Kia riro nā te tamariki ‘āpi’i e ‘akakīkī

Ingoa: _____

NSN

Nūmero ‘ō te ‘Āpi’i

NĀ TE TANGATA ‘AKATERE ‘UA Ē TĀ’ANGA’ANGATA’ANGA’ANGA

See back cover for an English translation of this cover

Tuku ‘i te ‘akairo tīkoti ki roto ‘i te pi’a (☒) mē KĀRE koe ‘i tātā ana ki roto ‘i tēia puka.

+

32406C TAU ‘ĀPI’I 2

NZQA | **Mana Tohu Mātauranga o Aotearoa**
New Zealand Qualifications Authority

Tārērē ‘Āpi’i Nūmero 2024

32406C Tā‘anga‘anga ī te mātemātika ē te tātakitika kī roto ī tēta‘i au tu‘anga raverave ī te au rā katoa

Kai: Ta‘inga‘uru

TĒ KA RAUKA MAI	
1	Tā’anga’anga ‘i te au rāvenga mātemātika, ‘ē te tārē’anga-nūmero, ‘ei tatara’anga ‘i te au mea rave ngatā ‘i roto ‘i te au tū ‘ākono’anga raverave ‘ō te au rā kātoatoa.
2	Tā’anga’anga ‘i te mātemātika, ‘ē te tārē’anga-nūmero, kia rauka te tūranga tā te ‘āpi’i nūmero ‘e umuumu nei nō te au tū ‘ākono’anga raverave ‘ō te au rā kātoatoa.
3	‘Akamārama mai ‘i te au pa’u’anga rāvenga mātemātika, ‘ē te tārē’anga-nūmero ki te au ‘akakoro’anga.

‘Akakī ‘i tō’ou Nūmero Rētita (NSN), ‘ē pērā te nūmero o tā’au ‘āpi’i, ki roto ‘i te vā ‘i runga ake.

Ka anoano’ia koe kia tautā ‘i te pa’u ‘i te au ui’anga kātoatoa ‘i roto ‘i tēia puka.

Mē ka anoano koe kia ma’ata atu te vā nō tēta’i ā’au pa’u’anga, ‘ē tā’anga’anga atu koe ‘i te vā tei ‘akataka’ia, ‘i muri roa ‘i tēia puka.

‘Ākara meitaki ē, ‘e kapi 2–43 tō roto ‘i tēia puka, kua tano te ‘akapapa’anga’ia, ‘ē kāre ‘e kapi ē, kāre ‘e tātā’anga ki runga.

‘Auraka e tātā ki roto ‘i te au tapa (////). Ka tīpū’ia tēia tu’anga ki va’o mē oti te puka ‘i te māka.

KA ANOANO’IA KOE KIA ‘ŌRONGA ‘I TĒIA PUKA KI TE TANGATA ‘AKATERETERE, ‘I TE ‘OPENGA ‘Ō TE TĀRĒRĒ.

UI'ANGA TA'I: Tuatara

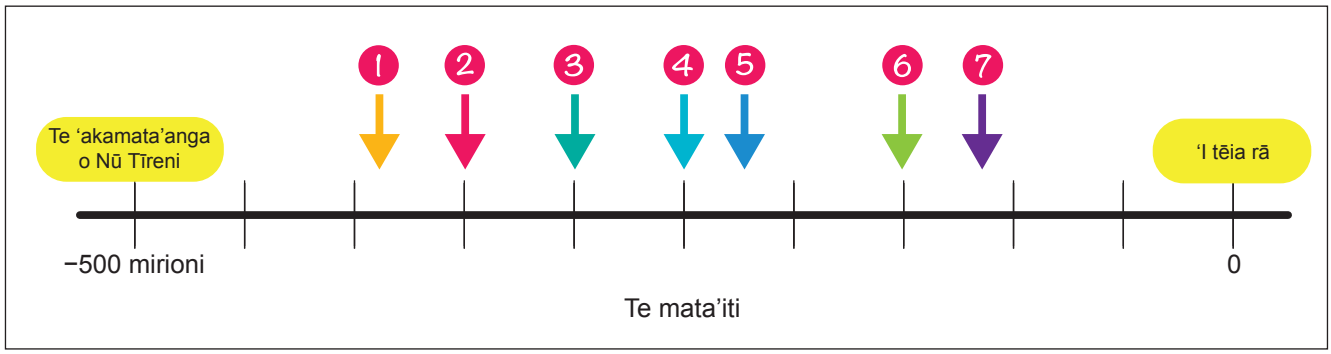
Ko Nū Tīreni te kāinga e no'o nei te moko-mama'ata toe 'ē ora nei – ko te tuatara.

