

# 3

91584M



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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

SUPERVISOR'S USE ONLY

## Te Pāngarau me te Tauanga (Tauanga), Kaupae 3, 2016

### 91584M Te aromātai i ngā pūrongo tauanga

2.00 i te ahiahi Rāpare 24 Whiringa-ā-rangi 2016  
Whiwhinga: Whā

Paetae	Kaiaka	Kairangi
Te aromātai i ngā pūrongo tauanga.	Te aromātai i ngā pūrongo tauanga, me ngā parahautanga.	Te aromātai i ngā pūrongo tauanga, me te āhuetanga mātau tauanga.

Tirohia mēnā e rite ana te Tau Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

**Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.**

Tangohia te Pukapuka Rauemi 91584MR i waenga o tēnei pukapuka.

Tuhia ō mahinga KATOA.

Tirohia mēnā kei a koe te Pukapuka Tikanga Tātai me ngā Tūtohi L3–STATMF.

Mēnā ka hiahia whārangi atu anō koe mō ō tuhinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te tau tūmahi.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–15 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

**ME HOATU RAWA KOE I TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE Ā TE MUTUNGA O TE WHAKAMĀTAUTAU.**

**TAPEKE**

MĀ TE KAIMĀKA ANAKE

## TŪMAHI TUATAHI

Titiro ki te **Pūrongo 1** i roto i te pukapuka rauemi hei whakatutuki i ngā tūmahi e whai ake nei.

- (a) Tautuhia ka whakamārama i ngā taurangi whakamārama me ngā taurangi whakautu mō te rangahau.

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- (b) E whakapae ana te pūrongo “he whaitake ake ngā whakahekenga utu i te mātauranga kaiora mō te whakatenatena i ngā tāngata ki te hoko i ngā kai whai oranga ake”.

Whakamāramahia mai mēnā he rangahau mātakitaki tēnei rangahau, he whakamātautau rānei, me ngā pānga o tēnei mō taua whakapae.

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**QUESTION ONE**

Refer to **Report 1** in the resource booklet to answer the following questions.

- (a) Identify and describe the explanatory and response variables for the study.

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- (b) The report claims that “price discounts are more effective than nutrition education in encouraging people to buy healthier foods”.

Explain whether this study is an observational study or an experiment, and the implications of this for this claim.

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- (c) Whakamāramahia mai he aha i whakamahia ai te tohatoha matapōkere hei whakarite i ngā rōpū e rua i whakatauritehia i roto i te rangahau.

Hei wāhanga o tō whakamāramatanga, tuhia ngā tauira whāiti e pā ana ki te rangahau i matapakitia.

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- (d) Ko tētahi raruraru ka puta pea i tētahi rangahau tauanga ko te hē o te whakawhānui i ngā otinga<sup>1</sup>.

Matapakitia kia KOTAHI te raruraru ka tāea mā te whakawhānui i ngā otinga o tēnei rangahau.

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<sup>1</sup> kitenga

- (c) Explain why random allocation was used to form the two groups compared in the study. As part of your explanation, give specific examples related to the study discussed.

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- (d) A potential issue with a statistical study is extending the results inappropriately. Discuss ONE potential issue with extending the results of this study.

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## TŪMAHI TUARUA

Titiro ki ngā **Pūrongo 2a** me **2b** i roto i te pukapuka rauemi hei whakatutuki i ngā tūmahi e whai ake nei.

He pūrongo pāpāho te Pūrongo 2a i ahu mai i ngā mōhiohio i tukuna i te Pūrongo 2b.

(a) Ko te pae hapa i pūrongotia he 1.7%.

(i) Whakaaturia i pēhea te tātai i tēnei pae hapa.

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(ii) Whakamāramahia mai te take me whakauru te pae hapa ki ngā pūrongo rangahau tauanga.

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(b) E kī ana te pūrongo pāpāho e 59% o ngā kaiurupare i tino hiahia, tērā pea i hiahia kia whakaitia ngā rahinga rato o ngā inu whai huka.

Waihangahia mai he āputa māia mā te whakamahi i tēnei ōrautanga, ka whakamārama i tēnei āputa māia.

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**QUESTION TWO**

Refer to **Reports 2a** and **2b** in the resource booklet to answer the following questions.  
Report 2a is a media report that was based on the information provided in Report 2b.

- (a) The reported margin of error is 1.7%.
- (i) Show how this margin of error was calculated.

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- (ii) Explain why the margin of error should be included in statistical survey reports.

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- (b) The media report states that 59% of the survey respondents definitely or possibly favoured a reduction in the serving sizes of sugar drinks.

