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91584M



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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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Te Pāngarau me te Tauanga (Tauanga), Kaupae 3, 2014

91584M Te aromātai i ngā pūrongo tauanga

9.30 i te ata Rāpare 20 Whiringa-ā-rangi 2014
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, mā te mātau tauanga.

Tirohia mehemea e ōrite ana te Tau Ākonga ā-Motu (NSN) kei tō pepa whakauru ki te tau kei runga ake nei.

Me whakautu e koe ngā pātai KATO A kei roto i te pukapuka nei.

Whakaaturia ngā mahinga KATO A.

Me mātua riro mai i a koe te pukaiti o ngā Tikanga Tātai me ngā Papatau L3-STATMF.

Ki te hiahia koe ki ētahi atu wāhi hei tuhituhi whakautu, whakamahia te (ngā) whārangi kei muri i te pukapuka nei, ka āta tohu ai i ngā tau pātai.

Tirohia mehemea kei roto nei ngā whārangi 2-21 e raupapa tika ana, ā, kāore hoki he whārangi wātea.

HOATU TE PUKAPUKA NEI KI TE KAIWHAKAHAERE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

PĀTAI TUATAHI

Kei te pāhekeheke te wā ki ngā waea kāinga – kamupene waea hou

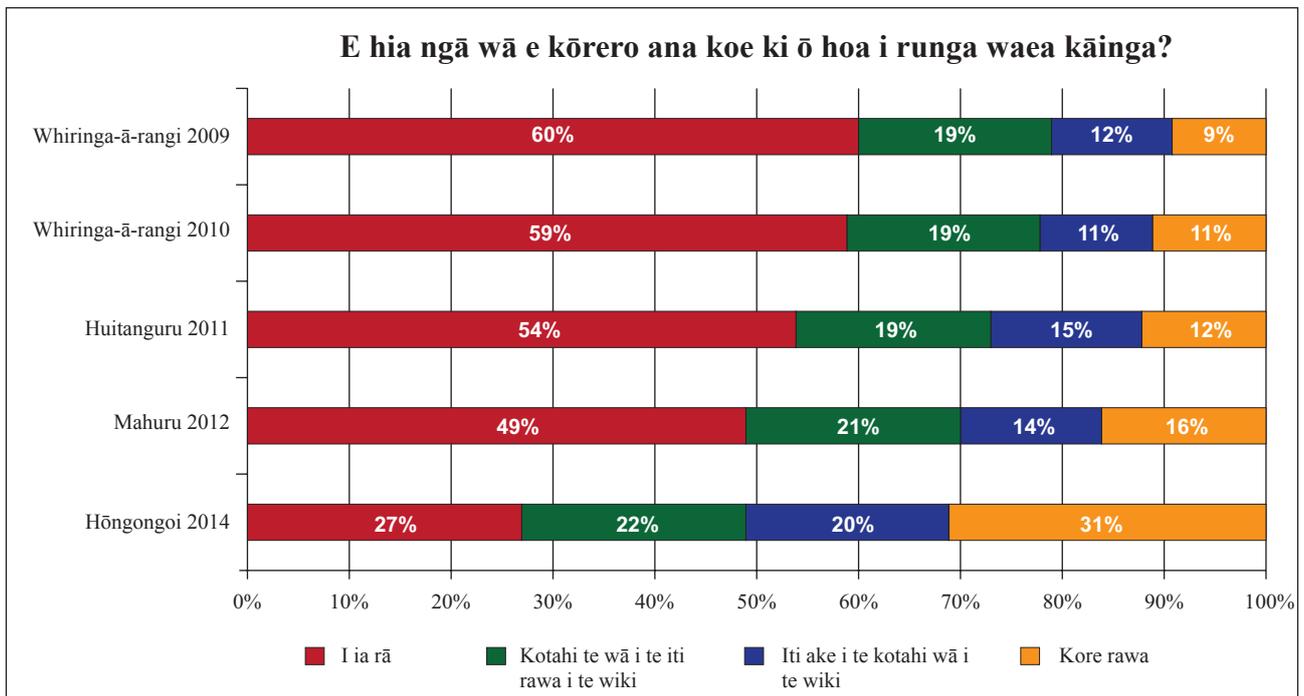
*NZ Times**, 9 Hereturikōkā 2014

E whakarite ana te kamupene waea hou rawa o Aotearoa, e whakawhāiti ana ki te māketē taiohi, ki te whakarewa i a ia i roto i te 6 marama, engari kāore pea e whakaratohia ngā ratonga katoa i tūmanakohia e ia i te tuatahi.