Kua no'o ana te Tuatara mua, mei tēta'i 225 mirioni mata'iti 'i topa ake nei.

Kua 'akaāri mai te au toka takere rava atu ē, mei tēta'i 500 mirioni o Nū Tīreni mata'iti .

'E tuatara tei runga 'i te pōtonga rākau

(a) 'I runga 'i te 'akapapa'anga tuātau 'i raro ake nei, **torō tāpunupunu takapini 'i te tūtū 'ō te 'ana** 'e 'akaāri nei 'i te 225 mirioni mata'iti 'i topa ake nei.



'Ē kai ana te Tuatara 'i te au manu rikiriki, mei te wētā, te toke, te pōpoti, 'ē pērā te tukutukura'onui.

'E 1 kiro karāmu te teima'a 'i te tuatara.

'E 25 karāmu te teima'a 'i te wētā.

(b) 'Ē 'ia o te tuatara **taime teima'a atu** 'i te wētā?

_____ taime teima'a atu

Tē kai nei te tuatara 'i te wētā

QUESTION ONE: Tuatara

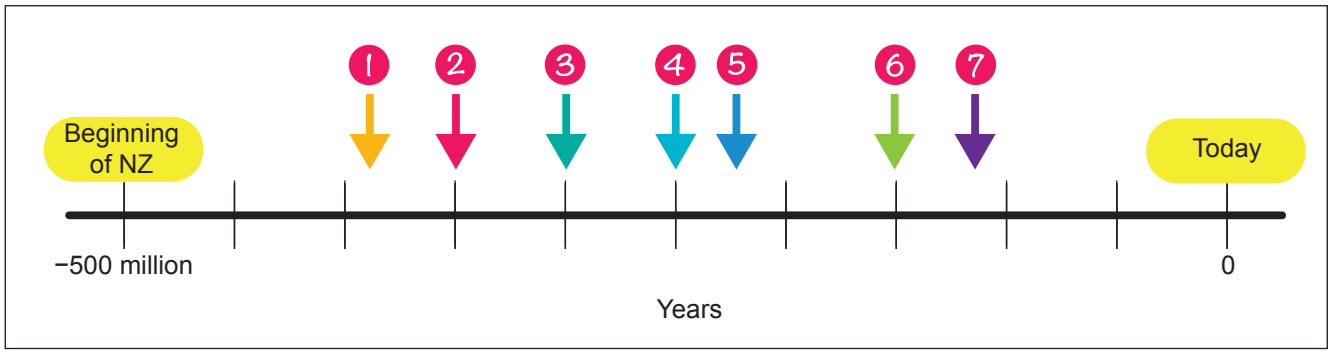
New Zealand is home to the last surviving dinosaur – the tuatara.

Tuatara first lived about 225 million years ago.

The oldest rocks show New Zealand is at least 500 million years old.

(a) On the timeline below, **circle the arrow** that shows 225 million years ago.

A tuatara on a log



Tuatara eat small animals, such as wētā, worms, beetles, and spiders.

The tuatara weighs one kilogram.

The wētā weighs 25 grams.

(b) How **many times heavier** is the tuatara than the wētā?

_____ times heavier

A tuatara eating a wētā

Tē ngaro atu ra te tuatara.

Kua ʻangaʼia tētaʼi porokarāmu ʻakaʼuānga nō te tuatara.

ʻĒ ʻānau ana te uʼa tuatara ʻokotaʼi, mei te 6–10 ʻua ʻi roto ʻi te 4 mataʼiti. ʻĒ taeaʼia ana mei te 11–16 marama ē pana ei te ʻua.

