

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	Kua rēhitatia	Te rā i mana ai	Hakihea 2023
Te rā e arotakengia ai	Hakihea 2028	Te rā i puta ai	Hakihea 2023

Te Whāinga

Ko tā tēnei paerewa he whakamahi tikanga taurangi hei whakaoti rapanga. Ko te pūtake o te taurangi, he tūāpapa mō ngā tohu mātauranga nui, ka whaitake ki ngā rāngai huhua.

Paearu Paetae

Paetae	Hei tohu i te paetae: <ul style="list-style-type: none"><li>Ka whakamahi tikanga taurangi hei whakaoti rapanga.</li></ul>
Kaiaka	Hei tohu i te kaiaka: <ul style="list-style-type: none"><li>Ka whakamahi tikanga taurangi me ngā whakaaro tūhonohono hei whakaoti rapanga.</li></ul>
Kairangi	Hei tohu i te kairangi: <ul style="list-style-type: none"><li>Ka whakamahi tikanga taurangi me ngā whakaaro waitara hei whakaoti rapanga.</li></ul>

Kōrero Āpiti

- 1
- I ahu mai tēnei paerewa paetae i te Taumata 6 o Te Marautanga o Aotearoa (Te Tāhuhu o te Mātauranga, 2017). E hono ana ki te Papa Whakaako mō Pāngarau kei: <https://ncea.education.govt.nz>.

Whāinga Paetae
<p><u>Te Tau me te Taurangi, Te Whārite me te Kīanga</u></p> <p>6. Ka tuhi, ka whakaoti whārite rārangi, tōrite rārangi, whārite pūrua, whārite taupū mā mā, whārite tukutahi, kia rua ngā taurangi.</p> <p><u>Te Tau me te Taurangi, Te Pānga me te Tauira</u></p> <p>7. Ka whakawhānui i ngā tikanga paheko tau, me ngā tikanga taupū.</p>

2 E whai ake nei ngā whakamārama mō ngā paearu paetae:

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

<i>Ka whakamahi tikanga taurangi me ngā whakaaro waitara hei whakaoti rapanga.</i>	<p>Ko te whakaaro waitara te mea nui. Arā, kia kotahi, nui ake rānei o ēnei:</p> <ul style="list-style-type: none"> <li>• Ka waihanga rautaki hei tūhura, hei whakaoti rānei i tētahi rapanga.</li> <li>• Ka tautohua ngā huatau e hāngai ana ki te horopaki.</li> <li>• Ka whakaputaina tētahi raupapatanga whakaaro arorau, tētahi hāponotanga rānei.</li> <li>• Ka whakahoropaki i te kaupapa ki tētahi pūāhua Māori me te tautohu i ngā tikanga Māori e whaitake ana.</li> <li>• Ka whakamahi kīanga pāngarau tika, ka whakawhitiwhiti rānei i te aroā pāngarau ki te reo Māori.</li> </ul>
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- 3 E whai ake nei ngā whakamārama mō ngā kupu me ngā kīanga whaitake matua o te paerewa nei:

<i>rapanga</i>	Ko ngā āhuatanga o ia rā, ngā āhuatanga pāngarau rānei, ka whai wāhi mai te whakamahinga o te mātauranga pāngarau, o ngā huatau pāngarau, o ngā tikanga pāngarau rānei.
<i>hononga</i>	Ko ngā āhuatanga 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.
<i>ētahi tikanga taurangi whānui</i>	Kia toru, nui ake rānei ngā tikanga.

- 4 Kia taunga te ākonga 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.

- 5 Me honohono te ākonga i ngā whakaaro whānui ki ngā pūāhua ahurea, ki ngā pūāhua pāpori (He Uri Whakaheke):
- ki te tautohu i ngā uara, i ngā kawa me ngā tikanga
  - ki te tautohu i ngā kōrero tuku iho, i te mātauranga Māori
  - ki te tūhono i te pāngarau ki ngā take o te takiwā, o te hapū, o te iwi, me ngā kaupapa o te ao whānui.
- 6 Me whakamahi te ākonga i te reo matatini o te pāngarau me ngā rautaki reo maha (He Puna Kōrero) ki te kōrerorero i ngā whakaaro pāngarau nei ki te reo Māori – ā-tuhi, ā-waha, ā-ataata.
- 7 Arā ngā Tikanga Aromatawai mō tēnei paerewa paetae, kei: <https://ncea.education.govt.nz>.

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## Kōrero Whakakapinga

I whakakapingia ngā paerewa 91655-91656 e ngā paerewa 92065-92068.

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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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