



Te Kaupae 1 Te Pāngarau 2024

92068 Te whakamahi whakaaro āhuahanga, whakaaro
ine hei whakaoti rapanga

Ngā Whiwhinga: E 5

Kairangi	Kaiaka	Paetae
Ka whakamahi whakaaro āhuahanga, whakaaro ine mā roto mai i ngā whakaaro waitara hei whakaoti rapanga.	Ka whakamahi whakaaro āhuahanga, whakaaro ine mā roto mai i ngā whakaaro tūhonohono hei whakaoti rapanga.	Ka whakamahi whakaaro āhuahanga, whakaaro ine hei whakaoti rapanga.

HE TAUAROMAHĪ

No part of the candidate's evidence in this exemplar material may be presented in an external assessment for the purpose of gaining an NZQA qualification or award.

Tā te ākonga mahi (Kairangi/Excellence)



I te taenga mai o ō tātou tūpuna ki tēnei whenua o Aotearoa, i ngakoro katoa te taiao o tēnei whenua, ngā roto, ngā awa, ngā moana, ngā takutai hoki. Haere te wā, ka kitea te āwhina me te hua o ngā tangata ki roto i te taiao.

E ai ki te ao maori, he uri whakaheke ngā tuna nā Tangaroa. Heoi aōo, he rerekē tō ia iwi, ōa ia iwi. Nō roto mai o Rotoiti ko ngā momo tuna nui he taniwha, he kaitiaki kē.

I kauhoe mai ngā tuna mai i Tonga, ko te tawhiti o te kauhoe, he 2,382 kiromita te tawhiti.

2,382 km

Distance from New Zealand to Tonga



Te Pātai:

Mēnā he 125 hm te roanga, he 45 hm te whānui, he 35 hm te teiteinga o tētahi hīnaki tapawhāroa. He aha te nui o ngā rauemi me whakamahi kia hanga i te hīnaki, he aha hoki te rōrahi?

Kia whakautua te pātai nei, me tātai ahau i te rōrahi me te horahanga mata

Te tātai kia kimi i te rōrahi= Roa x Whānui x Teitei

Te tātai kia kimi i te horahanga mata= Roa x whānui + roa x teitei + whānui x teitei

Horahanga = Roa x Whānui

Roa: 125 hm

Whānui: 45 hm

Horahanga = 125 hm x 45 hm =
5,625hm²

Rorahi = Roa x Whānui x Teitei

Roa: 125 hm

Whānui: 45 hm

Teitei: 35 hm

Rōrahi = 125 hm x 45 hm x 35 hm = 196,875 hm³

HORAHANGA MATA = Roa x Whānui + Roa x Teitei + Whānui x Teitei

Roa: 125 hm

Whānui: 45 hm

Teitei: 35 hm

Ture tātai kia kitea te horahanga mata = 125 hm x 45 hm + 125 hm x 35 hm + 45 hm x 35 hm

TEPE 1: Tāpirihia ēnei nama = 5,625 hm² + 4,375 hm² + 1,575 hm² = 11,576 hm²

TEPE 2: Whakarea ki te 2: 2 x 11,576 hm² = 23,152 hm²

TEPE WHAKAMUTUNGA: Horahanga Mata= 2 x 11,576 hm² = 23,152 hm²

Te whakautu ki taku pātai

Horahanga mata = 23,152

hm² Rorahi = 196,875 hm³

Me whakamahi ahau kia 23,152 hm² o te paparanga kia hanga i taku hīnaki tapawhā roa.

$$\text{Horahanga} = \text{Roa} \times \text{Teitei}$$

$$H1 = 125 \times 40 = 5000 \text{hm}^2$$

$$H1 \times 2 = 10000 \text{hm}^2$$

$$H2 = 125 \times 30 = 3750 \text{hm}^2$$

$$H2 \times 2 = 7500 \text{hm}^2$$

$$H3 = 30 \times 40 = 1200 \text{hm}^2$$

$$H3 \times 2 = 2400 \text{hm}^2$$

Ture hanga i te koeko

Volume formula:

$$V = (1/3) \times \pi \times h \times (r^2 + r \times R + R^2).$$

Slant height formula:

$$s = \sqrt{(R - r)^2 + h^2}.$$

Lateral surface area formula:

$$\text{Lateral} = \pi \times (R + r) \times s.$$

Top and bottom surface area:

$$\text{Top} = \pi \times r^2 \text{ and } \text{Bottom} = \pi \times R^2.$$

Total area formula:

