

91584MR



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD  
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

## Te Pāngarau me te Tauanga (Tauanga), Kaupae 3, 2019

### 91584M Te aromātai i ngā pūrongo tauanga

9.30 i te ata Rāpare 28 Whiringa-ā-rangi 2019  
Whiwhinga: Whā

## PUKAPUKA RAUEMI

Tirohia tēnei pukapuka hei whakatutuki i ngā tūmahi mō te whakamātautau Te Pāngarau me te Tauanga (Tauanga) 91584MR.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–7 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

**KA TAEA TĒNEI PUKAPUKA TE PUPURI HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.**

## PŪRONGO 1

### **Kua kitea e te rangahau kua whakaitia e ngā ara pahikara me ngā ara hīkoi te whakamahi waka, ā, ka whakaiti i ngā tukunga hoki**

E whakaatu ana ngā kairangahau mō te wā tuatahi nā te haumi ki ngā ara pahikara me ngā ara hīkoi kua iti iho te taraiwa a ngā tāngata me te whakaheke i ngā tukunga waro. I rangahautia e ngā kairangahau mai i Te Whare Wānanga o Ōtākou me Te Whare Wānanga o Te Ūpoko o te Ika te pānga o ngā ara pahikara me ngā ara hīkoi hou i hangaia i Ngāmotu me Heretaunga i te tau 2011.

I te tau 2014, e toru tau mai i te whakawhanaketanga, i kitea e 1.6% te hekenga o ngā kiromita i haerehia e ngā waka, ā, ko te otinga o tēnei he 1% te hekenga o ngā tukunga waro.

Hei tā ngā kairangahau mēnā i ōrite te haumitanga ki te motu whānui, ka whakahekea pea ngā tukunga hauā o te motu mā te 0.23 miriona tana ā ngā tau e toru e heke iho.

I whakamahia e ngā kairangahau ngā tūmomo tikanga hei kohikohi i ngā mōhiohio mō te whakamahinga waka: ngā uiui kanohi ki te kanohi me ngā rangatira o ngā whare, te tātari i ngā tatau inehauroa mai i ngā raraunga raihana, me te arotake i ngā taipitopito mō te whai motokā mai i te Rangahau Haerenga a Te Hunga Whare o Aotearoa.

I whakatauritea ngā raraunga mai i Ngāmotu me Heretaunga (he 74 200 me te 86 600 te rahinga taupori o tēnā, o tēnā) ki ngā mōhiohio mai i Whanganui me Whakaoriori (he 40 900 me te 25 200 ngā taupori o tēnā, o tēnā) – ngā tāonenui porowini pātata kāore i whiwhi pūtea kāwanatanga atu anō mō ngā ara pahikara, hīkoi rānei.

He mea urutau mai i [www.otago.ac.nz/news/news/otago701085.html](http://www.otago.ac.nz/news/news/otago701085.html)

## REPORT 1

### **Cycle lanes and walkways cut car use, reduce emissions, study finds**

Researchers have shown for the first time that investing in cycle lanes and walkways encourages people to drive less and cuts carbon emissions. The researchers, from the University of Otago and Victoria University, studied the impact of new cycling and walking paths built in New Plymouth and Hastings in 2011.

In 2014, three years after the development, they found there was a reduction of 1.6% in motor vehicle kilometres travelled, resulting in a 1% drop in carbon emissions.

If the same level of investment was made nationwide, it could reduce the country's carbon dioxide emissions by at least 0.23 million tonnes over three years, the researchers say.

The researchers used a variety of methods to collect information on car usage: conducting face-to-face interviews with householders, analysing odometer readings from licensing data, and reviewing details on car ownership from the New Zealand Household Travel Survey.

The data from New Plymouth and Hastings (populations 74 200 and 86 600 respectively) were compared with information from Whanganui and Masterton (populations 40 900 and 25 200 respectively) – two nearby provincial cities that received no additional government funding for cycleways or walking paths.

