga, te
koki, me te rōrahi. Ina ine
mātou, ka whakamahi
mātou i te whakataurite,
ka whakataurite mātou i
ngā āhuatanga pēnei kia
kite ko tēhea te mea nui
ake. Ka taea e mātou te
whakataurite mā te
whakamahi i ngā wae ine
paerewa, paerewa rānei, ā,
ka whakamahi mātou i te
reo pāngarau hei
whakaahua i ēnei.

E hiahiatia ana e te
māramatanga ariā o te
inenga te māramatanga o
te atawhai me te
whakawhitiwhiti. E
hiahiatia ana e te atawhai
te māramatanga ina
nekehia, ka wehewehea
rānei, ka mau tonu te rahi
o tētahi ahanoa. Ko te
mōhiotanga ka taea te
whakataurite i ngā ine o
ngā ahanoa e rua ki tētahi
ahanoa tuatoru. Hei tauira,
mēnā he nui ake te
taumaha o te ahanoa A i
te ahanoa B, ā, he nui ake
te taumaha o te ahanoa B
i te ahanoa C, kātahi ka nui
ake te taumaha o te
ahanoa A i te ahanoa C.

He mātāpono matua e pā
ana ki te inenga tae atu ki
te rahi o te wae inenga e
noho ōrite ana (tae atu ki
ngā wae ōrite, ngā
wehenga iti rānei), ka
tāruatia ngā wae kāore he
āputa, he inaki rānei (au),
he wāhanga te wae o te
katoa, ā, ka whakapuakina
te inenga hei tapeke o ngā
wae e whakamahia ana.

Hono

Mēnā i oma ahau i te 1.5 kiromita, e hia ngā mita ka oma ahau? E hia henimita tēnā? E hia mirimita? Mehemea i oma ahau i te 250 mita, e hia kiromita taku oma? E hia henimita tēnā? E hia mirimita?

Whainga ako: Ka ako ngā mokopuna ki te:

Whakatau tata te roa i roto i te awhe o ngā wae inenga (mm, cm, m).

Inea te roa ki te awhe o ngā wae inenga (mm, cm, m).

Tautuhia te whanaungatanga i waenga i ngā henimita me te mita.

Tautuhia te whanaungatanga i waenga i ngā mirimita me ngā henimita.

Tautuhia te pātahitanga i waenga i ngā mirimita me te mita.

Ngā Tūmahi Takitahi

Kimihia te paenga mō ēnei hanga. (tirohia ngā matua tārua).

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:

h.t., $724\text{ g} = 0.724\text{ kg}$.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Mita, henimita, mirimita, roa, wae inenga, kaute inenga, tauine.

Tūmahi 2

Kei te āwhina a Layla i tana Nanny ki te whiriwhiri tāpa mo ta rātau whare horoi. Me ine e ia te papa kia tika ai te nui o ngā tāpa. Anei te whakahuahua o tētahi tauira tauine o te papa i roto i te horoi horoi: (tirohia ngā matua tārua)

Me utu e rātou te 50 hēneti mō ia tāpa iti me te \$1 mō ngā tāpa waenganui, me te \$3 mō ngā tāpa nui. Ko tēhea te mahi pai ake?

Hei āwhina i te kaiako

Mō te tūmahi, hoatu ki ngā ākonga tētahi tapawhā nui, tētahi waenganui, kotahi tapawhā iti. Mēnā e hiahia ana ngā ākonga kia nui ake ngā tapawhā, kia rua ngā tapawhā kia taea ai e rātou te whakanoho i tētahi, kātahi ko te mea panuku hei ine i te horahanga.

Whakangāwari i ngā ākonga kia kite me āta whakatakoto ngā tapawhā kāore he āputa, he inaki rānei, ā, ka tīmata i te tīmatanga o ia haupae. Tautokona rātou kia mōhio ka taea e rātou te whakawhanake i tētahi huānga, i tētahi whakawaitara rānei o tētahi huānga hei tohu i te horahanga.

Kia mōhio mēnā ka inea e ngā ākonga te horahanga katoa ki te tapawhā, mēnā rānei ka tīmata rātou ki te mōhio he ōrite te tatau inenga o ia haupae, tiwae rānei, ā, ka taea kē te whakapūkete, ā, ka whakawhanakehia ngā tatauranga mai i tēnei.

Me whakatū ngā ākonga ki te whakawhanake i te tātai horahanga mō ngā tapawhā, kātahi ka whakawhānui i tēnei i roto i te tūhono.

Tūmanako kia whakamahi ngā ākonga i te reo inenga tae atu ki te horahanga.

Mō te tūmahi takitahi, hoatu ki ngā ākonga ngā tapawhā tae rerekē kua tapahia mai i te tātauira 1 cm² me tētahi pepa pātea.

Wā toha

Tīpakohia ngā ākonga hei tiritiri nā wai i whakamahi i te whakareatanga, i whakawhanake i tētahi huānga hei tohu i taua horahanga, kātahi ko te hunga kua whakawhanake i tētahi huānga hei kimi i te horahanga. Tautoko i ngā ākonga kia kite ko te wāhi ine e pā ana ki te whakakī i te mokowā ki ngā wae.

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

He mātāpono matua e pā ana ki te inenga tae atu ki te rahi o te wae inenga e noho ōrite ana (tae atu ki ngā wae ōrite, ngā wehenga iti rānei), ka tāruatia ngā wae kāore he āputa, he inaki rānei (au), he wāhanga te wae o te katoa, ā, ka whakapuakina te inenga hei tapeke o ngā wae e whakamahia ana.

Hono

Tonoa ngā ākonga ki te whakawhanake i tētahi ture me pēhea te kimi i te horahanga o te tapawhā ka mahi i ngā wā katoa. Whakamātauria ngā ture me te whakawhanake i tētahi whakamāramatanga tiritiri me te whakatikatika.

Whainga ako: Ka ako ngā mokopuna ki te:

Whakamahia ngā wae paerewa-kore (tapawhā) hei ine horahanga.

Kimihia te horahanga o te mata mā te whakamahi i te whakareatanga.

Whakawhanake i tētahi whakawhānuitanga mō te kimi i te horahanga o te tapawhā.

Whakamahia te reo inenga hei whakaahua me pēhea te ine horahanga.

Ngā Tūmahi Takitahi

I te āwhina a Layla i tana Nanny ki te mahi i te maha o ngā tāpa e hiahiatia ana e rātau mō ngā pakitara me te papa o te kaukau. Ka nekehia a ia, a, kaore i oti. Ka taea e koe te āwhina mā te mahi i tētahi huarahi tere ki te kimi i te horahanga me te maha o ngā tāpa e hiahiatia ana mō ia mokowā? (tirohia ngā matua tārua mō ngā atahanga).