$$\text{Total} = \text{Lateral} + \text{Top} + \text{Bottom}.$$

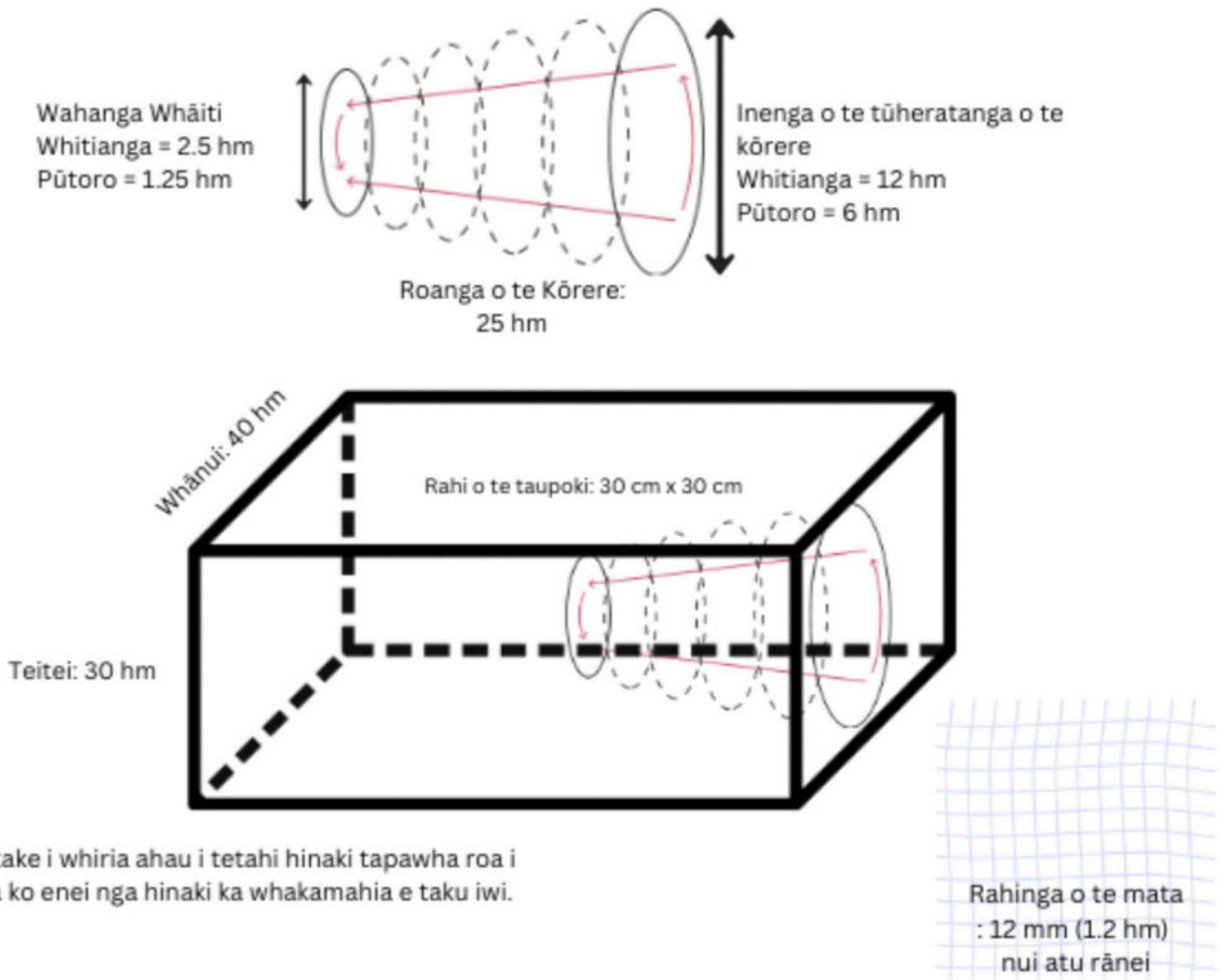
H= Horahanga o te koeko:

$$579.592 \text{hm}^2$$

Total surface area

$$2.0479591 \text{m}^2$$

Ko tētahi o ngā rautaki hopu tuna, ko te hīnaki. He maha ngā momo hīnaki hopu tuna, engari ko te hīnaki ka whakamahia e au mō taku mahi, he mea tapawhā roa.



Ko te take i whiria ahau i tetahi hinaki tapawhā roa i te mea ko enei nga hinaki ka whakamahia e taku iwi.

