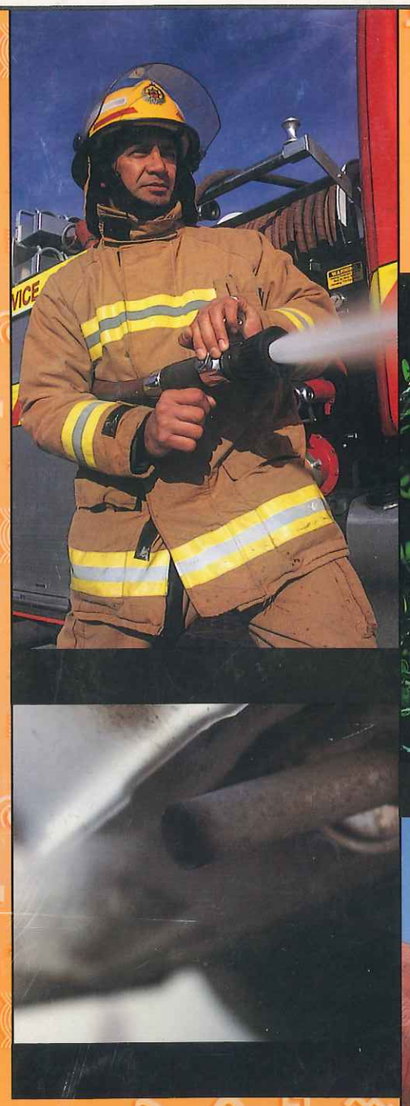
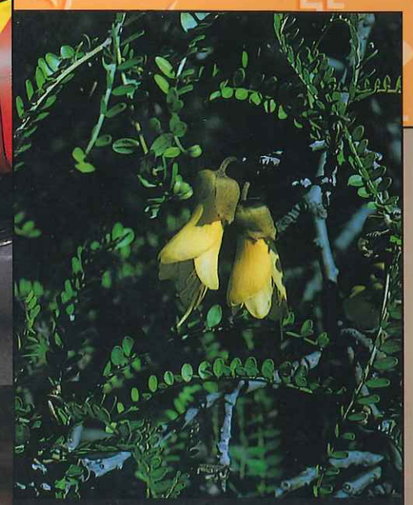
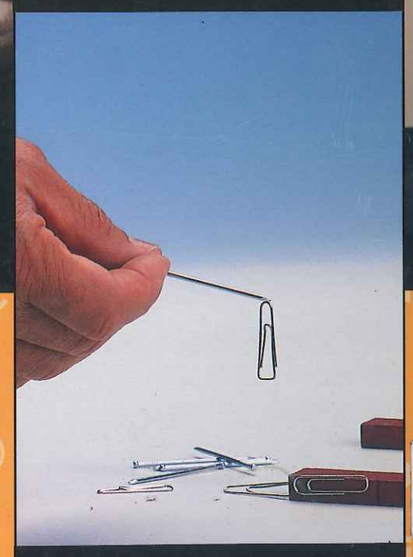




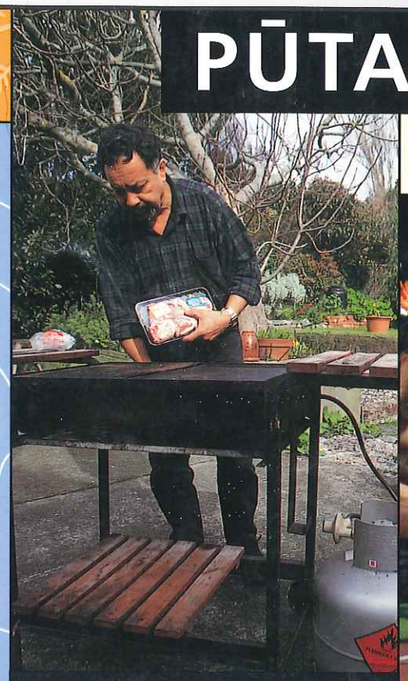


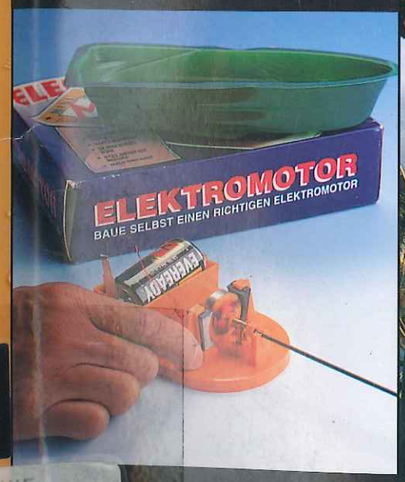
Te Ao Hurihuri 5

He Pukapuka Tohutohu Kaiako

PŪTAIAO

Te Rea





Te Ao Hurihuri 5

He Pukapuka
Tohutohu Kaiako

Pūtaiao

Te Rea

TE TĀHUHU O TE MĀTAURANGA
Ministry of Education

Huia
Publishers

He Mihi

Nā Neil Schrader ngā pikitia kei ngā wharangi 10, 12, me 18.