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:

h.t., 724 g = 0.724 kg.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Horahanga, tapawhā, wae ine, tatau inenga.

Tūmahi 3

He aha te paenga me te rohe o te _____?

Whakamahia te tauine mita, mita tapawhā rānei.

Whakatau tata paenga (m):

Horahanga whakatau tata (m²)

Paenga inenga (m):

Horahanga inenga (m²):

Tahuri inenga paenga ki tētahi wae rerekē:

Tahuri inenga horahanga ki tētahi wae rerekē:

Tukuruatia kia toru ngā wā.

Whakaaro Matua

He mātāpono matua e pā ana ki te inenga tae atu ki te rahi o te wae inenga e noho ōrite ana (tae atu ki ngā wae ōrite, ngā wehenga iti rānei), ka tāruatia ngā wae kāore he āputa, he inaki rānei (au), he wāhanga te wae o te katoa, ā, ka whakapuakina te inenga hei tapeke o ngā wae e whakamahia ana.

Hei āwhina i te kaiako

I mua i tō whakarewatanga i te tūmahi, pātai atu ki ngā ākonga kia tahuri i waenga i ēnei inenga; 500 cm = ?? m, 0.75 km = ?? m, 45 mm = ?? cm; 2 km = ?? cm.

I te wā o te whakarewatanga, tonoa ngā ākonga kia whakamahi i ngā tauine mita hei hanga mita tapawhā. Whakamahia te kupu mita tapawhā me te whakatauiria me pēhea te hopu i te tatau inenga (hei tauira, 5 m²). Pātai atu ki ngā ākonga kia whakatau tata e hia ngā ākonga e tū ana i roto i te mita tapawhā, kātahi ka ine i tēnei. Whakaritea he tapawhā nui (6 m mā te 4 m) kia tohua mā te rīpene hīpoki, ki te tioka rānei i waho o te akomanga. Tonoa ngā ākonga kia whakamahi i ngā tauine mita ki te kimi i te paenga me te horahanga.

Whakangāwari i ngā ākonga ki te whakamahi i ngā tauine mita, mita tapawhā rānei hei ine i ngā mokowā nui, kātahi ka whakamahi i te whakarea hei mahi i te horahanga.

Tūmanako kia tuhia e ngā ākonga mā te whakamahi i ngā wae inenga tika me te whakapotonga.

Mō te tūmahi takitahi, me whai tūmahi i raro nei.

Wā toha

Tīpakohia ngā ākonga hei tiritiri e āhei ana ki te wehe tika i ngā mokowā nui ki ngā mita hei mahi i te horahanga ki ngā mita tapawhā me te tohu i tēnei, kātahi ka tahuri i waenga i ngā wae ngahuru rerekē mā te tātui i te mōhiotanga ka whakamahi ngā wae ngahuru i te taturinga tekau take.

Hono

Tonoa ngā ākonga ki te whakawhanake i tētahi huinga ture mō te tahuri i waenga i ngā wae ngahuru rerekē.

Whainga ako: Ka ako ngā mokopuna ki te:

Whakatau tata e hia te nui e uru ana ki te mita tapawhā.

Inea tika te paenga ki ngā mita me ngā ā-ira.

Tahuri i waenga i ngā wae ngahuru mō te roanga.

Inea te horahanga ki te mita tapawhā.

Tahuri i waenga i ngā wae ngahuru mō te horahanga.

Ngā Tūmahi Takitahi

Anei ngā tapuwae mo ngā whare hou mo te kura. (tirohia ngā matua tārua)

Ko ia tapawhā e tohu ana i te 1 m^2 .

Kimihia te horahanga me te paenga mō ia tapuwae.

Ki tōu whakaaro he aha te whakamahinga o ia mokowā?

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724 \text{ g} = 0.724 \text{ kg}$.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., $1\text{ g} = 1\text{ ml} = 1\text{ cm}^3$.

Tau 8

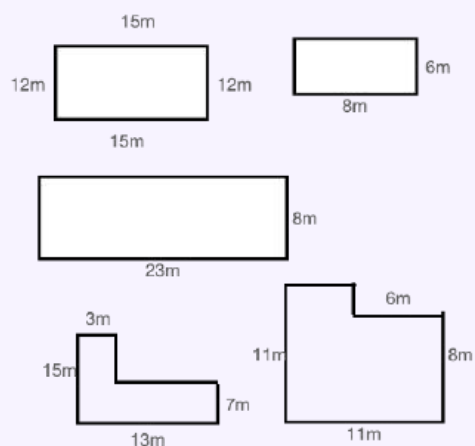
Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

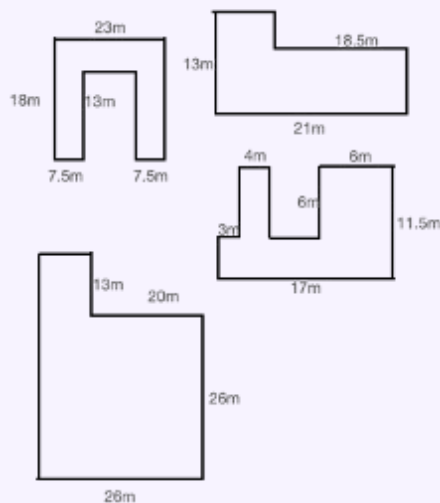
*Papatipu, orite ,
manokaramu, karamu,
āwhata.*

Tūmahi 4

Kimihia te horahanga me te paenga o ēnei hoahoa whare.



Tau 7



Tau 8

Hei āwhina i te kaiako

Kia mōhio mēnā ka whakamahi ngā ākonga i te whakarōpūtanga, te whakarea rānei hei kimi i te paenga me te horahanga o ia hanga hiato. Whakangāwari i ngā ākonga ki te hopu tika i ngā wae inenga mō ia mā te whakamahi i te whakapotonga.

Tūmanako kia whakamahi ngā ākonga i te reo inenga tae atu ki te horahanga me te paenga.

Wā toha

Tīpakohia ngā ākonga hei tiritiri nā wai i wehe i ngā hanga hiato, kātahi ka whakamahi i te whakarea hei kimi i te horahanga o ia wāhanga me te tāpiri tahi, kua hurihia rānei te hanga hiato hei tapawhā, kātahi ka kimi i te horahanga tapeke, ā, ka tangohia ngā wāhanga ngaro.