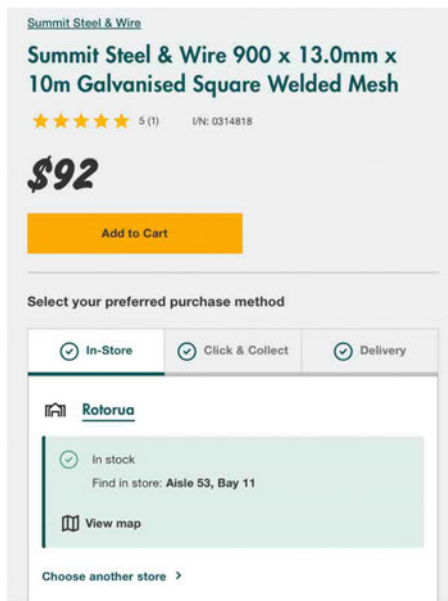
Nga Utu

Mo te hinaki waea, ko nga rauemi matua ko'enei:

- Paparanga waea whakahoī
- Kutikuti waea
- Here waea

Ki Bunnings i kitea he paparanga waea whakahoī, 900mm x 13mm te rahinga mō te \$92.

Ko'etahi atu rauemi ka'awhina hoki kia whakāu i te waea he hononga mētara kia mau ai i te hanga puoto.



Horahanga mata:

$$0.9 \times 10 = 9\text{m}^2$$

$$\text{Horahanga mata} - 2.047 / 9 = 0.227$$

No reira me hoko noa kia kotahi he rora hei hanga i taku hinaki.

Ko ia rora o te paparanga he 900 mm x 10 m te rahinga. He rite ki te:

Whānui o te paparanga: 0.9 m
Roa o te rora: 10 m

Me whakamahi ahau i tetahi rora hei hanga i taku hinaki.

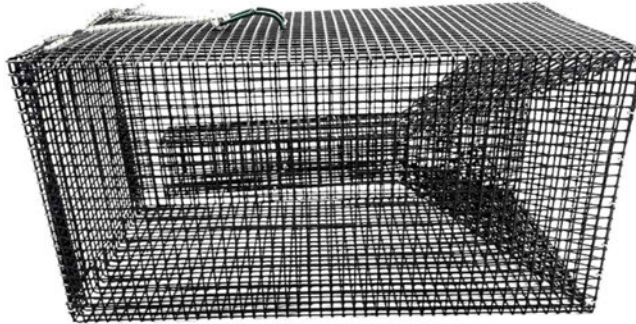
He meka mō ngā hīnaki

Ka taea te roanga o te hīnaki kia 1 ki te 1.5 mita. Engari ko ētahi hīnaki he nui ake i te 2 mita kia hopu i ngā tuna nui.

Ko te taitapa ka taea te ine atu ki te 35-50 henemita i te wharahitanga me te 20 ki te 45 henemita i te teiteinga. Ko te tikanga o te rahi kia mau tonu te mahanga me te whakanui i te waahi hopu.

Mo ngā hīnaki popohue, he kuaha kei ngā taha e rua o te hīnaki, he tuanui fānei e taea ana te tango, kia hopu, kia waiho fānei i te maunu ki roto

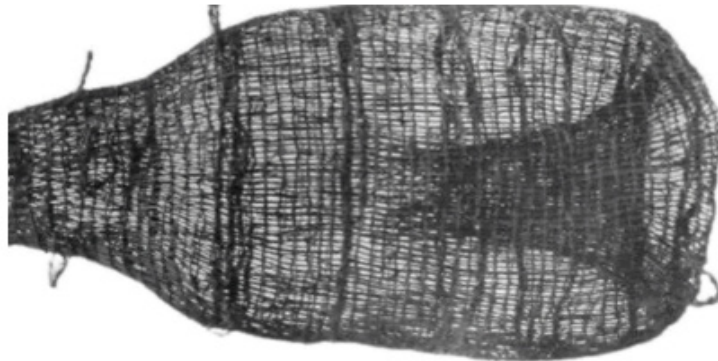
Ko te tikanga, me whakauru i te tarore kia 45 ki te 60 henemita (16-24 inihi) te hohonu i raro i te wai kia piki te fuponotanga o te hopu tuna.



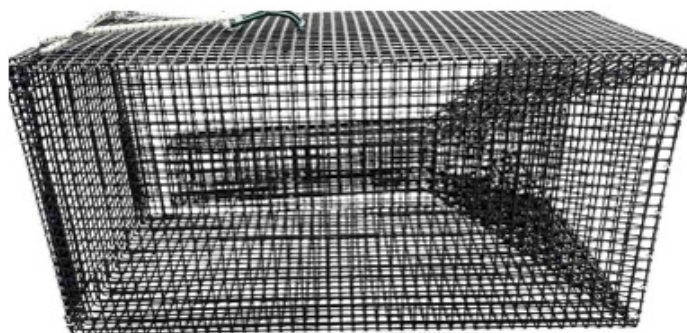
Ētahi wā, ka tapirihia he mea taumaha ki raro i te hīnaki, te taura fānei kia kaua te tarore e rere, e mānu atu.