Kotahi te kape kore utu kua tukuna ki ngā kura waenganui he karahe rumaki Māori kei reira. Mō ngā patapatai, ngā whakaaro kia pai ake, mō ētahi atu kape rānei, tono atu ki a Huia Publishers, Pouaka 17335, Te Whanga-nui-a-Tara. Waea 04 473 9262 Waea whakaahua 04 473 9265 email huiapubs@huia.co.nz

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Ngā Ihirangi

Hei Whakapuaki

Ko ēnei pukapuka e rima mā ngā tauira kei te rea e mahi ana. Ko ngā kaupapa kei roto, e pā ana ki ngā whenu e rima o *Pūtaiao i roto i te Marautanga o Aotearoa*. Kotahi, e rua rānei, ngā whāinga akoako o te whenu kei ia pukapuka.

Ō Mataora

E titiro ana te pukapuka *Huarere* ki ngā āhuatanga o te huarere i te taiao.

Ō Ahupūngao

E titiro ana te pukapuka *Wera* ki te wera me te pēhanga.

Ō Kawekawe

Ko te kaupapa o te pukapuka *Matū* ko ngā rawa whai matū me pēhea te raweke i ēnei mea.

Ngā Pūkenga

Ko te kaupapa o te pukapuka *Aukume* ko ngā mahi a ngā kaipūtaiao me ngā whakaaro a te kaumātua ki tēnei ao hurihuri.

Hangarau

Ko te kaupapa o te pukapuka *Tākaro* ko ngā nekeneke pūtaiao o te hākinakina.

Ētahi Atu Āwhina – He Pukapuka Tohutohu Kaiako

Kei roto anō hoki i tēnei pukapuka ngā pānga ki ngā hononga marautanga, ngā kōrero whānui mō ia kaupapa, ngā whakaaro akoako, ngā whakaaro aro matawai, me ētahi matua kape.

Ō Mataora: Huarere

Te rea

Whāinga Paetae/Achievement Objectives

- 5) tirotiro, te whakamārama ngā mahi a Rūaumoko [me Tāwhirimatea] e tāhorahia ai tōna riri ki te mata o te whenua i ōna wā anō (pēnei i te horo whenua, i te tūnguru)
- 1 / 2 investigate and describe processes which change the Earth's surface over time at local and global levels, e.g., erosion, weathering

Pūtaiao i roto i te Marautanga o Aotearoa whārangi 26; *Science in the New Zealand Curriculum* (Planet Earth and Beyond) page 116.

Hei Mahi

Mātautautia ngā tohu huarere i tōu rohe mai i te niupepa mō ia rā. E tika ana ngā tohu?

Whakaaturangatia te pāmahana i tō kura mō te kotahi marama. Mahia he huahuatanga. Hangaia he kaupapa marangai ka inea te hekenga marangai mō te rua marama o te hōtoke, o te raumati.

Pōhiritia tētahi kaumātua ki tōu kura ki te kōrero atu mō tōu rohe. He aha ngā rerekētanga o mua ki o nāianei? Kua whakaawea tōu rohe i ngā mahi o Tawhirimātea?

Rangahaua ngā ingoa tūturu mō ngā kapua mai i te pukapuka nā Biggs: te *Complete English-Maori Dictionary* (Oxford, Auckland, 1985).

Kohikohia ngā whakataukī e pā ana ki te huarere me ngā wāhanga o te tau, kia kitea ai te tino whānui o ngā mōhiotanga o ā tātou tīpuna.

Kohikohia ngā tuhinga mai i ngā niupepa mō ngā take e pā ana ki te huarere.

