



# Muu ki a Koe



Pukapuka Kaiako





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He mea tautoko tēnei kete nā:

<insert sponsor's logo>

# Ngā Rauemi Kete

- Pukapuka Kaiako
- 10 raumahi ākonga – Pārae Piki me te Miki
- 10 raumahi ākonga – Whakaranu, Mehanga rānei? Wāhanga A: Rūrūtia
- 10 raumahi ākonga – Whakaranu, Mehanga rānei? Wāhanga B: Rūrū Miraka
- 10 raumahi ākonga – Rapurapu Hokomaha
- 5 raumahi ākonga – He Ōrite te Hanganga o te Miraka Katoa?
- Ipu Kirihou
- Mahere huatau me ngā pānui 'Tīmata ki te Pūtaiao'
- He Aha Tō Tātou Hononga?
- E 5 huinga kāri raupapa kararehe

## Pārae Piki me te Miki

- 10 paepae kirihou
- 20 paepae whakatipu pango
- 10 kutikuti
- 10 tīpune
- 10 ipu rehu
- Kākano pārae rerekē
- pepa rauangi
- huinga 'kāri tohuta a Rosie'
- 20 paepae pōpopo
- rōra raukonu

## Nakunaku Wāhanga A: Nakunaku Pukutahi

- pukutahi me te pēke kirihou
- hūware
- waikawa puku
- pihikete paka
- moroiti
- paepae kirihou
- tōkena pipiri / kutikuti
- kapu kirihou/kirihou kōmāmā
- huinga o ngā pānui 'Nakunaku pukutahi

## Nakunaku Wāhanga B: Nakunaku kai rua

- pēke kai kuhukuhu
- puku kai rua
- moroiti kai rua
- hūware
- waikawa puku
- autō
- tīpune/pune nui
- karapu tawau
- huinga pānui 'Nakunaku Kai rua'

## Whakaranu, Mehanga rānei?

### Wāhanga A: Rūrūtia

- kirikiri/tote/huka
- 10 tīpune
- 10 ipu i tapaina ki te 'tote'
- 10 ipu i tapaina ki te 'huka'
- 10 ipu i tapaina ki te 'kirikiri'

## Whakaranu, Mehanga rānei ?

### Wāhanga B: Rūrū Miraka

- paura miraka
- hinu tunu
- 10 ngōine
- 10 50mL ipurau
- 10 ipu i tapaina ki te 'miraka'

## He Ōrite Rānei Ngā Miraka Katoa?

- 5 Huinga Miraka Whāngote
- mataono rākau
- 5 pānui 'Taioranga Miraka'

## Rapurapu Hokomaha

- wati tū

## Ngā Tapuwae Taiao

- 10 pānui A
- 10 pānui B

## Ngā tohanga pepa

- Nakunaku Pukutahi
- Nakunaku Kai rua
- Whakaranu, Mehanga rānei?
- Rapurapu Hokomaha

# MAHERE ARIĀ Muu ki a Koe

**ARIĀ MATUA:** Ka ahu mai ō tātou pūngao katoa i te rā.

**Ka tatū te whitinga o te pūngao kōmaru i roto, i waenganui hoki i ngā rauropi i te wā ka kai ngā kararehe me te tangata i ngā tipu me ngā kai i hangaia i te tipu.**

He pānga tō te mahi kai i runga i te taiiao – ngā puhanga haurehu kati mahana, te tua ngahere, te whakamahi wai me te parahanga.

E hiahia ana te taupori ā-ao tipu nui i te āheinga ki te taioranga kounga nui.

Ko te ahumahi miraka tētahi kaituku hira ki te puna kai o te ao.

Ko te nakunaku te tukanga e āhei ai te tinana ki te whiwhi i ngā taiora me te pūngao e hiahia ana mai i ngā kai e kaingia ana.

Ka whakaranu, whakarite hoki te puku i te kai mō te nakunaku.

Ko ngā tipu pārae he puna whaihua o te kai me te pūngao.

He puna o te whiringa kai taurite, taiora hoki ngā hua miraka pēnei i te miraka, te tīhi me te waipupuru.

He wē taiora-nui te waiū, i hangaia mai i te wai, te pūmua, te ngako, te rei huka me ngā huaora me ngā kohuke.

He pūnaha nakunaku ahurei tō ngā kararehe kai rua e āhei ai rātou ki te whakamahi pai ake i te pūngao o ngā mea tipu, ka huri hei waiū taiora-nui mā ā rātou punua.

He kararehe kai rua ngā kau.

Ko ngā kararehe kai rua katoa he whāngote. Ka hanga waiū te whāngote mā ā rātou punua.

E whakarōpūtia ana ngā mea ora katoa i runga anō i ngā tauritenga me ngā tauaronga.

4

3

2

1

Te  
Marautanga  
(Kōke)

**ARIĀ TĪMATANGA:** E hiahia ana ngā mea ora katoa i te kai hei puna o te pūngao.



# Te Marautanga o Aotearoa: Pūtaiao

*Nā Rangi tāua, nā Tū-ā-nuku e takoto nei*

*Ko ahau tēnei, ko mea a mea*

Ko te mātauranga pūtaiao i hua mai i te tangata: i ahua mai i ngā ahurea katoa, ā, nō ngā ahurea katoa hoki. Ko te pūtaiao he mātauranga e pā ana ki te ao tūroa me te wāhanga ki te tangata i roto i taua ao tūroa. Ka whakamātau whakaaro hāngai ki ngā wheako tairongo o te ao; he mātauranga hangore, ka tūpono hē, e taea te whakahou.

## Te Whaitake o te Ako i te Pūtaiao

Ka mātau te ākonga ki ngā pūkenga rangahau, ki te whakamātau, ki te tūhura, ki te whakaoti rapanga. Heoi anō, me mataara tonu te titiro ki ngā putanga mai o te pūtaiao i te ao. Ka pakari te ākonga ki te reo pūtaiao, ki te rongo ā-tinana, ā-wairua, ā-hinengaro. Me puare ki a ia ngā huarahi hei whakatutuki i ngā taumata mahi o te ao pūtaiao, engari kia pūmau tōna ngākau ki te taiao puta noa. Me rongo tonu te whatumanawa ki ngā nawe o tōna ao, kia kitea ai ngā huarahi hei whakatikatika.

## Te Hanga o tēnei Wāhanga Ako



Tohutoro: Te Marautanga o Aotearoa

# Hononga Ahurea

## Miraka

Ko Miraka anake te kamupene miraka e puritia nuitia, whakahaeretia ana hoki e te Māori, kei Mōkai, 30km ki te raki o Taupō i Te Puku o te Ika.

Ka hangaia e Miraka ngā paura miraka tiketike ka hokona ki te ao whānui.

Kua tūturu te noho o Miraka i roto i te ahumahi tukatuka miraka o Aotearoa me ngā uara kaha i takea mai i ngā whakapono ahurea o ōna kaipupuri.

He whāinga rangatira te tiaki i te taiao ki ngā kaiwhaipānga o Miraka.

He moemoeā pae tawhiti tō rātou o ngā tikanga pakihi toitū hei whakarite i te putanga o ngā hua o te whenua ki ngā whakatipuranga.

Ka whakamahia te korohū ngāwhā whakahou mai i te papa ngāwhā o Mōkai ki te whakahaere i āna mahi tukatuka - he tuatahitanga i te ao mō te ahumahi tukatuka miraka. Ka whakaritea ētahi poka aroturuki puta noa i te whenua ki te whakarite kāore he pānga ki te wai o te whenua.

Ko te para koiora o te tukanga whakamaroke miraka ka wairākoutia i te pāmu noke o Tuaropaki Trust. Waihoki ko ngā para noke ka whakaurua ki tētahi māra whakatipu rākau māori, ā, ko ēnei tipu ka whakatipuhia ki te tahataha wai.



Ka heke iho ngā puhanga haurehu kati mahana i te whakamahinga e Miraka i te korohū ngāwhā me te whakawairākau i te para koiora. He mea nui tēnei i roto i tā rātou mahi hei kaitiaki i te taiao. He mea nui tonu hoki ki ngā kiritaki puta noa i te ao e rapu ana ki te hoko i nga hua e iti ana te tapuwae waro.

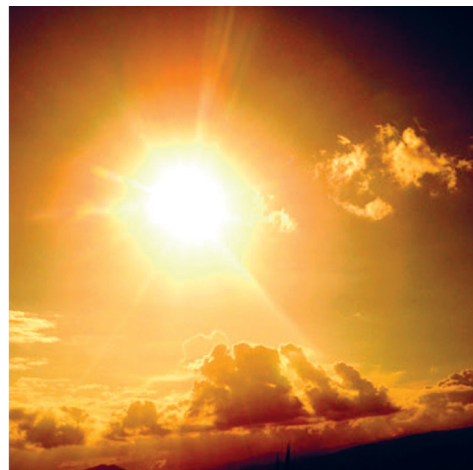
# Ngā Whakamārama mā te Kaiako

## Kupu Whakataki

Ka ahu mai ō tātou pūngao katoa i te rā. Ka hopu ngā tipu, ka puri hoki i te pūngao aho mai i te Rā hei pūngao matū, mā te tukanga e kīia nei ko te ahotakakame. Ka puritia te pūngao ki ngā pakiaka, ngā hua me ngā rau. Ka whāngai tēnei pūngao i ngā mea ora katoa o te Ao.

Ka tatū te whitinga o te pūngao kōmaru i roto, i waenganui hoki i ngā rauropi i te wā ka kai ngā kararehe me te tangata i ngā tipu me ngā kai i hangaia i te tipu.

Ka whai haere te kete rauemi o 'Moo to You' i te whakawhitinga o te pūngao mai i te Rā ki ngā tipu pārae, ki ngā kau, me tana tukunga i te wā o te tukanga nakunaku hei warowaihā, pūmua me te ngako o te miraka me ētahi atu hua miraka.





## Te āhua o te whakarōpū i ngā mea ora?

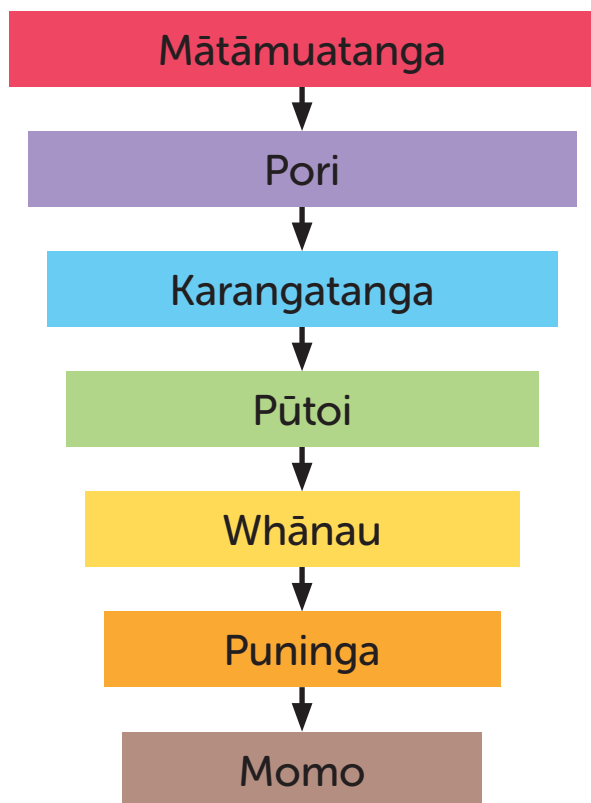
E hia piriona ngā momo mea ora i te Ao, ā, kua whakaritea ētahi huarahi hei whakaingoa, hei whakarōpū hoki i aua mea i runga anō i ngā tauritenga me ngā tauaronga.

Ko te pūnaha e whakamahia nuitia ana e ngā kaipūtaiao ka whakarōpū i ngā mea ora katoa ki ngā rōpū mātua e 7 (taxon rānei), i whakaraupapatia mai i te mea whānui ki te mea motuhake rawa. Ka tīmata mai ēnei rōpū hei mea nui ka heke i ngā mea iti, kia tautuhia ngā āhuatanga ahurei, ā, kia puta rā anō he ingoa momo.