E ai ki te Ministry for Primary Industries (MPI) ko te ture o te rahi mō ētahi hīnaki me 12mm (1.2 hm). Ka tuku tenei i ngā tuna paku me ngā ika iti kia puta pai i te hīnaki. I ngā ra o mua i hangaia ngā hīnaki ki te aka, te harakeke me te manuka. Irāianeī ka kite koe i ngā hīnaki kua hangaia ki te fira, te mētara, he popohue fānei kia kaua te hīnaki e waikura.

Ko ētahi hīnaki he kuhunga korere kotahi noa, ko te ingoa o ēnei hīnaki he Parera, he whakarua fānei. Ko te ahua o fenei tarore, he ahua rahi te kuhunga engari ka whāiti haere. Koirā ka ngāwari kia kuhu atu te Tuna engari ka uaua kia puta. Ko te nui o te kuhunga, he ahua 10 ki te 15 henemita te whitianga. I te wā ka kauhoe tonu te tuna ki te tarore ka whāiti haere, ka heke te nui ki te 2.5 ki te 4 henemita.



He aha te panga o te hīnaki puoto ki te tere o te mau i te tuna ki te whakatairite ki te hīnaki tapawhā roa?



Ka whakarerekehia te horahanga me te āhua i te rapunga me te urunga o te tuna ki te hīnaki

💡 Ko te **Hinaki puoto** he porohita te āhua o te fuheratanga kia ngāwari ake ai te rapu a te tuna i te mea he māori ake te āhua e rite nei ki ngā kuhunga o raro i te wai i roto i te ōrātau taiao.

📖 He whānui, he papatahi hoki te urunga o te **Hinaki tapawhā roa** nōreira he nui atu ngā tuna ka uru i te wā kotahi mehemea kua pai te whakatakotoranga ki te wai e whai ana i te ia o te wai.

Kei nui atu te hopu i ngā tuna i te wā kotahi mehemea he nui atu te ōrahi

💡 I te nuinga o te wā he nui atu te **Hinaki puoto** nōreira he nui atu ngā tuna ka mau i te wā kua mau.

📖 He nui atu pea te ōrahi katoa o te **Hinaki tapawhā roa** engari ko te hanga taineke o roto kāore e mau katoa i ngā tuna.

Ka whai pānga te rere o te wai me te taineke a te hīnaki i te hopunga me ngā tauira kauhoe a te tuna

💡 Ka tuku te āhua o te **Hinaki puoto** i te wai kia āta rere ki roto, i waho atu hoki i a ia e ārahi nui ake ana i ngā tuna ki roto i te hīnaki.