Kua pana te ʻua ʻā te tuatara

(c) Mē ora kātoatoa te ʻua, ʻē ʼia i tōʼou manako tuatara ka ora mai, mei kō ʻi te uʼa ʻokotaʼi, ʻi roto iʼ te 10 mataʼiti? ʻAkaāri mai ʻi te au takaʼinga tāʼau ʻi tāʼangaʼanga nō tāʼau paʼuʼanga.

Tuatara are endangered.

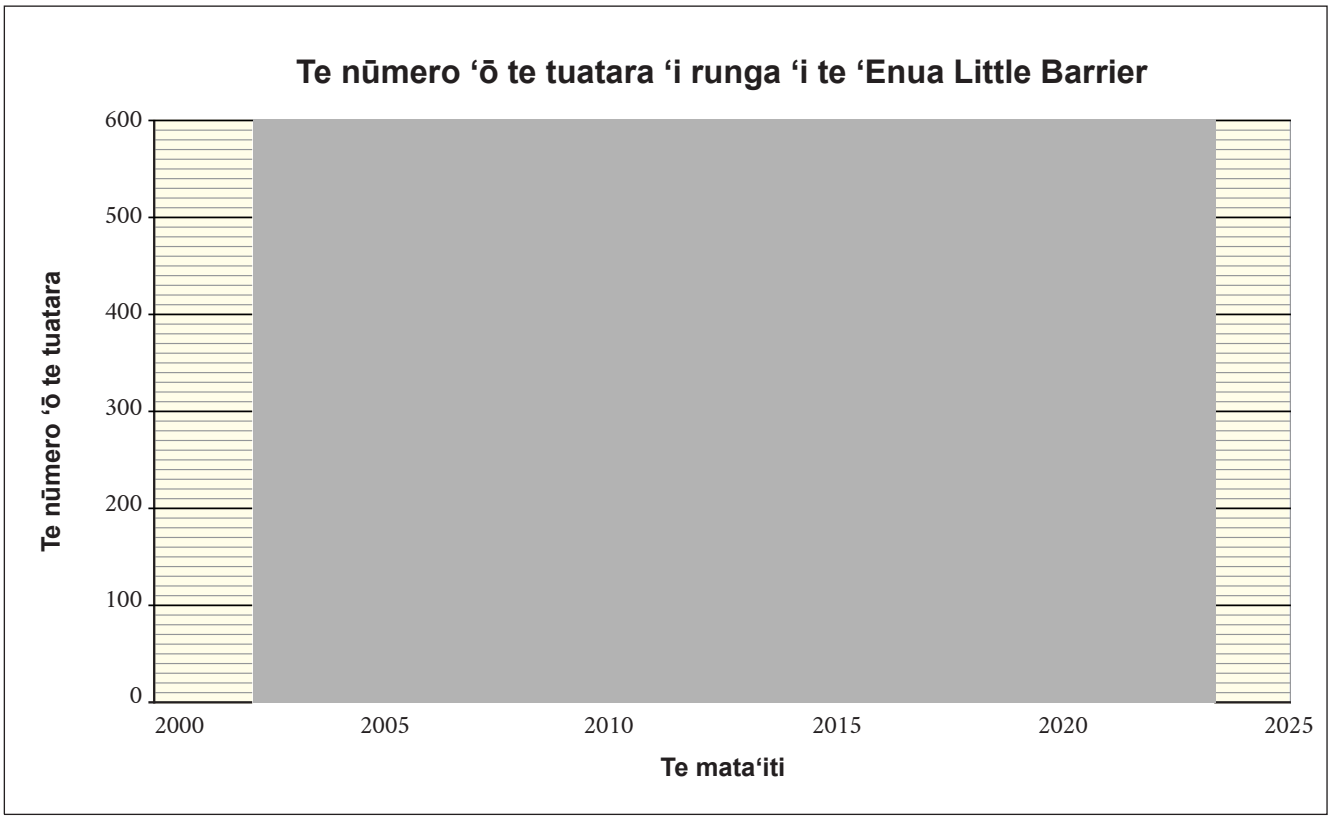
A breeding programme for tuatara has been set up.

A female tuatara lays 6–10 eggs every four years. The eggs take 11–16 months to hatch.