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

E hiahiatia ana e te māramatanga ariā o te inenga te māramatanga o te atawhai me te whakawhitiwhiti. E hiahiatia ana e te atawhai te māramatanga ina nekehia, ka wehewehea rānei, ka mau tonu te rahi o tētahi ahanoa. Ko te mōhiotanga ka taea te whakataurite i ngā ine o ngā ahanoa e rua ki tētahi ahanoa tuatoru. Hei tauira, mēnā he nui ake te taumaha o te ahanoa A i te ahanoa B, ā, he nui ake te taumaha o te ahanoa B i te ahanoa C, kātahi ka nui ake te taumaha o te ahanoa A i te ahanoa C.

He mātāpono matua e pā ana ki te inenga tae atu ki te rahi o te wae inenga e ōrite tonu ana (tae atu ki ngā wae ōrite, wehenga roto rānei), ka tāruatia ngā wae kāore he āputa, he inaki rānei (au), he wāhanga te wae o te katoa, ā, ka whakapuakina te inenga hei tau katoa o ngā wae e whakamahia ana.

Hono

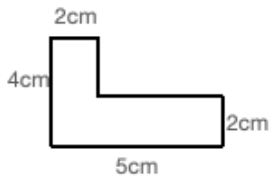
Kei te kimi a Litea i te wāhi o tēnei hanga. Koinei tana rongoa:

$$A = 5 \times 4 = 20 \text{ cm}^2$$

$$A = 3 \times 2 = 6 \text{ cm}^2$$

$$20 - 6 = 14 \text{ cm}^2$$

Kei te whakaae, kei te whakahē rānei koe ki tana rongoa?
Whakamāramatia he aha.



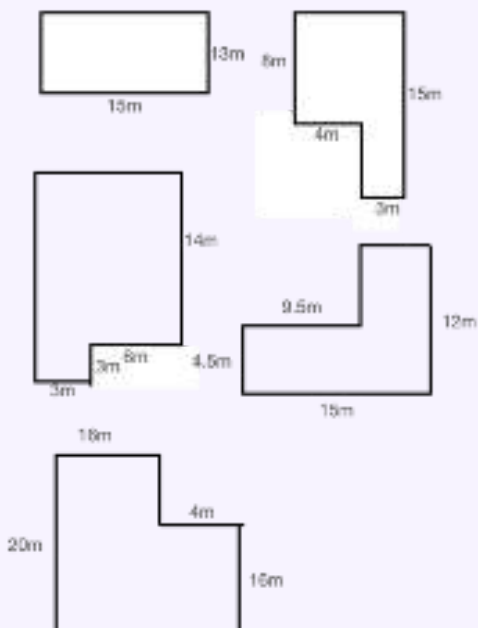
Whainga ako: Ka ako ngā mokopuna ki te:

Kimihia te paenga o tētahi hanga mā te whakamahi i ngā roanga taha.

Kimihia te horahanga o ngā hanga hiato.

Ngā Tūmahi Takitahi

Kimihia te horahanga me te paenga o ēnei hoahoa whare.



Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:

h.t., $724 \text{ g} = 0.724 \text{ kg}$.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Mita tapawhā, horahanga, paenga, wae ine, tatau inenga.

Tūmahi 5

Kimihia te horahanga me te paenga o ēnei tapatoru: Tirohia ngā matua tārua mō ngā tapatoru.

Hei āwhina i te kaiako

Mō te tūmahi, hoatu ki ngā ākonga he pepa tapawhā (1 cm²) me tētahi tauine. Whakangāwari i ngā ākonga ki te whakamahi i te pepa tapawhā hei ine i te horahanga o ngā tapatoru, kātahi ka tīmata ki te whakawaitara i te tukanga mō tēnei me te whakamātau he aha koe e hiahia ai ki te wehe ki te rua. Ka taea hoki e ngā ākonga te whakamahi i te tauine hei ine i te teitei o te tapatoru.

Tautokona ngā ākonga kia kite me pirau te hanga (he rite ki ngā hanga hiato), kia huri rānei hei tapawhā nui ake, kimi i te horahanga katoa kātahi ka tangohia.

Kia mōhio mēnā ka whakawhānuitia e ngā ākonga te tātai mō te kimi horahanga mō ngā tapawhā, ā, ka hoatu ki te horahanga o te tapatoru.

Mō te tūmahi takitahi, hoatu ki ngā ākonga he pepa tapawhā (1 cm²) me tētahi tauine.

Wā toha

Tīpakohia ngā ākonga hei tiritiri i te tuatahi nā wai i whakamahi i te pepa tapawhā hei hanga anō i te tapatoru ki tētahi tapawhā mā te tuhi anō, mā te tapahi rānei. Tīpakohia ētahi atu ākonga hei tiritiri nā wai i whakamahi i te tauine ki te kimi i te teitei, kātahi ka whakamahi tika i ngā inenga ki te kimi i te horahanga. Mēnā kāore anō ngā ākonga kia mahi i tēnei, whakatauirā tēnei hei rongōā i whakamahia e ngā ākonga i mua, me te whakaahua me pēhea tēnei e tūhono ai ki te pepa māiti.

Hono

Tonoa ngā ākonga ki te whakawhanake i tētahi ture mō te kimi i te horahanga o te tapatoru. Pātai atu ki a rātou kia whakamatau ka mahi te ture (hei tauira, haurua wā te teitei) ki te kimi i te horahanga o tētahi momo tapatoru.

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

E hiahia ana e te māramatanga ariā o te inenga te māramatanga o te atawhai me te whakawhitiwhiti. E hiahia ana e te atawhai te māramatanga ina nekehia, ka wehewehea rānei, ka mau tonu te rahi o tētahi ahanoa. Ko te mōhiotanga ka taea te whakataurite i ngā ine o ngā ahanoa e rua ki tētahi ahanoa tuatoru. Hei tauira, mēnā he nui ake te taumaha o te ahanoa A i te ahanoa B, ā, he nui ake te taumaha o te ahanoa B i te ahanoa C, kātahi ka nui ake te taumaha o te ahanoa A i te ahanoa C.

He mātāpono matua e pā ana ki te inenga tae atu ki te rahi o te wae inenga e ōrite tonu ana (tae atu ki ngā wae ōrite, wehenga roto rānei), ka tāruatia ngā wae kāore he āputa, he inaki rānei (au), he wāhanga te wae o te katoa, ā, ka whakapuakina te inenga hei tau katoa o ngā wae e whakamahia ana.

Whainga ako: Ka ako ngā mokopuna ki te:

Kimihia te horahanga o ngā tapatoru mā te whakamahi i te 1 cm^2 pepa.

Whakawhanakehia he ture/whakawhānuitanga hei kimi i te horahanga o te tapatoru.

Kimihia te horahanga o ngā tapatoru mā te whakamahi i te teitei ture kua whakareatia ki te roa, ā, ka wehea kia rua.

Ngā Tūmahi Takitahi

Tāngia tētahi tapatoru koki tika, 16 cm^2 te horahanga.