Nō tētahi puninga ngā momo katoa, ko ia puninga nō tētahi whānau, ko ia whānau nō tētahi pūtoi, ā, pērā tonu te haere.

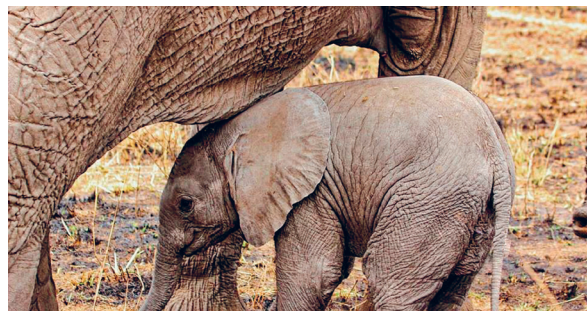
I te tuatahi ka whakatauhia ngā rauropi ora ki tētahi mātāmuatanga. Ko ngā mātāmuatanga e 6 ko ngā Tipu, Kararehe, Pūtautahi, Hekaheka, Huakita Tawhito me te Huakita Pono.

Ko te mātāmuatanga kararehe (*Animalia*) te mea nui o ngā mātāmuatanga katoa, neke atu i te kotahi miriona ōna momo.



### Ngā Whāngote

He mema te Whāngote o te rōpū kararehe i roto i te mātāmuatanga Kararehe (*Animalia*), e whāngaihia ana te punua ki te waiū mai i ngā repe ū motuhake o te ūkaipō. Ka whai tuaiwi hoki, he mahana te toto, ā he huruhuru hōki tō rātou.



## Kararehe Kai Rua

Ko te kararehe kai rua he whāngote o te pūtoi-iti *Ruminantia* (pūtoi *Artiodactyla*). He whāngote ngā kai rua katoa, engari ehara ngā whāngote katoa i te kai rua.

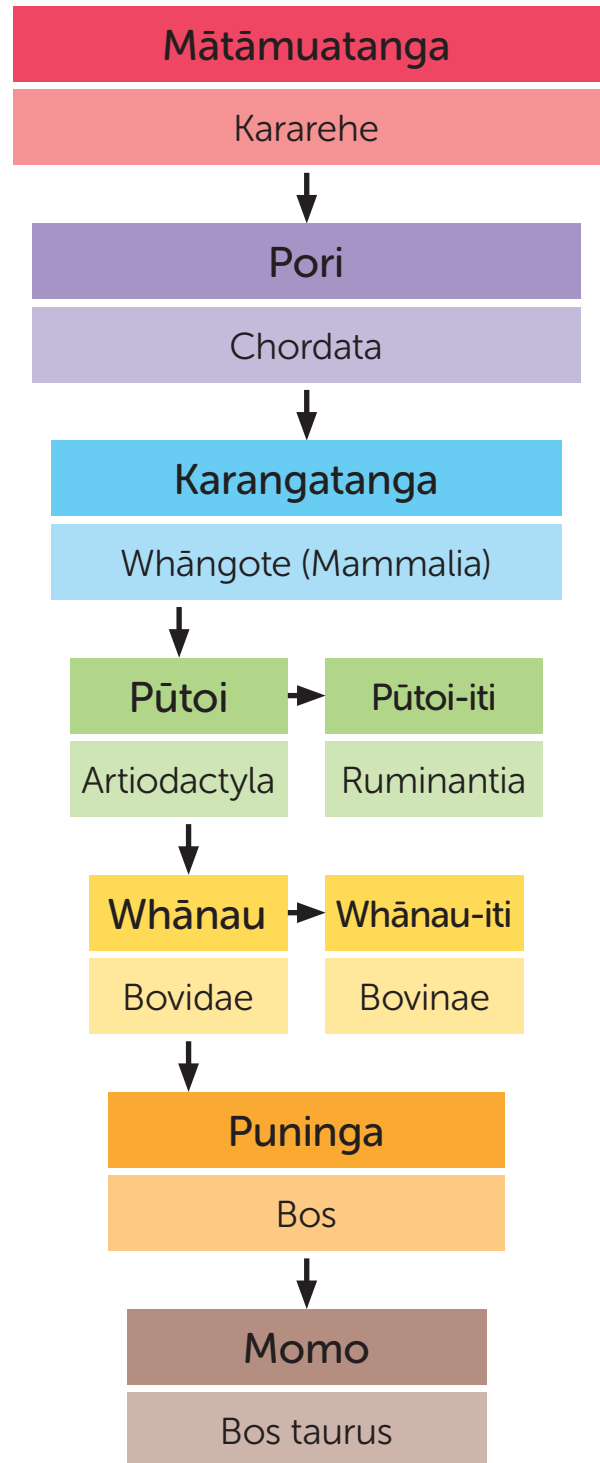
Ko ngā kararehe kai rua ka whiwhi taiora mai i ngā kai tipu mā te whakamoī i te kai i roto i te puku motuhake i mua i te nakunaku.

He āhua 200 ngā momo kai rua, ētahi he rata, ētahi he puihi.

Ko te whānau *Bovidae*, i roto i te pūtoi-iti *Ruminantia*, ka uru te kau, te nanekoti, te hipi me te anaterope.



Ko ngā kau (te uwaha) me ngā pūru (te toa), he mema rongonui hou o te whānau iti *Bovinae*, ā, ko te momo nui tēnei puta noa i te puninga *Bos*. Ko te *Bos taurus* (*B. taurus*) te ingoa momo o te kau rata.





## Otaota

E hiahia ana ngā mea ora katoa i te kai hei puna o te pūngao.

Ko te otaota, pērā i ngā tipu kākāriki katoa, ka hopu i te pūngao mai i te Rā, ka whiti i te pūngao hei kai (huka me te warowaihā) ka whakamahia e ia ki te tipu. Ko te ingoa o tēnei tukanga ko te ahotakakame.

He puna whaihua o te kai me te pūngao te otaota mō ngā momo kararehe ora maha.

Mai i ngā otaota pārae hei kai mā ngā kararehe ki ngā tipu kai pēnei i te ōti me te pāre mā te tangata, ka noho ngā otaota hei puna kai matua o te ao. He 26% te nui o te otaota o ngā tipu o te Ao. He nui ngā tūmomo otaota (āhua 10,000 ngā momo). He whānui hoki ngā momo rahinga me ngā pāpātanga tipu.

He nui ngā momo kararehe kai otaota hei puna kai matua, tae atu ki te hipi, kau, hoiho, rāpeti, tia me ngā tuaiwi-kore pēnei i te pākauroharoha me te anuhe. Ka kainga hoki ngā otaota e ngā kaikiota, ā, he wā anō ka kainga e ngā kaikiko.

Ko te kaiotaota (graminivore) he momo kararehe kaitipu e kai nui ana i te otaota me te kākano.



## Pārae

Ko te pārae he pātiki whakatipu tipu mā ngā kararehe tītongi. Ehara te pārae i te otaota noa engari he tipu rerekē maha. Ko te tikanga he pahekotanga o ngā momo otaota, kanopī me ngā amiami i kōwhiria i runga i te hāngai ki te taiao me ngā kararehe. Nā te kanorau o ngā momo tipu, ka taea e ngā kararehe te kai i ngā whiringa kai rerekē, me ngā huaora me ngā kohuke hauora.



Me whakatipu wawe anō ngā tipu pārae puta noa i te tau i muri i te kainga e ngā kararehe tītongi

Ko ngā tipu pārae katoa ka kaingia e ngā kararehe tītongi, ka kīia he tipu kai kuhukuhu. Ko te kai kuhukuhu te pūtake o te kai a te kau. Me pai tonu te whiringa kai a te kau, e noho ora ia, me te whakaputa kāwhe pakari, me te miraka pai rawa.



Kua whakawhanaketia e ngā kaipāmu o Aotearoa ngā pūnaha mō te tītongi whaihua i ngā kararehe maha ki ngā pārae tuwhera puta noa i te tau. Ka uru ki tēnei te otaota pārae i te raumati, ā, i te wā e onge ana te pārae, ka whakamahia te karapēpē me te hei hei kīnaki i ngā whiringa kai a ngā kararehe tītongi.

Ko te karapēpē ko ngā tipu pārae i tapahia i te wā e makuru ana, kātahi ka moītia hei pupuri i te taiora o roto.



Ka ita tonu te tākai i ngā pēre karapēpē ki te kirihou. Ka hanga tēnei i te taiaro hāora-kore i roto i te pēre e moī ai te pārae.



Ko te hei hei pārae kua tapahia, kua maroketia hoki.

## Nakunaku

Ko te nakunaku te tukanga e āhei ai te tinana ki te whiwhi taiora me te pūngao e hiahiatia ana mai i ngā kai ka kaingia.

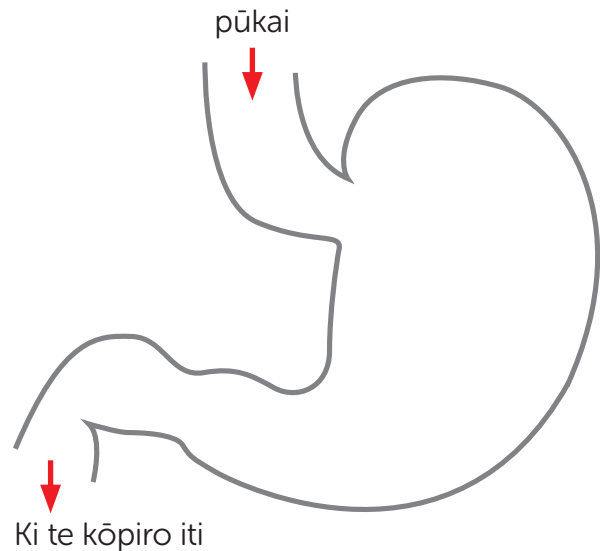
Ka toro te pūnaha nakunaku mai i te waha ki te kōtore, ā, i hangaia i ngā wāhanga tinana e mahi tahi ana ki te huri i te kai me te wē hei paraka hangahanga me te kora e hiahia ana te tinana ki te tipu tika, kia hauora hoki.

Ko te puku he whēkau uaua e noho ana hei wāhanga o te ara nakunaku.

Ko te mahi matua o te puku he puri kai, ka tuku ki ngā kōpiro i runga anō i te pāpātanga e taea ai e ngā kōpiro te tukatuka. Ka whakaranu te puku, ka kauoro, ā, ka whakarite i te kai mō te nakunaku.

## Nakunaku Pukutahi

Kotahi noa te wāhanga o te puku o te rauropi pukutahi.



Ko ngā tauira o ngā kararehe pūnaha nakunaku pukutahi ko te tangata, kurī, poaka, hoiho, rāpeti me te ngeru.

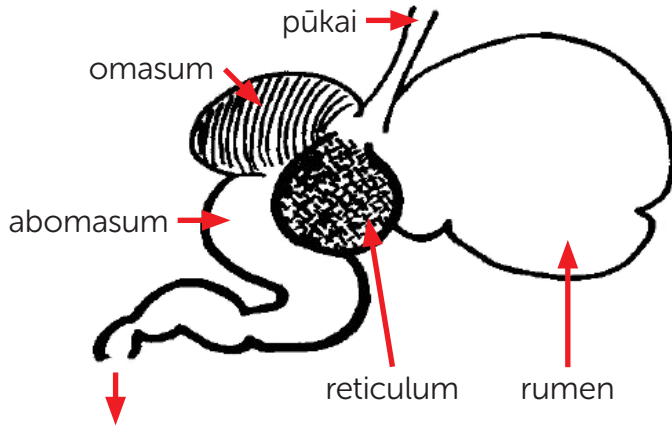




## Nakunaku Kai Rua

Ko te rerekētanga matua i waenga i ngā kararehe kai rua, kai rua kore hoki, e whā rawa ngā wāhanga o te puku o te kararehe kai rua.

He ara motuhake tō ngā kararehe kai rua mō te nakunaku kai, otirā ka neke haere i te kai mai i tētahi wāhanga o te puku ki tētahi atu.



Ki te kōpiro iti

Ko ngā taurira o ngā kararehe me ngā pūnaha nakunaku kai rua ko te kau, te hipi, te nanekoti me te tia.