A tuatara hatching from an egg

(c) If all the eggs survive, about how many tuatara would you expect to get from **one** female in 10 years? Show the calculations you used to get your answer.

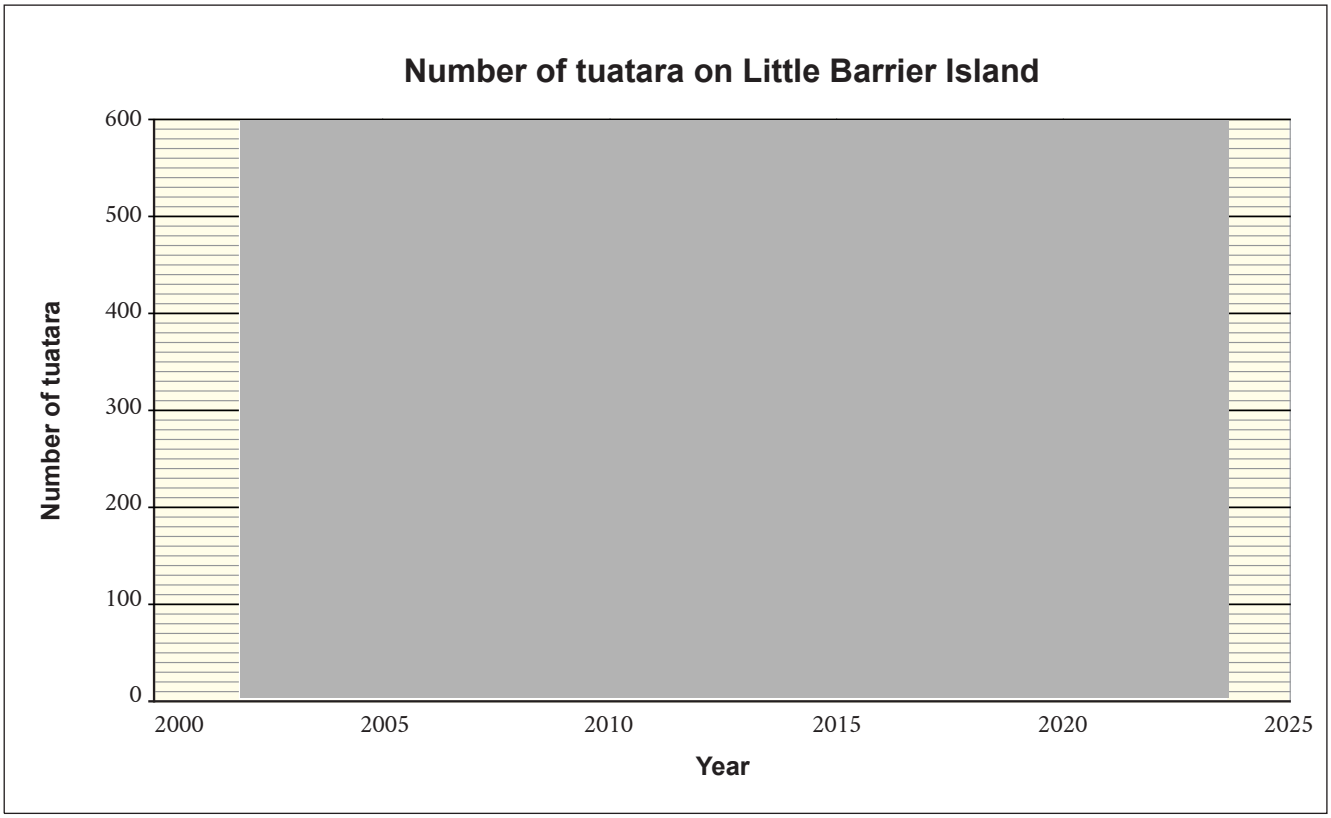
ʻĒ varu rāi tuatara pakari toe ʻi runga ʻi te ʻEnua Little Barrier, ʻi te mataʼiti 2004. Kua tākoreʼia te kiore toka ʻi runga ʻi te ʻenua ʻi te mataʼiti 2006, ʻē kua tukuʼia ʻē 100 tuatara pakari ki runga i te ʻenua. Tē ʻakaāri mai nei tēia karāpu ʻi te nūmero tuatara ʻō te au tuātau ʻi ʻaereʼia mai.



