

Te Kauhoe Tawhiti

Ko ngā kaupapa pāngarau e whai wāhi atu ana ki tēnei ngohe:

- Ko te whakaatu pānga whakarea ki te tūtohi, ki te kauwhata hoki.
- Ko te whiriwhiri pānga whakarea māmā.
- Ko te whakamāori kauwhata rārangi.
- Ko te tautohu pūwāhi i te mahere.
- Ko te whakatau tata i te tawhiti i runga i tā te karu titiro ki te mahere.
- Ko te whakamahi i te rūri ki te ine tōtika i te roa.

Ko ngā kupu pāngarau matua:

mahere, āwhata, ahopou, ahopae, koki, tapatoru waerite, tūtohi, pānga, whārite, kōaro, whakatekaraka, kauwhata rārangi

Arā ētahi tāngata, he pakari ki te kauhoe. Ka whai rātou ki te whakaoti i ngā kauhoe tawhiti.



Hei Mahi 1

- a) Koia nei ngā ahopae me ngā ahopou hei tohu i ētahi wāhi kauhoe tawhiti o Aotearoa. Whakamahia te mahere, ka tuhi ai i ngā ingoa o ngā wāhi:

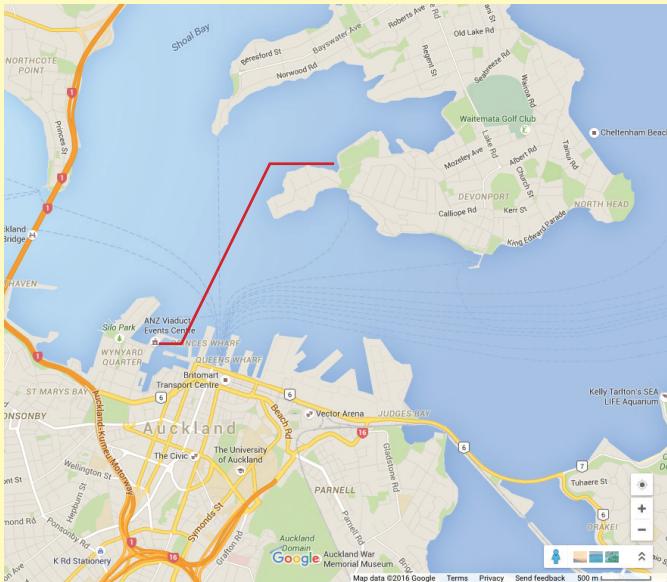
Ahopae	Ahopou	Wāhi
39°	176°	
41°	174°	
35°	174°	
45°	168.5°	

E mōhio ana te ākonga ki te tautohu pūwāhi ki te mahere. Arā:

Ahopae	Ahopou	Wāhi
39°	176°	Te Moana o Taupō
41°	174°	Te Moana o Raukawa
35°	174°	Paihia, Kororāreka, Te Pēwhairangi
45°	168.5°	Te Moana o Wakatipu



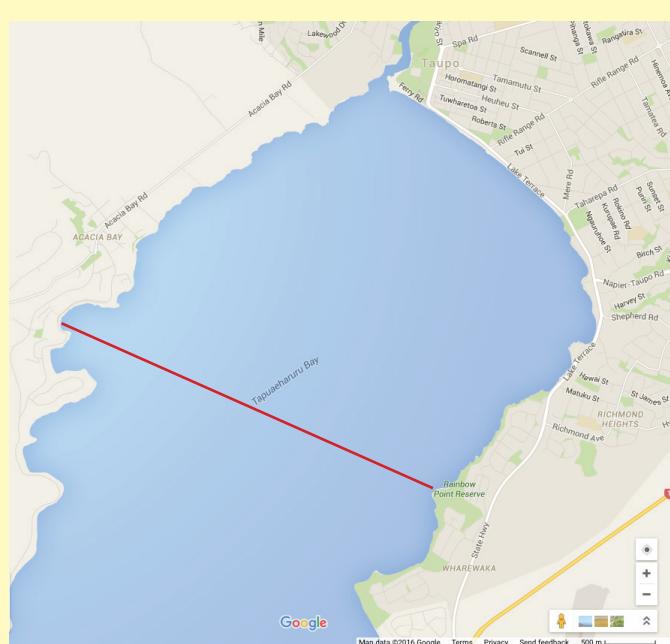
- e) Ki tō titiro ki te mahere, ko tēhea o ēnei kauhoe te mea tawhiti rawa, ko tēhea te mea poto rawa?
- h) Ko tētahi atu o ngā kauhoe tawhiti, ko te whakawhiti i te whanga o Waitematā i Tāmakimakaurau. Koia nei te mahere. Inea te tawhiti o te kauhoe i te mahere.