Rerekētanga	Pukutahi Pūnaha nakunaku	Kai Rua Pūnaha nakunaku
Te nui ngā wāhanga o te puku	1	4
Te nui o te wā ka ngaua te kai	Kotahi	Torutoru
Te whaihua o te naku-naku tipu, hua tipu rānei	Whāiti	Tino Whanake

## He aha te waiū

Ko ngā whāngote anake te rōpū kararehe i te mātāmuatanga kararehe katoa e whakaputa waiū ana mā ngā punua.

Ko te waiū he puna tapele o te taioranga mā ngā piripoho. He kūtere taiora nui o te ngako, te pūmua, te reihuka (huka) me te wai, ā, he huhua ngā momo taiora, pēnei i te huaora me te kohuke.

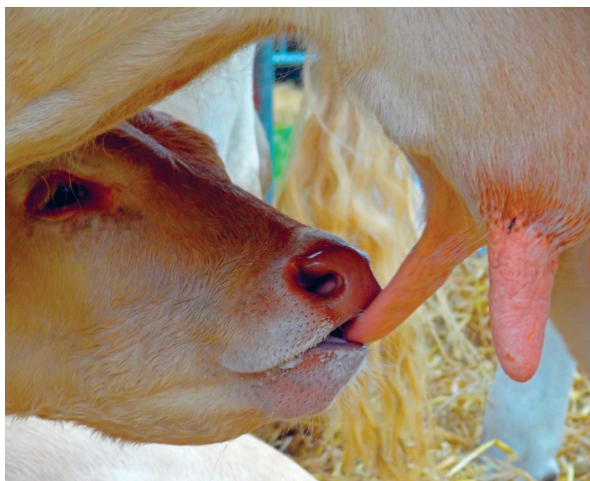


Ko te hanganga o te waiū he rerekē i runga i te āhua o te momo, te whiringa kai me te taiao. Ko ngā renetia i te Pito Raki ka hanga waiū taiora nui he 20% te ngako (he whakarea 5 o te waiū tangata, kau rānei), hei āwhina i ngā punua kia pakari i roto i te āhuarangi mātaotao rawa.

Kua hia mano tau e kaingia ana te miraka puta noa i te ao hei puna kai taioaraora. Ko ngā miraka e kaingia nuitia ana, nō te kau, te hipi me ngā nanekoti.

## Me pēhea, he aha ai hoki e hanga ai te kau i te miraka?

He puku wāhanga whā tō te kau, e taea ai e ia te nakunaku i te kai kuhukuhu mō te taioranga. He kararehe kai rua ia.



Me whakawhānau te kau e hanga miraka ai ia. Nā te hapūtanga ka hanga te tinana o te kau i ngā taiaki e tika ana ki te whakarite i tōna tinana me ōna ū ki te hanga miraka. Ko ngā taioara ka mitia mai i te rerenga toto ka huri haere ki te repe ū i te ū, te wāhi e paheko ai ngā pūtau motuhake i ngā taioara ki te hanga miraka.

Kia whānau te kāwhe, kua rite ki te whakarato miraka mā tana kāwhe.

He kaha te kau miraka ki te hanga miraka. I te wā ka kūtētē te kaipāmu i te kau, e tuku karere ana ki te tinana o te kau kia hanga tonu i te miraka, ā, me te nohonga tika o ngā taumata taiaki waiwai i roto i te kau.

Ko te nui o te miraka e hangaia ana e te kau ka heke haere i te paheketanga o ngā marama, ā, ka 'whakamaroketia' e te kaipāmu te kau. E toru marama te wā e tatari ana te kau i mua o te whakawhānau anō, ā, ka tīmata anō te tukanga.

## Te Miraka i Aotearoa

He whenua haumako a Aotearoa mō te mahi miraka.



Ko te āhuarangi, te oneone me te nui o te wai o Aotearoa e hanga ana i te taiao pai rawa mō te whakatipu otaota me ētahi atu tipu pārae.

Ka taea e ngā kau te kai pārae puta noa i te tau, ā, i te mea he motu tawhiti tātou i ētahi atu whenua, e wātea ana a Aotearoa i ngā riha maha me ngā pokenga kararehe e kitea ana i ētahi atu whenua o te ao.





Ka hangaia e Aotearoa te 3% o te miraka katoa o te ao, ā, ko ia anō hoki te kaihanga miraka nui tuawhitu o te ao. Ko Aotearoa te kaihoko hua miraka nui rawa o te ao.



**Tohutoro:**

[www.dairynz.co.nz/media/5794072/quickstats-about-dairying-new-zealand-2020-web.pdf](http://www.dairynz.co.nz/media/5794072/quickstats-about-dairying-new-zealand-2020-web.pdf)

## Ngā mehanga me ngā whakaranu

Ko te whakaranu he matū e whakaranua ana ngā matū e rua engari kāore i hono ā-matū nei. He māmā noa te whakawehe i te whakaranu, ā, ka mau tonu ngā āhuetanga taketake o ngā matū.

Ko te mehanga, he pahekotanga e memeha ai tētahi matū ki roto i tētahi atu.

Ko te totoka ka memeha e karangatia ana he matūmeha. Ko ēnei waehanga ka taea māmātia te whakawehe mā te whakaeto, ā, ka mau tonu ki ō rātou āhua ake.

Ko te miraka, he whakaranu me te mehanga.

Ko te mehanga he pahekotanga o ngā pūmua (pēnei i te pūtepe me ngā pūmua waikuruwhatu) me ngā huka (pēnei i te reihuka) i te wai. Ko te whakaranu ko te ngako o te miraka e iri ana i roto i te mehanga.

# Mahi Ākongā

## 1. He aha tō tātou hononga?

### NGOHE AKORANGA Ā-KAIAKO

#### Whāinga Ako (taumata 1-4)

E mārāma ana ngā ākongā kua whakaritea ētahi pūnaha hei whakarōpū i ngā mea ora i runga anō i ngā tauritenga me ngā tauaronga.

### E HIAHIATIA ANA:

E 5 huinga kāri whakarōpū kararehe.

### NGĀ TOHUTOHU

1. Whakawehea te akomanga kia 5 ngā rōpū.
2. Tohaina tētahi huinga kāri kararehe ki ia rōpū. Kei ia huinga te 20 ata o ngā momo kararehe rerekē.
3. Tono i ia rōpū ki te whakarite pūnaha o te whakarōpū i ngā kararehe nei ki ngā wāhanga, rōpū rānei i runga anō i ngā āhuetanga ōrite.
  - E hia ngā waewae? 4, 2, kore rānei?



- Ka noho ki hea? (nōhanga)? whenua, wai rānei?
- Te nui – iti, waenga, nui rānei?
- Uwhi kiri – huruhuru, kiri, unahi rānei?

- Kararehe rata, puihi rānei?
- Ngā kararehe e kitea ana i Aotearoa, me ērā nō whenua kē.
- Toto mahana, mātao rānei?
- He aha ngā kai – he kaitipu, kaikiko, kaikiota rānei?

Ko te kaitipu he kararehe ka whirinaki ki te matū tipu, ka whirinaki ngā kaikiko ki te kiko, ā, ka kai te kaikiota i te matū tipu me te kiko.



4. Kōwhiria ētahi o ngā huatau, ā, ka tonono i ngā ākongā ki te whakarōpū i ngā kararehe i runga anō i ngā paearu rerekē kua kōwhiria.
5. Tono ki ia rōpū ki te whakaatu i ā rātou hua, ā, ki te kōrero i ngā whakaaro i muri i ā rātou kōwhiringa.

He tino rerekē te āhua o ngā mea ora i ētahi atu. Ka rangahau ngā kaipūtaiao i ēnei rerekētanga, ā, ka whāia tētahi tukanga ki te whakarōpū me te tautuhi i aua mea.

Mā te whakarōpū i ngā mea ora ki ētahi atu e ōrite ana ngā āhuetanga, he māmā ake mā ngā kaipūtaiao ki te rangahau ake.

Ko ngā kararehe katoa e whakaaturia ana i ngā ata o ngā kāri nō te rōpū nui kotahi (mātāmuatanga) e kīia ana ko te Animalia.

Nō tētahi rōpū iti ake te arewhana, tohorā, nanekoti, kau, kurī, tia, poaka, tangata, hipi, ngeru me te kakīroa, i roto i te rōpū nui o te Animalia.

- He ōrite te āhua?
- He aha ētahi atu āhuatanga ōrite ki ō whakaaro?
- E mōhio rānei koe ki te ingoa o tēnei rōpū?

E karangahia ana tēnei rōpū he whāngote. He whai tuaiwi te whāngote, he mahana te toto, ka whakatipu huruhuru i tētahi wā o te oranga, ā, ka whāngai i ngā punua ki te waiū e tukua ana e ngā repe ū a te uwaha.

**Kia mōhio:** Ko te nuinga o ngā tohorā me ngā aihe he huruhuru ō rātou i te whānautanga, ā, ko ētahi momo ka mau tonu ki aua huruhuru puta noa i te oranga.



I roto i te rōpū whāngote tērā tētahi atu rōpū kararehe e kīia nei he kai rua.

- E mōhio rānei ana koe he aha te kararehe kai rua?

Ko te kai rua he whāngote e kai ana, e nakunaku ana i ngā kai tipu mā tētahi pūnaha nakunaku ahurei.



- Ka taea e koe te whakarōpū i ngā whāngote ki ngā kararehe pukutahi, kai rua hoki?

Whāngote	
Kai Rua	Pukutahi
Kau	Arewhana
Nanekoti	Tohorā
Hipi	Kurī
Kakīroa	Ngeru
Tia	Poaka
	Tangata

- He kai rua ngā whāngote katoa?  
**Kāo**
- He whāngote ngā kai rua katoa?  
**Āe**

### Kei te mōhio koe?

- Ko te taupori o te ao katoa o ngā kai rua puihi he neke atu i te 75 miriona. He taketake ki ngā whenua rahi katoa hāunga a Te Kōpaka ki te Tonga, ā, kei ngā āhuarangi whānui katoa e noho ana (pārū ki te Kōpaka Raro) me ngā nōhanga (mai i ngā mānia koraha ki ngā ngāherehere).
- He nui ake te taupori o ngā kai rua rata i te 3.5 piriona, ā, ko te kau, hipi me te nanekoti ka eke ki te 95% o te taupori katoa.



## 2. Pārae Piki me te Miki

### TAUTOKO KAIKO

#### Whāinga Ako (taumata 2-4)

Ka mārama ngā ākonga ko ngā pārae:

- he pātiki o ngā tipu i whakatipuria mā ngā kararehe tītongi.
- he kohinga o ngā momo tipu, kua ko te otaota anake.
- me pai tonu te kounga hei whakaputa i te nui o te miraka pai i ngā kararehe.

### E HIAHIATIA ANA

Me whai ia rōpū:

- paepae kirihou pūataata
- e 2 paepae whakatipu pango
- pepa rauangi
- kutikuti
- tīpune
- kōwhiringa o ngā kākano pārae
- ipu rehu
- raukonu
- kāri tohutoa a Rosie

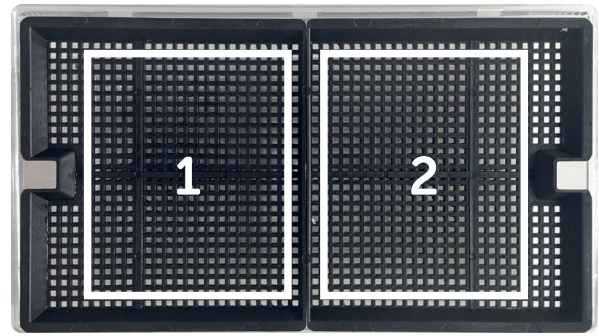
### NGĀ TOHUTOHU

He pāmu miraka tōu, ā, me whakatipu pārae atu anō koe mā ō kau.



1. Whakanōhia ngā paepae whakatipu ki runga ake o te paepae kirihou pūataata.

E tohu ana ia paepae pango i tētahi pātiki i tō pāmu miraka.



- He aha te pārae?