Tāngia tētahi tapatoru e 10 cm te roa o te pūtaka, ā, e 6 cm te roa o tētahi taha. He aha te rohe?

Tāngia tētahi tapatoru koki-kore me te horahanga 20 cm^2 .

Tāngia ngā tapatoru maha e taea ana e koe ki te horahanga 6 cm^2 .

Marautanga

Tau 7

Whakataua tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724\text{ g} = 0.724\text{ kg}$.

Tau 8

Whakataua tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

*Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:
h.t., 1 g = 1 ml = 1 cm³.*

Tau 8

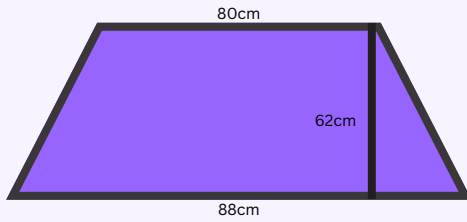
Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

*Mita tapawhā,
horahanga, paenga,
teitei, wae ine, tatau
inenga.*

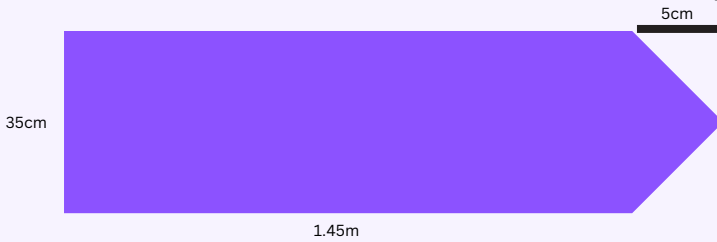
Tūmahi 6

Kei te hoahoa a Tiana i tētahi pakitara tautau, ā, e hiahia ana ki te whakarite he rawaka ōna rawa.



Mahia te inenga horahanga mo te kakahu.

Pēnei te āhua o te hoahoa tuarua a Tiana mō te tautau pakitara:



Mahia te inenga horahanga mō te papanga.
E hia te nui o te papanga e hiahitia ana e Tiana?

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

Hei āwhina i te kaiako

I mua i tō whakarewatanga i te tūmahi, pātai atu ki ngā ākonga kia kōrerorero i te tātai mō te kimi i te horahanga o te tapatoru i te akoranga o mua, me te whakamārama he aha tēnei mahi.

I te wā o te akoranga, tautokona ngā ākonga kia kite me pirau te hanga (he rite ki ngā hanga hiato tapawhā) me te kimi i te horahanga katoa o ngā hanga.

Tonoa ngā ākonga ki te whakaoti i te tūmahi tuatahi, kātahi ka tiritiri rongoā i mua i te whakaurunga i te wāhanga tuarua o te tūmahi.

Mō te tūmahi tuarua, tirohia mēnā ka kite ngā ākonga e whakamahia ana ngā wae inenga rerekē i roto i te tūmahi, ā, ka tahuri ki tētahi wae noa.

Whakangāwari i ngā ākonga ki te hopu tika i ngā wae inenga mō ia mā te whakamahi i te whakapotonga.

Tūmanako kia whakamahi ngā ākonga i te reo inenga tae atu ki te horahanga me te paenga.

Wā toha

Tīpakohia ngā ākonga hei tiritiri nā wai i pirau te hanga, ā, i whakamahi i te tātai hei kimi i te tapatoru me tētahi tātai hei kimi i te horahanga o te tapawhā, ā, ka tāpirihia tahitia.

Hono

Tonoa ngā ākonga ki te whakawhanake i tētahi ture mō te kimi i te horahanga o te trapezium me te whakamātau me pēhea te mahi.

Whainga ako: Ka ako ngā mokopuna ki te:

Kimihia te horahanga o te tapawhā mā te whakamahi i ngā roanga taha.

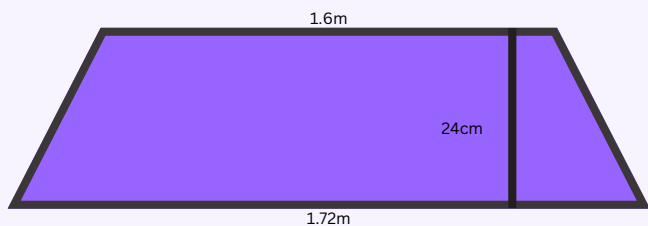
Kimihia te horahanga o te tapatoru.

Whakamahia te tātai hei kimi horahanga.

Kimihia te horahanga o ngā hanga hiato tae atu ki ngā tapawhā me ngā tapatoru.

Ngā Tūmahi Takitahi

Kei te hoahoa a Tiana i tētahi pakitara tautau, ā, e hiahia ana ki te whakarite he rawaka ōna rawa.



Mahia te inenga horahanga mo te kakahu.

Pēnei te āhua o te hoahoa tuarua a Tiana mō te tautau pakitara:



Mahia te inenga horahanga mō te papanga.
E hia te nui o te papanga e hiahiatia ana e Tiana?

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724\text{ g} = 0.724\text{ kg}$.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Horahanga, teitei, pūtake, roa, tapatoru koki matau, tapawhā hāngai.

Tūmahi 7

Anei ētahi pūkoro tapawhā (tirohia ngā Tārua Matua). Kimihia te rōrahi o ia pūkoro. Tuhia he whakamārama me pēhea te kimi i te rōrahi o tētahi pūkoro.

Tuhipoka: Ehara te whakatakoto ture i te whakamārama!

Hei āwhina i te kaiako

Tīmata mā te tūhura me ngā ākonga i te kupiki Ahu-3 me ōna huanga katoa. Hangaia he hononga ki ngā rerekētanga i waenga i ngā kupiki me ngā kupiki (roa, whānui, teitei). Whakatūpato ko te kupiki he take motuhake o te poroporo tapawhā, ā, ko te poroporo tapawhā he take motuhake o te poroporo tapawhā, ā, he pūkoro katoa.

Whakangāwari i ngā ākonga ki te mārama ki te ariā ko te rōrahi o tētahi ahanoa ko te nui o te mokowā e pau ana, ā, ka inea tētahi ahanoa mā te maha o ngā rōrahi wae e uru ana ki roto.

Mo te mahi motuhake, me whai hononga-maha, he hautau-rūpine rānei mēnā e hiahiatia ana.

Wā toha

Tīpakohia ngā ākonga hei tiritiri kua whakawhanake i ngā whakamāramatanga rerekē hei kimi i te rōrahi o ngā cuboids. Me mahi kia whakaatu ngā rōpū katoa i ā rātou whakamāramatanga ki te taha kia kite ai rātou i te katoa me te mahi ki te whakamahine ki tētahi whakamāramatanga kua whakaaetia.