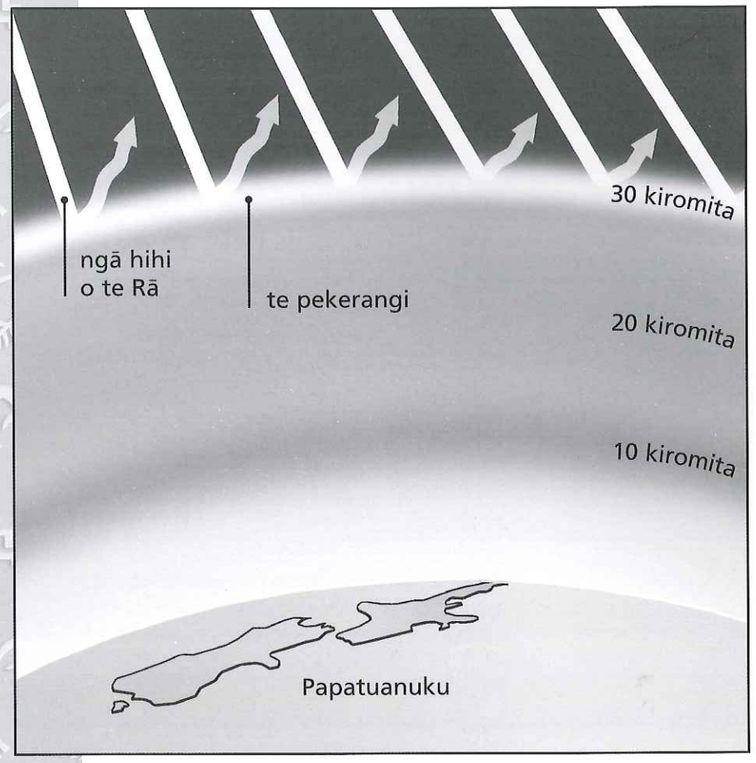
Mātautia ngā tohu pekerangi mai i te kape matua 'Pekerangi'.

Taupatupatua te kaupapa 'Ko te tangata te kaipatu o Papatuanuku'.

He Tauira Aro Matawai

E kitea ai te kaha o te ākonga ki te mātau i ngā rawa parahanga o te kōhauhau i te wā e taupatupatu ana i te kaupapa 'Ko te tangata te kaipatu o Papatuanuku'.

pekerangi



Te nui o te pekerangi i runga i Te Tiri o te Moana ki te Tonga:

1967	364
1971	303
1975	253
1979	290
1983	225
1987	141

Mahia he kauwhata hei whakaatu mai i ēnei nama.

Ō Ahupūngao: Wera

Te rea

Whāinga Paetae/Achievement Objectives

- 4) tūhura me te whakamārama ngā tauira e pā ana ki ngā putaputa āhua; mā te tōpū hōtuku pea ētahi o ēnei tauira e whakaahua (pēnei i te wera me te ine mahana)
- 3) investigate and describe the patterns associated with physical phenomena – some patterns may be expressed in graphical terms, e.g., heat and temperature

Pūtaiao i roto i te Marautanga o Aotearoa whārangi 44; *Science in the New Zealand Curriculum* page 80.

Hei Mahi

Tāhia he mahere ripo (flow diagram) hei whakaatu mai i te ara o te mamaoa mai i te poho o Papatuanuku ki ngā kapomamaoa hanga hiko, ā, ki te awa.

Pōhiritia tētahi kaiaka mīhini (mechanic) ki tōu kura. Māna e whakaatu me pēhea te mahi o te pūkaha motokā.

Whakamahia te kape matua 'Kōkeke' ('Pistons'). Mā ngā ākonga anō ō rātou mōhiotanga e tuhi mō ia pikitia.

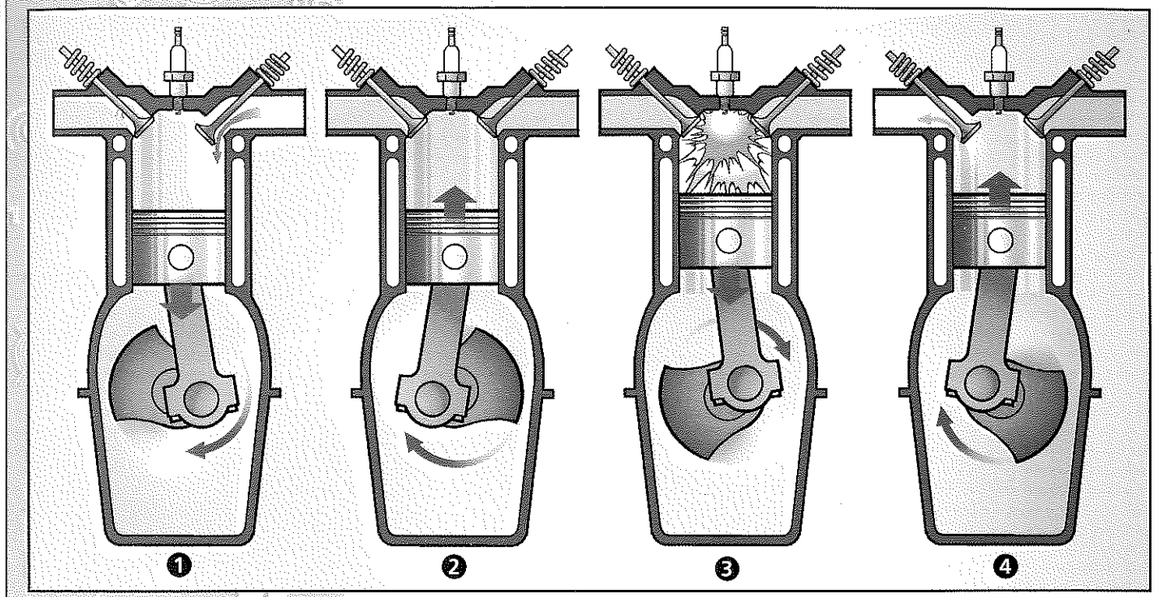
Mā ngā ākonga e whakarite ngā rongo o te kawe wera i te whārangi 10-11 o *Wera* ki tēnā o te kawe wera i roto i te hāngi. He pēhanga mamaoa kei roto i te hāngi? Whakamahia te kape matua 'Hāngi' hei whakaatu mai i ō rātou whakautu.