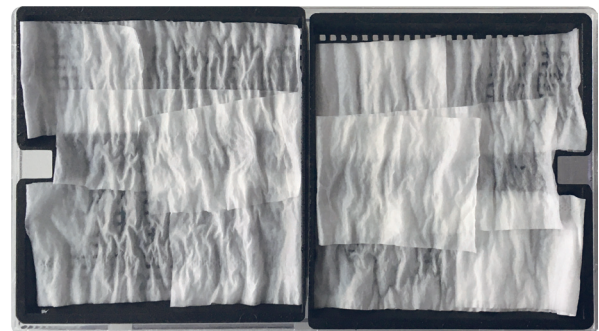
Ko te pārae he pātiki whakatipu tipu mā ngā kararehe tītongi.

- He aha te pātiki kuhukuhu?

Ko te pātiki kuhukuhu he whīra e tipu ana ngā tipu mō ngā kararehe tītongi.

2. Tapahia te rauangi hei tāhei, ka whakaraupapatia ki raro o ia paepae. Whakamahia te ipu rehu ki te whakamākūkū i te rauangi.

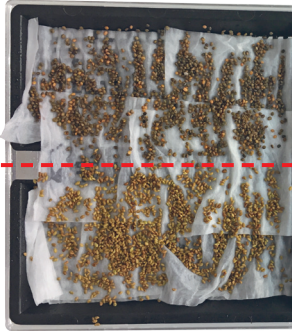
Me tapiki ngā pihi rauangi.



3. Tīpakohia kia 2 ngā momo kākano pārae rerekē.

- Otaota wīti
- Arawhawha
- Raukete
- Amaranata

4. Kōwhiria tētahi pātiki. Whāia te tohutoa i runga i te tapanga ipu, ka tāpiri i tētahi kākano pārae ki te haurua o te pātiki, me tētahi atu kākano ki tētahi atu haurua.



- He aha te kākano? He aha te kākano?

Ko te tikanga ahuwhenua o te whakatipu i te huanga kai kotahi, momo kotahi rānei i te pātiki, pūnaha pāma rānei i te wā kotahi.

5. Tipakohia tētahi o ngā tohutao a Rosie mō te whakatipu tipu pārae. Whāia ngā tohutohu ka tāpiri i te whakararu o ngā kākano ki te pātiki tuarua i tō pāmu.



- He aha te kākano? He aha te kākano?

Ko te tikanga tēnei o te whakatipu i ngā momo huanga kai maha i te wāhi me te wā kotahi.

6. Rapua he wāhi pai e tipu ai tō pārae, ā, ka āta whakakī i te paepae kirihou pūataata ki te wai. Ūhia te paepae ki te raukonu.

Ringihia te wai ki ngā paeape mā te ipu kua whakaritea. Kaua e ringi i te wai ki te paepae mā runga i ngā kākano, engari mā ngā puare i ia taha o ngā paepae whakatipu pango.

7. Wairehuria ngā kākano kia 2-3 wā i te rā ki te wai reherehu. Ūhia te paepae ki te raukonu i waenganui i ngā rehunga, mō ngā rā 3-4 i te tīmatanga.

Ka āwhina te raukonu ki te whakaiti i te whakaeto i waenga i ngā rehunga.

8. Tirohia tō pārae ia rā mō te tipunga. Me tae te taumata o te wai ki te take o ngā paepae pango.

Kia tae ngā pakiaka ki te wai i te take o te ipu, kua kore e mate ki te rehu me te uhi ki te raukonu.



- E kaingia anake e te kau te otaota?

E kore te kau e kai anake i te otaota. Engari he whenumi o ētahi otaota me ngā tipu pēnei i ngā kanopī (te korowa hei tauira) me ētahi tarutaru hoki. Ka kīia tēnei whenumi tipu e kaingia ana e ngā kararehe tītongi, he kai kuhukuhu.



- Ko tēhea pārae e pai ana ki ō kau ki ōu whakaaro?

E whai ana te kaipāmu miraka ki te whakatipu i te whenumi o ngā momo e tipu pai ana, e pārekareka ana hoki ki te kau.

Ko koe ngā kai e kaingia ana e koe, ā, kāore te kau i rerekē ake.

Me whai pārae tino pai ngā kau ki te whakaputa kāwhe pakari, me te nui whaihua ā-ōhanga o te miraka.

### Kia mōhio:

Ko ngā kākano o tēnei ngohe he raupihī, nā, ka pihi ake, ka tipu wawe hoki. Ahakoa tērā, e kore pea e oti tēnei ngohe i mua i te wā e whakahokia ai tēnei rauemi. Kua whakaratoa ētahi paepae pōpopo, e pai tonu ai te tipu o ngā pārae i roto i te akomanga. Ringihia he wai ki te takere o te paepae. Āta hikina ā-poutū ngā tipu ki waho o ngā paepae whakatipu mā te pupuri i ngā rau, ka tau anō ko ngā pakiaka ki raro, ki roto i te wai o ngā paepae pōpopo. Tirohia te taumata wai ia rā.



## Ngohe Toronga

### Mahia tāu ake karapēpē.

Ka hangaia te karapēpē mā te tapahi i ngā tipu pārae, kātahi ka moitia hei pupuri i te taiora ki roto.



Tikina he kutikuti ki te tapahi i te tīpakohanga o ngā tipu pārae. Raua ngā tipu ki tētahi pēke nihokati. Tūwhiti i te hau KATOA ki waho o te pēke, ka katia.

Tirohia te pēke ia 2-3 rā mō te 2 wiki. Kua e huaki i te pēke – ka tino HAUNGA.



- E ahatia ana ngā tipu?



- He aha te tikanga o te hanga karapēpē i runga pāmu miraka? Āwhea whakamahia ai?

Ko te whāinga o te hanga karapēpē ko te tāroki i ngā taiora kuhukuhu hei kai ā muri iho. E kore hoki te pārae tipu noa e tipu pai i te wā makariri rawa, maroke rawa rānei.

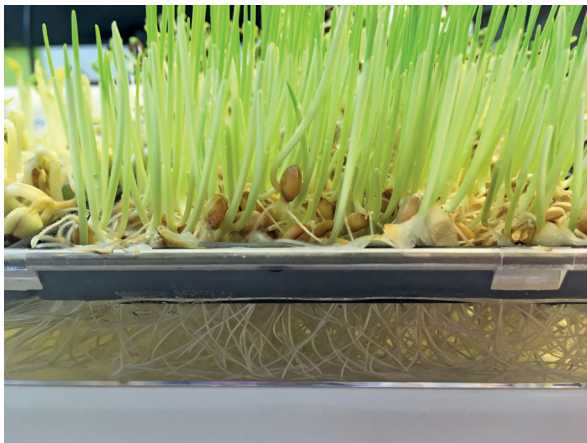
- He aha te matū maroke?

Ko te matū maroke ngā toenga i te wā ka whakaeto katoa te wai mai i te kai.

Ko te matū maroke he tohu o te nui o te taiora e wātea ana ki te kararehe i tētahi tūmomo kai. Me kai ngā kau miraka i tētahi rahinga motuhake o te matū maroke ia rā (ka inea ki te manokaramu) e mau tonu ai i te hauora me te putanga o te miraka.

### Matapaki Hohonu ake

Ko te whakatipu ā-wai he tikanga o te whakatipu tipu karekau he oneone. Ka whakamahia kē ngā mehanga pēnei i te wai. Ko ngā raupihi ka whakamahia i roto i tēnei ngohe he mea whakatipu ā-wai, ā, kāore i tāpiritia ētahi atu taiora ki te wai.



Āta tirohia te nui o ngā tipu me te hanga o ngā pakiaka kua whanaketia. I ahu mai ngā taiora i hea – e tika ana mō te whakatipu? I ahu mai i ngā kākano – he tino mīharo te ao tūroa ne?

### 3. Nakunaku

#### WHAKAATURANGA KAI AKO

Ahakoā tēnei ngohe he momo whakaaturanga, he pārekareka, he paruparu hoki, otirā he āhua rihariha, ā, me akiaki i ngā ākonga kia uru mai i ngā wāhi e taea ana. Kua whakaratoa ētahi tohanga pepa mā ngā ākonga ki te tuhi i ngā akoranga.

#### Wāhanga A: Nakunaku Pukutahi



#### Whāinga Ako (taumata 1-4)

Ka mārama i ngā ākonga:

- me whai taiora ngā mea ora katoa e ora ai rātou.
- ko te nakunaku te tikanga e āhei ai te tinana ki te whiwhi taiora me te pūngao e tika ana mai i te kai e kaingia ana.
- He puku wāhanga tahi tō ngā kararehe pukutahi.

#### Kupu Whakataki

Ko te pūnaha nakunaku ngā wāhanga o te tinana ka mahi tahi ki te huri i te kai me te wē hei taiora mā te tinana kia ora ai.

Ko te pūnaha nakunaku pukutahi, kotahi anake te wāhanga o te puku. He pūnaha nakunaku pukutahi tō te tangata me ētahi atu kararehe.

#### E HIAHIATIA ANA:

- 'he puku pukutahi' he pēke kirihou kei roto
- hūware
- waikawa puku
- moroiti
- e 6 ngā pihikete paka
- tōkena pipiri (kōpiro iti)
- kapu kirihou
- kapu kōmāmā me te puare (kōpiro nui)
- paepae (tinana)
- kutikuti, tīpune, me te pune tēpū
- huinga pānui 'Nakunaku Pukutahi' (1-7)
- Tohanga pepa Nakunaku Pukutahi

#### NGĀ TOHUTOHU

E whakatauirā ana tēnei ngohe i te pūnaha nakunaku pukutahi o te tangata.

1. Whakaatu, ka kōrero i te pānui 'Nakunaku Pukutahi' 1, whāia, ko te pānui 2 me te 3.



2. Tangohia te pēke kirihou mai i te 'puku', ā, tāpiritia te waikawa puku ki te pēke, me te tīpune o ngā moroiti.

3. Wāhitia ngā pihikete paka ki ngā kongā iti, ka tāpiri atu ki te puku, me te hūware hoki. Ka whakaatu tēnei i te horomitanga o te kai me te taenga ki te puku mā te pūkai.
4. Tūwhiti i te hau ki waho o te pēke ka kati anō i mua o te whakahokinga ki te puku.
5. Kōtēhia, kōpiritia hoki te puku ki te whakaranu i te kai, te hūware me te waikawa puku (pānui 4).
6. Tirohia ngā mea i roto i te pēke ka tango mai i te puku i te wā ka huri hei wē.
7. Raua te tōkena pipiri ki te paepae kirihou. Raua atu tētahi tīpune o ngā moroiti i roto i te tōkena pipiri.
8. Puritia te pito tuwhera o te tōkena kia whānui tonu, tapahia he koko o te pēke kirihou, ā, ka āta ringi i te 'puku' ki roto i te tōkena pipiri (kōpiro iti).
9. Katia atu te pito tuwhera o te tōkena ka pēhi i ngā kai o te puku ki raro, ki te takere o te tōkena pipiri, ka kōtē i te nuinga o te wē ki te paepae (tinana) (pānui 5).
10. Tapahia atu te pito o te tōkene pipiri ka pēhi i te toenga o te matū totoka ki te kapu kōmāmā (kōpiro nui). Tāpiritia kia 2 ngā tīpune moroiti.
11. Raua te kapu kirihou ki roto i te kapu kōmāmā, ki runga ake i te matū totoka, ā, ka kaha te pēhi ki raro (pānui 6, whāia ko te pānui 7).

He take nui tonu te mahara ake, ko te waiate ka puta i te ate, ā, ka tukuna ki te kōpiro me te huhua o ngā moroiti, ka āwhina hoki i te tikanga nakunaku, me te mititanga o ngā taiora.

## Wāhanga B: Nakunaku Kai Rua



### Whāinga Ako (taumata 1-4)

Ka mārama ngā ākongā ko tō ngā kararehe kai rua he:

- puku wāhanga whā.
- pūnaha nakunaku ahurei e āhei ai rātou ki te whakamahi i te pūngao mai i te matū tipu, pai ake i ētahi atu kararehe kaitipu.

### Kupu Whakataki

I roto i ngā kararehe kai rua, kua hangaia e te ao tūroa he pūnaha nakunaku e tino hāngai ana ki te puna kai. Ka tahuri ngā kai rua i te otaota me te kai kuhukuhu kāore e taea ana e te whāngote te nakunaku, ki tētahi pūmua kounga nui, e taea ana e te tangata te kai, arā ko te miraka me ētahi atu hua miraka.

