

3

91584M



NZQA

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

Tohua tēnei pouaka
mēnā kāore he tuhituhi i
roto i tēnei pukapuka

Te Pāngarau me te Tauanga (Tauanga), Kaupae 3, 2020

91584M Te aromātai i ngā pūrongo tauanga

9.30 i te ata Rāapa 18 Whiringa-ā-rangi 2020
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 mai i te puku o tēnei pukapuka.

Tuhia ō mahinga KATOA.

Tirohia mēnā kei a koe te pukapuka Tikanga Tātai me ngā Tūtohi L3-STATFM.

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 2-23 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

Tirohia te **Pūrongo 1** kei te pukapuka rauemi hei whakatutuki i ngā wāhanga tūmahi e whai ake nei. Me kī ko te tīpakonga i riro mai he tīpako tōtika mō ngā kaimahi katoa o Aotearoa.

- (a) (i) Tātaihia te pae hapa mō te rangahau Tātau Katoa (2020) a Te Kauae Kaimahi (CTU).

- (ii) Whakamāramahia mai he aha i hiahiatia ai te pae hapa hei whakamārama i ngā whakapae ka puta i te pūrongo.

- (iii) Me kī ka hiahia te CTU ki te whakaiti i te pae hapa mō tana rangahau whai ake ki te 0.02 (2%) i te mōrahi.

Me aha rātou?

QUESTION ONE

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

Assume that the sample obtained is representative of all New Zealand workers.

- (a) (i) Calculate the margin of error for the Council of Trade Unions (CTU) Together (2020) survey.

- (ii) Explain why the margin of error is needed to interpret any claims made from this survey.

- (iii) Suppose the CTU wants to reduce the margin of error for its next survey to at most 0.02 (2%).

What would it have to do?

TŪMAHI TUARUA

Tirohia te **Pūrongo 2** kei te pukapuka rauemi hei whakatutuki i ngā wāhanga tūmahi e whai ake nei.

- (a) Whakamāramahia te take ko te tūhuratanga kua pūrongohia he rangahau whakamātautau, ā, ehara i te rangahau tirotiro.

- (b) Whakamāramahia te take i whakaaturia ngā whakaahua ki ngā kaitirotiro ki te raupapa matapōkere.

- (c) E whakaahua ana te pūrongo i pēhea te tango i ngā whakaahua e rua o ia tangata.

Whakamāramahia te take he aha i whakaaturia ai ki ngā kaitirotiro ngā whakaahua e rua o ia tangata.

QUESTION TWO

Refer to **Report 2** in the resource booklet to answer the following question parts.

- (a) Explain why the investigation reported on is an experimental study, and not an observational study.

- (b) Explain why the photographs were shown to the observers in a randomised order.

- (c) The report describes how two photographs were taken of each subject.

Explain why the observers were shown two photographs of each subject.

TŪMAHI TUATORU

Tirohia te **Pūrongo 3** kei te pukapuka rauemi hei whakatutuki i ngā wāhanga tūmahi e whai ake nei. Me kī ko te tīpakonga i riro mai he tīpako tōtika mō ngā mātua katoa o Aotearoa.

(a) Anei te whakaupoko mō tēnei pūrongo:

"E whakaatu ana te rangahau mātua ko te kore moe te māharahara hauora nui rawa mō ā rātou tamariki".

Tautohua me te whakaahua i ngā taunakitanga kua whakatakotohia i roto i te pūrongo, me ngā whakairoiro mōhiohio hei tautoko i tēnei whakaupoko.

(b) Hei whakaputa i ngā otinga kei te Hoahoa 3B, anei ngā kupu o te pātai i tukuna ki ngā mātua: "E hia te nui ake o ngā hākinakina e tākarotia ana e tō tamaiti tēnā i a koe i te wā e pērā ana tō pakeke?"

Tautohua me te matapaki i ngā take e RUA ka taea e pā ana ki ngā kupu o tēnei pātai ka whai pānga pea ki ngā otinga o te rangahau.

Take Tuatahi: _____

Take Tuarua: _____

QUESTION THREE

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

Assume that the sample obtained is representative of all New Zealand parents.

- (a) The headline for this report is:

“Parenting survey highlights sleep as parents’ biggest health concern for their children”.

Identify and describe the evidence that has been presented in the report and/or infographics to support this headline.

- (b) To produce the results in Figure 3B, the question that parents were asked was worded as follows:

“How much sport does your child participate in compared to you at the same age?”

Identify and discuss TWO potential issues with the wording of this question that may affect the results of the survey.

Issue One: _____

Issue Two: _____

- (c) Ko tētahi āhuatanga hei whakaaroaro ina aromātai ana i ngā pūrongo rangahau tauanga ko wai kei te utu i te rangahau.

Whakamāramahia mai te take ka pā mai pea tētahi raruraru nā runga i te hunga nā rātou te rangahau i utu.

- (d) Matapakitia te take ka noho pea te tīpako haukume hei raruraru mō tēnei rangahau.

**Ka haere tonu te Tūmahi
Tuatoru i te whārangi 18.**

- (c) One component to consider when evaluating statistical survey reports is who funded the study.

Explain why there is a potential issue with who funded this survey.

- (d) Discuss how selection bias could be a potential issue for this survey.

**Question Three continues
on page 19.**

(e) Ka taea te whakapae e whai ake nei mō tēnei rangahau?

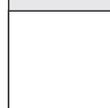
He nui ake te ōwehenga o ngā mātua o Aotearoa e kī ana he iti iho ngā hākinakina a ā rātou tamariki tēnā i a rātou e kī ana he ōrite te rahinga o ngā hākinakina i te wā e tamariki ana rātou.

Mā te whakamahi i ngā mōhiotio e whakaaturia ana ki te Hoahoa 3B, waihangahia he āputa māia KOTAHI, ka whakamārama i tēnei āputa ki roto i tō tuhinga.

- (e) Could the following claim be made based on this survey?

A higher proportion of New Zealand parents feel their children do less sport than feel their children do about the same amount of sport as they did as a child.

Using information presented in Figure 3B, construct ONE confidence interval, and interpret this interval as part of your answer.



English translation of the wording on the front cover

Level 3 Mathematics and Statistics (Statistics) 2020

91584 Evaluate statistically based reports

9.30 a.m. Wednesday 18 November 2020
Credits: Four

91584M

Achievement	Achievement with Merit	Achievement with Excellence
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 2–23 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.