Rangahautia ngā tikanga i whakamahanatia, i āraitia ngā whare o ō tātou tīpuna. Tāhia tētahi pānui hei whakaatu mai i te ara o te wera mai i ngā kāpua whakamahana, me ngā āhuatanga o te mahi o te ārai.

He Tauira Aro Matawai

Arotaketia te mōhiotanga o ngā ākonga mai i ō rātou whakaaturanga mō ngā ara wera o te hāngi.

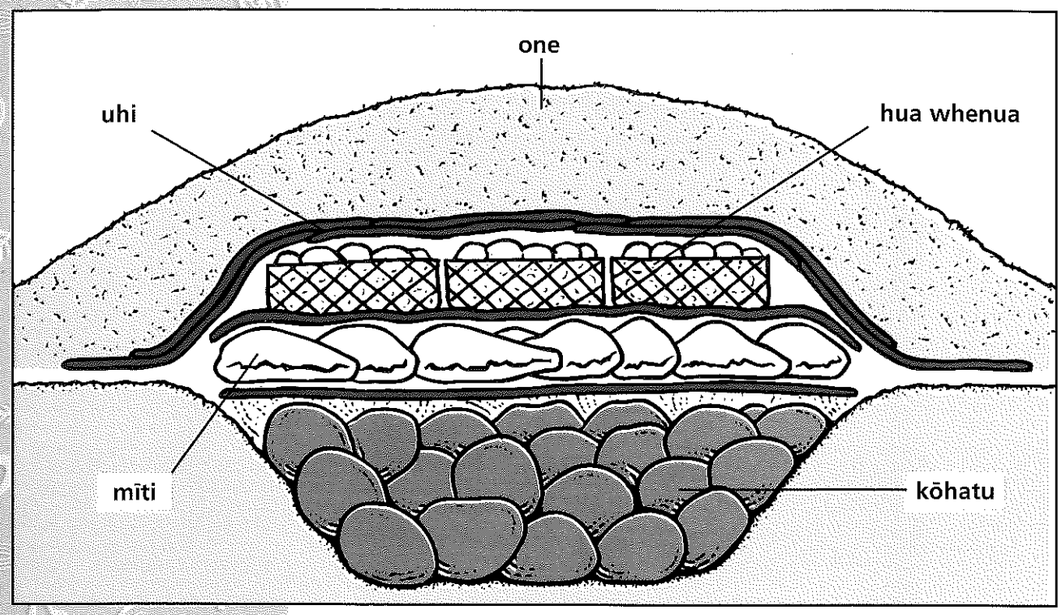
kōkeke



Ka pēhea te kōkeke?

1 _____
_____
_____
2 _____
_____
_____
3 _____
_____
_____
4 _____
_____
_____

h ā n g i



Ō Kawekawe: Matū

Te rea

Whāinga Paetae/Achievement Objectives

- 2) whakaatu ōna mōhio ki ngā āhuatanga matū me ngā āhuatanga ōkiko kia tika ai te whakamahia o ngā matū i te kāinga whānui (pēnei i ngā matū hōpua kaukau, i ngā matū horoi tō, i ngā kora)
- 3) tūhura ētahi tū momo matū e mōhio whānuitia ana me ngā paheko matū i roto i ngā āhuatanga o ia rā (pēnei i ngā kora)
- 2) apply their knowledge of chemical and physical properties of substances to investigate their safe and appropriate use in the home and the community, e.g., swimming pool chemicals, oven cleaners, fuels
- 3) investigate some important types of substances and the way they change chemically in everyday situations, e.g., fuels

Pūtaiao i roto i te Marautanga o Aotearoa whārangi 62*; Science in the New Zealand Curriculum* page 98.