- i) Mēnā 18mm i te mahere e rite ana ki te 500m tūturu i te whenua, whakatau tatangia te tawhiti o tēnei kauhoe.

Hei Mahi 2

E 4.2km te tawhiti o tēnei kauhoe i te moana o Taupō:



Ko Te Moana o Raukawa te mea tawhiti rawa ki tā te karu titiro.

E mōhio ana te ākonga ki te whakamahi rūri ki te ine tōtika i ngā roa i te mahere. Arā:

- Kaupeka 1 = 8mm
- Kaupeka 2 = 25mm
- Kaupeka 3 = 3mm

E mōhio ana te ākonga ki te pānga whakarea kei waenganui i ngā inenga i te mahere me ngā tawhiti tūturu. Arā:

E 36mm te tawhiti o te ara kauhoe i te mahere ($8 + 25 + 3 = 36$)

$2 \times 18\text{mm} = 36\text{mm}$ Nō reira ko te 1km (1000m) te tawhiti i te moana tūturu.

- a) E 80 ngā kau o ia ringa o Paea ka oti i a ia te 100m.
Whakaotia tēnei tūtohi:

te tawhiti o te kauhoe (m)	100	200	300	400	500
ngā kau o ia ringa					

- e) E hia ngā kau o ia ringa kia oti i a ia tēnei kauhoe tawhiti i te moana o Taupō?

- h) E 60 ngā kau o ia ringa o Rangi, ka oti i a ia te 100m.
Ka tuhia e ia tēnei whārite:

$$K = 60t \div 100$$

E tohu ana te K i te aha? E tohu ana te t i te aha?

- i) He aha i whakawehea ai ki te 100?

- k) Whakamahia te whārite hei whiriwhiri i te maha o ngā kau o ia ringa o Rangi, kia oti i a ia tēnei kauhoe tawhiti i te moana o Taupō?

te tawhiti o te kauhoe (m)	100	200	300	400	500
ngā kau o ia ringa	80	160	240	320	400

E mōhio ana te ākonga ki te whakaatu pānga ki te tūtohi. Arā:

- Ka tāpiri haere i te 80 hei whakaoti i te tauira tipu i te kapa raro o te tūtohi.
- Ka whakareatia ia rau mita ki te 80 hei whiriwhiri i te maha o ngā kau o ia ringa.

Ka whai rautaki te ākonga ki te whiriwhiri i te maha o ngā kau o ia ringa. Hei tauira:

- 1km = 800 ngā kau; 4km = 3200 ngā kau; 200m = 160 ngā kau. Nō reira, $3200 + 160 = 3360$ ngā kau hei whakaoti i te 4.2km
- 4.2km = 4200m. Whakareatia te 42 ki te 80, ka 3360 ngā kau o ia ringa

E mōhio ana te ākonga ki te whakaatu pānga ki te whārite. Arā, e tohu ana te K i te maha o ngā kau o ia ringa. E tohu ana te t i te tawhiti o te kauhoe (hei mita).

E mōhio ana te ākonga ki te whakamāori i te whārite e whakaatu ana i tētahi pūāhua whaitake. I konei, ka whakawehea ki te 100 nā te mea ko te t e tohu ana i te maha o ngā mita (kāore te rau mita).

E mōhio ana te ākonga ki te whakamahi whārite hei whiriwhiri i tētahi taurangi kāore e mōhiotia ana. Arā:

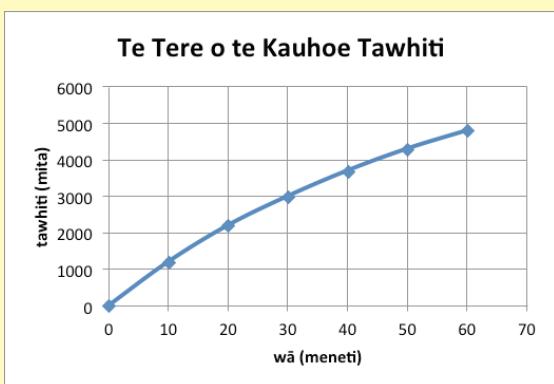
$$\begin{aligned} K &= 60t \div 100 \\ &= 60 \times 4200 \div 100 \\ &= 2520 \text{ (te maha o ngā kau o ia ringa)} \end{aligned}$$