(d) Ēʼia tuatara ʻi te kātoatoa ʻi runga ʻi te ʻEnua Little Barrier, ʻi te mataʼiti 2012?

_____ tuatara

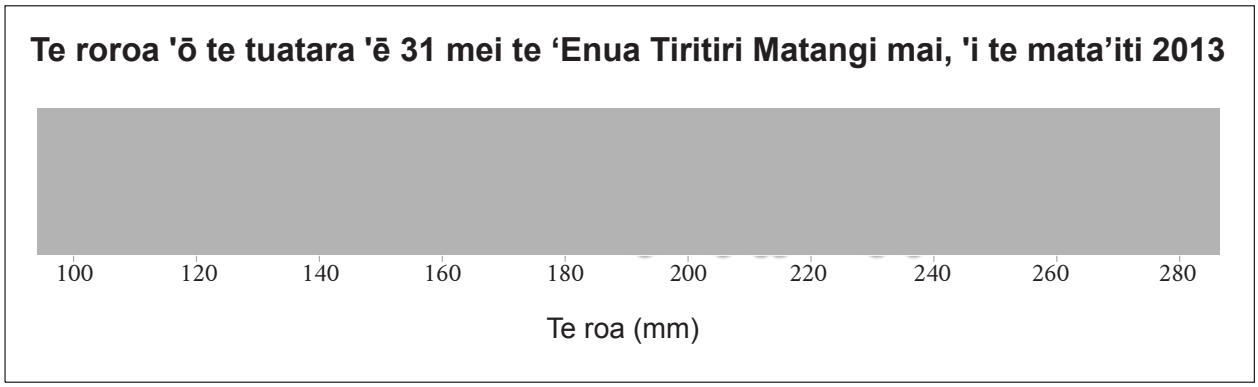
Only eight adult tuatara remained on Little Barrier Island in 2004. The island was made rat-free in 2006 and 100 adult tuatara were released on the island. This graph shows tuatara numbers over time.



(d) About how many tuatara were on Little Barrier Island in 2012?

_____ tuatara

‘I te mata’iti 2003, ‘ē 60 tuatara pakari tei tuku’ia ki runga ‘i te ‘Enua Tiritiri Matangi. ‘Ē ta’i nga’uru mata’iti ‘i muri mai, kua kitea mai ‘ē 31 tuatara, ‘ē kua vāito’ia te roa ‘i tō rātou kōpapa. Ko te rāini tōpatapata te roa ‘i tō rātou kōpapa.



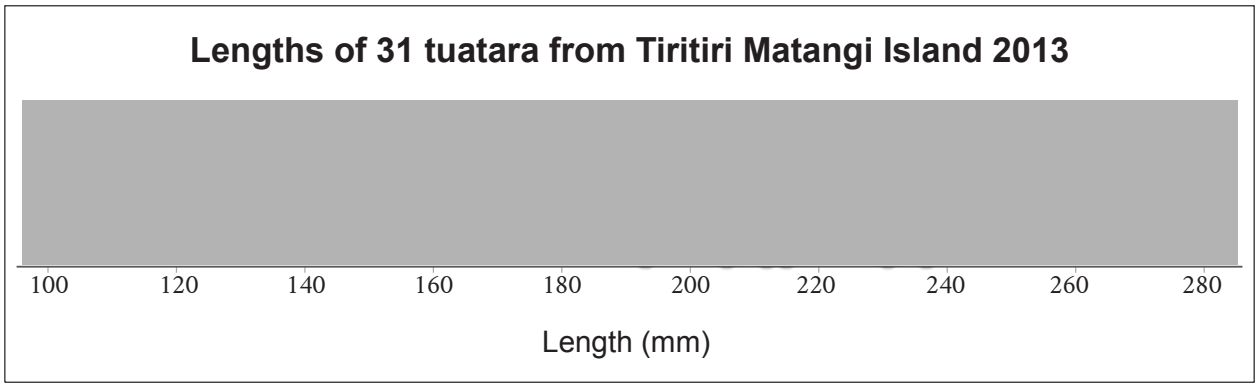
(e) Tē ‘akaāri mai nei āinei te karāpu ē, ‘e au punua tuatara tō runga i te ‘enua? Tā’anga’anga ‘i te nūmero ‘i roto ‘i te karāpu, ‘ei akamārama mai ‘i tā’au pa’u’anga.