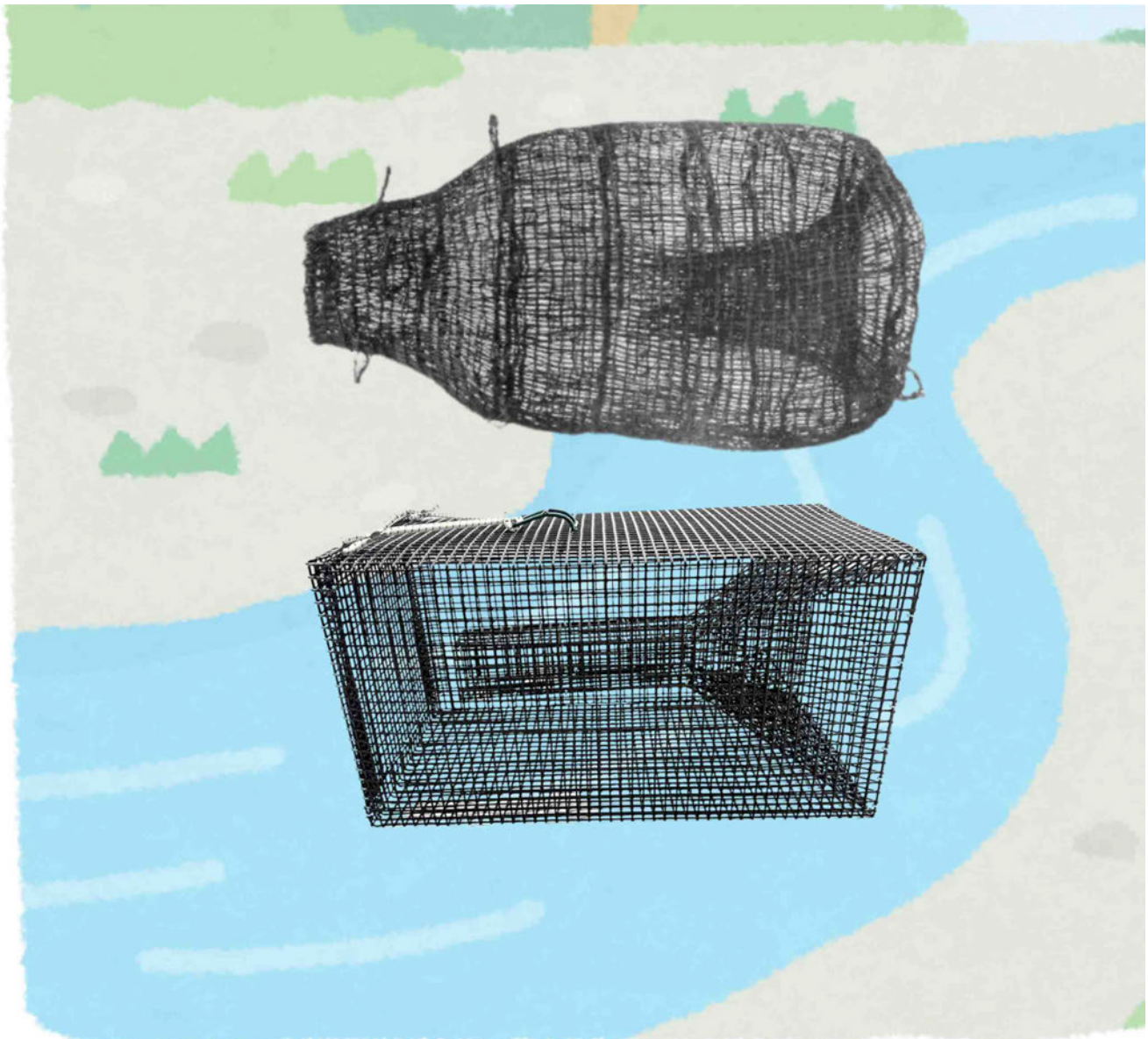
📖 Kei aukati te **Hinaki tapawhā roa** i te rere o te wai, kei runga i tana nohonga, ā, ka whai pānga te rere ki te whanonga i te tuna e pātata atu ana ki te hīnaki.

Tikanga

Kei hāngai te kōwhiranga o te hoahoa ki ngā mātauranga tuku iho, ki ngā wheako hoki i ngā kaihituna e āta mātai ana i ngā hua me ngā rerekētanga kua kitea i ngā āhua hīnaki rereke me ngā tini taiao e noho nei ngā hīnaki.

Ōku whakaaro i ngā kohinga rangahau

I te **hinaki puoto** ka kitea ko te pai o te rere o te wai, he āhua urunga e hāngai ake ana ki te taiao, ā, kei nui atu te hopunga o ngā tuna. Heoi, he nui atu te **Hinaki tapawhā roa**, ā, i te nui o te urunga me te ōrahi engari kei aukati i te rere o te wai. I te mutunga ake ko te painga o ngā hīnaki kei runga i te rere o te wai, te whanonga o ngā tuna me te taiao motuhake ka whakamahia ngā hīnaki.