Hei Mahi 3

E ai ki te rangahau a Rangi, kei te takiwā o te 7.2k/h te tere rawa atu o te kauhoe e taea ana e te tangata. Koia nei te tūtohi i tuhia e ia:

wā (meneti)	10	20	30	40	50	60
tawhiti (mita)	1,200	2,400	3,600	4,800	6,000	7,200

- a) Nō hea te 60 me te 7,200 i te pou matau o te tūtohi? E tohu ana ērā i te aha?
- e) He aha te mahi a Rangi hei whiriwhiri i te 1,200m ka oti i roto i te 10 meneti?
- h) Me he pēnei te tere o te tangata ki te kauhoe, e hia meneti ka oti i a ia te kauhoe tawhiti i te moana o Taupō (Hei Mahi 2 i runga ake nei)?
- i) Ko te tautohe a Paea, kāore e pūmau te tere o te kauhoe mēnā he kauhoe tawhiti. Ka tuhia tēnei kauwhata hei whakamārama i tana whakaaro:



Whakamāramahia te kauwhata me te whakaaro o Paea.

E mōhio ana te ākonga ki te whakamāori tūtohi. I konei, i takea mai te 60 me te 7,200 i te kōrero o runga ake e mea ana ko te 7.2km/h te tere. He ūrite te kotahi haora ki te 60 meneti. He ūrite te 7.2km ki te 7,200m.

E mōhio ana te ākonga ki te whiriwhiri pānga whakarea. Arā, ka whakawehea te 60 meneti ki te 6, ka 10 meneti. Kia pērā hoki te whakawehe i te 7,200 ki te 6 hei whiriwhiri i te tawhiti, arā, $7,200 \div 6 = 1,200\text{km}$.

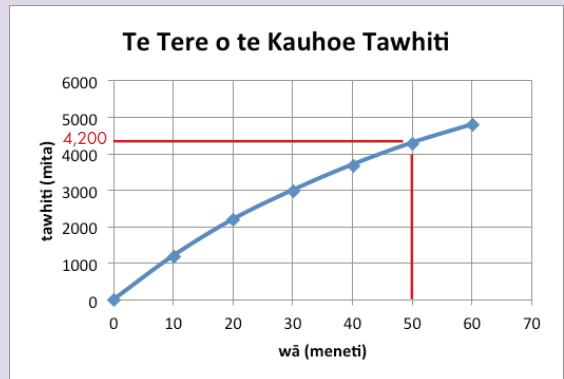
E mōhio ana te ākonga ki te whiriwhiri pānga whakarea. Hei tauira:

- E 4,200m te tawhiti o te kauhoe. Kei waenganui pū te 4,200 i te 3,600 me te 4,800. Nō reira ko waenganui pū i te 30 me te 40 meneti te wā ka oti te 4,200m te kauhoe, arā, te 35 meneti.

E mōhio ana te ākonga ki te whakamāori kauwhata rārangī. Arā, ka pōturi haere te kauhoe i te takanga o te wā, nā te mea ka pau haere te hau o te tangata kauhoe. Ko te pikoi o te rārangī e tohu ana i tērā. Mēnā he pūmau te tere o te kauhoe, he rārangī torotika te kauwhata.

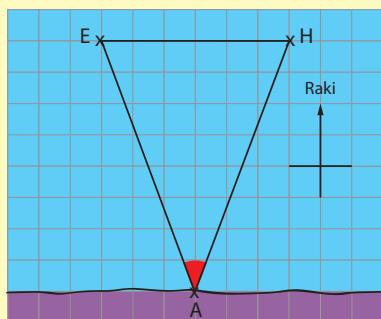
- k) Mēnā ka whai i tā Paea e tautohe nei, e hia meneti ka oti te kauhoe tawhiti i te moana o Taupō?

E mōhio ana te ākonga ki te whakamahi kauwhata hei whiriwhiri i te taurangi kāore e mōhiotia ana. I konei, e mōhiotia ana te tawhiti o te kauhoe, arā, te 4,200m. Ka tautohua te 4,200 i te tuaka pou o te kauwhata, ā, ka kimi i te pūtahitanga o tērā me te rārangi o te kauwhata. Ko te 50 meneti tērā.