Adapted from [www.otago.ac.nz/news/news/otago701085.html](http://www.otago.ac.nz/news/news/otago701085.html)

## PŪRONGO 2

### Te Rangahau Pēke Kirihou – ngā otinga

E 937 ngā tāngata i whakauru mai ki te tirohanga tauanga a tētahi kaunihera mō te rapu i ngā whakaaro o te tāngata mō ngā pēke kirihou me te whakamahi. I te hiahia te Kaunihera ā-Takiwā o Wairau ki te mōhio mēnā ka whakahekea e te utu te hiahia o te tangata ki te whakamahi pēke kirihou, he aha i kore ai e whakamahia e ētahi, ā, mēnā kei te huri ngā whakaaro o ngā tāngata mō ngā pēke kirihou. He mea whakahaere te tirohanga tauanga e ngā whakautu tuihono me te pōhi i ngā puka ki ngā kōpaki kua utua i tukuna ki ngā kāinga katoa i te takiwā o Te Kaunihera ā-Takiwā o Wairau.

E kī ana Te Kaunihera ā-Takiwā o Wairau e tohu ana te tirohanga tauanga kāore e pōuri te nuinga ki tētahi utu iti noa mō ngā pēke kirihou, engari neke atu i te haurua o ngā kaiwhakautu i kī kāore e mutu pea tā rātou whakamahi i ngā pēke kirihou mēnā ka uru mai he utu iti. I kī te kaunihera e tohu ana ngā otinga tērā ētahi mutunga iho pea kāore i te tūmanakohia mēnā ka whakakorehia tonutia ngā pēke: “Ki te whakahaua he utu mō ngā pēke ka rerekē haere pea te āhua o ngā tāngata, engari ko te kaha o ngā huringa kei te nui kē o te utu o ngā pēke.”

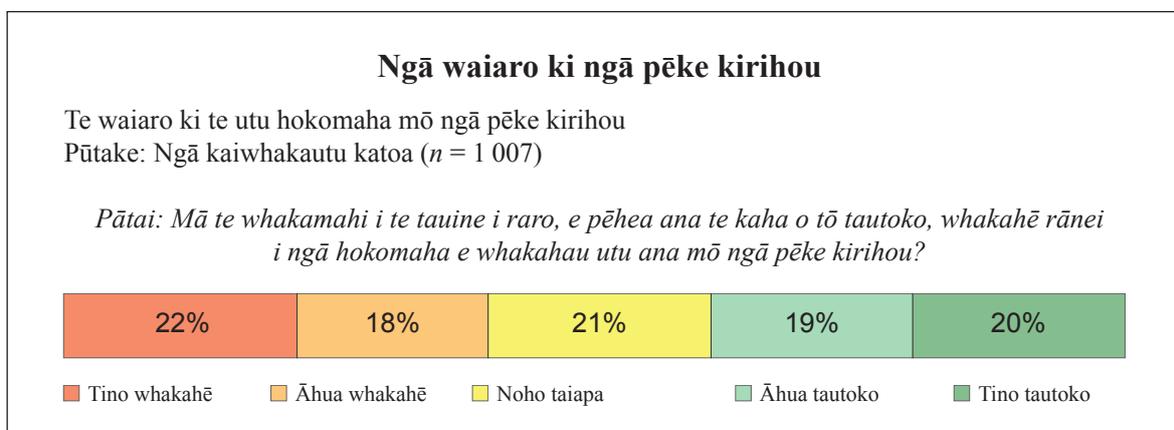
He toru hauwhā o ngā kaiwhakautu i kī he whakaparuparu ngā pēke kirihou i te taiao, ā, neke atu i te 90% ka hiahia kia tukuruahia ā rātou pēke kirihou. Tata ki te haurua o te hunga i whakaae ki te whakaoti i te tirohanga tauanga kei te heri kē i ā rātou ake pēke ka taea te whakamahi anō ki te hokomaha ina haere ana ki te hokohoko.

Ko te pātai tuatahi ki ngā kaiwhakautu mēnā kei te whakamahi pēke kirihou i tēnei wā i a rātou e hokohoko ana. 35.1% o ngā kaiwhakautu i kī he rite tonu tā rātou whakamahi pēke kirihou, ā, 47.9% o ngā kaiwhakautu i kī ka whakamahia ngā pēke kirihou i ētahi wā anake. E kī ana te kaunihera e tohu ana pea tēnei kua nui kē atu te neke o ngā whakaaro i tērā i whakaarohia ai i te tuatahi.

Tata ki te haurua o ngā kaiwhakautu i kī ka whakatenatena tētahi kaupapa paraihe i ngā tāngata ki te whakamahi i ngā pēke ka taea te whakamahi anō, ā, i kātata anō ki tēnei te hunga e whakapono ana mā te whakauru mai i tētahi utu mō ngā pēke kirihou te take ka whakamahia e rātou ngā pēke ka taea te whakamahi anō.