E tāpae ana i ngā utu waea me ngā utu raraunga iti ake tae atu ki ngā ratonga kiritaki pai ake, e whakarite ana a 3's *Company*, he kamupene nō Te Hononga o Amerika me Kānata, ki te whakarewa i te tīmatanga o te tau 2015 me te ngana hoki ki te werowero i ngā kamupene waea tūroa i Aotearoa. Engari, whai muri i ana kōrero i roto i ngā tau maha kia riro mai i a ia te māketē waea kāinga** nui rawa e taea ana, ko te kī a te kamupene ināianei ka whakarato ratonga waea pūkoro me te ipurangi anake.

Hei tā te tumu whakarae a Rob Chaney, e ai ki ngā rangahau whānui i whakahautia e te kamupene i roto i ngā tau e rima kua hipa i kitea i roto i “ngā taunakitanga kaha kei te iti haere ngā kōrero waea kāinga”. E kī ana ia mēnā ka whakapau moni ki te tuku ratonga waea kāinga kei aukatihia pea te whakatutukitanga whānui o te whāinga a te kamupene ki te whakarato hua whakawhitiwhiti pai ake ki ngā tāngata o Aotearoa. E whakapae ana a Mr Chaney e ai ki ngā rangahau a tana kamupene kua kitea he iti ake i te haurua o ngā taiohi o Aotearoa e kōrero ana ki ō rātau hoa i runga waea kāinga i ia wiki, ā, nā tēnei, ka arotahi kē te kamupene ki te whakarato i ngā hua ipurangi me ngā hua kawē pai rawa.

I tūhurahuria e te kamupene te whakamahinga waea i roto i te rima tau. E whakaaturia ana ki te kauwhata i raro ngā kitenga mō te auautanga o te kōrero a ngā hoa ki a rātau anō i runga waea kāinga.



I ngā rangahau o ia tau, e 600 ngā tāngata o Aotearoa i uiuitia mai i ngā tau 12 ki te 17.

I whakahaerehia ngā uiui mā runga waea kāinga me ngā waea pūkoro, ā, ko te pae hapa o ngā rangahau o ia tau he 4.1%.

* He nūpepa pakimaero te *NZ Times*.