Hei Mahi

Waihotia he kapu wai tai kia whakaeto. Ka kite aha koe?

Ringihia he hinu ki roto i te ipu wai. Ka aha?

Whakaranutia te pēkena poura ki te winika. Ka aha? Mahia he keke ki te pēkena poura.

Mahia te whakamātau i te whārangi 9 o *Matū*.

Whakamahia te kape matua 'He aha tēnei mea?' ki te wehewehe i ētahi ranunga.

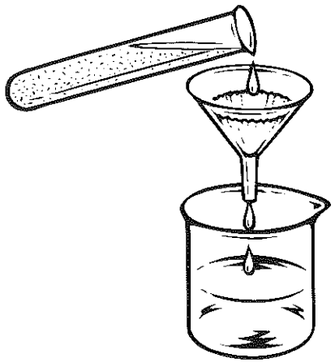
Titiro ki te tepu i te whārangi 11. I whakamahia e ō tātou tīpuna Māori te konukura me te rino i mua i te taenga mai o te Pākehā? (Kao.) Rārangitia ngā momo papanga i whakamahia e ngā tūpuna hei tapahi, hei kotikoti, hei haehae. Hangaia he ripi.

Hangaia he pepa mai i ngā tohutohu o te kape matua 'Pepa Harakeke'. Whakamārama atu ki ngā ākonga ngā tohutohu e pā ana ki ngā matū mōrearea. Mā ngā ākonga e hanga mai he pukapuka, he kāri rānei mai i ō rātou pepa. Tuhia he rātaka mō tēnei mahi.

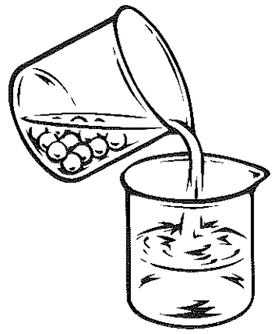
He Tauira Aro Matawai

Ka taea te arotake i ngā mōhiotanga o ngā ākonga mō te mahi me te konutai hauhā (caustic soda) mai i ō rātou rātaka.

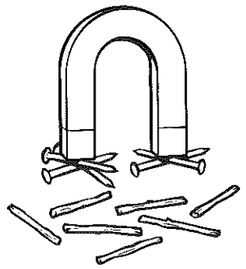
he aha tēnei mea?



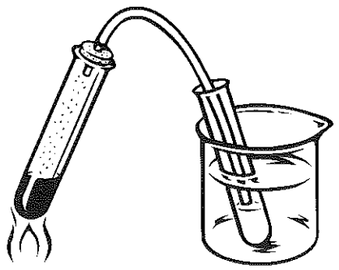
tātari



āta ringiringi

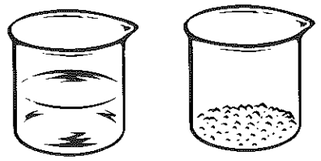


mahi aukume



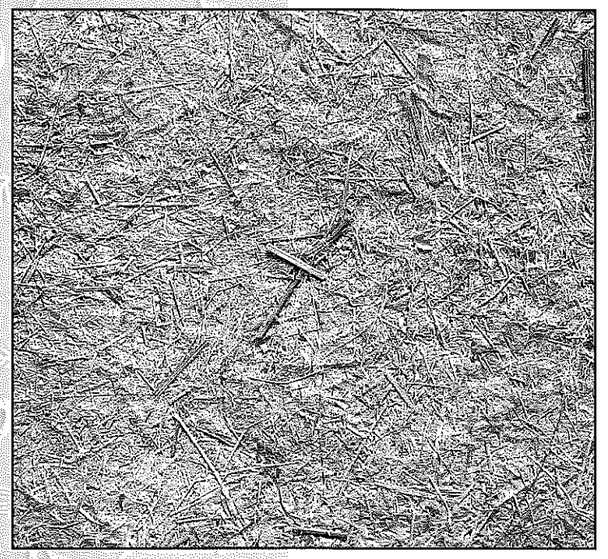
iheu

wehewehe



whakaeto

pepa harakeke



Hei Mahi

Whakakītia tētahi ipu rino tawau kore (stainless steel) ki te 4 rita wai makariri.

Tāuhitia kotahi pune konutai waihā (caustic soda) ki roto.

Tapahia e rua tekau ngā rau harakeke. Haehaetia ngā rau kia nohinohi.

Kōhuatia te katoa mō te whā haora.