Nō reira, 80% o ngā kaiwhakautu ka rata ki a rātou te utu i tētahi utu iti noa mō ia pēke kirihou - me kī 10 hēneti. Engari, ka whakamahia tonutia e te 63%, ahakoa he utu iti, kāore rānei.

## Hoahoa 1



He mea urutau mai i [www.scoop.co.nz/stories/AK1708/S00385/plastic-bags-survey-the-results.htm](http://www.scoop.co.nz/stories/AK1708/S00385/plastic-bags-survey-the-results.htm)

## REPORT 2

### Plastic Bags Survey – the results

937 people took part in a council’s survey gauging attitudes to plastic bags and their use. Marlborough District Council wanted to know whether a charge would discourage the use of plastic bags, why some people choose not to use them at all, and whether people’s attitudes to plastic bags are changing. The survey was conducted by a mixture of online returns and posting of forms in pre-paid envelopes that were delivered to all households in the Marlborough District Council area.

The Marlborough District Council says the survey suggests the majority would not be unhappy about a small charge for plastic bags, but more than half the respondents also said a small charge wouldn’t necessarily deter them from using the bags. The council said the results suggest that there could be unintended consequences if the bags were removed overnight: “Charging for bags would likely change people’s behaviour eventually, but how much change we’d see would depend how much was being charged for the bags.”

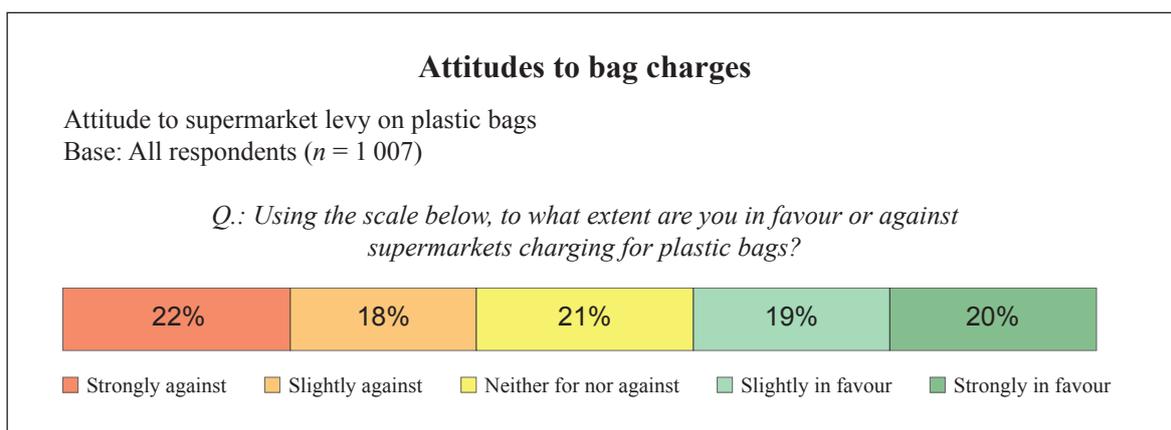
Three quarters of respondents considered that plastic bags litter the environment, and more than 90% would like the opportunity to recycle their plastic bags. About half of those who took the time to fill out the survey already take their own re-usable bags to the supermarket when they go shopping.

The first question asked shoppers whether they are currently using plastic bags when getting their shopping. 35.1% of respondents said they regularly do, whilst 47.9% of respondents said they only occasionally do. The council says this may indicate views on plastic bags have already shifted more than previously thought.

About half of the respondents think a reward scheme would encourage people to use re-usable bags, while almost as many believe that introducing a charge for plastic bags would be the incentive that would get them using re-usable bags.

Overall, 80% of respondents would be happy to support a small charge per plastic bag – say 10 cents. However, 63% would still use them, whether they’re paying a small fee or not.

**Figure 1**



Adapted from [www.scoop.co.nz/stories/AK1708/S00385/plastic-bags-survey-the-results.htm](http://www.scoop.co.nz/stories/AK1708/S00385/plastic-bags-survey-the-results.htm)

## PŪRONGO 3

### E tautoko ana te whakamātau ake a te kura i te omeka 3

Kua puta mai ngā otinga tōmua mō te whakamātau ā-akomanga tuatahi o Aotearoa mō ngā painga o te omeka 3 (hinu ika). Ka mutu, he pai aua otinga tōmua, e ai ki tētahi tumuaki kura tuatahi o Te Raki Paewhenua (Tāmaki Makaurau). I toko ake i te hiahia o te tumuaki kia whakamātauhia tēnei ara whai muri i te pānui i ngā otinga o tētahi rangahau, e kī ana i piki ake te pūmahara mahi o ngā taiohi hauora mā te 23% whai muri i tētahi wā roa o te kai huaora omeka 3.