** landline

QUESTION ONE

Uncertain future for landlines – new telco

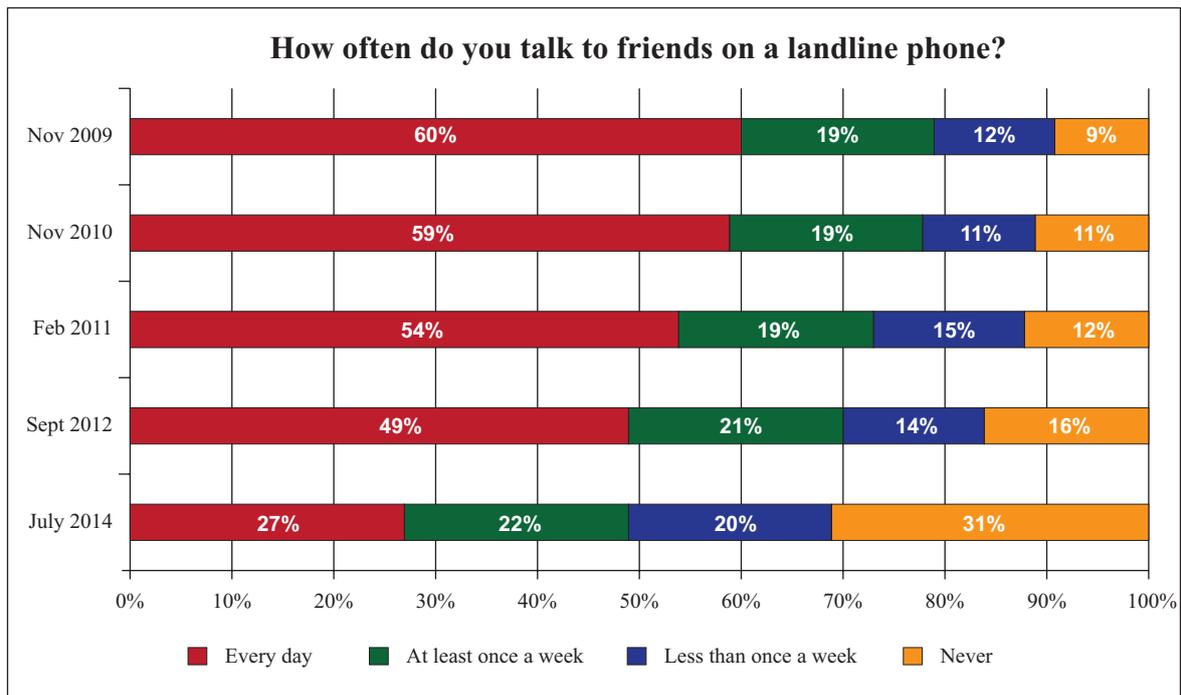
*NZ Times**, 9 August 2014

New Zealand's newest telecommunication company, targeting the younger market, is set to launch in less than six months, but it might not offer the full range of services it originally intended.

Promising lower calling and data charges as well as better customer service, the joint US-Canadian owned *3's Company* is set to launch early in 2015 and plans to shake up the established telcos in New Zealand. However, after indicating for several years it wanted to acquire as much of the landline market as possible, the company now says it will offer only mobile and internet services.

Chief executive Rob Chaney said the extensive research the company had commissioned over the past five years provided "strong evidence landline voice calls were diminishing". Spending money to offer landline services might prevent the company from fully meeting its aim to provide New Zealanders with better communication products, he said. Mr Chaney claimed that his company's research had shown that fewer than half of young New Zealanders are now talking to friends on landlines regularly each week, and because of this, the company would instead focus on providing the very best internet and mobile products.

The company investigated phone usage over a five-year period. The results for the frequency of talking to friends on a landline phone for each of these years are shown in the graph below.



In each year's survey, 600 New Zealanders aged 12 to 17 were interviewed. Interviews were conducted using landlines and cell phones, and each year's survey has a margin of error of 4.1%.

* *NZ Times* is a fictional newspaper.

- (a) E kī ana te tuhinga ko te pae hapa mō ia rangahau he 4.1%.
- (i) Whakaaturia mai i pēhea te tātaihia o tēnei pae hapa, ka whakamārama te take me whakauru te pae hapa ki roto i ngā pūrongo rangahau tauanga.

- (ii) Whakamāramahia mai he aha i kore ai e tika te whakamahi i te pae hapa i pūrongohia ki te waihanga i tētahi āputa māia mō te ōrautanga o ngā kaiwhakautu mai i te rangahau o te Whiringa-ā-rangi 2009 e kore rawa e kōrero ki ō rātou hoa i runga wāea kōrero o te kainga.

(a) The article states that the margin of error for each survey is 4.1%.

(i) Show how this margin of error was calculated, and explain why the margin of error should be included in statistical survey reports.

(ii) Explain why it would be inappropriate to use the reported margin of error to construct a confidence interval for the percentage of respondents from the November 2009 survey who never talk to their friends on a landline.

- (b) E pūrongo ana te tuhinga i tētahi whakapae he iti ake i te haurua o ngā taiohi o Aotearoa e kōrero ana ki ō rātou hoa i runga i te wāea kōrero o te kainga i ia wiki.
- (i) Mō te rangahau o te Hōngongoi 2014, ko ngā wāhanga whakautu o te “I ia rā” me te “Kotahi wā i te wiki i te iti rawa” he 49% te katoa o te hunga i uiuitia.

E rawaka ana ēnei ōrautanga rangahau tōpū hei taunakitanga tauanga ki te tautoko i te whakapae?

Parahautia tō whakautu.

- (ii) I ōrite te pātai mō te auautanga o te kōrero ki ngā hoa i runga i te wāea kōrero o te kainga me ngā wāhanga whakautu hāngai, i ngā rangahau o ia tau.

