Hei mahi whakamahere anake – KUA MŌNEHU

Paerewa Paetae Pāngarau 91030: Te whakamahi tikanga ine hei whakaoti rapanga

Te Kaupapa Ako: Pāngarau 1.5A v1

Te Ingoa o te Rauemi: Te Whakapau Wai i te Pāmu

Whiwhinga: 3

Tohutohu mā te Ākonga

**Te Horopaki**

E whā ngā kura wai nui o te pāmu a Herewini hei whāngai atu i te wai ki te hēti miraka kau me ngā hōpua wai inu mō ngā kararehe o te pāmu. I ngā wā karekau he ua, ka turuturu noa iho te wai mai i tētahi puna hei whakakī i ngā kura wai nui e whā nei.

Mai i ngā kura wai nui e whā, ka rere te wai mā roto i ngā ngongo ki te hēti miraka kau, ki ngā hōpua wai inu hoki e ono o roto i ngā pātiki.

**Hei Mahi**

* E 25,000 rita te kītanga o ia kura wai nui e whā o te pāmu.
* E ono ngā pātiki o te pāmu.
* He rango te āhua o ētahi o ngā hōpua wai inu, he poro taparara te āhua o ētahi.

Ia rā horoia ai te hēti miraka kau i te ata, i te ahiahi anō hoki.

Ka pau te rua rita (2l) wai hei horoi i ia mita pūrua (m2) o te papa o te hēti.

120 ngā kau o te pāmu, ā, e 70 rita (70l) te rōrahi o te waimāori ka inumia e ia kau i ia rā.

Ia rā, ka whakaetongia ētahi o te wai kei roto i ngā hōpua wai inu. E 7mm te hōhonu o te wai ka ngaro ki te takiwā mō ia mita pūrua (m2) o te mata o te wai o roto i ngā hōpua wai inu.

Kei raro nei te mahere o te pāmu, e whakaatu ana i ngā ngongo e rere ai te wai ki te hēti miraka kau me ngā pātiki e ono. Ka haere hoki te ngongo wai huri amio i te hēti. Kei te whakaaturia hoki ngā inenga o ngā ngongo me ngā inenga o ngā hōpua wai inu.





E whā ngā pātai hei whakaoti māu. Me āta whakautu ia wāhanga o ia pātai, me te whakamārama i ō whiriwhiringa i te taha. Ko te kounga o ngā whakamārama me te tika o ngā whiriwhiringa hei tohu i te taumata ka ekea e koe i tēnei aromatawai.

1. Kei te hiahia a kaipāmu Herewini ki te whakahou i ngā ngongo wai. E hia te roa o te ngongo hei hoko māna?
2. E hia rita wai ka pau, ka ngaro rānei i te whakaetonga i ia rā?
3. Ina heke te wai o roto i ngā hōpua wai inu kia 50mm noa iho te hōhonu, kātahi ka tīmata te rere o te wai mai i ngā kura wai nui hei whakakī i ngā hōpua. Ko te 0.25 rita (0.25l) i ia hēkona te rōrahi o te rere o te wai. E hia te wā kia kī rawa anō te hōpua rango?
4. Ko te 0.08 rita (0.08l) i ia hēkona te turuturu o te wai mai i te puna hei whakakī i ngā kura wai nui. E hia ngā rā ka haere tonu te mahi o te pāmu mēnā karekau he ua?