Nga hononga rangahau



Kairangi

Te Wāhanga Ako: Pāngarau

Te Paerewa: 92068

Te Maaka: 07/08

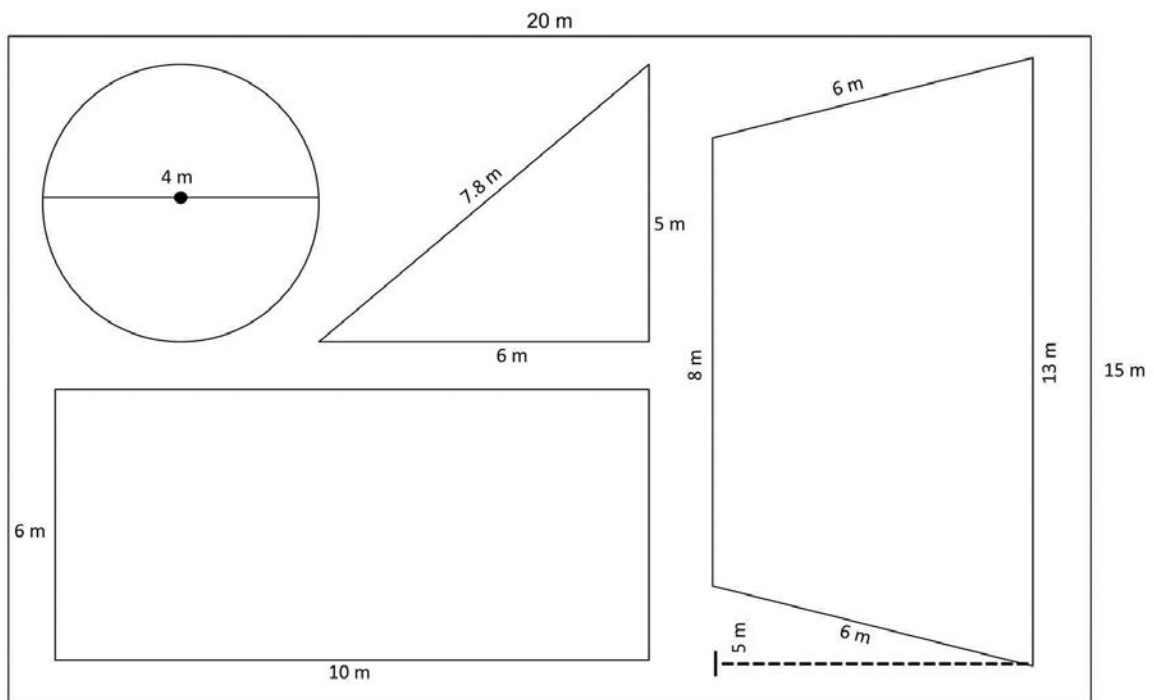
Te Tūmahi	He Pitopito Kōrero
Tuatahi	He arorau te raupapa o ngā whārite. He tuatini hoki ētahi o ngā whārite. I hāngai nui ngā hāponotanga ki ngā otinga me te horopaki o te rangahau. Kua whakamahia tikahia ngā ariā me ngā huatau o te ine me te āhuahanga hei whakautu i ngā rapanga kia hāngai tonu ai ki te horopaki.

Tā te ākonga mahi (Kaiaka/Merit)



Pāngarau 1.4 He Maara mo te Marae

Horopaki: He pihi whenua kua rahuitia hei hanga mara mo te marae.



Tataitanga: Awhiotanga	Tataitanga: Horahanga	Tataitanga: Rorahi
Tataihia te awhiotanga/paenga o ia parekereke kua hoahoatia e koe. Tapawha = $10 + 6 + 10 + 6$ = 32 m Porohita = $\pi \times 4$ = 12.57 m Tapatoru = $6 + 5 + 7.8$ = 18 m Taparara = $h^2 = a^2 + b^2$ = $5^2 + 2.5^2$ = $25 + 6.25$ = $\sqrt{31.25}$ = 5.6 = $5.6 + 8 + 13 + 5.6$ = 32.2 m	Tataihia te horahanga o ia parekereke kua hoahoatia e koe. Tapawha = 10×6 = 60 m² Porohita = $\pi \times 2^2$ = 12.57 m² Tapatoru = $\frac{1}{2} \times 6 \times 5$ = $\frac{1}{2} \times 30$ = 15 m² Taparara = $\frac{1}{2} \times (13 + 8) \times 5$ = $\frac{1}{2} \times 21 \times 5$ = $\frac{1}{2} \times 105$ = 52.5 m²	He aha te rorahi o te paruparu hei hoko mo to mara, mena he 80cm te hohonu mo nga parekereke katoa? Paruparu = $80 = 0.8 \text{ m}$ Tapawha = $H = 60 \text{ m}^2$ $R = 60 \times 0.8$ = 48 m³ Porohita = $H = 12.57 \text{ m}^2$ $R = 12.57 \times 0.8$ = 10.06 m³ Tapatoru = $H = 15 \text{ m}^2$ $R = 15 \times 0.8$ = 12 m³ Taparara = $H = 52.5$ $R = 52.5 \times 0.8$ = 42 m³ $R = 48 + 10.06 + 12 + 42$ = 112.06 m³