Matapakihia ngā uauatanga ka tūpono pea i ngā kupu o tēnei pātai me ngā kupu e whakamahia ana mō ngā wāhanga whakautu.

- (b) The article reports a claim that fewer than half of young New Zealanders are now talking to friends on landlines regularly each week.
- (i) For the July 2014 survey, the response categories “Every day” and “At least once a week” have a total of 49% of interviewees.

Is this combined survey percentage sufficient statistical evidence to support the claim?
Justify your answer.

- (ii) The question about frequency of talking to friends on a landline phone and the related response categories were the same in each year's survey.

Discuss potential difficulties with the wording of this question and the wording of the response categories used.

PĀTAI TUARUA

He tohu hou tō te kamupene ipurangi*NZ Times*, 23 Paengawhāwhā 2014

Kua whakaputahia e te kaiwhakarato ratonga ipurangi ā-whare tawhito rawa o te motu, a *SuperInfo*, ngā rerekētanga maha e aro ana ki te whakaara anō i a ia mai i te pūhore. I roto i ēnei rerekētanga ko tōna ingoa hou – *Beam*. Kāore i te rata ngā kaitātari māketē ki te ingoa hou, ko te whakautu a te hunga 75% i te imēratanga atu ko tā rātou whakapae ko te whakaaro o te marea “nā te ohorere tēnei mahi ka mutu kātahi ka tino hē rāwa atu te kamupene”.

I kī te kaiwhakahaere tauhokohoko o *SuperInfo* inanahi, a Dale Nind, e hāngai ana ngā ritenga hou ki te whakahoki mai i ngā kiritaki, me te kukume mai hoki i tētahi rōpūtanga hou o ngā kiritaki tamariki ake. I tau i tōna rōpū tauhokohoko tēnei whakatau whai muri i te rāngahau i ngā kiritaki i tīpakohia matapōkeretia i ngā taunga rererangi me ngā whare wānanga puta noa i Aotearoa.

I ngā rohe toa tāuhi nui rawa e rua o Tāmaki Makaurau inanahi, i pātai ngā kairīpoata o *NZ Times* ki ngā kaihoko he pēhea ō rātau whakaaro mō te huringa o te ingoa. Ko tētahi kōrero pai mō *SuperInfo*, i te rohe toa tāuhi i Tāmaki Makaurau ki te Uru, e 56% o ngā kiritaki 210 a *SuperInfo* i uiuitia i whakaae ki te huringa o te ingoa. Engari i te rohe toa tāuhi i Tāmaki Makaurau ki Paerau, he 42% anake o ngā kiritaki 175 a *SuperInfo* i whakaae ki te huringa o te ingoa. Engari, neke atu i te haurua i ia rohe toa i amuamu mō te ngoikore o te ratonga kiritaki me te pōturi o te aunui i roto i ngā tau, ā, me te kī anō koinei te take e whakaaro ana rātou ki te wehe.

(a) E whakaahua ana te tuhinga i ngā rangahau i tētahi rohe toa tāuhi i Tāmaki Makaurau ki te Uru me Tāmaki Makaurau ki Paerau.

(i) Tātaihia te pae hapa mō ia rangahau.

(ii) Ka tāea te whakapae he nui ake te ōrau o ngā kiritaki a *SuperInfo* i Tāmaki Makaurau i te Uru e whakaae ana ki te huringa o te ingoa i ngā kiritaki a *SuperInfo* i Tāmaki Makaurau ki Paerau, e ai ki ngā ōrautanga o te pūrongo?

Waihangahia mai he āputa māia, ka whakamārama i tēnei āputa i roto i tō whakautu.

QUESTION TWO

Internet company rebrands*NZ Times*, 23 April 2014

The country's oldest provider of home-based internet services, *SuperInfo*, has announced a raft of changes aimed at reviving its ailing fortunes. Among the measures is a new name – *Beam*. The name change has not been well received by market analysts, 75% of whom claimed when contacted by email that the name change would be seen as a “last-minute panic measure and reduce the company's fortunes even further”.