Hei Mahi 4

He mahere tēnei o tētahi whakataetae kauhoe moana. Ko te A e tohu ana i te tīmatanga o te ara kauhoe. He pōito e rewa ana i te moana i te pūwāhi E me te pūwāhi H.



- a) Mēnā he kōaro te huri āmio i te ara kauhoe, ko tēhea te pōito tuatahi?
- e) Mēnā he kōaro te huri āmio i te ara kauhoe, he aha te ahunga o te kaupeka tuarua o te ara?
- h) He aha te momo tapatoru o te ara kauhoe?

E mōhio ana te ākonga ki te tikanga o te kōaro (me te whakatekaraka). Arā, i konei ka kauhoe atu ki te pōito H i te tuatahi.

E mōhio ana te ākonga ki ngā ahunga matua o te kāpehu. Arā, i konei, ko te uru te ahunga mai i te pōito H ki te pōito E.

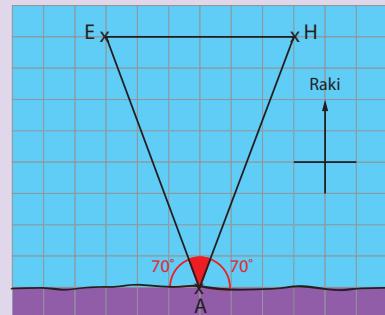
E mōhio ana te ākonga ki ngā āhua ahurua māmā. He tapatoru waerite tēnei.

- i) E 70° te rahi o te koki kei waenganui i te tahatika (arā, te whenua) me te kaupeka AH o te ara kauhoe. Ki tō titiro e hia putu te rahi o te koki kei waenganui i te tahatika (arā, te whenua) me te kaupeka AE o te ara?

- k) Whiriwhiria rahi o te koki EAH (te koki whero i te mahere).

- m) Mēnā e 500m te tawhiti o te kaupeka tuatahi o te ara, whakatau tatangia te tawhiti o te kaupeka tuarua o te ara.

E mōhio ana te ākonga ki te hangarite o te tapatoru waerite. Arā, i konei he ūrite ngā koki e rua kei ia taha o te tapatoru me te tahatika.



E mōhio ana te ākonga ki te whiriwhiri i ngā koki i tētahi rārangī torotika. E 70° te rahi o ia koki kei ngā taha o te tapatoru me te tahatika. Hui katoa, ko te 140° tērā. 180° te koki torotika. Nō reira ka tangohia te 140 i te 180 , ko te 40° te koki whero.

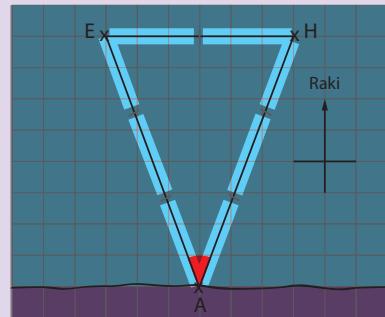
Ka whakamahia te pānga riterite o tā te karu e kite ana hei whakatau tata i ngā tawhiti.

- Mēnā e 500m te tawhiti o te kaupeka tuatahi, e 500m hoki te kaupeka tuatoru (nā te mea he hangarite te tapatoru, he tapatoru waerite).
- He nui ake te kaupeka tuarua o te ara i te haurua o te kaupeka tuatahi (500m). Nō reira ko te whakatau tata, kei te takiwā pea o te 350m.
- Hui katoa te 500m, te 350m me te 500m, ko te 1,350m te whakatau tata i te tawhiti huri āmio i te ara kauhoe.

n) Mēnā e 4km te tawhiti huri āmio i te ara kauhoe, whakatau tatangia te tawhiti o ia kaupeka.

Ka whai rautaki te ākonga ki te whakatau tata i ngā tawhiti. Hei tauira:

- Mēnā ka wāwāhia te AH me te AE ki ētahi wāhangā ūrite e 3, ā, ka wāwāhia te EH ki ētahi wāhangā ūrite e 2, he ūrite aua wāhangā e 8 katoa ki tā te karu titiro:



- Whakaweha te 4km ki te 8, ko te 0.5km tērā ($4,000\text{m} \div 8 = 500\text{m}$). Koirā te roa o ia wāwāhitanga o te ara.
- Nō reira ko te 1.5km te whakatau tata i te roa o te AE me te AH ($500\text{m} \times 3$). Ko te 1km te whakatau tata i te roa o te EH ($500\text{m} \times 2$).