### E HIAHIATIA ANA:

- pēke kai kuhukuhu
- 'puku kai rua'
- hūware
- moroiti kai rua
- autō
- waikawa puku
- tīpune me te pune tēpu
- karapu tawau
- huinga pānui 'Nakunaku Kai Rua (1-14)
- tohanga pepa Nakunaku Kai Rua



## NGĀ TOHUTOHU

Ka whakatauirā tēnei ngohe i te pūnaha nakunaku kai rua o te kau.

1. Whakaatu ka kōrero i te pānui 'Nakunaku Kai Rua' 1, whāia ko te pānui 2.
2. Tikina te pēke i tapaia ki te 'kai kuhukuhu', ka tāpiri i te hūware.
  - He aha te kai kuhukuhu?  
**Ka kīia ngā tipu katoa e kaingia ana e ngā kararehe tītongi he kai kuhukuhu.**
3. Tūwhiti i te hau katoa i te pēke ka kati anō. Mā ō matimati, āta wāwāhitia te 'matū tipu'. Ka whakaatu tēnei i ngā mahi i roto i te waha i te wā ka kōnatunatu, ka kauoro ngā niho me te hūware i te matū tipu.
4. Huakina te wāhanga tuatahi o te puku o te kau (rumen) ka rau i te pēke kai kuhukuhu me te hūware ki roto (pānui 3). Katia te wāhanga puku ka pokepoke i te pēke mō ētahi mineti mā te pēhi i te puku. Huakina, ā, ka tango i te pēke mai i te wāhanga puku, ka tiroiro i te 'matū tipu kīhai i nakunakutia' (pānui 4).
5. Huakina te pēke ka tāpiri i te 3 pune tēpu o te 'moroiti kai rua' (pānui 5).
6. Tūwhiti i te hau mai i te pēke, ka kati, ā, ka whakahoki anō ki te 'rumen', kātahi ka pokepoke anō mō ētahi mineti.

Me mārama hoki, he uaua ki te nakunaku i te matū tipu weuweu (whakatauritehia ki ngā pihikete paka i nakunakutia i roto i te whakaaturanga nakunaku pukutahi).

7. Waiho te rumen kia kati tonu, ka āta whakaputa i te pēke kai kuhukuhu mā roto i te puare kei te pito matau whakarunga o te wāhanga puku, kia uru ki roto i te wāhanga tuarua o te puku (reticulum) (pānui 6).
8. Huakina te reticulum, tangohia, ā, huakina te pēke. Tikina te poro autō ka tōia haere i roto i ngā kai o te pēke hei tango i ngā mea rino tērā pea kei roto (arā ngā karapu).
9. Tūwhiti i te hau ki waho o te pēke, katia, ā ka whakahoki ki roto i te reticulum.
10. Katia te reticulum, ka pokepoke i te pēke, ā, ka āta whakaputa i te pēke mā te puare, kia uru ki te wāhanga tuatoru o te puku (omasum) (pānui 7).
11. I muri mai i te pokepoke i te pēke anō, whakaputa atu anō mā te puare ki te wāhanga tuawhā o te puku – te abomasum (pānui 8).
12. Tangohia te pēke mai i te abomasum ka tāpiri i te waikawa puku.
13. Tūwhiti i te hau i te pēke, katia, ā, ka whakahoki ki te abomasum, kātahi ka pokepoke anō.
14. Ināianei kua rite te 'matū tipu' kua nakunakutia kia neke mai i te puku ki te kōpiro iti, te wāhi e mitia ana te nuinga o ngā taiora, ā, kātahi ki te kōpiro nui (pānui 9, whāia ko te pānui 10).

Me mahara hoki ko te hanga miraka kei raro i te whakahaere o te pūnaha taiaki. Kua whakaurua tēnei ki te 'matapaki nakunaku' i te mea e hiahiatia ana hoki te mititanga taiora me te tohanga, mō te whakaputa miraka.



15. E kōrerotia ana te tukatuka me te kohinga miraka i ngā pānui 11, 12, me te 13.

Me whakarite kia tirohia e koe ngā meka 'Cool Cow' hoki.



### Matapaki Hohonu Ake

#### Tērā anō ētahi kararehe karekau ana he puku?

Ko te āhua nei he whēkau whaihua te puku mō ngā kararehe kai i ngā kai nui, matatini hoki, engari, puta noa i ngā hia miriona tau, he nui ngā kararehe kua ngaro atu ō rātou puku.

Ko ngā tauira ko ngā whāngote whakawhānau hēki (platypus me te echidna) me ētahi momo ika huhua.



Ka nakunaku kai tonu ngā kararehe karekau ana he puku, engari he rerekē te tikanga. I ētahi kararehe he nekehanga mahi ki ētahi atu wāhi o te kōpiro. Hei tauira, kei te korokoro o ētahi ika he niho anō hei āwhina ki te wāwāhi i ngā kai kua horomia.

## 4. Whakaranu, Mehanga rānei? ■

### Wāhanga A: Rūrūtia

#### TAUTOKO KAI AKO

##### Whāinga Ako (taumata-4)

Ka mārāma ngā ākonga i te rerekētanga o te whakaranu me te mehanga.

#### ME WHAI KOE:

Me whai ia rōpū i te kirikiri, tote, huka, wai, tīpune, e 3 ipu e tapaia ana ki te kirikiri, tote, me te huka, ā, me te tohanga pepa 'Whakaranu, Mehanga rānei?'

#### NGĀ TOHUTOHU

**Ka hangaia he whakaranu i te wā ka pahekotia ngā matū e 2, nui atu rānei, engari ka puri tonu ia matū i tōna āhuatanga taketake.**

1. Whakakīhia ia ipu ki te  $\frac{3}{4}$  o te wai.
2. Tāpirihia he tīpune o te kirikiri ki te ipu kua tapaia ki te kirikiri, ā, ka pērā anō mō te tote me te huka.  
Kia tūpatō kei mākū te tīpune.
3. Whakahokia ngā taupoki ki runga i ngā ipu.
4. Kia kaha te rūrū i ia ipu, ka waiho mō te 2-3 mineti.  
Āta titiro ki te wai i ia ipu.
  - He aha tāu e kite ana?
  - E kitea tonu ana te kirikiri, te huka me te tote?
5. Tuhia ō tirohanga ki runga i te tohanga pepa.

**Ko te mehanga ka hangaia i te wā ka memeha te totoa hei wē.**

- Kua huri tētahi o ngā whakaranu e 3 hei mehanga?
- He momo whakaranu katoa ngā mehanga?

Whakaranu	Tirohanga	Ka hangaia he mehanga ĀE, KĀO rānei?
tote me te wai	i memeha	āe
huka me te wai	i memeha	āe
kirikiri me te wai	kāore i memeha	kāo

#### Matapaki Hōhonu Ake

##### Te whakawehe i ngā whakaranu

He nui ngā huarahi o te whakawehe i ngā whakaranu:

- te whakaeto me te tōtā
- autō
- tātari – putua te whakaranu o te totoa meha-kore me te wē mā te pepa tātari.
- hītari – putua he whakaranu o ngā totoa rahinga rerekē ki te hītari.
- āta tāhoro – waiho te whakaranu o ngā wē rerekē e 2 kia tau ki ngā papanga, kātahi ka āta ringi i te papanga o runga.

He huatau āu mō ngā huarahi ki te whakawehe i ngā waehanga o ngā whakaranu e 3 kua mahia e koe?

E kore te kirikiri e memeha i roto i te wai. He meha-kore. Mā te hītari matarehu, pepa tātari rānei e whakawehe i te kirikiri i te wai.

Ka memeha te tote me te huka i roto i te wai, ā, ka taea te whakawehe mā te whakaeto. Mā te whakamahi i te pūwera ka whakaeto te wai (ka huri i te wē hei haurehu).



Mā te whakamātao ka hua mai te tōtā o te haurehu ki te wē anō. Kia tangohia te wai, ka huri te huka me te tote hei tioata.

### Kia mōhio:

Tēnā whakawāteatia, horoia, ka whakamaroke i ngā ipu katoa i mua o te whakahoki atu ki te kete.

## Wāhanga B: Rūrū Miraka

### Whāinga Ako (taumata 2-4)

Ka mārama ngā ākonga ko te miraka he:

- pahekotanga o te pūmua, ngako, huka, huaora, kohuke me te wai.
- he whakaranu me te mehanga

### E HIAHIATIA ANA:

Me whai ia rōpū i te paura miraka, wai, hinu tunu, tīpune, ngōine, ipurau, me te ipu i tapaia ki te 'miraka'.



### NGĀ TOHUTOHU

Ko te miraka he pahekotanga o ngā ngako, pūmua, huka, huaora, kohuke me te wai.

1. Inea te 50mL o te wai, ka ringi ki roto i te ipu.
2. Tāpiritia he tīpune o te paura miraka.

**Kei roto i te paura miraka te pūmua, huka, huaora me ngā kohuke.**

3. Whakahokia te taupoki ki runga i te ipu, ā, kia kaha te rūrū hei whakararu.

- Kua huri tēnei whakararu hei mehanga?

Āe. Ko te mehanga he whakararu o te pūmua, huka, huaora me ngā kohuke i roto i te wai.

4. Whakamahia te ngōine ki te ine i te 2ml o te hinu tunu, ka tāpiri i tēnei ki te mehanga miraka.

### E tohu ana te hinu i te ngako tūturu i roto i te miraka

- He aha tāu e kite ana ki te hinu?
  - Ka noho tonu i runga ake, ka totohu rānei ki raro o te ipu?
5. Whakahokia te taupoki ka rūrū kaha i te ipu.
6. Tangohia te taupoki ka āta titiro.

- I ahatia te hinu?

Nā te rūrūtanga i wāwāhi haere te hinu ki ngā pata iti.

- Kua huri tēnei whakararu hei mehanga?

Kāo. E tāiri ana ngā pata hinu i roto katoa i te wē. Te iti ake o ngā pata, te tūwhena ake, ā, ka kaha ake te noho tāiri.

- He aha te miraka hanumi?

Nā te hanumitanga i āhei ai ngā kaihangā miraka ki te whakakotahi i te ngako (kirīmi) i te miraka, kia kore ai e whakawehe. Ka whakarite tēnei i te huene me te ōrite o te miraka. He tukanga ā-hangarau tēnei, kāore he tāpiritanga, whakaurunga matū rānei.

Ko te tikanga nui o te hanumitanga ko te whakaheke i te rahi o te rāpoi ngota ngako i te miraka.

Ka noho tāiri tonu ngā rāpoi ngota ngako iti i roto i te wē, ā, ka

ātete ki te whakawehe.

Ka whakatōroa hoki tēnei tukanga i te oranga o te miraka i runga i te whata.

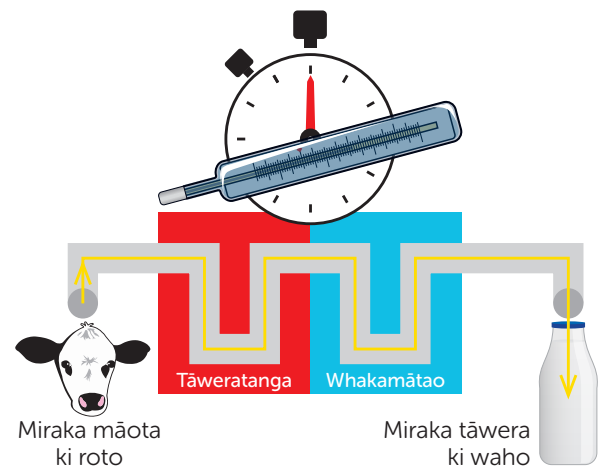
- E mōhio ana koe i te rerekētanga o te miraka māota me te miraka tāwera?

Ko te tāweratanga he tikanga whakawera miraka hei patu i ngā moroiti e whai wāhi ana ki te tauhekenga kai me te mate, me te whakaroa i te oranga whata.

Ko te nuinga o te miraka i Aotearoa kua tāweratia. Kua whakawerahia ki te 72°C mō te 15 hekona, nui atu rānei, kātahi ka whakamātaotia wawetia.

