

## Achievement Standard

<b>Subject Reference</b>	Mathematics and Statistics 2.13		
<b>Title</b>	Investigate a situation involving elements of chance using a simulation		
<b>Level</b>	2	<b>Credits</b>	2
		<b>Assessment</b>	Internal
<b>Subfield</b>	Statistics and Probability		
<b>Domain</b>	Probability		
<b>Status</b>	Registered	<b>Status date</b>	19 November 2015
<b>Planned review date</b>	31 December 2019	<b>Date version published</b>	19 November 2015

This achievement standard involves investigating a situation involving elements of chance using a simulation.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Investigate a situation involving elements of chance using a simulation.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate a situation involving elements of chance using a simulation, with justification.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate a situation involving elements of chance using a simulation, with statistical insight.</li> </ul>

### 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 objective
  - investigate situations that involve elements of chance
    - calculating probabilities using such tools as simulations and technology.
 in the Statistics strand of the Mathematics and Statistics Learning Area. It is also related to 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.

- Investigate a situation involving elements of chance using a simulation* involves showing evidence of using each component of the simulation process.

*Investigate a situation involving elements of chance using a simulation, with justification* involves linking components of the simulation process to the context, explaining relevant considerations made in the design of the simulation, and supporting findings with statements which refer to evidence gained from the simulation.

*Investigate a situation involving elements of chance using a simulation, with statistical insight* involves integrating statistical and contextual knowledge throughout the simulation process, which may involve reflecting about the process, or considering other variables.

- 3 The process of carrying out a simulation involves:
- designing a simulation for a given situation by
    - identifying tools to be used
    - defining a trial and deciding the number of trials
    - determining data recording methods
  - carrying out the simulation and recording outcomes
  - selecting and using appropriate 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 and AS91267 replaced AS90289 and unit standard 5250.

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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

<b>Aronga</b>	Pāngarau 2.13		
<b>Ingoa</b>	Te tūhura pūāhua tūponotanga mā te whakatipu putanga whakamātau tūpono		
<b>Kaupae</b>	2	<b>Whiwhinga</b>	2
		<b>Aromatawai</b>	Ā-roto
<b>Marau akoranga</b>	Te Marautanga o Aotearoa		
<b>Kokonga akoranga</b>	Pāngarau		
<b>Mana rēhita</b>	Kua rēhitatia	<b>Te rā i mana ai</b>	19 Whiringa-ā-rangi 2015
<b>Te rā e arotakengia ai</b>	31 Hakihea 2018	<b>Te rā i puta ai</b>	8 Hakihea 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 Tūponotanga*

4 *Ka tūhura i ngā pūāhua tūponotanga:*

- *ka tātai tūponotanga mā te whakamātau tūponotanga me te hangarau e hāngai ana.*

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 tūhura pūāhua tūponotanga mā te whakatipu putanga whakamātau tūpono.</p>	<p>Hei tohu i te paetae:</p> <ul style="list-style-type: none"> <li>• Ka whakaatu i ngā raupapatanga katoa o te tukanga whakamātau tūpono.</li> </ul>
<p><b>Kaiaka</b> He kaiaka te tūhura pūāhua tūponotanga mā te whakatipu putanga whakamātau tūpono.</p>	<p>Hei tohu i te kaiaka:</p> <ul style="list-style-type: none"> <li>• Ko te parahau i ngā kōrero me ngā whakakitenga te mea nui. Nō reira, ka kitea ēnei: <ul style="list-style-type: none"> <li>– ka tūhono i te mātauranga tūponotanga me te mārama ki te horopaki i ngā raupapatanga katoa o te tukanga whakamātau tūpono</li> <li>– ka whakaputa kōrero taunaki e whakamārama ana i ngā tikanga whakarite i te whakamātau tūpono</li> <li>– ka whakaputa kōrero taunaki e whakamārama ana i ngā otinga i puta i te whakamātau tūpono.</li> </ul> </li> </ul>
<p><b>Kairangi</b> He kairangi te tūhura pūāhua tūponotanga mā te whakatipu putanga whakamātau tūpono.</p>	<p>Hei tohu i te kairangi:</p> <ul style="list-style-type: none"> <li>• Ko te aroā tauanga hōhonu te mea nui. Arā, kia kotahi, nui ake rānei o ēnei: <ul style="list-style-type: none"> <li>– ka kōtuitui i te mātauranga tūponotanga me te mārama ki te horopaki i ngā raupapatanga katoa o te tukanga whakamātau tūponotanga</li> <li>– ka whakaaroaro i te tukanga whakamātau tūpono i whakamahia ai</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 ākongā ki ngā tikanga o te tukanga whakamātau tūpono ki:

- te whakamahere i tētahi whakamātau tūponotanga hei tūhura i tētahi pūāhua:
  - te tautohu i ngā taputapu ka whakamahia
  - te whakamahere i te whakamātau tūpono me te tohu hoki kia hia katoa ngā whakamātau
  - te whakarite i ngā tikanga hei kohi i ngā putanga o te whakamātau tūpono
- te whakahaere i te whakamātau tūpono me te kohikohi i ngā raraunga
- te whiriwhiri me te whakamahi i ngā momo whakaari raraunga
- te whakaputa kōrero mō ngā putanga o te whakamātau tūpono.

Kuputaka:

aroā tauanga hōhonu  
kōtuitui  
parahau

statistical insight  
integrate, connect  
justify

**He Kōrero mō te Whakakapi**

Koinei me te paerewa paetae AS91267 hei whakakapi i te paerewa paetae AS90289 me te paerewa 5250.

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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

0233