‘Ē no’o ana tēta’i ‘āpa ‘ō te kātoa’anga o te tuatara ‘i Nū Tīreni, ki runga ‘i tēta’i ‘enua, mei te 95 kiromita ki te tua tokerau-’opunga ‘ō Pōneke.

Ko te māpu tēia o Nū Tīreni ‘e ‘akaāri mai nei ia Pōneke

(f) Tātā ‘i te reta tē ka ‘akaāri mai i te ngāi ‘ō te ‘enua. Tā’anga’anga ‘i te vāito ‘i runga ‘i te māpu ‘ei tauturu iā koe.

In 2003, 60 adult tuatara were released on Tiritiri Matangi Island. Ten years later, 31 tuatara were found, and their body lengths were measured. The dotted line is the median body length.



(e) Does the graph suggest that there are now young tuatara on the island? Explain your answer using numbers from the graph.

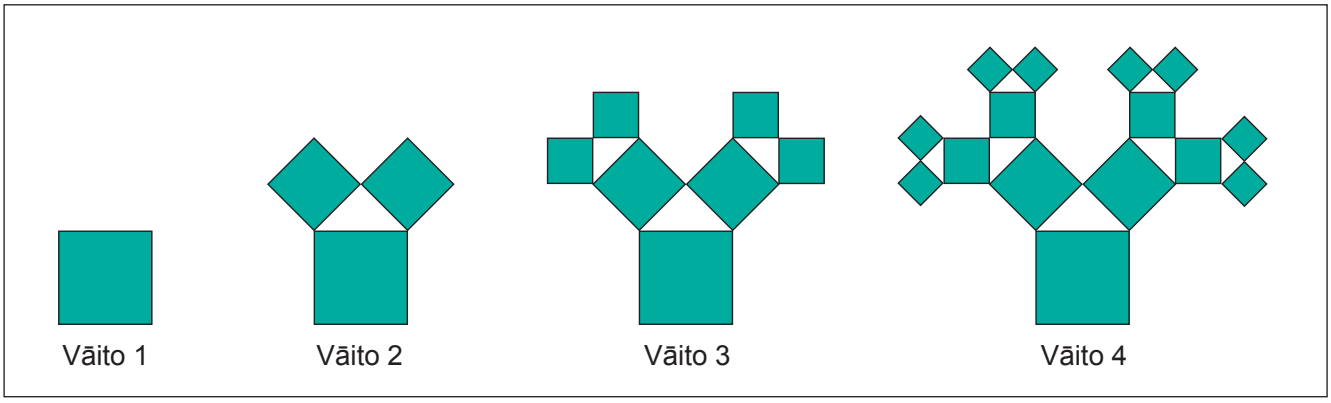
Half of all the tuatara in New Zealand live on an island that is about 95 km northwest of Wellington.

Map of New Zealand showing Wellington

(f) Write the letter that shows the location of the island. Use the scale on the map to help you.

