

## Achievement Standard

<b>Subject Reference</b>	Mathematics and Statistics 2.10		
<b>Title</b>	Conduct an experiment to investigate a situation using statistical methods		
<b>Level</b>	2	<b>Credits</b>	3
		<b>Assessment</b>	Internal
<b>Subfield</b>	Statistics and Probability		
<b>Domain</b>	Statistics		
<b>Status</b>	Registered	<b>Status date</b>	19 November 2015
<b>Planned review date</b>	31 December 2020	<b>Date version published</b>	19 November 2015

This achievement standard involves conducting an experiment to investigate a situation using statistical methods.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Conduct an experiment to investigate a situation using statistical methods.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct an experiment to investigate a situation using statistical methods, with justification.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct an experiment to investigate a situation using statistical methods, with statistical insight.</li> </ul>

### Explanatory Notes

- 1 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 objective
- carry out investigations of phenomena, using the statistical enquiry cycle:
    - conducting experiments
    - evaluating the choice of measures for variables and data collection methods used
    - using relevant contextual knowledge, exploratory data analysis, and statistical inference

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 *Conduct an experiment to investigate a situation using statistical methods* involves showing evidence of using each component of the investigation process.

*Conduct an experiment to investigate a situation using statistical methods, with justification* involves linking components of the process of investigating a situation by experiment to the context, explaining relevant considerations in the investigation process, and supporting findings with statements which refer to evidence gained from the experiment.

*Conduct an experiment to investigate a situation using statistical methods, with statistical insight* involves integrating statistical and contextual knowledge throughout the investigation process which may involve reflecting on the process, or considering other relevant variables.

- 3 The process of investigating a situation by experiment involves:
- posing an investigative question about a given experimental situation
  - planning the experiment by
    - determining appropriate variables and measures
    - determining data collection and recording methods
  - conducting the experiment and collecting data
  - selecting appropriate displays and measures
  - discussing displays and measures
  - 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](http://www.tki.org.nz/e/community/ncea/conditions-assessment.php).

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### Replacement Information

This achievement standard replaced unit standard 7564.

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### 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 2.10		
Ingoa	Te whakamahi tikanga whakamātau tauanga hei tūhura i tētahi huinga raraunga		
Kaupae	2	Whiwhinga	3
		Aromatawai	Ā-roto
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.*

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><b>Paetae</b> Te whakamahi tikanga whakamātau tauanga hei tūhura i tētahi huinga raraunga.</p>	<p>Hei tohu i te paetae:</p> <ul style="list-style-type: none"> <li>• Ka whakamahi, ka whakaatu i ngā wāhanga o ngā tikanga whakamātau tauanga hei tūhura i tētahi huinga raraunga.</li> </ul>
<p><b>Kaiaka</b> He kaiaka te whakamahi tikanga whakamātau tauanga hei tūhura i tētahi huinga raraunga.</p>	<p>Hei tohu i te kaiaka:</p> <ul style="list-style-type: none"> <li>• Ko te mea nui i konei, ko te parahau i ngā wāhanga o ngā tikanga tūhuratanga tauanga hei tūhura i tētahi huinga raraunga. Nō reira, ka kitea ēnei: <ul style="list-style-type: none"> <li>– ka tūhono i ngā wāhanga o ngā tikanga tūhuratanga tauanga ki te horopaki me te taupori</li> <li>– ka whakaputa kōrero taunaki e hāngai ana ki ngā whakakitenga ka hua ake i ngā raraunga o te whakamātau tauanga.</li> </ul> </li> </ul>
<p><b>Kairangi</b> He kairangi te whakamahi tikanga whakamātau tauanga hei tūhura i tētahi huinga raraunga.</p>	<p>Hei tohu i te kairangi:</p> <ul style="list-style-type: none"> <li>• Ko te mea nui i konei, ko te whakaatu aroā tauanga hōhonu. Arā, kia kotahi, nui ake rānei o ēnei: <ul style="list-style-type: none"> <li>– ka kōtuitui i te mātauranga tauanga me te mārama ki te horopaki, i roto i ngā wāhanga o te tūhuratanga tauanga</li> <li>– ka arohaehae i te tukanga whakamātau tauanga me ngā whakamārama e hāngai ana ki ngā whakakitenga</li> <li>– ka whakaaroaro i te whai wāhi mai o ētahi atu taurangi, o ētahi atu āhuatanga rānei e whai pānga ana.</li> </ul> </li> </ul>

**Kōrero Āpiti**

Kia taunga te ākonga ki ngā tikanga o te whakamātau tauanga hei tūhura i tētahi uinga raraunga, arā:

- te whakatakoto i tētahi pātai whakatairite e hāngai ana ki tētahi huinga raraunga ka hua ake i te whakamātau tauanga
- te whakamahere i te whakamātau tauanga:
  - te whiriwhiri i ngā taurangi me te āhua o te ine i ngā taurangi
  - te whakarite i ngā tikanga mō te tukanga whai tīpako, te tukanga kohikohi raraunga hoki o te whakamātau tauanga
  - te whiriwhiri, te whakamahi i ngā momo whakaari raraunga e hāngai ana
  - te whakaputa kōrero mō ngā raraunga ka hua ake i te whakamātau tauanga
  - 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 whakamārama i ngā whakakitenga ka hua ake i te whakamātau tauanga.

Kuputaka:

aroā tauanga hōhonu  
kōtuitui  
parahau

statistical insight  
integrate, connect  
justify

**He Kōrero mō te Whakakapi**

Koinei hei whakakapi i te paerewa 7564.

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**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

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