SuperInfo's head of marketing, Dale Nind, said yesterday the new measures were aimed at recapturing customers, and also attracting a new group of younger clients. His marketing team had reached this conclusion after surveying random samples of customers from airports and universities around New Zealand.

At two of Auckland's biggest malls yesterday, *NZ Times* reporters asked shoppers what they thought of the name change. In some good news for *SuperInfo*, at the mall surveyed in West Auckland, 56% of 210 *SuperInfo* customers surveyed agreed with the name change. However, in another mall in South East Auckland, only 42% of 175 *SuperInfo* customers surveyed agreed with the name change. However, more than half in each mall complained about poor customer service and slow broadband over the past few years, and said this was the reason why they were thinking of leaving.

(a) The article describes surveys carried out at a West Auckland mall and a South East Auckland mall.

(i) Calculate the margin of error for each survey.

(ii) Can a claim be made that a higher percentage of *SuperInfo* customers in West Auckland agree with the name change than *SuperInfo* customers in South East Auckland, based on the survey percentages presented in the report?

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

PĀTAI TUATORU

E whakaatu ana ngā rangahau i te pānga o te pāpāho pāpori ki te oranga tinana

NZ Times, 2 Whiringa-ā-nuku 2014

Kua kitea e ngā tohunga pūtaiao tētahi hono kaha i waenga i te wā e whakapaua ana e ngā taiohi ki te korikori tinana me te wā e whakapaua ana ki te pāpāho pāpori.

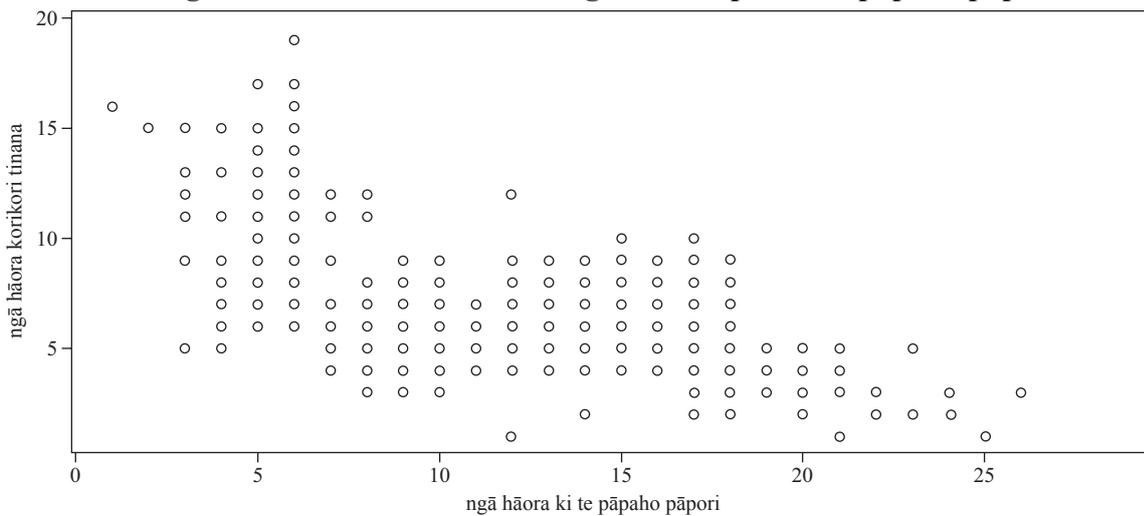
I uiuihia e ngā kairangahau o Aotearoa, Ahitereiria, me Piritene Nui ngā ākonga kura tuarua 150 te maha puta noa i ngā whenua e toru, ā, kotahi te uiuitanga i roto i te ono wiki i te tau 2014. I pātaihia ngā ākonga e hia te roa o te wā i whakapaua e rātou ki ngā paetukutuku pāpāho pāpori me ētahi atu momo whitiwhiti kōrero ā-hiko, pēnei i te patowaea, i te wiki kua taha ake. E whakaatu ana ngā kitenga he 61% he nui ake i te 14 hāora i te wiki ka pau ki aua momo mahi – he rua hāora te toharite i te rā.