**Taunakitanga: Pāngarau 91030 Te Whakapau Wai i te Pāmu**

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| Taunakitanga mō te Paetae | Taunakitanga mō te Kaiaka | Taunakitanga mō te Kairangi |
| E tutuki ai te taumata o te paetae, ka whakamahi tikanga ine te ākonga hei whakaoti i ētahi wāhanga o tēnei ngohe.  Arā:   * + te whiriwhiri me te whakamahi i ētahi tikanga whānui;   + te whakaatu mōhiotanga ki ngā huatau ine, me ngā kupu e hāngai ana;   + te whakamārama i ngā otinga mēnā kotahi e rua rānei ngā mahi o roto i te tikanga i whakamahia ai.   Kia toru, nui ake rānei ngā tikanga hei whakamahi mā te ākonga, hei whakaoti i ētahi wāhanga o tēnei ngohe aromatawai.  He pai noa iho ngā hapa iti me ngā taurangitanga ka hua mai i ngā whakaawhiwhinga.  Kaua te ākonga e raru mēnā ka whakamahia te otinga hē o tētahi tātaitanga i roto i ngā tātaitanga o muri ake.  Hei tauira o ngā tikanga whānui e hāngai ana ki tēnei ngohe:  **Ko te tātai i te paenga porowhita**  hauruatia te whitianga i te tuatahi: 25 ÷ 2 = 12.5  paenga = 2π x pūtoro  = 2π x 12.5  = 79m (ki te mita e pātata ana)  **Ko te tātai i te roa o te ngongo hei hoko**  79 + 400 + 75 + 75 + 95 + 105 + 95 + 95 + 105 = 1124mita  **Ko te tātai i tētahi horahanga, horahanga mata rānei**  horahanga o te hēti  = π x pūtoro2  = π x 12.52  = 491 m2 (kia 3 ngā mati whai tikanga)  **Ko te tātai i tētahi rōrahi**  rōrahi hōpua taparara = horahanga pito x roa  = x (500mm + 710mm) x 400mm x 1900mm  = 0.605m x 0.4m x 1.9m  = 0.4598m3  = 460rita  **Ko te whakawhitiwhiti waeine ngahuru**  Ka whakawhitia ngā inenga mitamano (mm) hei mita (m)  Ka whakawhitia te inenga mita pūtoru (m3) hei inenga rita (l) | E tutuki ai te taumata o te kaiaka, ka whakamahi tikanga ine te ākonga hei whakaoti i tēnei ngohe, me te whai wāhi mai o te whakaaro tūhonohono.  Arā:   * + te whiriwhiri me te whakatutuki i te raupapatanga mahi arorau e hāngai ana;   + te tūhono i ētahi huatau rerekē, i ētahi whakaahuahanga rerekē rānei;   + te whakaatu māramatanga ki ngā huatau e hāngai ana;   + te hanga me te whakamahi tauira;   me te tūhono i ngā otinga ki te horopaki, te whakamahi rānei i ngā kīanga pāngarau e hāngai ana hei whakawhitiwhiti whakaaro.  Ka whaitake anō te whakaawhiwhi i ngā inenga me ngā tātaitanga.  He pai noa iho ngā hapa iti (ka hua mai pea i te whakamahinga hē o te tātaitai), ngā taurangitanga ka hua mai i ngā whakaawhiwhinga, me te paku rehurehu pea o ngā whakamārama.  Kia tika ngā waeine ka whakamahia e te ākonga.  Hei tauira o te raupapatanga mahi arorau:  Ko te tātai i te rahi o te wai ka pau, ka ngaro rānei i ia rā:   * te wai ka whakaetongia i te hōpua taparara   = 1.9 x 0.71 x 0.007  = 0.009443m3  = 9.4rita i ia rā   * te wai ka whakaetongia i te hōpua rango   = π x 0.752 x 0.007  = 0.01237m3  = 12.4rita i ia rā   * te wai ka whakaetongia i ngā hōpua katoa   = 9.4 x 3 + 12.4 x 3  = 65.4 rita i ia rā   * te wai ka pau i ngā kau = 120 x 70   = 8400 rita   * te wai hei horoi i te hēti miraka kau   = π x 12.52 x 2rita x 2(ngā wā)  = 1963 rita   * te katoa o te wai ka pau, ka ngaro i ia rā   = 65.4 + 8400 + 1963  = 10,428.4 rita  Ko te tātai i te wā e kī anō ai te hōpua rango:   * te rōrahi o te hōpua rango   = π x 0.752 x 0.35(400mm – 50mm)  = 0.619m3  = 619 rita     * te wā e kī anō ai te hōpua = 0.25 rita i ia hēkona   = 619 ÷ 0.25  = 2474 hēkona  = 41 meneti me te 16 hēkona | E tutuki ai te taumata o te kairangi, ka whakamahi tikanga ine te ākonga hei whakaoti i tēnei ngohe, me te whai wāhi mai o te whakaaro waitara whānui. Arā:   * + te hanga rautaki hei tūhura, hei whakaoti rānei i tēnei ngohe;   + te tautohu i ngā huatau e hāngai ana ki te horopaki o te ngohe;   + te whakaputa i tētahi raupapatanga whakaaro arorau, i tētahi hāponotanga rānei;   + te hanga whakawhānuitanga;   me te whakamahi kīanga pāngarau tika, te whakawhitiwhiti rānei i te aroā pāngarau.  Hei tauira:   * Ka whakaawhiwhia te roa o te ngongo hei hoko mā Herewini i runga i te horopaki o te ngohe. Arā, ka whakaawhiwhia te 1124 mita ki te 1200 mita me ngā whakamārama * kia nui ake te hokonga i te tātaitanga nā te paku hē pea o ētahi o ngā inenga * kia toe mai tētahi roanga o te ngongo * ākene pea 100m te roa o ia pōkai ngongo e hokona ana * Ka tātaihia te rerekētanga o te wai ka turuturu mai ki roto i ngā kura wai nui (mai i te puna) me te rahi o te wai ka whakapaungia:   te wai ka pau i ia rā = 10,430 rita  te wai ka turuturu mai ki roto i ngā kura wai nui  = 0.08 rita i te hēkona  = 0.08 x 60 x 60 x 24  = 6912 rita i te rā  te rerekētanga = 6912 – 10430  = –3518rita   * Ka tātaihia te roa o te wā e haere tonu ai te mahi o te pāmu mehemea karekau he ua:   te rōrahi o te wai i ngā kura wai e whā  = 25,000 rita x 4  = 100,000 rita  te roa o te wā = 100,000 ÷ 3518  = 28.4 rā  = 28 rā (te whakaawhiwhinga) |