Hono

Kōrerorero, tūhura, me te whakamahine i ngā whakamāramatanga kia puta rā anō he ture whānui. Tērā pea ka hiahia koe ki te hoatu i tēnei ture ki tō pakitara pāngarau.

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

E hiahiatia ana e te māramatanga ariā o te inenga te māramatanga o te atawhai me te whakawhitiwhiti. E hiahiatia ana e te atawhai te māramatanga ina nekehia, ka wehewehea rānei, ka mau tonu te rahi o tētahi ahanoa. Ko te mōhiotanga ka taea te whakataurite i ngā ine o ngā ahanoa e rua ki tētahi ahanoa tuatoru. Hei tauira, mēnā he nui ake te taumaha o te ahanoa A i te ahanoa B, ā, he nui ake te taumaha o te ahanoa B i te ahanoa C, kātahi ka nui ake te taumaha o te ahanoa A i te ahanoa C.

He mātāpono matua e pā ana ki te inenga tae atu ki te rahi o te wae inenga e noho ōrite ana (tae atu ki ngā wae ōrite, ngā wehenga iti rānei), ka tāruatia ngā wae kāore he āputa, he inaki rānei (au), he wāhanga te wae o te katoa, ā, ka whakapuakina te inenga hei tapeke o ngā wae e whakamahia ana.

Whainga ako: Ka ako ngā mokopuna ki te:

Whakatauritea te rōrahi o ngā ahanoa mā te whakamahi i ngā wae tau oti.

Whakamahia ngā wae/tau oti tika hei ine rōrahi.

Whakamahia te whakaaro whakarea hei kimi i te rōrahi o ngā pūkoro.

Whakamahia ngā ahu katoa hei kimi i te rōrahi o ngā pūkoro.

Whakawhanakehia he whānuitanga mō te kimi i te rōrahi o te cuboid.

Ngā Tūmahi Takitahi

Whakamahia ngā kupiki $10 \times 1 \text{ cm}^3$ hei hanga i te maha o ngā whare āhua pouaka (cuboid) e taea ana. Tāngia he whakaaturanga Ahu-3 mō ia pūkoro.

Whakamahia ngā kupiki $24 \times 1 \text{ cm}^3$ hei hanga i te maha o ngā whare āhua pouaka (cuboid) e taea ana. Tāngia he whakaaturanga Ahu-3 mō ia pūkoro.

Whakamahia ngā kupiki $35 \times 1 \text{ cm}^3$ hei hanga i te maha o ngā whare āhua pouaka (cuboid) e taea ana. Tāngia he whakaaturanga Ahu-3 mō ia pūkoro.

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724 \text{ g} = 0.724 \text{ kg}$.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Maraautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Porotapawhahāngai, mata, akitu, roanga, whānui, teiteitanga, pae, henimita, ahutoru, ahurua, rōrahi, hōhonu, whakarea.

Tūmahi 8

Kei te tukuna e Tasa me tōna whānau he pōkai i roto i tētahi ipu kaupuke ki Tonga. Kua whakawhāititia e te kamupene kaupuke te rahi o te pōkai ki te roa paheko mōrahi me te whitiki o te 4 mita. He aha te rōrahi nui rawa atu ka taea e rātou te tiki mō tētahi mōkī tapawhā tapawhā?

Hei āwhina i te kaiako

I mua i tō whakarewatanga i te tūmahi, pātai atu ki ngā ākonga kia kimi i te horahanga nui rawa mō tētahi tapawhā me te paenga 24 cm.

Hei whakarewa i te tūmahi, me mātua mōhio ngā ākonga ko te whitiki e pā ana ki ngā inenga huri noa i waenganui o te pōkai. Whakamahia he tapawhā tapawhā me te whakataki i te whitiki mō ngā ākonga.

Ko te arotahi o tēnei tūmahi ko te whakatū i ngā ākonga ki te tiroiro i te whanaungatanga i waenga i te horahanga mata me te rōrahi. Kia mōhio mēnā e mōhio ana ngā ākonga ki te pātahitanga i waenga i te horahanga mata me te rōrahi, ā, ka tāngia tēnei ina whakaoti i te tūmahi.

Whakangāwari i ngā ākonga ki te whakamahi ripanga hei hopu i ngā hua me te mahi ā-pūnaha ki te kimi i te rōrahi nui rawa.

Wā toha

Tīpakohia ngā ākonga hei tiritiri ko wai i kite i te rōrahi nui rawa mā te hanga whatianga, mā te kimi rānei i ngā pūkoro e rua (hono tahi) e tata ana ki te rua te whānui me te whānui.

Mēnā kāore anō ngā ākonga kia whakamahi i te rongoā tuarua, whakaurua tēnei hei rongoā ka taea.

Me whakahauhau ngā ākonga Tau Waru ki te tiroiro hoki i ngā mea ka tūpono ina kāore ngā inenga i mahia i roto i ngā henimita katoa.

Hono

He aha te āhua o te cuboid e hoatu ana i te rōrahi nui rawa?

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

Whainga ako: Ka ako ngā mokopuna ki te:

Kimihia te rōrahi nui rawa mō tētahi uara o te whitiki me te roa.

Tahuri i waenga i ngā wae ngahuru (cm/m).

Tautuhia te pātahitanga i waenga i te rōrahi me te horahanga mata.

Ngā Tūmahi Takitahi

He aha ngā cuboids ka taea e koe te hanga me ēnei ahu? He aha te rōrahi mō te cuboid?

Whakamahia he whakaaturanga hei whakatika i ō whakautu.

1. E 6 kupiki te roa; e 3 kupiki te whānui; e 2 kupiki te teitei.
2. E 10 kupiki te roa; e 8 kupiki te whānui; e 3 kupiki te teitei.
3. E 13 kupiki te roa; e 4 kupiki te whānui; e 2 kupiki te teitei.
4. E 12 kupiki te roa; e 8 kupiki te whānui; e 4 kupiki te teitei.
5. Ko te roa ko te 10 cm, ko te whānui ko te 9 cm, ko te teitei ko te 5 cm.
6. Ko te roa ko te 3 cm, ko te whānui ko te 7 cm, ko te teitei ko te 5 cm.
7. Ko te roa ko te 7 cm, ko te whānui ko te 2 cm, ko te teitei ko te 10 cm.
8. Ko te roa ko te 5 cm, ko te whānui ko te 6 cm, ko te teitei ko te 7 cm.

Marautanga

Tau 7

Whakataua tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724\text{ g} = 0.724\text{ kg}$.