Hei tā ngā kaituhi o te pūrongo *Te huri i ngā whanonga whakawhitiwhiti i waenga i ngā taiohi e kī ana ā rātou kitenga he pānga nui tō te whakapau wā ki te pāpāho pāpori ki te wā e whakapaua ana ki te korikori tinana.*

“He iti ake te wā o ngā ākonga i whakamahi pāpāho pāpori ki te korikori tinana,” hei tā te kairangahau matua a Dr Bolton o te Whare Wānanga o Enzed.

E kī ana ngā kitenga, mō ia hāora tāpiri ka pau ki te pāpāho pāpori i te wiki, he hāora haurua te iti ake o te korikori tinana a ngā ākonga i te wiki, e ai ki te kauwhata i raro.

Ngā hāora korikori tinana ki ngā hāora i pau ki te pāpāho pāpori



(a) Tautohua te taurangi whakamārama me ngā taurangi whakautu mō te rangahau.

QUESTION THREE

Study shows social media affects fitness*NZ Times*, 2 October 2014

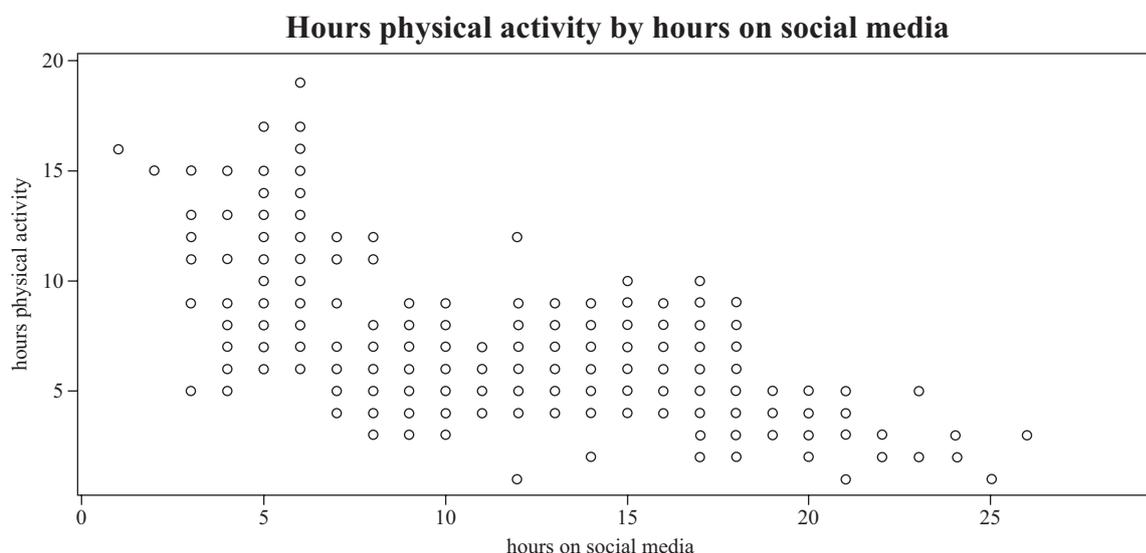
Scientists have found a strong link between the time youngsters spend on physical activity and the time they spend on social media.

Researchers from New Zealand, Australia, and the UK interviewed a total of 150 secondary school aged students across the three countries once over a period of six weeks in 2014. Students were asked how long they had spent on social media websites and other forms of electronic communication, such as texting, in the previous week. The results showed that 61% spent more than 14 hours a week on such activities – an average of two hours a day.

Authors of the report *Changing communication habits among young people* say their findings suggest the time spent on social media is having a big impact on time spent on physical activity.

“The students who used social media spent less time doing physical activity,” lead researcher Dr Bolton from the University of Enzed, said.

The findings suggest that for every extra hour spent on social media per week, students tend to spend half an hour less on physical activity per week, as shown in the graph below:



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

English translation of the wording on the front cover

Level 3 Mathematics and Statistics (Statistics), 2014

91584 Evaluate statistically based reports

9.30 am Thursday 20 November 2014
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Evaluate statistically based reports.	Evaluate statistically based reports, with justification.	Evaluate statistically based reports, with statistical insight.

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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.

Show ALL working.

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

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

Check that this booklet has pages 2–21 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.