

## Achievement Standard

**Subject Reference** Mathematics and Statistics 1.13

**Title** Investigate a situation involving elements of chance

**Level** 1      **Credits** 3      **Assessment** Internal

**Subfield** Statistics and Probability

**Domain** Probability

**Status** Registered      **Status date** 9 December 2010

**Planned review date** 31 December 2018      **Date version published** 20 November 2014

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

### Achievement Criteria

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

### Explanatory Notes

- 1 This achievement standard is derived from Level 6 of *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Mathematics and Statistics*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>. The achievement standard is aligned to the following achievement objectives taken from the Probability thread of the Mathematics and Statistics learning area:
- Compare and describe the variation between theoretical and experimental distributions in situations that involve elements of chance.
  - Investigate situations that involve elements of chance:
    - comparing discrete theoretical distributions and experimental distributions, appreciating the role of sample size
    - calculating probabilities in discrete situations.

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 *Investigate a situation* involves using the experimental probability process.

*Investigate, with justification* involves linking aspects of the investigation to the situation and making supporting statements which refer to evidence such as summary statistics, probabilities, trends or features of visual displays.

*Investigate, showing statistical insight* involves integrating contextual information and knowledge with an understanding of applications of probability and may involve considering the possible effects of other related variables or factors.

- 3 Students need to be familiar with the process of experimental probability, which involves:
    - posing a question to explore a situation involving elements of chance
    - planning an experiment to explore the situation (discussing and defining the set of possible outcomes and deciding the sample size)
    - gathering data by performing the experiment
    - selecting and using appropriate displays including experimental probability distributions
    - identifying and communicating patterns in the data
    - comparing discrete theoretical distributions and experimental distributions as appropriate
    - communicating findings in a conclusion.
  - 4 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.
- 

### 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 1.13                |                 |                 |
| Ingoa                  | Te tūhura pūāhua tūponotanga |                 |                 |
| Kaupae                 | 1                            | Whiwhinga       | 3               |
|                        |                              | Aromatawai      | Ā-roto          |
| Marau akoranga         | Te Marautanga o Aotearoa     |                 |                 |
| Kokonga akoranga       | Pāngarau                     |                 |                 |
| Mana rēhita            | Kua rēhitatia                | Te rā i mana ai | 9 Hakihea 2010  |
| Te rā e arotakengia ai | 31 Hakihea 2016              | Te rā i puta ai | 12 Hakihea 2013 |

### Te Hononga ki te Marautanga

I ahu mai tēnei paerewa paetae i te Taumata 6 o Te Marautanga o Aotearoa, i whakaputaina e Te Pou Taki Kōrero i te tau 2008.

### Whāinga Paetae

*Te Tauanga, Te Tūponotanga*

3 *Ka tūhura pūāhua tūponotanga:*

- *ka whakatairite i ngā tuari tātai me ngā tuari whakamātau, me te aro anō ki te rahi o te tīpako;*
- *ka tātai tūponotanga i ngā pūāhua e whai wāhi mai ana te raraunga motumotu.*

E hono ana ki te Papa Whakaako mō Pāngarau kei te pae ipurangi 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

Kei tēnei pae ipurangi ngā Tikanga Aromatawai mō tēnei paerewa paetae:

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

**Paerewa Paetae**

|  |   |
|--|---|
| <b>Paetae</b><br>Te tūhura pūāhua tūponotanga.               | Hei tohu i te paetae: <ul style="list-style-type: none"> <li>• Ka whakamahi i te tukanga whakamātau tūponotanga.</li> </ul>   |
| <b>Kaiaka</b><br>He kaiaka te tūhura pūāhua tūponotanga.     | Hei tohu i te kaiaka: <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 ētahi āhuatanga o te tūhuratanga ki te horopaki</li> <li>– ka whakaputa kōrero taunaki e whai wāhi mai ai ngā taunakitanga pērā i ngā tātaitanga tauanga whakarāpopoto, ngā tūponotanga, ngā ia, me ngā āhuatanga kōhure o roto i ngā whakaari raraunga.</li> </ul> </li> </ul> |
| <b>Kairangi</b><br>He kairangi te tūhura pūāhua tūponotanga. | Hei tohu i te kairangi: <ul style="list-style-type: none"> <li>• Ko te whakaatu aroā tauanga hōhonu te mea nui. Nō reira, ka kitea ēnei:             <ul style="list-style-type: none"> <li>– ka kōtuitui i te mātauranga tūponotanga me te mārama ki te horopaki</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 te tukanga whakamātau tūponotanga, arā:

- te whakatakoto pātai tūponotanga hei tūhura
- te whakamahere i tētahi whakamātau tūponotanga hei tūhura i te pūāhua (me te whakawhiti kōrero, te tautohu hoki i ngā putanga katoa e taea ana, me te rahi o te tīpako e tika ana)
- te whakahaere i te whakamātau me te kohikohi i ngā raraunga
- te whiriwhiri me te whakamahi i ngā momo whakaari raraunga, me te whai wāhi anō o te tuari whakamātau tūponotanga
- te tautohu me te whakawhiti kōrero mō ngā tauira e kitea mai ana i ngā raraunga
- te whakatairite tuari tātai motuhake me te tuari whakamātau e hāngai ana
- te whakaputa kōrero mō ngā whakakitenga.

Kuputaka:

kōtuitui

integrate, connect

aroā tauanga hōhonu

statistical insight/understanding

parahau

justify

**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 whakarite e tika ana mō aua paerewa paetae.

Ko te tohutoro ki te Mahere Whakamana, Whakaōritenga hoki

0233