Rangahaua te utu hoko paruparu i nga pakihi rereke.	Whiriwhiria te momo ka hokona, i hea hokona ai hoki.
Gardenmakers = \$77 per m³ Daltons = \$90 per m³ Intelligro = \$84 per m³ Mitre 10 (Tui) = \$13.98 per 40L 0.04 m³ $1/0.04 = 25$ $25 \times 13.98 = 349.50$ \$349.50 per m³ & 25 peke per m³ Whiriwhiria te momo ka hokona, i hea hokona ai hoki. Gardenmakers = 113 m³ Tataihia te huinga utu. $77 \times 113 = \textbf{\\$8701}$ I taku mahi rangahau o runga, i kowhiria e au te pakihi o 'Gardenmakers', engari, na nga mahi rangahau hohonu ake, i kitea e au kei Otautahi, Te Waipounamu ke taua pakihi, rite ki tera atu pakihi i runga ra, 'Intelligro', a, kaore raua tahi e kawae mai ki Rotorua. Na reira ko Daltons me Mitre 10 nga kowhiringa hei kowhiri maku. I taku rangahau i nga korero a etahi atu tangata mo nga paru nei, i pai te nuinga, na reira e kowhiria au i te paru o Daltons, na te iti ake o te utu. Ke Mt Maunganui ratou, a, ahakoa kaore e kawae mai ki Rotorua, ka mama noa te tiki i Mt Maunganui.	Momo - Daltons Garden Mix $150 \times 113 = 16,950 = \textbf{\\$16,950.00}$ Mena ka whakatauritetia e au i te utu o Daltons Mt Maunganui ki te utu o te paru Daltons no Mt wellington, he \$150 per m³, a, \$16,950.00 ke te huinga utu. Na reira, ahakoa ko te kamupene orite, me te paru orite, kua tino rereke nga utu, a, na tera kowhiri ai au i a Daltons Mt Maunganui. I hea hokona - Daltons Landscape Supplies, Mount Maunganui (57 Hull Rd, Mt Maunganui, 3116) $90 \times 113 = 10,170 = \textbf{\\$10,170.00}$ Na reira, kia hokona au i te paru Daltons i a Daltons, Landscape Supplies, Mt Maunganui, ka \$10,170.00 te utu mo te 113 m³ hei whakaki i taku mara, kia whakatipua e au nga momo tipu katoa.

Kaiaka**Te Wāhanga Ako:** Pāngarau**Te Paerewa:** 92068**Te Maaka:** 05/06

Te Tūmahi	He Pitopito Kōrero
Tuatahi	Māraakerake ana te raupapa aroā o ngā whārite. E kitea ana te hāngai o ngā hāponotanga ki te take i hua mai ai ngā otinga. Kei reirā te whakataunga e whakamārama ana i te hua o te rangahau.

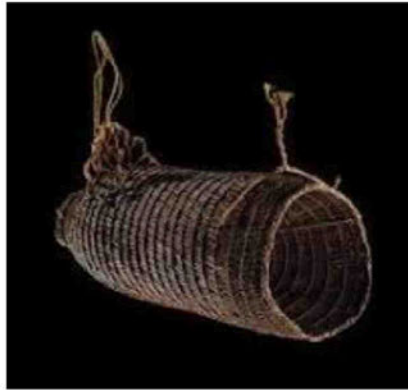
Tā te ākonga mahi (Patae/Achieved)

Pehea te hanga hinaki ki te hopu tuna



Ko te tuna he ika taketake no Aotearoa, ā, he tino kai ki te māori. E toru ngā momo tuna āra ko te tuna longfin, te tuna shortfin me te tuna australian longfin. Ka pēhea koe e mōho he aha te momo tuna? 1- tiro ki te urutira. Ko ngā longfins he roa ake te urutira ki te anal fish engari, ngā shortfin he āhua ōrite te roa o ngā fins e rua. 2-koiri te tinana. I te wā ka kōiri i te tinana mēnā ka whakātu ngā kōruhe he tuna longfin tērā, ā, mēnā tētaca te kite he shortfin. 3- Kei te ika ngā ira. He ōrite te hanga o ngā australian longfins ki ngā mea nō Aotearoa engari kei ngā Australian longfins ngā ira pango hurinoa i te tinana. He āhua kino ngā karu o te tuna engari he ihu kurī tā rātou, ā, ka kimi rātou i te kai mai te hongī me te rongo. Ka noho ngā tuna ki ngā wāhi pōuriuri, ngā wāhi tē tāea te tino kite hei tauira ngā wai hohonu. E ono ngā whanaketanga i te mataora o te tuna. Tuatahi ka tīmata mai te tuna ki tētahi hēki i roto i te moana kātahi ka paopao mai ngā heki i roto i te moana, ā, ko tēnei te Larvae. I te wā ka tae atu rātou ki te parumoana ka huri rātou hei glass eels. Hei tōna wā ka huri hei Elvers (juvenile eel) āra i te wā ka tini te tuna ki te tae parauri. Kātahi ka tupu hei Adult Tuna, ā, ka mutu ki te Tuana heke. I tēnei wā ka haerenga atu ki te moana, ki reira mate ai. No reira me pehea te hanga hīnaki hei hopu i ngā tuna? He aha ngā inenga hei hīnaki, tao, otirā ngā taputapu taketake hei hopu i te tuna?