Tau 8

Whakataua tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

*Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:
h.t., 1 g = 1 ml = 1 cm³.*

Tau 8

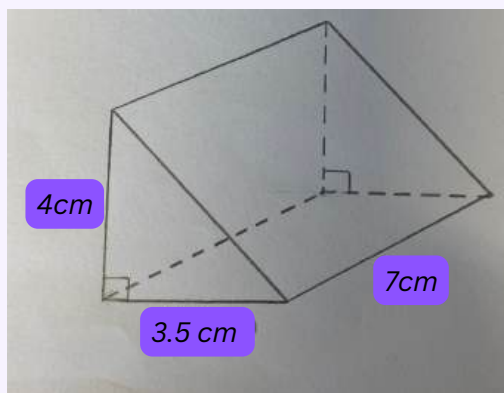
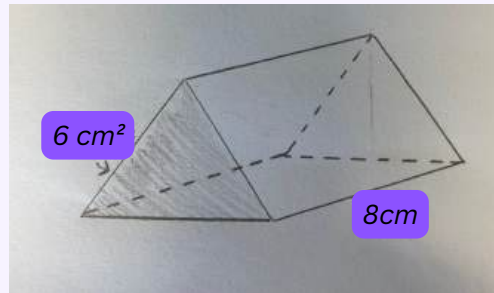
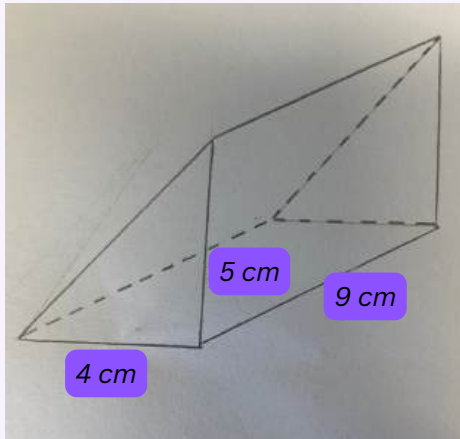
Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Rōrahi, whitiki, whānui, roa, whānui, tapawhā, mita, henimita

Tūmahi 9

Kimihia te rōrahi o ēnei porotoru tapatoru:



Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

He mātāpono matua e pā ana ki te inenga tae atu ki te rahi o te wae inenga e noho ōrite ana (tae atu ki ngā wae ōrite, ngā wehenga iti rānei), ka tāruatia ngā wae kāore he āputa, he īnaki rānei (au), he wāhanga te wae o te katoa, ā, ka whakapuakina te inenga hei tapeke o ngā wae e whakamahia ana.

Hei āwhina i te kaiako

I mua i tō whakarewatanga i te tūmahi, pātai atu ki ngā ākonga kia kōrerorero me pēhea te kimi i te horahanga o te tapatoru me te pororua tapawhā hoki.

Hei whakarewa i te tūmahi, mēnā ka taea, whakaaturia ki ngā ākonga tētahi poroporo tapatoru koki matau hei tautoko i a rātou kia kite i te pātahitanga i waenga i te porotoru tapatoru me te pororua tapawhā.

Whakarewahia motuhake ia wāhanga o te tūmahi, mō te tūmahi tuarua, whakaaturia ki ngā ākonga he porotoru tapatoru (ehara i te koki matau) me te miramira he ōrite te wāhanga tapatoru o te porotoru tapatoru puta noa i tōna roanga.

Tūmanakohia kia whakapūketetia e ngā ākonga mā te whakamahi i ngā wae inenga tika.

Wā toha

Tīpakohia ngā ākonga hei tiritiri ko wai i kite i te rōrahi mā te whakamahi i te tātai mō tētahi poroporo tapawhā me te whakawehe i tēnei ki te rua. Mō te tūmahi tuatoru, tīpakohia ngā ākonga hei tiritiri ko wai i whakamahi i te horahanga o te tapatoru, ā, whakareatia tēnei ki te roanga.

Hono

Tonoa ngā ākonga ki te whakawhanake i tētahi ture mō te kimi i te rōrahi o te poroporo tapatoru. Pātai atu ki a rātou kia whakamatau ka mahi te ture ki te kimi i te horahanga o tētahi momo poroporo tapatoru.

Whainga ako: Ka ako ngā mokopuna ki te:

Kimihia te rōrahi o te pororua tapatoru.

Whakawhanakehia te tātai hei kimi i te rōrahi o ngā porotoru tapatoru.

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

● - kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724\text{ g} = 0.724\text{ kg}$.

Tau 8

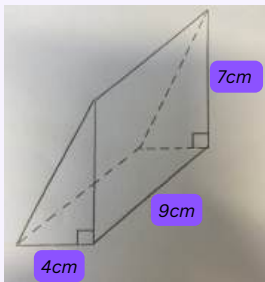
Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

● Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

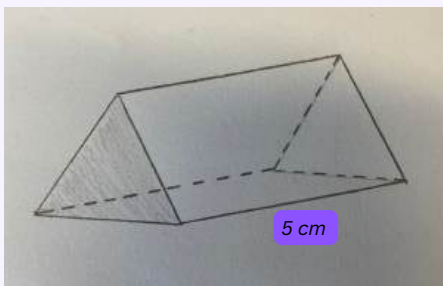
Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tūmahi Takitahi

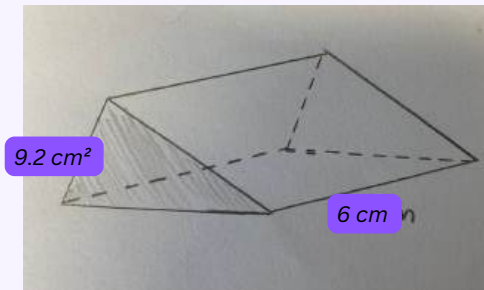
Kimihia te rōrahi o tēnei porotoru tapatoru:



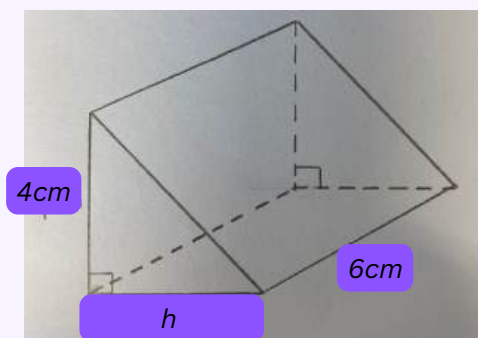
Ko te rōrahi o tēnei porotoru tapatoru ko te 82 cm^3 . He aha te horahanga o te tapatoru uriuri?



Kimihia te rōrahi o tēnei porotoru tapatoru:



Ko te rōrahi o tēnei porotoru tapatoru ko te 84 cm^3 . He aha te roa o te h ?



Marautanga

Tau 7

Whakataua tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724 \text{ g} = 0.724 \text{ kg}$.