Construct a confidence interval using this percentage, and interpret this confidence interval.

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- (c) Matapakitia kia KOTAHI te raruraru ka tāea e pā ana ki te hoahoa o te rangahau, o ngā pātai hoki/rānei.

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- (d) Nō ngā mōhiohio me ngā otinga o te pūrongo 2b te kōwae tuatahi o te Pūrongo 2a, otirā e hāngai ana ki ngā ōrautanga rangahau mō te pātai kai huka tuatahi e kīia ana “Te whakawhāiti i te huka i roto i ngā inu”.

Matapakitia te kounga o tēnei kōwae.

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- (c) Discuss ONE potential issue with the design of the survey and/or questions.

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- (d) The first paragraph of Report 2a is based on information and results from Report 2b, specifically the survey percentages for the first sugar consumption question headed “Limit sugar in drinks”.

Discuss the quality of this paragraph.

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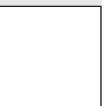
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## TŪMAHI TUATORU

Titiro ki te **Pūrongo 3** i roto i te pukapuka rauemi hei whakatutuki i ngā tūmahi e whai ake nei.

- (a) E kī ana te pūrongo ko ngā pae hapa mō ngā rangahau 2006 me te 2008 he 3.8% me te 4.5%.

Whakamāramahia mai he aha i rerekē ai ngā pae hapa i pūrongohia mō ngā rangahau e rua.

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- (b) I puta te tauākī nei a tētahi kaipānui o tēnei pūrongo ki tētahi o ōna hoa: “He nui ake te hautanga o ngā tāne i te rangahau 2008 i tū ki ngā tūnga waka hauā me te kore whakaaetanga tēnā i ngā wāhine”.

Aromātaihia he aha ngā taunakitanga tauanga, mēnā kei reira, i tukuna i roto i te pūrongo hei tautoko i tēnei tauākī.

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**QUESTION THREE**

Refer to **Report 3** in the resource booklet to answer the following questions.

- (a) The report states the margins of error for the 2006 and 2008 surveys were 3.8% and 4.5% respectively.

Explain why the reported margins of error are different for the two surveys.

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- (b) A reader of this report has made the following statement to a friend: “A higher proportion of males in the 2008 survey parked in disability parks without a permit than females”.

Evaluate what statistical evidence, if any, has been presented in the report to support this statement.

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- (c) Ko te whakapae ko ngā tīpakonga o ngā waka/tāngata i riro mai i te tau 2006 me te tau 2008 he tīpako tōtika o ngā waka/tāngata i Aotearoa i aua tau.

Ka tāea te whakapae ko te ōraitanga o ngā waka/tāngata o Aotearoa i whakamahi i tētahi tūnga waka hauā me te kore whakaatu whakaaetanga he iti iho i te tau 2008 i tō te tau 2006? Waihangahia mai he āputa māia KOTAHI, ka whakamārama i tēnei āputa i roto i tō tuhinga.

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- (d) Ko te whakaupoko mō tēnei pūrongo ko “Ngā whaina nui ake hei whakapāhunu i te whakamahinga poka noa o ngā tūnga waka mō te hunga hauā”.

Matapakitia kia KOTAHI te raruraru ka tāea e pā ana ki te hoahoa rangahau i whakamahia mō te rangahau 2008, e ai ki te whakaupoko mō tēnei pūrongo.

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- (c) Assume that the samples of cars/people obtained in 2006 and 2008 are representative of all cars/people in New Zealand in those years.

Can a claim be made that the percentage of New Zealand cars/people who used a disability park without displaying a current permit was lower in 2008 compared to 2006?

Construct ONE confidence interval, and interpret this interval as part of your answer.

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- (d) The heading for this report is “Higher fines discourage disability parking abuse”.

Discuss ONE potential issue with the study design used for the 2008 survey, in respect to the heading for this report.

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*English translation of the wording on the front cover*

## **Level 3 Mathematics and Statistics (Statistics), 2016**

### **91584 Evaluate statistically based reports**

2.00 p.m. Thursday 24 November 2016  
Credits: Four

**91584M**

<b>Achievement</b>	<b>Achievement with Merit</b>	<b>Achievement with Excellence</b>
Evaluate statistically based reports.	Evaluate statistically based reports, with justification.	Evaluate statistically based reports, with statistical insight.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**You should attempt ALL the questions in this booklet.**

Pull out Resource Booklet 91584MR from the centre of this booklet.

Show ALL working.

Make sure that you have the Formulae and Tables Booklet L3–STATMF.

If you need more room for any answer, use the space provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–15 in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**