

Achievement Standard

Subject Reference	Mathematics and Statistics 2.9		
Title	Use statistical methods to make an inference		
Level	2	Credits	4
		Assessment	Internal
Subfield	Statistics and Probability		
Domain	Statistics		
Status	Registered	Status date	19 November 2015
Planned review date	31 December 2020	Date version published	19 November 2015

This achievement standard involves using statistical methods to make an inference.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Use statistical methods to make an inference. 	<ul style="list-style-type: none"> Use statistical methods to make an inference, with justification. 	<ul style="list-style-type: none"> Use statistical methods to make an inference, with statistical insight.

Explanatory Notes

- This achievement standard is derived from Level 7 of *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the achievement objectives
 - carry out investigations of phenomena, using the statistical enquiry cycle:
 - using existing data sets
 - evaluating the choice of sampling and data collection methods used
 - using relevant contextual knowledge, exploratory data analysis, and statistical inference
 - make inferences from surveys:
 - using sample statistics to make point estimates of population parameters
 - recognising the effect of sample size on the variability of an estimate
 in the Statistics strand of the Mathematics and Statistics Learning Area. It is also related to the material in the *Teaching and Learning Guide for Mathematics and Statistics*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of the *Marautanga* achievement objectives to which this standard relates, see the [Māori version](#) of the standard.

- 2 *Use statistical methods to make an inference* involves showing evidence of using each component of the statistical enquiry cycle to make an inference.

Use statistical methods to make an inference, with justification involves linking components of the statistical enquiry cycle to the context, and/or to the populations, and referring to evidence such as sample statistics, data values, trends, or features of visual displays in support of statements made.

Use statistical methods to make an inference, with statistical insight involves integrating statistical and contextual knowledge throughout the statistical enquiry cycle which may involve reflecting on the process, or considering other explanations.

- 3 Using the statistical enquiry cycle to make an inference involves:
- posing an appropriate investigative comparison question from a given set of population data
 - selecting random samples
 - selecting and using appropriate displays and measures
 - discussing sample distributions
 - discussing sampling variability, including the variability of estimates
 - making an inference
 - communicating findings in a conclusion.

- 4 Conditions of Assessment related to this achievement standard can be found at www.tki.org.nz/e/community/ncea/conditions-assessment.php.

Replacement Information

This achievement standard replaced AS90288 and unit standard 5247.

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233

Paerewa Paetae

Aronga	Pāngarau 2.9		
Ingoa	Te whai i ngā tikanga o te tūhuratanga tauanga hei whakaputa hīkaro		
Kaupae	2	Whiwhinga	4
		Aromatawai	Ā-rotō
Marau akoranga	Te Marautanga o Aotearoa		
Kokonga akoranga	Pāngarau		
Mana rēhita	Kua rēhitatia	Te rā i mana ai	19 Whiringa-ā-rangi 2015
Te rā e arotakengia ai	31 Hakihea 2020	Te rā i puta ai	19 Whiringa-ā-rangi 2015

Te Hononga ki te Marautanga

I ahu mai tēnei paerewa paetae i te Taumata 7 o *Te Marautanga o Aotearoa*, i whakaputaina e Te Pou Taki Kōrero i te tau 2008.

Whāinga Paetae

Te Tauanga, Te Tūhuratanga Tauanga

- 1 *Ka whai i ngā tikanga mō te tūhuratanga tauanga:*
 - *ka whakahaere tirohanga tauanga mā te whakamahi tikanga tīpako matapōkere, tikanga whakamātau rānei, ka whakamahi rānei i ngā huinga raraunga kua oti kē te kōhi mai;*
 - *ka arotake i te āhua o te ine i ngā taurangi, te tukanga whai tīpako, te tukanga kohikohi raraunga hoki;*
 - *ka whakamahi mōhiotanga e pā ana ki te horopaki o te tūhuratanga, te tātaritanga raraunga torotoro me te hīkaro tauanga.*
- 2 *Ka whakaputa hīkaro, mai i ngā tirohanga tauanga me ngā whakamātau:*
 - *ka whakamahi tauanga māmā ki te whakatau tata i ngā tawhā taupori;*
 - *ka mārama ki te pānga o te rahi o te tīpako ki te tōtika, te taurangitanga rānei o tētahi whakatau tata.*

E hono ana ki te Papa Whakaako mō te Pāngarau kei te pae tukutuku nei:

<http://tmoa.tki.org.nz/Te-Marautanga-o-Aotearoa/Taumata-Matauranga-a-Motu-Ka-Taea>.