Tau 8

Whakataua tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., $1\text{ g} = 1\text{ ml} = 1\text{ cm}^3$.

Tau 8

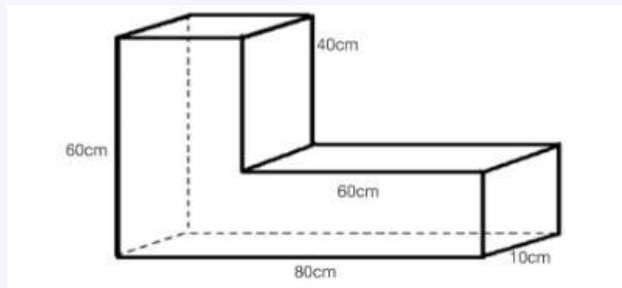
Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

*Rōrahi, porotoru
tapatoru, porowhā
tapawhā, wāhanga
whakawhiti.*

Tūmahi 10

Kai te āwhina a Atawua i tōna pāpā ki te hanga i tētahi hipanga mo te whare pepeha. Ka hangaia e rātou he paraka tapawhā āhua L pēnei i raro nei hei hono i ngā poro rākau e rua. Ka wero tōna pāpā i a ia ki te kimi i te rōrahi o tēnei hanganga tapawhā āhua L. Ka taea e koe te āwhina i a ia?



Hei āwhina i te kaiako

Tūmanako kia whakamahi ngā ākonga i te whakarea hei kimi i te rōrahi me te whakamahi i ngā whakaaturanga Ahu-3 hei whakamārama me te whakatika.

Wā toha

Tīpakohia ngā ākonga hei tiritiri kua wehe i ngā pūkoro hiato kia rua ngā pūkoro, ā, kua kitea te rōrahi o ia pūkoro.

Hono

Me pēhea koe e kite ai i te rōrahi o ēnei arawhata? Whakamahia tētahi whakaaturanga me te tohu i ngā inenga e hiahiatia ana hei kimi i te rōrahi



Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

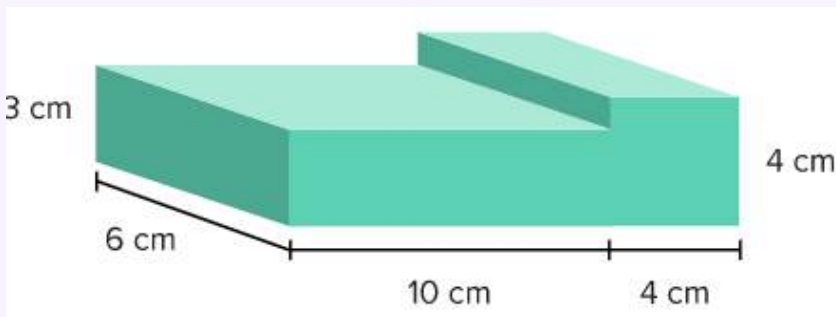
Whainga ako: Ka ako ngā mokopuna ki te:

Whakamahia te whakaaro whakarea hei kimi rōrahi.

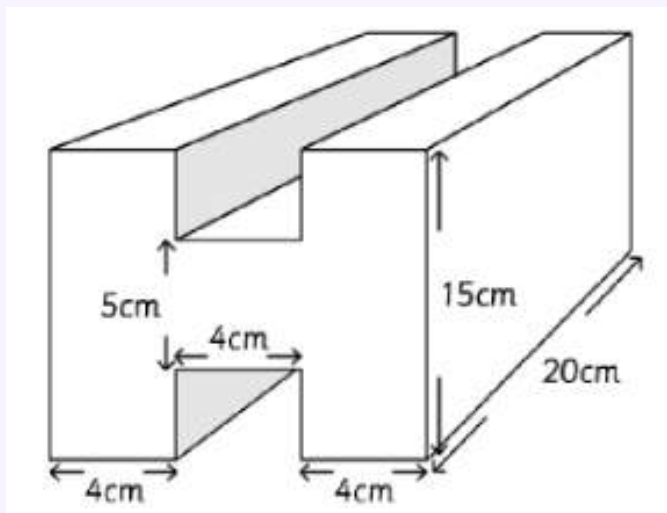
Kimihia te rōrahi o te pūkoro hiato.

Ngā Tūmahi Takitahi

Kimihia te rōrahi:



Kimihia te rōrahi:



Marautanga

Tau 7

Whakataua tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:

h.t., $724 \text{ g} = 0.724 \text{ kg}$.

Tau 8

Whakataua tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Porotapawhahāngai, mata, akitu, roanga, whānui, teiteitanga, pae, henimita, ahutoru, ahurua, rōrahi, hōhonu, whakarea.

Tūmahi 11

E 6 ngā moenga māra rākau o te māra o te kura. Kei ia mea ngā ahu e whai ake nei: te roa 3 m, te whānui 1.25 m, te teitei 20 cm.

E 0.8 cm te mātotoru o ia papa rākau.

Me whakakī ia moenga māra ki te 1cm i raro iho i runga.

E hia ngā rita oneone e hiahiatia ana hei whakakī i ngā moenga māra?

Hei āwhina i te kaiako

Ko te kiato he papatipu e wehea ana e te rōrahi.

$$p = \frac{m}{v}$$

I whakamahia te wai hei pūtake mō te whakatū i te wae ngahuru o te papatipu, arā, kotahi karamu (1 cm³) te pauna o te wai. Nā reira, 1 g /1 cm³ = 1 g/cm³ e māmā ai te maumahara i te wai.

Kia mōhio ki ngā ākonga e mōhio ana he ōrite te 1000ml ki te rīta, ā, ka taea hoki te whakapuaki i ngā ine pēnei i ngā rīta hei rōrahi.

Wā toha

Tīpakohia ngā ākonga hei tiritiri e whakaaro ana ki te mātotoru o te papa me te hono ki ētahi atu āhuatanga ōrite (ipu mātao, pākatiao) i roto i tā rātou whakamārama.

Hono

Tonoa ngā ākonga kia matapaki he aha ngā ine e whakamahia ana mō te rōrahi me te kaha. Whakaurua te ariā o te kiato.

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou, ka whakamahi mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

Whaingā ako: Ka ako ngā mokopuna ki te:

Whakamahia ngā wae/tau oti tika hei ine rōrahi.

Whakamahia te whakaaro whakarea hei kimi rōrahi.

Tahuri cm ki m (tahuri ana i waenga i ngā wae ngahuru).

Whakaotia ngā raru rōrahi e pā ana ki ngā ā-ira.

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., $724\text{ g} = 0.724\text{ kg}$.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tūmahi Takitahi

Kai te kōruru aku inenga. Kōmakahia kia tika ai te ōrite.