Horoia ki roto i tētahi tātari kia mā rāno te wai.

Penupenutia ngā muka.

Purua ngā muka ki roto i te puoto mahi pepa.

Waiho te pepa kia maroke.

Kia Tūpato

1 Me mau whaowhao ringa rapa.

2 Me mau mōhiti.

3 Me mahi ki roto i te ipu rino tawau kore anake.

4 Tāuhitia te konutai waiha ki roto i te wai – **KAUA** e ringihia he wai ki roto i te konutai waiha kei pahū te katoa.

5 Huakina ngā matapihi.

6 Me mahi tata tonu ki te kōrere wai.

Ngā Pūkenga: Aukume

Te rea

Whāinga Paetae/Achievement Objectives

Te Arotahi me te Whakahoahoa: te whakawhiti whakaaro me te whakarite patapatai e tika ana, e hāngai ana ki te rangahau pūtaiao; te whakauruuru i ōna ake mōhiotanga pūtaiao me ngā mōhio pūtaiao o ētahi atu hei matapae whakamātautau mō ngā otinga ka puta, ka taea rānei;

Te Kohikohi Mōhio: te whakamahi i ngā āhuatanga tātari mōhio kia taea ai te tātari ngā mōhio e pā ana ki te kaupapa.

Focusing and Planning: ask a series of related questions of themselves, their group, and resource people and refine questions to make them suitable for scientific investigation; integrate their scientific ideas and personal observations with the scientific ideas of others to make testable predictions or to identify possible solutions for trialling;

Information Gathering: use information processing techniques to process information related to the purpose.

Pūtaiao i roto i te Marautanga o Aotearoa whārangi 73, 75; *Science in the New Zealand Curriculum* pages 44, 45.

Hangarau: Aukume

Te rea

Whāinga Paetae/Achievement Objectives

- 1b) whakamārama i pēhea te whanake ake o te mātauranga o ētahi atu iwi ki te ao mataora, ki te ao ahupūngao, ki te ao rawa, me ngā āhuatanga hangarau o te taiao
- 1b) explain how different cultures have developed understanding of the living, physical, material, and technological components of the environment

Pūtaiao i roto i te Marautanga o Aotearoa whārangi 96; *Science in the New Zealand Curriculum* page 34.

Hei Mahi

Mahia ngā whakamātau i te pukapuka *Aukume*.

Rangahaua te whai takunga ki te Taraipiunara mō ngā ngaru kawe tohu. Whakatūhia he hui mō tēnei take. Hangaia he mahere ki te tohu mai he aha te autō-a-hiko. I ngā rā o mua ko ā tātou tūpuna ngā kaitiaki i te wāhanga e tauwehe ana i a Ranginui rāua ko Papatuanuku, arā, kei a tātou tonu tēnei mahi. He taonga mā tātou katoa ēnei ngaru kawe tohu.

He Tauira Aro Matawai

E kitea ai te kaha o ngā pūkenga rangahau o ngā ākonga mai i ngā whakaaro o ngā tāngata i kite atu i ō rātou mahi.

Rangirāua ko Papa

‘Ranginui ki runga
Papatuanuku ki raro
Ngā tikanga ki waenga
Hei whakakaha i te ira tangata
Koia rā, koia rā!’

Hangarau: Tākaro

Te rea

Whāinga Paetae/Achievement Objectives

- 3) tūhura te mōhiotanga pūtaiao me te hangarau e whakamahia ana e te tangata ia rā
- 3) investigate how knowledge of science and technology is used by people in their everyday life

Pūtaiao i roto i te Marautanga o Aotearoa whārangi 96; *Science in the New Zealand Curriculum* page 34.

Hei Mahi

Tatautia (calculate) te taipana i roto i te nūtana (newtons): whakarautia (multiply) te taumaha i roto i te kirokarāme ki te tekau. Whakaatuhia ngā taipana (forces) e mahi ana mō ngā kaipara (athletes). Whakamahia te kape matua a ngā ākonga 'Ngā Taipana o te Tākaro'.

Haere ki waho ki te oma. Ki te hoki mai ngā ākonga, tatautia ngā mahi i mahia e rātou mai i te tauira i te whārangi 5 i roto i te pukapuka *Tākaro*.

Tatautia te tere o tō rātou omanga. Mahia i runga i te kape matua 'Te Tere'.

Kohikohia he pikitia kai kia whakaritea ki roto i ngā rōpū rima o te kai - tiro atu ki ngā whārangi 8-9 i roto i te pukapuka *Tākaro*. Mā ngā ākonga e hanga he tapatoru kai mai i ngā pikitia o ngā kai e kainga ana e rātou mō ia rā.