Hinaki



I ngā rā o nehe i whakamahi ngā tūpuna i ngā hīnaki ki te hopu i ngā ika. Ka hangāia te hīnaki ki te kōrari o te mangemange ranei o te aka-tororaro. Ka whakamahi hoki i te pakiaka o te kiekie. He rite te hanga o te hīnaki ki te kete, ka whakauru te maunu, ka haere ki roto i te wai, a, ka hopu i ngā ika ara ngā tuna. Ka whakamahia nuitia ngā noke engari taea ano hoki te whakamahi i te manu hei maunu. I te wā ka kuhu ngā tuna ki roto i te hīnaki te taea te puta. Ko te take ko te ākura he porohita iti ki tōna waha me ngā rara. Ka anga whakaroto ēnei rara kia whāiti ai a waenganui. Koinei te take tē taea te puta atu ngā tuna.

Tatai

Paenga o ngā porohita kei ia pito o te hīnaki:

$$45 \times \pi \\ = 141.37$$

Horahanga o te porohita:

$$H = \pi p \times p \\ = \pi \times 22.5 \times 22.5 \\ = 1590.43 \text{cm}^2$$

Rango (Cylinder) o te hīnaki:

$$1590.43 \times 125 \\ = 198803.75 \text{cm}^2$$

Horahanga mata o te porohita kei ngā pito o te hinaki:

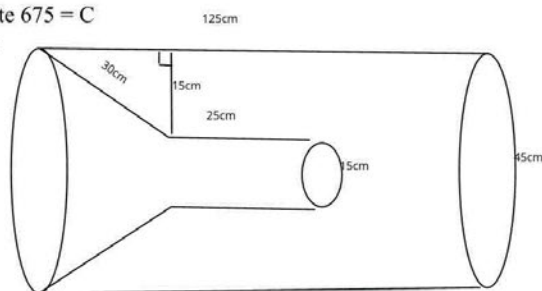
$$198803.75 + 198803.75 \\ = 397607.5$$

Paitakorahi (Pythagoras) kia rapu i te roanga o te tapatoru ki roto i te kokonga ki te taha o te urunga o te hīnaki:

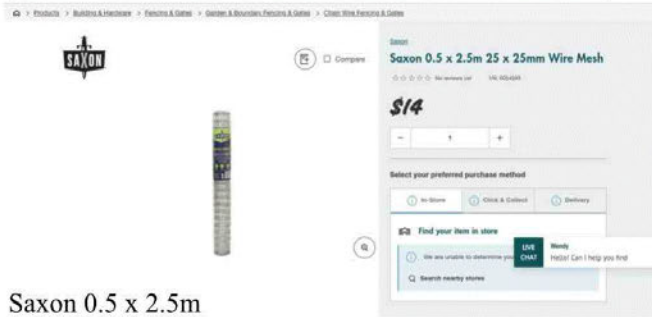
$$a^2 = b^2 + c^2 \\ 30^2 = 15^2 + c^2 \\ 900 = 225 + c^2 \\ c^2 = 900 - 225 \\ = 675$$

Takepūrua i te 675 = C

$$C = 25.98 \text{cm}$$



Utu mo te wire mo te hīnaki



I whakamahi ahau i te kukara ki te tini i te cm ki te m:

$$198803.75\text{cm} \div 10,000 = 19.880375\text{m}$$

Ki te kimi e hia te wire me whakamahi ahau mō tōku hīnaki i mahi au i tēnei:

$$0.5 \times 2.5 = 1.25$$

$$1.25 \div 19.880375\text{m} = 15.9043$$

Me hoko ahau i tēnei wire mesh (15.9043) engari ka whakaawhiawhi ki te 16 ngā wā

$$\text{Nō reira } \$14 \times 16 = \$224$$

\$224 te utu mō te wire mesh

Paetae

Te Wāhanga Ako: Pāngarau

Te Paerewa: 92068

Te Maaka: 04/04

Te Tūmahi	He Pitopito Kōrero
Tuatahi	E whakaatu ana i ētahi whārite hāngai ana ki te horopaki me ngā huatau o te ine me te āhuahanga. He pai te raupapa hoi, kāore e tino kitea ana te whakataunga a te kairangahau i tua atu i ngā otinga.