Temperature of a fridge	0.06	seconds
Length of a human intestine	1.2	kg
Area covered by one litre of paint	324	ml
Time of one TV advert	4	°C
Mass of an adult	250	cm
Area of a piece of A4 paper	15	metres
Length of a cello	22	m ²
Capacity of a teaspoon	40	km
Mass of an orange	100	months
Temperature of the human body	10	metres
Length of the Equator	40000	m ²
Capacity of a car's petrol tank	70	grams
Height of the Eiffel Tower	120	°C
Gestation of an elephant	37	litres

Ina mutu koe, tuhia tētahi atu tekau hei whakaoti mā tētahi atu.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

*Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:
h.t., 1 g = 1 ml = 1 cm³.*

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Rōrahi, mita pūtoru, henimita, mita, roa, hōhonutanga, teitei, kaha, rīta, mirimita.

Tūmahi 12

E 70 cm te roa, 50 cm te whānui, 45 cm te teitei o te kaukau o tō tuahine pēpi.

Mēnā ka kī te kaukau ki tōna teitei, $\frac{3}{5}$ e hia te nui o te wai e whakamahia ana?

Hei āwhina i te kaiako

Ko te kiato he papatipu e wehea ana e te rōrahi.

$$p = \frac{m}{v}$$

I whakamahia te wai hei pūtake mō te whakatū i te wae ngahuru o te papatipu, arā, kotahi gram (1g) henimita pūtoru (1 cm^3) o te wai. Nā reira, $1\text{ g} / 1\text{ cm}^3 = 1\text{ g/cm}^3$ e māmā ai te maumahara i te wai.

Kia mōhio ki ngā ākonga e mōhio ana he ōrite te 1000ml ki te rīta, ā, ka taea hoki te whakapuaki i ngā ine pēnei i ngā rīta hei rōrahi.

Kia mōhio ki ngā ākonga e mōhio ana he ōrite te 1000ml ki te rīta, ā, ka taea te whakapuaki i ngā ine pēnei i ngā rīta hei rōrahi.

Whakangāwari i ngā ākonga kia mōhio e hiahiatia ana te ōritetanga ki te ine rōrahi, ā, he rite tonu tēnei ki te ine i te kaha.

Tūmanako kia haere ngā ākonga ki runga ake i te 1 rīta tae atu ki te whakamahi i te reo hautau. Whakangāwari i a rātou ki te whakamahi i ngā raina tau hei tohu i ēnei.

Hangaia he hononga ki ngā kupu, te mirimita, me te mitamano, ā, ko te kupu milli e tohu ana i te mano.

Wā toha

Tīpakohia ngā ākonga hei tiritiri kua whakawhanake i ngā whakamāramatanga e whakaaro ana ki ngā tahuringa o te cm ki te m me te ml me te l.

Whakaaro Matua

He maha ngā huanga ka taea e mātou te ine tae atu ki te roa, te papatipu, te wā, te horahanga, te koki, me te rōrahi. Ina ine mātou i te whakataurite, ka whakataurite mātou i ngā āhuatanga pēnei kia kite ko tēhea te mea nui ake. Ka taea e mātou te whakataurite mā te whakamahi i ngā wae ine paerewa, paerewa rānei, ā, ka whakamahi mātou i te reo pāngarau hei whakaahua i ēnei.

Hono

Ka aha mehemea kua haurua te kī o te kaukau?
Ka aha mēnā kua kī $\frac{3}{4}$ te kaukau?

Whaingā ako: Ka ako ngā mokopuna ki te:

Whakamahia te whakaaro whakarea hei kimi rōrahi.

Tahuri i waenga i ngā wae ngahuru (cm/m me ml/l).

Tautuhia te pātahitanga i waenga i te rōrahi me te kaha.

Ngā Tūmahi Takitahi

Tīpakohia tētahi, ētahi rānei o ngā tūmahi aromatawai e whai ake nei
(kua āpitihia ki te mutunga o te tuhinga) hei tūmahi takitahi:

Tūmahi Aromatawai 1: Horahanga me te Paenga

Tūmahi Aromatawai 2: Ipu Wai

Marautanga

Tau 7

Whakatau tata, ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

- kōwhiri me te whakamahi waeine e tika ana (h.t., mita (m), karamu (g), rita(l)) mō te pūnaha ngahuru me te whakamahi hoki i te kuhi (h.t., mitarau (cm), manokaramu (kg), ritamano(ml)) hei whakaatu i te rahi o ngā waeine.

- huri i ngā waeine o te roa, te papatipu me te kītanga mā te whakamahi i ngā tauoti me ngā tau ā-ira ki te whakaatu i tētahi huinga:
h.t., 724 g = 0.724 kg.

Tau 8

Whakatau tata, kātahi ka ine i te roa, te rōrahi, te kītanga, te papatipu, te paemahana, te raraunga pūrokiroki, te wā, me ngā koki mā te whakamahi waeine e whai take ana.

Kōwhiri me te whakamahi waeine e tika ana mō te pūnaha ngahuru me te whakamahi hoki ngā kuhi hei whakaatu i te rahi o ngā waeine.

Huri i waenga i ngā waeine, me ngā waeine pūrua hoki.

Ngā Tumanako

Ngā Rongoā, Ngā Pōhēhētanga

Marautanga

**Te Paenga te Horahanga,
Te Rōrahi**

Tau 7

Tātai i te paenga me te horahanga o ngā āhua pūhui kua hangā ki te tapatoru me te tapawhā hāngai.

Tautohu he ōwehenga auau te pānga o te paenga me te whitianga, te pūtoro rānei:

h.t., 1 g = 1 ml = 1 cm³.

Tau 8

Tātai i te rōrahi o ngā poro tapatoru me ngā momo poro kua hangā ki ngā poro tapawhā hāngai.

Reo Pāngarau

Rōrahi, mita pūtoru, henimita, mita, roa, hōhonutanga, teitei, kaha, rita, mirimita.

Aromatawai 1

Tāngia kia 3 neke atu rānei ngā hanga rerekē (hei tauira, ngā tapawhā, ngā tapatoru, ngā whakarara, ngā hanga hiato) e 48 cm te paenga.

Ko tēhea te hanga ka nui rawa te horahanga?

Whakaaturia me pēhea tō mahi i te horahanga me te paenga o ia hanga.
Whakamārama, whakatautika hoki me pēhea tēnei mahi.

Aromatawai 2

E 240 cm^3 te rōrahi o te ipu wai. He aha pea ngā ahu o te ipu? Hoatu he awhe rongoā ka taea me te whakamahi i ngā whakaaturanga hei whakatika i tō whakaaro.