I whakapā atu te tumuaki ki tētahi kamupene hua hauora māori nō Te Raki Paewhenua, ka whakaae rātou ki te whakarato i ngā pire omeka 3 ki te kura. Rua tekau mā tahi ngā ākongā o te kura, mai i te 11 ki te 13 te pakeke, i kai i ngā pire omeka 3 kotahi wā i te rā mō te marama tuatahi, ā, ka kai haere tonu i ngā wā e rua i te rā mō ngā marama e rua i muri mai. Ko tētahi atu rōpū e ōrite ana te rahi me te āhua ōrite anō o ngā tatauranga iwi i noho hei rōpū whakatina - kāore i kai i ngā pire engari i whakauru ki aua akoranga anō.

I aromatawaihia ngā rōpū e rua ki ngā tūmomo peka mātauranga, ka whakahaerehia ētahi aromatawai mātauranga. Ko te aromatawai tuatahi, i arotahi ki te tuhituhi, nō nā tata nei i oti ai tērā. I eke ngā tuhituhi a te rōpū whakatina ki tērā i tūmanakohia, engari i kitea i roto i ngā tamariki e kai ana i te omeka 3 te tino pai haere ake o te tuhituhi me te whakaaro tapatahi, te kī a te tumuaki. I ū tēnei ki tāna i tūmanako ai ko ngā tamariki e kai ana i te omeka 3 ka kaha ake te wairua hihiri, me te whakaaro tapatahi, me te pai ake o ngā pūkenga taketake.

I kī te pou whakahaere o te kamupene hua hauora māori ko te wawata ka nui ake ngā whakamātau whai tikanga ka puta i tēnei whakamātau i Aotearoa hei whakamātau mēnā ka tino whakapai ake i te omeka 3 te oranga o ngā tamariki.

He mea urutau mai i [www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=10542321](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10542321)

He tiki ngā mōhiohio tāpiri i [www.ncbi.nlm.nih.gov/pmc/articles/PMC3463539/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3463539/) me [www.cognitune.com/fish-oil-benefits/](http://www.cognitune.com/fish-oil-benefits/)

## REPORT 3

### School's DIY trial supports omega 3

Early results are in on New Zealand's first classroom-based experiment on the benefits of omega 3 (fish oil). And those initial results are good, according to a North Shore (Auckland) primary school principal. The principal was inspired to try this approach after reading the results of a study, which suggested that in healthy young people, working memory improved by 23% after a long period of taking omega 3 supplements.

The principal contacted a North Shore-based natural health products company, who agreed to supply the school with omega 3 tablets. Twenty-one of the school's students, aged between 11 and 13, took omega 3 tablets once a day for the first month, and continued to take them twice a day for the following two months. Another student group of the same size and roughly the same demographic makeup served as the control group – not taking the tablets but engaging in the same lessons.

The two groups were tested on a range of disciplines, undergoing a series of academic tests. The first of the tests, focused on writing, was completed recently. The control group's writing was as expected, but the children taking omega 3 had shown a definite improvement in writing and general focus, the principal said. That followed his expectations that the children taking omega 3 would have higher motivation, more concentration, and improved basic skills.

The chief executive of the natural health products company said he hoped the trial would prompt more formal trials in New Zealand to test if omega 3 did genuinely improve the well-being of children.

Adapted from [www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=10542321](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10542321)

Additional information sourced from [www.ncbi.nlm.nih.gov/pmc/articles/PMC3463539/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3463539/) and [www.cognitune.com/fish-oil-benefits/](http://www.cognitune.com/fish-oil-benefits/)

*English translation of the wording on the front cover*

## **Level 3 Mathematics and Statistics (Statistics), 2019**

**91584 Evaluate statistically based reports**

9.30 a.m. Thursday 28 November 2019  
Credits: Four

**RESOURCE BOOKLET**

Refer to this booklet to answer the questions for Mathematics and Statistics (Statistics) 91584MR.

Check that this booklet has pages 2–7 in the correct order and that none of these pages is blank.

**YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.**