Ko te miraka UHT kua tino whakawerahia (138°C mō te 2 hekona), kia tino roa ake tana noho i runga i te whata.

Kāore te miraka māota e tāweratia.



## Ngohe Toronga

### Miraka Mīharo

He meka rongonui tērā e kore te ngako me te wai e whenumi. Nō reira, ko te miraka hanumi, e mau ana ngā rāpoi ngota ngako iti e tāiri ana, e kīia ana he whakaranu.

Ringihia he miraka ki roto i tētahi kumete papatahi, pāpaku hoki, ka tāpiri i ētahi patanga o ngā tae kai rerekē. He pai ake te miraka ngako nui.

Toutoutia te pito o te tā kātene ki roto i te hopi horoi rīhi. Āta toutoutia te pito o te tā kātene ki roto i te patanga tae kai. Ka taea e koe te whakamārama i ngā āhuetanga e tatū ana, a, he aha ai?

E hangaia ana te hopi i ngā rāpoi ngota e rata ana ki te wai me te ngako. Ina tāpiritia he pata o te hopi ki te miraka, ka neke wawe ōna rāpoi ngota ki te 'hopu' i ngā rāpoi ngota ngako.

Ko te nekehanga tēnei e kitea ana i roto i te miraka whai tae. Ki te kore e tāpiritia atu te tae kai, e kore koe e kite i tēnei nekehanga.





## 5. He Ōrite Rānei Ngā Miraka Katoa? ■

### TAUTOKO KAIAKO

#### Whāinga Ako (taumata 2-4)

E mārama ana ngā ākonga:

- ko ngā whāngote anake te rōpū kararehe ka whakaputa miraka mā ngā punua.
- he rerekē te hanganga o te miraka i runga anō i te momo.
- ka whakarato te miraka i ngā taiora waiwai maha mō te whiringa kai pai, i te āhua e māmā ai te nakunaku.

### E HIAHIATIA ANA:

Whakawehea te akomanga ki ngā rōpū e 5.

Me whai ia rōpū:

- kāri māmā me te pēpi
- kāri waiū whāngote
- tātauirā kāhua taiora
- kāri taiora – pūmua, ngako me te reihuka
- pānui 'Taioranga Miraka'
- putunga mataono rākau

### NGĀ TOHUTOHU

Matapakitia ngā kōrero kei runga i te pānui 'Taioranga Miraka'.

- He aha i noho hira ai ngā taiora matua e 3 mō te hauora tino arotau? He waiwai te pūmua mō te whakatipu, te pupuru me te whakatika i ngā kiko o te tinana, ā, he waehanga waiwai o ngā uaua, kōiwi, huruhuru me ngā maikuku. He waiwai ngā ngako whiringa kai hei tuku i te pūngao ki te tinana me te tautoko i te tipunga pūtau. Ka tiaki, ka ārai hoki i ngā whēkau.



Ko te warowaihā te puna matua o te pūngao. Ka āwhina ki te whāngai i te roro, ngā tākihi, ngā uaua manawa me te pūnaha ioio.

- Ka pēhea ngā taiora moroiti? He waiwai ngā huaora mō te hanga i te pūngao, te mahi awhikiri, te tepetoto me ētahi atu mahi. He mahi nui hoki tō ngā kohuke i roto i ētahi tukanga pēnei i te whakatipu, te hauora kōiwi me te tauritenga kūtere.

Ko ngā momo whāngote rerekē ka whakaputa i te waiū mō ā rātou punua i hangaia i te wai, pūmua, ngako, warowaihā, huaora me te kohuke.

Engari kei roto i ngā waiū o ngā whāngote katoa te rahi ōrite o ngā taiora, huaora me ngā kohuke?

1. Whakataurite i ia whāngote ki tana tātauirā kāhua taioranga.

Ko te % o te wai me ngā huaora me ngā kohuke kei ia momo waiū e tuhia ana i runga i te tātauirā.

Ko ēhea whāngote e 2 ka hanga waiū e tino iti ana te % wai i ō ētahi atu?

Tohorā me te kekeno <45%.

2. Whakataurite i ia whāngote ki tōna kāri pūmua.

E whakaatu ana ēnei kāri i te % o te pūmua ka kitea i te waiū ka hangaia e ia whāngote.

3. Whakamahia ngā mataono rākau ki te hanga i tētahi kāhua pūmua mō te waiū o ia whāngote i runga i te tātauira. He 1% te uara o ia mataono.



- Ko tēhea whāngote ka hanga waiū me te % nui rawa o te pūmua?
- Pēhea te % iti rawa o te pūmua?

Kararehe	% pūmua
Tohorā	11
Kekeno	10
Kiore	9
Hipi	5
Pūru Wai	4
Arewhana	4
Kau	4
Nanekoti	3
Kāihe	2
Tangata	1

4. Toaitia ki te hanga i ngā kāhua ngako me te warowaihā mō ia momo waiū whāngote.

Kararehe	% fat
Kekeno	49
Tohorā	42
Kiore	13
Pūru Wai	9
Hipi	6
Arewhana	5
Kau	4
Tangata	4
Nanekoti	4
Kāihe	1

Ko te nuinga o te warowaihā i te waiū kei te āhua o te huka reihuka

Kararehe	% reihuka (warowaihā)
Tangata	7
Kāihe	6
Nanekoti	5
Kau	5
Arewhana	5
Pūru Wai	5
Hipi	5
Kiore	3
Tohorā	1
Kekeno	<1

- He aha tātou e inu nui ai i te miraka kau? He aha e kore nei e kai i te miraka o ētahi atu whāngote – pēnei i te kāmera, nanekoti, tohorā rānei?

He take ōhanga kē kua ko te pai rawa o te hua. He rata te wairua o te kau, nā, he māmā ki te whakahaere, otirā he take nui tērā i te wā o te whakaputanga nui. Ka mutu he tino nui ake te miraka ka puta i te kau kotahi tēnā i ētahi atu kararehe pēnei i te nanekoti me te hipi.

Ko te nui o te pūmua me te ngako o te waiū ka whakaawe i te tāwara me te kakano, ā, nā ngā taumata ngako me te pūmua nohunohu e kore pea aua miraka e tae ki ngā whata hokomaha. He rite te nui o te ngako o te miraka kau ki tō te waiū tangata, ā, nā tērā he waia, ā, he kakato ake.

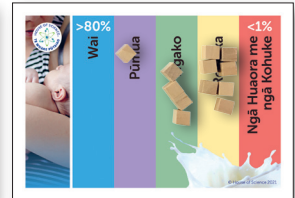
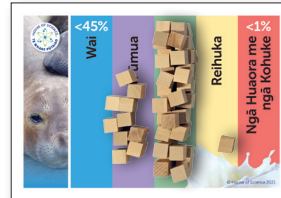
- Pēhea ngā huatipu whakakapi miraka?

He nui ngā rerekētanga taioranga o ngā hua huatipu pēnei i te hoi, āmanati, ōti, raihi me te miraka kokonati, ā, me tūpato i te wā e whakamahi ana i ēnei hei whakakapi i ngā hua miraka i tō whiringa kai. He mea nui tonu ki te kimi i ngā momo kua whakahaumakotia – arā kua tāpiritia he konupūmā me ngā huaora.



## Ngohe Toronga

Hangaia, ka whakatairite i ngā kāhua taioranga (% pūmua, ngako me te warowaihā) o ngā whāngote rerekē.



## kekeno ki tangata

### Matapaki Hōhonu Ake

#### Ka pēhea te whāngai a ngā tohorā i āna punua i raro i te wai?

Me torohī te tohorā uwaha i te waiū ki te waha o tana punua mā roto i te wai, me tuku rānei i tana punua kia ngote i te waiū i tana titi.

He nui te ngako kei roto i te waiū tohorā, nā tērā he mātotoru, pērā ki te pēniho. Nā te nui o te ōrau ngako, ka āhei te waiū o te tohorā te rere i roto i te wai me te kore e paratī.





## 6. Rapurapu Hokomaha

### TAUTOKO KAIAKO

#### Whāinga Ako (taumata 2-4)

Ka tūhura ngā ākongā i te rahi me te huhua o ngā hua miraka e wātea ana i ngā whata hokomaha o Aotearoa

#### Kupu Whakataki:

Kua pupū haere te nui o ngā hua miraka i ngā whata miraka o ngā hokomaha o Aotearoa i ngā tau tata nei.

He pēhea te rerekē o tētahi hua i tētahi atu? I puta katoa mai i te kararehe, he huatipu rānei ētahi?



### E HIAHIATIA ANA:

Me whiwhi ia rōpū i tētahi tohanga pepa Rapurapu Hokomaha.

E whakaratoa ana he wati tū mā te kaiako ka noho ia hei kaitiaki i te wā.

Ka taea tēnei ngohe i roto i te akomanga mā te whiringa hoko kai tuihono, mā te toro atu rānei ki te hokomaha tata. Mēnā e kōwhiri ana i te whiringa tuihono, me whai rorohiko ia rōpū e piki ai rātou ki te ipurangi.

### NGĀ TOHUTOHU

1. Kōwhiria he hokomaha.

countdown 

**PAKŌSAVE**



**NEW WORLD**

2. Rapua te maha o ngā momo miraka e whakarārangi mai ana i te tohanga pepa e taea ana i te wā kua whakaritea.

Kia iti noa te wā whakarite – kia uaua ai te wero.

✓ te pouaka i runga i te tohanga mō ngā mea ka kitea e koe.

3. Mēnā ka whai wā, tirohia tētahi atu hokomaha.

4. He uara tau kei te taha o ia pouaka. Tāpiritia ngā tau mō ngā hua miraka i kitea e koe.

- E hia ngā mea i kitea e tō rōpū?
- He aha te tapeke?

5. Me rangahau anō ki te whakautu i ngā pātai i runga i te tohanga pepa me te whai piro tāpiri.

- He aha te miraka whānui rawa e wātea ana ki te hoko i ngā hokomaha o Aotearoa?

Ko te miraka kau te miraka e wātea whānuitia ana i Aotearoa. Ko tētahi rerekētanga nui o ngā momo miraka kau, ko te nui o te ngako kei roto. Me uru ki te 3.2% neke atu rānei te ngako ki ngā miraka ngako nui, miraka katoa, kirīmi nui rānei. Kei roto i te miraka ngako iti te 1.3 ki te 1.4% o te ngako, ā, mō te miraka kirīmi kore he 0.15% o te ngako.

- Ko te whakahaumako he tukanga o te tāpiri kohuke me te huaora ki ngā hua kai. Ko te miraka konupūmā haumako kua tāpiritia he konupūmā anō. Ka taea e koe te rapu i ngā miraka konupūmā haumako e rārangi mai ana i te raumahi?

Miraka Calci-trim, miraka UHT Calci-trim me te miraka Hoi Calci-Plus.

- He aha te miraka reihuka kore?  
E wātea ana te miraka reihuka kore mā te hunga pāwera reihuka. Ko te hunga pērā, e kore e taea te nakunaku tika i te reihuka, te huka i te miraka, ā, ka māuiui rātou. Kua oti kē te whakatiak i te miraka reihuka kore hei tango, hei wāwāhi rānei i te reihuka, kia māmā ake te nakunaku.

- Ka pēhea te hanga i ngā huatipu pēnei i te hoi, te āmanati, te raihi, te kahunati, te kokonati me te miraka kano hema?

Ka kōpenua ngā nati me ngā kākano, ā, ka tāpiritia he wai kia miraka te āhua.

- He aha te miraka A2?

He momo pūmua e kīia ana he casein, ā, ko te pūtepe te 80% o te pūmua katoa ka kitea i roto i te miraka. E rua ngā momo pūtepe, ko te A1 me te A2. Ko ētahi kau ka hanga i te pūmua A1 anake, ā, ko ētahi atu ko te A2 anake. Ko te miraka A2 ka ahu mai i ngā kau ka hanga anake i te momo A2 o te pūmua pūtepe. E whakapae ana ngā kaitautoko o te miraka A2 he māmā ake ki te nakunaku me te miti, i ētahi atu o ngā momo miraka.