Tatautia te pūngao konikoni e mahia ana i roto i ngā tauira o te kape matua 'Pūngao Konikoni'.

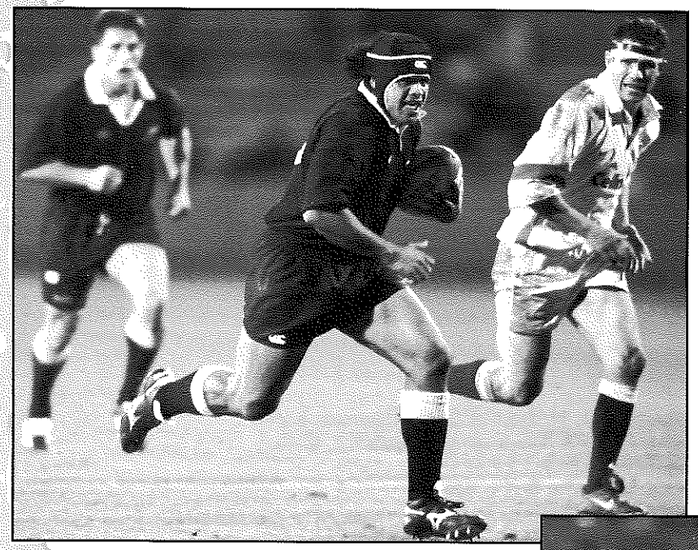
Mahia te whakamātau i te whārangi 11 o *Tākaro*.

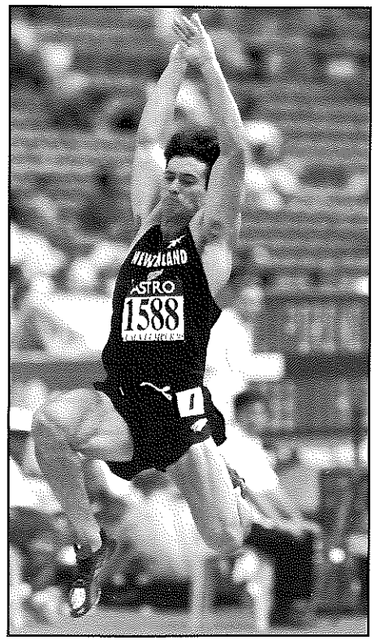
He Tauira Aro Matawai

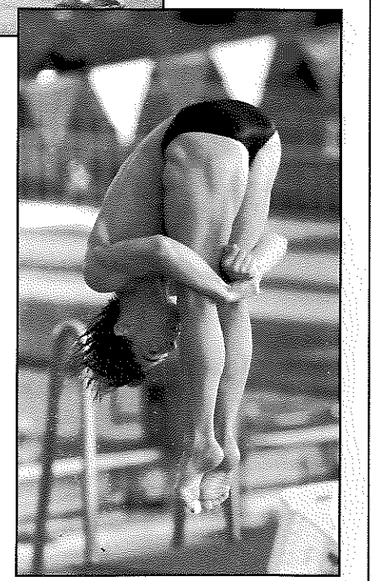
Ka taea e ngā ākonga te whakaatu mai ō rātou mōhiotanga me pēhea ka mahi te tauru mai i ngā huahuatanga i tāhia e rātou ki te whakamārama mai me pēhea ka mahi ngā mīhini whakapakari tinana.

ngā taipana o te tākaro

Tāhia ngā taipana e mahi ana i runga i ēnei kaipara.







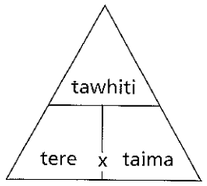
te tere

Te kaupapa o taku mahi:

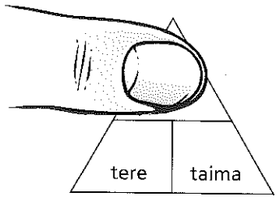
I pēheatia e au:

Ngā otinga:

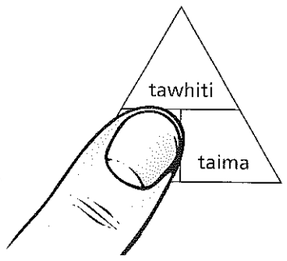
Hei whātau i te mahi:



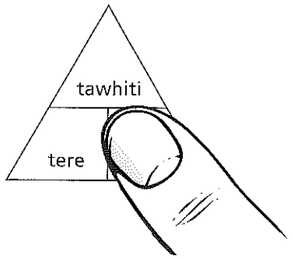
Hei Whakamōhio



Tawhiti = tere x taima

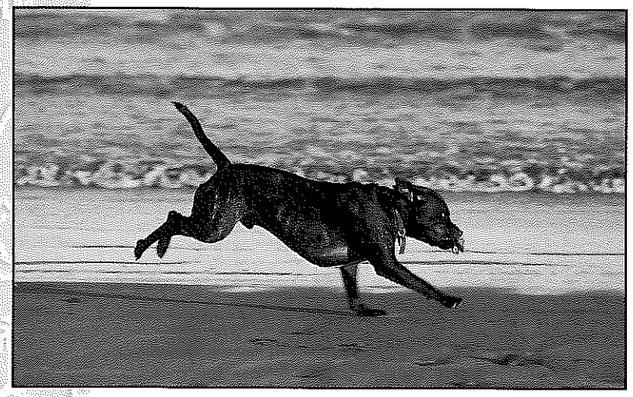


Tere = tawhiti ÷ taima



Taima = tawhiti ÷ tere

pūngao konikoni



Pēnā e 70 kirokarāme te taumaha o te kaioma ā, ka oma e ono mīta/te hēkona, he aha tōna pūngao konikoni?

Pēnā e iwa kirokarāme te taumaha o te pēpi ā, ka ngaoki kotahi mīta/te hēkona, he aha tōna pūngao konikoni?

Pēnā e toru tekau kirokarāme te taumaha o te kurī ā, ka oma e rima mīta/te hēkona, he aha tōna pūngao konikoni?

Ngā Kupu

ate	*liver*
atiru	*clouds threatening rain and wind*
aukume	*magnet, magnetism*
aukume hū hoiho	*horseshoe magnet*
aukume kaho	*bar magnet*
aukume-a-hiko	*electromagnet*
autō-a-hiko	*electromagnetic radiation*
hanga pūngao	*respiration (production of energy in animals)*
hāora	*oxygen*
hauhā	*carbon dioxide*
hauhauaitu	*exposure, hypothermia*
hauhauhā	*argon*
haukura	*neon*
hauora	*air*
hauota	*nitrogen*
hauwai	*hydrogen*
hekenga marangai	*rainfall*
hinu	*oil; fat*
hinu urutapu	*crude oil*
huaora	*vitamin*
huarere	*weather*
hūra	*joule (a measure of energy)*
iakawe mahana	*convection (upward movement of heat)*
inekurahau	*barometer (instrument to measure air pressure and predict weather)*
ipuipu	*test tube*
ipurau	*beaker*
iraruke kawe mahana	*radiation of heat*
kāpehu	*compass*
kapomamaoa	*steam turbine*
kēkēao, pōkē	*dark cloud*
kirihou	*plastic*
kōhauhau	*atmosphere*
kōkeke	*piston*
konupora pūhau māota	*magnesium chloride*
konupora pungatara	*magnesium sulphate*
konupūmā pungatara	*calcium sulphate*
konutai pūhau māota	*sodium chloride*
konutai waihā	*caustic soda*
kongakonga	*particles*
kōpuru	*heavy passing cloud*
korohū	*gas*
mamaru	*dark bank of cloud*
manawa whenua	*mineral*
matangi mahana	*warm front (mass of air bringing change in the weather)*
mōtū	*weight (used in weightlifting or training)*
muratahi	*bunsen burner*
nūtana	*newton (a measure of force)*
ngā	*breathe*
ngota	*atom*
okewa	*rain cloud*
pāpāhua	*alkali*
parakino	*pollutant*
pēhanga hauora	*air pressure*
pēkena poura	*baking powder*
pēkena houra	*baking soda*
pekerangi	*ozone, ozone layer (oxygen compound O_3 which absorbs harmful ultraviolet light rays)*
puehu maitai	*iron filings*
pūhuka	*cold front (mass of air bringing change in the weather)*
pūkaha	*engine*
pūmotu	*element (chemical substance)*
pūmua	*protein (food group which includes meat, fish, dairy products, eggs, nuts)*
pūngao konikoni	*kinetic energy*
pūngao torohū	*potential energy*
pūngao torohū roroha	*elastic potential energy*
puoto	*gas cylinder*
rāpoi ngota	*molecule*
rawhi	*clamp*
taipana	*force*
tākaro hauhā kore	*anaerobic exercise*
Takiwai	*Milford*
tauru	*pulley*
Te Taka Pūmotu	*Periodic Table*
totokawe mahana	*conduction (transmission of heat)*
waikawa miraka	*lactic acid*
waitī	*glucose*
waiwaro rau ewaro	*polythene*
waiwaro rua ewaro	*ethene*
warowaihā	*carbohydrate*
wē	*liquid*
wera	*heat*
wiri	*drill*
whārite	*equation*
whātau	*calculate, measure*