

Paerewa Paetae

Aronga Pāngarau 1.3

Ingoa Te whakamahi tikanga taurangi hei whakaoti rapanga

Kaupae 1 **Whiwhinga** 5 **Aromatawai** Ā-waho

Marau akoranga Te Marautanga o Aotearoa

Kokonga akoranga Pāngarau

Mana rēhita **Te rā i mana ai**

Te rā e arotakengia ai **Te rā i puta ai**

Te Hononga ki te Marautanga

I ahu mai tēnei paerewa paetae i te Taumata 6 o *Te Marautanga o Aotearoa*, i whakaputaina e Te Tāhuhu o te Mātauranga i te tau 2017.

Whāinga Paetae

Te Tau me te Taurangi, Te Whārite me te Kīanga

6 *Ka tuhi, ka whakaoti whārite rārangi, tōrite rārangi, whārite pūrua, whārite taupū māmā, whārite tukutahi, kia rua ngā taurangi.*

Te Tau me te Taurangi, Te Pānga me te Tauira

7 *Ka whakawhānui i ngā tikanga paheko tau, me ngā tikanga taupū.*

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

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

Te Hononga ki ngā Paearu Aromatawai

Arā ngā Paearu 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 whakamahi tikanga taurangi hei whakaoti rapanga.</p>	<p>Hei tohu i te paetae:</p> <ul style="list-style-type: none"> • Ka whiriwhiria, ka whakamahia ētahi tikanga taurangi whānui e hāngai ana hei whakaoti rapanga. • Ka whakaatu i ngā hononga o te tūtohi, te whārite me te kauwhata. • Ka whakaatu mōhiotanga ki ngā huatau me ngā kupu e hāngai ana • Ka whakamārama i ngā otinga mēnā kotahi, e rua rānei ngā mahi o roto i te tikanga i whakamahia. • Ka whakamahi i te reo matatini o te pāngarau hei whakawhitiwhiti whakaaro.
<p>Kaiaka He kaiaka te whakamahi tikanga taurangi hei whakaoti rapanga.</p>	<p>Hei tohu i te kaiaka:</p> <p>Ko te whakaaro tūhonohono te mea nui hei tohu i te kaiaka. Arā, kia kotahi, nui ake rānei o ēnei:</p> <ul style="list-style-type: none"> • ka whiriwhiri, ka whakatutuki raupapatanga mahi arorau hei whakaoti rapanga • ka tūhonoa ētahi huatau rerekē, ētahi whakaahuahanga rerekē rānei • ka whakaatu māramatanga ki ngā huatau e hāngai ana • ka hanga, ka whakamahi taurira • te whakahāngai i te kaupapa ki tētahi pūāhua Māori me te tautohu i ngā tikanga Māori e whai take ana • te tūhono i ngā otinga ki te horopaki o te rapanga, te whakamahi rānei i ngā kīanga pāngarau hei whakawhitiwhiti whakaaro ki te reo Māori.

<p>Kairangi He kairangi te whakamahi tikanga taurangi hei whakaoti rapanga.</p>	<p>Hei tohu i te kairangi: Ko te whakaaro waitara te mea nui hei tohu i te kairangi. Arā, kia kotahi, nui ake rānei o ēnei:</p> <ul style="list-style-type: none"> • ka waihanga rautaki hei tūhura, hei whakaoti rānei i tētahi rapanga • ka tautohua ngā huatau e hāngai ana ki te horopaki • ka whakaputaina tētahi raupapatanga whakaaro arorau, tētahi hāponotanga rānei • te whakahoropaki i te kaupapa ki tētahi pūāhua Māori me te tautohu i ngā tikanga Māori e whai take ana • ka hanga whakawhānuitanga • te whakamahi kīanga pāngarau tika, te whakawhitiwhiti rānei i te aroā pāngarau ki te reo Māori.
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Kōrero Āpiti

- 1 E whai ake nei ngā whakamārama mō ngā kupu me ngā kīanga whaitake matua o te paerewa nei:

rapanga	Ko ngā āhuetanga o ia rā, ngā āhuetanga pāngarau rānei, ka whai wāhi mai te whakamahinga o te mātauranga pāngarau, o ngā huatau pāngarau, o ngā tikanga pāngarau rānei.
hononga	Ko ngā āhuetanga e hono ana i te tūtohi, te whārite me te kauwhata e whakaatu ana i ētahi taurangi, me te whakaatu anō i ngā taurangi hei takirua raupapa.
ētahi tikanga taurangi whānui	Kia toru, nui ake rānei ngā tikanga.

- 2 Kia taunga te ākongā ki ngā tikanga e whai wāhi mai ana:

- te whakatauwehe kīanga taurangi
- te whakawhānui kīanga taurangi
- te whakarūnā i ngā kīanga taurangi e whai wāhi mai ana te taupū, pērā i te $(2x^4)^3$ me te $12a^5/8a^7$
- te whakauru uara ki te ture tātai
- te rāwekeweke me te whakarūnā i ngā kīanga pērā i te $3x/4 - x+2/3$ me te $(3x^2 - 12)/x - 2$
- te huri i ngā ture tātai pērā i te $E = 1/2mv^2$ me te $1/u + 1/v = 1/f$

- te whakaoti whārite rārangi, tōrite rārangi hoki, pērā i te $5x + 12 = 3 - 2x$ me te $3(x - 2) < 7$
- te whakaoti whārite pūrua pērā i te $(8x + 3)(x - 6) = 0$, te $x^2 + 5x - 6 = 0$ me te $3x^2 = 10x - 8$ (kāore e whai wāhi mai te whakaoti pūruatanga, te ture pūrua rānei)
- te whakaoti whārite māmā e whai wāhi mai ana te taupū, pērā i te $x^3 = 8$ me te $5x = 125$
- te whakaoti whārite rārangi tukutahi, e rua ngā taurangi
- te whakamahi ture tātai
- te hanga, te tuhi kauwhata, me te rāwekeweke i ngā whārite rārangi, pērā i te $E = 8 + 0.75t$, hei whakaoti rapanga
- te tūhono i te pāpātanga o te whiti ki te rōnaki o te kauwhata
- te whakamahi whārite tukutahi, tōrite, kauwhata rānei hei whakaoti rapanga e whai wāhi mai ana te pānga rārangi.

Kāore e whakaaetia te hangarau tāhiko i roto i ngā aromatawai mō tēnei paerewa paetae.

3 Horopaki Ahurea, Pāpori:

- Ka whātoro atu te pāngarau ki ērā atu wāhanga ako o te kura, otirā, ki ngā kaupapa me ngā horopaki huhua o te whānau, o te hapū, o te iwi, o te hapori, o te ao Māori, e ahu whakamua ai tātou i ēnei tū kaupapa katoa.
- Ko ngā tāngata e whakamahi ana i te pāngarau, ka kōtuitui i te mātauranga me ngā tukanga pāngarau ki te reo pāngarau me ngā horopaki pāngarau.
- Me kākahu anō ngā whāinga paetae ki nga momo horopaki e taunga ana te ākongā.
- Ki te mahi pāngarau ka whai tikanga i roto i te porihanga e whai pānga ana.
- He nui te honohono kei waenganui i te pāngarau me te ahurea.

4 Te reo matatini o te Pāngarau:

- Te whakamahi i te reo pāngarau e whaitake ana.
- Te whakamahi i ngā rautaki maha hei kōrerorero whakaaro pāngarau.

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