- E wātea ana te miraka ngakonui hipi hei hokonga i Aotearoa kaua ko te paura miraka anake?

Āe.

- He aha te tikanga o te miraka tiehe (jersey)?

Ko te kau Holstein Friesian (Friesian he mangu me te mā, ā, he nui te miraka ka puta i a ia.

Ko tana miraka te mea pūmua nui katoa o ngā momo kau miraka matua e 2. He iti ake te miraka ka hua mai i te kau tiehe engari he

nui ake te ngako i ō te miraka o ngā kau Friesian.

Nō ngā kau tiehe te miraka tiehe.

I te tau miraka 2020, tata ki te haurua o ngā kau miraka i Aotearoa (49%) he Holstein-Friesian/Jersey kua whakamoea.\* E ngana ana ngā kaipāmu o Aotearoa kia riro mai ngā huaira pai mai i ngā momo kau e 2 e whakamahia ana mō te pāmu miraka.

Ka rite pea te āhua o te tae o ēnei kau whakamoemoe ki tō te Friesian, tō te tiehe rānei, nō reira ko ngā tae maha mai i te mangu ki te karamera.



Holstein-Friesian (Friesian)



Jersey



Holstein-Friesian/Jersey kua whakamoea

\*Tohutoro:

<https://www.statista.com/statistics/1102335/new-zealand-dairy-cow-share-by-breed/>

- Ko ngā hua miraka he kai ka hangaia i te miraka, he miraka rānei kei roto, nō te whāngote. Ka taea e koe te tuku tauira mai o ngā hua miraka?

Ko ngā hua miraka ko ngā kai pēnei i te waipupuru, te tīhi me te pata.

### Ngohe Toronga

Hangaia ētahi atu wero 'Rapurapu Hokomaha'.

Hei tauira, e hia ngā momo tīhi feta ka taea e koe te rapu, i hangaia i te miraka o ngā whāngote i tua atu i te kau?



## 7. Ngā Tapuwae Taiao

### MATAPAKI AKOMANGA I ĀRAHITIA E TE KAIKO

#### Whāinga Ako (taumata 4)

E mārāma ana ngā ākonga:

- ka hiahia te taupori tipu o te ao i te āheinga ki te kai taioranga.
- he pānga tō te mahi kai ki te taiao.
- ko te ahumahi miraka tētahi kaituku hira ki te puna kai o te ao.

### E HIAHIATIA ANA:

Pānui Tapuwae Taiao A me te B.

#### Kupu Whakataki

Ko te toitūtanga he take nui kei mua i te ahumahi miraka o te ao. Me pēhea e ea ai ngā tono kai ā-rohe, o te ao hoki me te kore anō e whakararu i te āheinga o ngā whakatipuranga i muri nei ki te whakaea i ō rātou ake hiahia? Ko te ahumahi miraka o Aotearoa he kaituku hira ki te puna kai o te ao. He aha ngā mahi ki te whakaiti i te pānga o ngā pāmu miraka ki te taiao o tēnei motu?



### NGĀ TOHUTOHU

1. Whakarōpūtia te akomanga ki ngā rōpū 10.
2. Tohaina he kape o ngā pānui 'Tapuwae Taiao' A me te B ki ia rōpū.



3. Kua whiua he pātai i runga i ia pānui hei tīmatanga kōrero, tae atu ki ētahi kīanga ka taea te whakamahi hei huatau mō te rangahau anō.
4. Akiaki i ngā ākonga ki te mahi rangahau me te whakaatu i ō rātou whakaaro ki te akomanga.
5. Tīmata ki te pānui A.

### Pānui A:

#### He pānga tō te mahi kai i runga i te taiao?’

Ko te mahi kai e haepapa ana mō te ¼ o ngā puhanga haurehu kati mahana o te ao. Haurua o te whenua nohonga o te ao e whakamahia ana mō te ahuwahenua. He nui te wai māori ka pau i te ahuwahenua, ā, e haepapa ana te ahuwahenua mō ngā parakino taiora nui i ngā moana me ngā wai māori o te ao.



- Ko te tikanga o te taupori tipu nui o te ao, ko te pikinga o te hiahia mō te kai kounga nui, taioranga hoki.

Ko tētahi o ngā wero tino nui kei mua i a tātou ko te whakarite kia whiwhi ia tangata o te ao i te kai taioranga i runga anō i te tikanga toitū.

- He mahi nui tō te miraka me ngā hua miraka i roto i te wero o te ao ki te whāngai i te taupori tipu nui.

E kainga ana te miraka, pata, tīhi, waipupuru, aihikirīmi me ētahi atu hua miraka e te hia piriona tāngata puta noa i te ao. Ka whakarato ngā hua miraka i te taioranga taurite, hauora, haumarua hoki.

- I te wā e aromatawai ana i te pānga taiao o te mahi kai, me whai whakaaro hoki tātou ki te uara taioranga.

I te wā e whakataurite ana i ngā hua kai, he mea nui tonu te tiro ake, kua ki te pānga o te mahi kai te taiao anake, engari anō ki te ine i te pānga taioranga ki te whiringa kai kounga.

He pēhea te whaihua o te kai ki te whakarato pūmua, ngako me te warowaihā i te āhua e māmā ai te nakunaku?

Ko ngā take taiao tētahi o ngā take nui e kōwhiri ana ētahi tāngata i ngā huatipu whakakapi miraka i runga ake i te miraka kau, engari ka warewaretia te tapuwae taiao o te hanga i aua hua.

Hei tauira, ka 12L te nui o te wai ki te hanga i te kano āmanati kotahi, E hia rita o te wai e hiahiatia ana ki te hanga i te 1L o te miraka āmanati?

## Pānui B

### E mahi pāmu haepapa ana ngā kaipāmu miraka o Aotearoa?

He tino pai ngā kaipāmu o Aotearoa ki ā rātou mahi. E mahi kaha ana rātou ki te whakapai ake i te kouniga o te wai mā te taiapa i ngā awaawa me te whakatipu i ngā tahatataha, te haumi i roto i ngā pūnaha whakahaere hamuti pai ake, me te tāoki i ētahi wāhi o ō rātou pāmu kia huri ai hei waireporepo. E āta tuhi ana ngā kaipāmu i te whakamahinga taiora i runga i ō rātou pāmu, kia kore ai te tuhene wairākau i runga i ngā pārae me ngā hua kai. Me riro mai ngā whakaaetanga hāwaiwai mō te whakamahi wai i runga pāmu me ngā taputapu hāwaiwai hou, e uru nei ngā pūnaha aroturuki monoku e whakamahia ana.

He nui ngā kaipāmu e panoni haere ana i ā rātou pūnaha whakahaere kai. Ka puta te mewaro i ngā kau miraka hei hua hauata o tā rātou tukanga nakunaku, ā, ka tukuna ki te hau takiwā mā te tokopuaha. He haurehu kati mahana te mewaro, ā, he kaituku nui ki ngā puhanga haurehu kati mahana o Aotearoa.

Kei te nui o ngā kai a te kau, me te momo tipu, te pānga ki te nui o te haurehu mewaro ka hangaia e te kararehe. Ko te whakahaere i te nui me te momo o te kai, ka whai pānga ki te nui o ngā puhanga ka puta ake.



- He huhua ngā pānga o te hanga miraka i runga i te taiiao.

Ko puta i ngā kau miraka me ā rātou hamuti te puhanga haurehu kati mahana, e whai wāhi ana ki te hurihanga āhuarangi. Nā te kore e whakahaere tika i te hamuti me ngā wairākau e tāhawahawa pea i ngā puna wai ā-rohe.

Ko te whakahaere pāmu miraka i runga i ngā whenua kāore i tino toitū, ka ārahi pea ki te ngaronga o ngā waireporepo me ngā awaawa. Ko te nui o ēnei pānga kei runga i te āhua o ngā tikanga whakahaere a ngā kaipāmu miraka.

- He toitū te mahinga o te miraka i Aotearoa?

E whakaatu ana ngā rangahau hou (Huitanguru 2021) ko ngā kaipāmu miraka o Aotearoa e ārahi ana i te ao mō te mahi miraka puhanga iti, otirā he 48% iti ake te tapuwae waro i ētahi atu whenua 18 i rangahautia.

E tohu ana te tapuwae waro i te nui katoa o ngā haurehu kati mahana e hangaia ana, hāngai tonu, autaki rānei, hei tautoko i tētahi mahi.

- He whaipānga nui tō te ahumahi miraka ki te ōhanga o Aotearoa.
  - He 34% (i te 2019-20) te nui o ngā pāmu miraka i roto i te uara katoa o ngā hokonga ki tāwāhi i riro mai ki Aotearoa. He 2.5 whakarea nui ake tēnei i te rāngai mīti, 3 whakarea nui ake i te rāngai rākau, ā, 10 whakarea i te rāngai wāina.
  - Ko te nui o te moniwhiwhi i tāwāhi i riro mai ki Aotearoa i ngā pāmu miraka (tau ki te Pipiri 2020) he \$NZ19.7 piriona.

- E 50,000 ngā kaimahi a te ahumahi miraka (30,000 i runga pāmu, 20,000 i te tukatukanga me te hokorau.
- Ētahi tauanga o Aotearoa:
  - 4.92 miriona ngā kau miraka
  - 21.1 piriona rita o te miraka ka tukatukahia e ngā kamupene miraka (2019-20)
  - 3% o ngā miraka katoa o te ao e hangaia ana e Aotearoa.
  - Ko Aotearoa te kaihoko whakawaho nui rawa o te ao, o ngā hua miraka.
- Kua tīmata kē ngā rangahau e whai ana ki te whakaiti i ngā puhanga haurehu kati mahana o Aotearoa.

He nui ngā rangahau mīharo e whakahaeretia ana i Aotearoa pēnei i te:

- whakatipu kararehe puhanga iti
- whakatō i ngā tipu puhanga iti me te whakamahi i ngā tāpiritanga kai puhanga iti.
- kano ārai mewaro hei whakaiti i te hanganga mewaro.
- ka aupēhi ngā kaiwhakatōngā mewaro. i ngā moroiti hanga mewaro i te kōpiro o te kararehe.
- Etahi atu maimoatanga whakahaere hamuti kē, ki te hopu, te whakaiti rānei i te puhanga mai i ngā hamuti.

#### Ngā tohutoro

<https://www.dairynz.co.nz/environment/climate-change/dairy-sector-action/nz-dairy-sectors-carbon-footprint/>

<https://niwa.co.nz/education-and-training/schools/students/climate-change/agriculture>

<https://www.dairynz.co.nz/media/5794072/quickstats-about-dairying-new-zealand-2020-web.pdf>



# Ētahi atu Rauemi me ngā Paetukutuku Whaihua

Ingoa	Tākupu	Paetukutuku
Pokapū Akoranga Pūtaiao (SLH) 	<p>Whāia tēnei hononga ki tētahi kohinga kua hangaia e SLH mō te Whare Pūtaiao hei tautoko i ngā rauemi o tēnei kete.</p> <p>Whāia tēnei hononga ki te rapu kōrero mō te taputapu kohinga, me pēhea hoki te whakamahi hei whakaraupapa, hei whakarōpū hoki i ngā rauemi SLH</p> <p>Rapua anō he kōrero mō ngā kaupapa rangahau auaha e whai ana ki te whakaiti i ngā puhanga haurehu kati mahana e pā ana ki te pāmu miraka.</p>	<p><a href="https://www.sciencelearn.org.nz/collections/shared/935849a835cc98b8dfe0dfe9b207735c">https://www.sciencelearn.org.nz/collections/shared/935849a835cc98b8dfe0dfe9b207735c</a></p> <p><a href="http://www.sciencelearn.org.nz/resources/2762-creating-collections">www.sciencelearn.org.nz/resources/2762-creating-collections</a></p> <p><a href="https://www.sciencelearn.org.nz/resources/3029-dairy-innovations-targeting-climate-change">https://www.sciencelearn.org.nz/resources/3029-dairy-innovations-targeting-climate-change</a></p>
DairyNZ 	<p>E whakarato ana te hōtaka mātauranga kura a DairyNZ i ngā rauemi ako kore utu, i runga anō i te marautanga, ki ngā kaiako, ā, me ngā kete akomanga 'ā-ringa' i hoahoatia ki te hiki i te māramatanga o ngā tamariki ki ngā mahi pāmu miraka.</p>	<p><a href="http://www.dairynz.co.nz/about-us/education/dairynz-schools/">www.dairynz.co.nz/about-us/education/dairynz-schools/</a></p>
Rosie's World 	<p>He paetukutuku mātauranga haumarū, pārekareka hoki a Rosie's World i hoahoatia ki te āwhina i ngā tamariki ki te ako i ngā mahi pāmu miraka. I runga i te pae ka taea e ngā tamariki te tākaro, te ako me te hanga i ētahi kēmu mīharo, ataata mātauranga, ngohe e taea ana te tā, ngā whakamātautau ā-ringa me ngā tohutao pai mā ngā tamariki.</p>	<p><a href="http://www.rosiesworld.co.nz">www.rosiesworld.co.nz</a></p>
New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) 	<p>Rapua anō he kōrero mō te whāinga o Aoteaora ki te whakaiti i nga puhanga haurehu kati mahana.</p>	<p><a href="http://www.nzagrc.org.nz">www.nzagrc.org.nz</a></p>
Te Whare Pūtaiao 	<p>Ētahi atu kete e hono ana ki tēnei:</p> <ul style="list-style-type: none"> <li>• Huringa Āhuarangi</li> <li>• Tātari Wai</li> <li>• Te Whenua</li> <li>• Kai hei Whakaarotanga</li> <li>• Moroiti Kaha</li> </ul>	<p>Takiuru ki tō paetukutuku Whare Pūtaiao tata ki te kite he aha ngā kete e wātea ana.</p>