Te Hononga ki *The New Zealand Curriculum* (NZC)

I ahu mai hoki tēnei paerewa paetae i *The New Zealand Curriculum*. Mō ngā kōrero e pā ana ki ngā whāinga paetae o te NZC e hāngai ana ki tēnei paerewa, tirohia te [putanga reo Pākehā](#) o te paerewa.

Te Hononga ki ngā Tikanga Aromatawai

Arā ngā Tikanga Aromatawai mō tēnei paerewa paetae, kei te:

<http://tmoa.tki.org.nz/Te-Marautanga-o-Aotearoa-Taumata-Matauranga-a-Motu-Ka-Taea>.

Paerewa Paetae

<p>Paetae Te whai i ngā tikanga o te tūhuratanga tauanga hei whakaputa hīkaro.</p>	<p>Hei tohu i te paetae:</p> <ul style="list-style-type: none"> • Ka whakamahi i ia wāhanga o ngā tikanga tūhuratanga tauanga hei whakaputa hīkaro.
<p>Kaiaka He kaiaka te whai i ngā tikanga o te tūhuratanga tauanga hei whakaputa hīkaro.</p>	<p>Hei tohu i te kaiaka:</p> <ul style="list-style-type: none"> • Ko te parahau i ngā wāhanga o ngā tikanga tūhuratanga tauanga te mea nui. Nō reira, ka kitea ēnei: <ul style="list-style-type: none"> – ka tūhono i ngā wāhanga o roto i ngā tikanga tūhuratanga tauanga ki te horopaki me te taupori – ka whakaputa kōrero taunaki e hāngai ana ki: <ul style="list-style-type: none"> ○ ngā tātaitanga tauanga whakarāpopoto pērā i te toharite me te tau waenga ○ ngā uara raraunga ○ ngā ia me ngā āhuatanga kōhure o roto i ngā whakaari raraunga.
<p>Kairangi He kairangi te whai i ngā tikanga o te tūhuratanga tauanga hei whakaputa hīkaro.</p>	<p>Hei tohu i te kairangi:</p> <ul style="list-style-type: none"> • Ko te whakaatu aroā tauanga hōhonu te mea nui. Arā, kia kotahi, nui ake rānei o ēnei: <ul style="list-style-type: none"> – ka kōtuitui i te mātauranga tauanga me te mārama ki te horopaki, i roto i ngā wāhanga o te tūhuratanga tauanga – ka arohaehae i te tukanga tauanga me ngā whakamārama e hāngai ana ki ngā whakakitenga.

Kōrero Āpiti

Kia taunga te ākongā ki ngā tikanga o te tūhuratanga tauanga:

- te whakatakoto i tētahi pātai whakatairite e hāngai ana ki tētahi huinga raraunga
- te whakamahi tikanga tīpako matapōkere hei kohikohi i ngā raraunga
- te whiriwhiri me te whakamahi i ngā whakaari raraunga e hāngai ana
- te whakawhiti kōrero hei whakatairite i ngā tuari raraunga, pērā i te hanga o ngā raraunga, ngā rohe hauwhātanga, te neke, te inaki, te hora o ngā raraunga, me ngā āhuatanga kōhure
- te whakaputa hīkaro ōkawa mō te taupori ka hua ake i ngā raraunga
- te mārama ki te pānga o te rahi o te tīpako ki te tōtika, te taurangitanga rānei o tētahi whakatau tata
- te whakamārama i ngā whakakitenga ka hua ake i te tūhuratanga tauanga.

Kuputaka:

aroā tauanga hōhonu
kōtuitui
parahau

statistical insight
integrate, connect
justify

He Kōrero mō te Whakakapi

Koinei hei whakakapi i te paerewa paetae AS90288 me te paerewa 5247.

Tātari Kounga

- 1 Me mātua whakamana ngā Kaituku Akoranga me ngā Whakahaere Whakangungu Ahumahi e te Mana Tohu Mātauranga o Aotearoa ka rēhita ai i ngā hua ka puta mai i ngā aromatawai ki ngā paerewa paetae.
- 2 Ko ngā Kaituku Akoranga me ngā Whakahaere Whakangungu Ahumahi kua mana, ā, e aromatawai ana i ā rātou hōtaka ki ngā paerewa paetae, me uru rātou ki ngā pūnaha whakaōrite e tika ana mō aua paerewa paetae.

Ko te tohutoro ki te Mahere Whakamana, Whakaōritenga hoki

0233