# Kōrero Kaitautoko

<insert logo>

<insert information paragraph>

<insert sponsor's website>

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## Kōrero Kaitautoko ā-pūtea

Ko DairyNZ te rōpū e whakakanohi ana i ngā kaipāmu miraka katoa o Aotearoa, me te kaupapa o te āwhina i a rātou kia angitu rawa i roto i ngā āhuetanga katoa o tā rātou pakihī.

E tautokona ā-pūtea ana a DairyNZ e ngā kaipāmu miraka, ā, ka haumi i tā rātou pūtea whiwhi ki te rangahau me te āwhina i a rātou kia tū hei kaiārahi i te ao mō te tiaki kararehe, te tiaki me te manaaki i te taiao, te whakarite wāhi mahi pai rawa, te hanga i ngā pakihī pāmu toitū, aumangea, me te hanga i ngā hua kounga nui.

He kaupapa hoki tā DairyNZ pēnei i tana hōtaka mātauranga, hei āwhina ki te hiki i te mōhiotanga whānui o te mahi pāmu miraka me te ahunga mai o te miraka, ā, ki te whakatairanga hoki i te whiringa mahi mīharo rawa.



[www.dairynz.co.nz](http://www.dairynz.co.nz)

# ĀpitiHanga

## Kuputaka

Te Reo	Ingarihi
ara nakunaku	digestive tract
huaora	vitamins
kai kuhukuhu	forage
karangatanga	classification
karapēpē	silage
kararehe kai rua	ruminants
kohuke	minerals
mehanga	solution
miraka	dairy
miraka	milk
nakunaku	digestion
ngako	fat
ōhanga	economy
otaota	grass
pārae	pasture
puku	stomach
pūmua	protein
pūngao	energy
taiao	environment
taiora	nutrients
toitūtanga	sustainability
ū	udder
wai	water
warowaihā	carbohydrate
whakaranu	mixture
whāngote	mammals



# Raumahi Ākonga

## Pārae Piki me te Miki

RAUMAHI ĀKONGA

### E HIAHIATIA ANA:

Me whai ia rōpū:

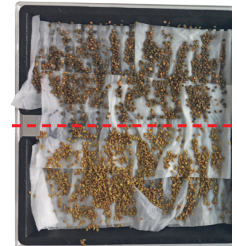
- paepae kirihou pūataata
- E 2 paepae whakatipu pango
- pepa rauangi
- kōwhiringa kākano pārae
- ipu rehu
- raukonu
- kutikuti
- tīpune
- Kāri tohutao a Rosie

### NGĀ TOHUTOHU

He pāmu miraka tōu, ā, me whakatipu pārae atu anō koe mā ō kau..



1. Whakanōhia ngā paepae whakatipu ki runga ake o te paepae kirihou pūataata. E tohu ana ia paepae pango i tētahi pātiki i tō pāmu miraka.
  - He aha te pārae?
2. Tapahia te rauangi hei tāhei, ka whakaraupapatia ki raro o ia paepae. Whakamahia te ipu rehu ki te whakamākūkū i te rauangi.
3. Tīpakohia kia 2 ngā momo kākano pārae rerekē
4. Kōwhiria tētahi pātiki. Whāia te tohutao i runga i te tapanga ipu, ka tāpiri i tētahi kākano pārae ki te haurua o te pātiki, me tētahi atu kākano ki tētahi atu haurua.
  - He aha te kākano tahi?
5. Tīpakohia tētahi o ngā tohutao a Rosie mō te whakatipu tipu pārae. Whāia ngā tohutohu ka tāpiri i te whakaranu o ngā kākano ki te pātiki tuarua i tō pāmu.
  - He aha te kākano maha?
6. Rapua he wāhi pai e tipu ai tō pārae, ā, ka āta whakakī i te paepae kirihou pūataata ki te wai. Ūhia te paepae ki te raukonu.
7. Wairehuria ngā kākano kia 2-3 wā i te rā ki te wai rehurehu. Ūhia te paepae ki te raukonu i waenganui i ngā rehutanga, mō ngā rā e 3-4 i te tīmatanga.
8. Tirohia tō pārae ia rā mō te tipunga.
  - Ka kai te kau i te otaota anake?
  - Ko tēhea pārae e pai ake ana ki ō kau??



**Ko koe ngā kai e kaingia ana e koe, ā, kāore te kau i rerekē ake**

## Whakaranu, Mehanga rānei?

RAUMAHI ĀKONGA

### Wāhanga A: Rūrūtia

#### E HIAHIATIA ANA:

Me whai ia rōpū i te kirikiri, tote, huka, wai, tīpune, e 3 ipu e tapaia ana ki te kirikiri, tote, me te huka, ā, me te tohanga pepa ' Whakaranu, Mehanga rānei?'

#### NGĀ TOHUTOHU

**Ka hangaia he whakaranu i te wā ka pahekotia ngā matū e 2, engari ka pupuri tonu ia matū i tōna āhua taketake.**

1. Whakakīhia ia ipu ki te  $\frac{3}{4}$  o te wai
2. Tāpirihia he tīpune o te kirikiri ki te ipu kua tapaia ki te kirikiri, ā, ka pērā anō mō te tote me te huka.  
Kia tūpato kei mākū te tīpune.
3. Whakahokia ngā taupoki ki runga i ngā ipu.
4. Kia kaha te rūrū i ia ipu, ka waiho mō te 2-3 mineti.  
Āta titiro ki te wai i ia ipu.
  - He aha tāu e kite ana?
  - E kitea tonu ana te kirikiri, te huka me te tote?
5. Tuhia ō tirohanga ki runga i te tohanga pepa.



**Ko te mehanga ka hangaia i te wā ka memeha te totoka i roto i te wē.**

- Kua huri tētahi o ngā whakaranu e 3 hei mehanga?
- He mehanga ngā whakaranu katoa?



## Whakaranu, Mehanga rānei?

RAUMAHĪ ĀKONGA

### Wāhanga B: Rūrū Miraka

#### E HIAHIATIA ANA:

Me whai ia rōpū i te paura miraka, wai, hinu tunu, tīpune, ngōine, ipurau, me te ipu i tapaia ki te 'miraka'.



#### NGĀ TOHUTOHU

**Ko te miraka he pahekotanga o te ngako, te pūmua, te huka, ngā huaora, ngā kohuke me te wai.**

1. Inea te 50mL o te wai ka ringi ki roto i te ipu.
2. Tāpiritia he tīpune o te paura miraka.

**Kei roto i te paura miraka te pūmua, te huka, ngā huaora me ngā kohuke.**

3. Whakahokia te taupoki ki runga i te ipu, ā, kia kaha te rūrū hei whakaranu.
  - Kua huri tēnei whakaranu hei mehanga?
4. Whakamahia te ngōine ki te ine i te 2ml o te hinu tunu, ka tāpiri i tēnei ki te mehanga miraka.

#### **E tohu ana te hinu i te ngako pūnoa i roto i te miraka**

- He aha tāu e kite ana ki te hinu?
  - Ka noho tonu i runga ake, ka tohuhu rānei ki raro o te ipu?
5. Whakahokia te taupoki, ka rūrū kaha i te ipu.
  6. Tangohia te taupoki ka āta titiro.
    - I ahatia te hinu?
    - Kua huri tēnei whakaranu hei mehanga?
    - He aha te miraka hanumi?
    - E mōhio ana koe i te rerekētanga o te miraka māota me te miraka tāwera?

## He Ōrite Rānei Ngā Miraka Katoa?

RAUMAHI ĀKONGA

### E HIAHIATIA ANA:

Me whai ia rōpū:

- kāri māmā me te pēpi
- kāri waiū whāngote
- tātauirā kāhua taiora
- kāri taiora – pūmua, ngako me te reihuka
- pānui 'Taioranga Miraka'
- putunga mataono rākau

### NGĀ TOHUTOHU

Ko ngā momo whāngote rerekē ka whakaputa i te waiū mō ā rātou punua. E hangaia ana i te wai, pūmua, ngako, warowaihā, huaora me te kohuke.



Engari kei roto i ngā waiū o ngā whāngote katoa te rahinga ōrite o ngā taiora, huaora me ngā kohuke?

1. Whakataurite i ia whāngote ki tana tātauirā kāhua taioranga. Ko te % o te wai me ngā huaora me ngā kohuke kei ia momo waiū e tuhia ana i runga i te tātauirā.
  - Ko ēhea whāngote e 2 ka hanga waiū e tino iti ana te % wai i ō ētahi atu?
2. Whakataurite i ia whāngote ki tōna kāri pūmua.
  - E whakaatu ana ēnei kāri i te % o te pūmua ka kitea i te waiū ka hangaia e ia whāngote.
3. Whakamahia ngā mataono rākau ki te hanga i tētahi kāhua pūmua mō te waiū o ia whāngote i runga i te tātauirā. He 1% te uara o ia mataono.
  - Ko tēhea whāngote ka hanga waiū me te % nui rawa o te pūmua?
  - Pēhea te % iti rawa o te pūmua?
4. Tōaitia ki te hanga i ngā kāhua ngako me te warowaihā mō ia momo waiū whāngote.
  - He aha tātou e inu nui ai i te miraka kau? He aha e kore nei e kai i te miraka o ētahi atu whāngote - pēnei i te kāmera, nanekoti, tohorā rānei?
  - Pēhea nga huatipu whakakapi miraka?

## Rapurapu Hokomaha

RAUMAHI ĀKONGA

### KUPU WHAKATAKI:

Kua pupū haere te nui o ngā hua miraka i ngā whata miraka o ngā hokomaha o Aotearoa i ngā tau tata nei.

He pēhea te rerekē o tētahi hua i tētahi atu?

I puta katoa mai i te kararehe, he huatipu rānei ētahi?

### E HIAHIATIA ANA:

Me whai ia rōpū i tētahi tohanga pepa Rapurapu Hokomaha.

### NGĀ TOHUTOHU

1. Kōwhiria he hokomaha.

countdown 

**PAKĪSAVE**



NEW WORLD

2. Rapua te maha o ngā momo miraka e whakarārangi mai ana i te tohanga pepa ka taea ana e koe i te wā kua whakaritea.  
✓ te pouaka i runga i te tohanga mō ngā mea ka kitea e koe.
3. Mēnā ka whai wā, tirohia tētahi atu hokomaha.
4. He uara tau kei te taha o ia pouaka.  
Tāpiritia ngā tau mō ngā hua miraka i kitea e koe.
  - E hia ngā mea i kitea e tō rōpū?
  - He aha te tapeke?
5. Me rangahau anō ki te whakautu i ngā pātai i runga i te tohanga pepa me te whai piro tāpiri.