UI'ANGA RUA: Ma'ani 'Apinga

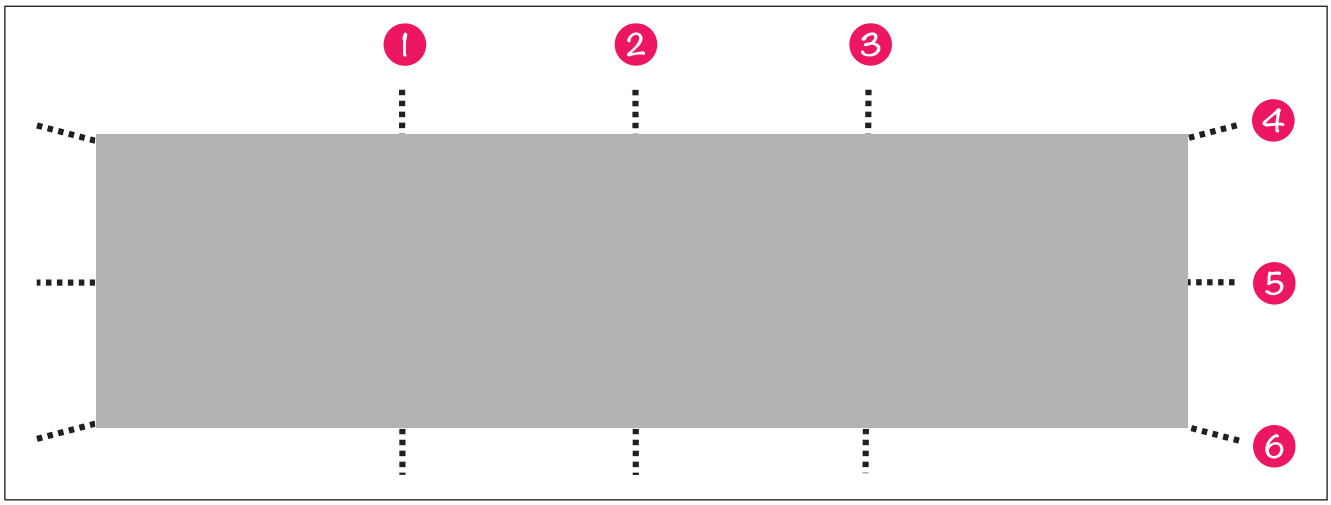
Te 'anga nei 'a Nicole 'i tēia vāito pū rākau e tupu rā.



(a) Nō te 'anga 'i te **Vāito 5**, 'ē 'ia au pi'api'a ā Nicole ka 'inangaro 'i te kātoatoa?
Tuku pouroa 'i te au pi'api'a tūkētūkē tō rātou au vāito.

Tē ma'ani nei 'a Ariana 'i tēta'i pare 'ōu nō tāna pupu kapa haka.

Tei raro ake te vāito a Ariana te ngā'i e 'akaāri'ia mai ei.



Pare

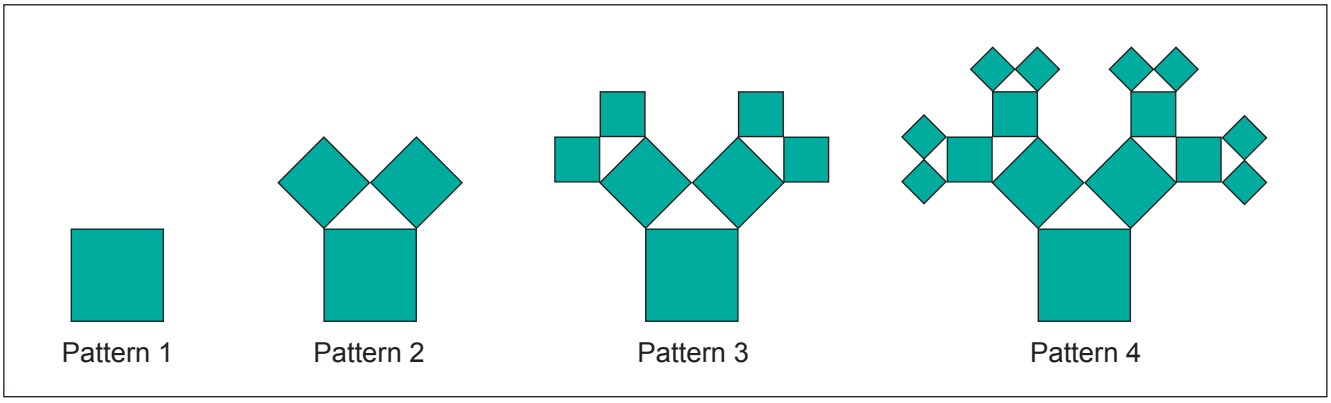
(b) Ko tē'ea au nūmero tē ka 'akaāri mai 'i te au rāini 'ō te **'akaāta'anga** 'āiteite (**reflection** symmetry) 'i roto 'i te tūtū a Ariana?

Tuku 'i te 'akairo (✓) ki roto i te punupunu, 'i te pae i te nūmero tano 'i raro ake. Kua tere atu i te ta'i pa'u'anga tano.

1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○

QUESTION TWO: Art

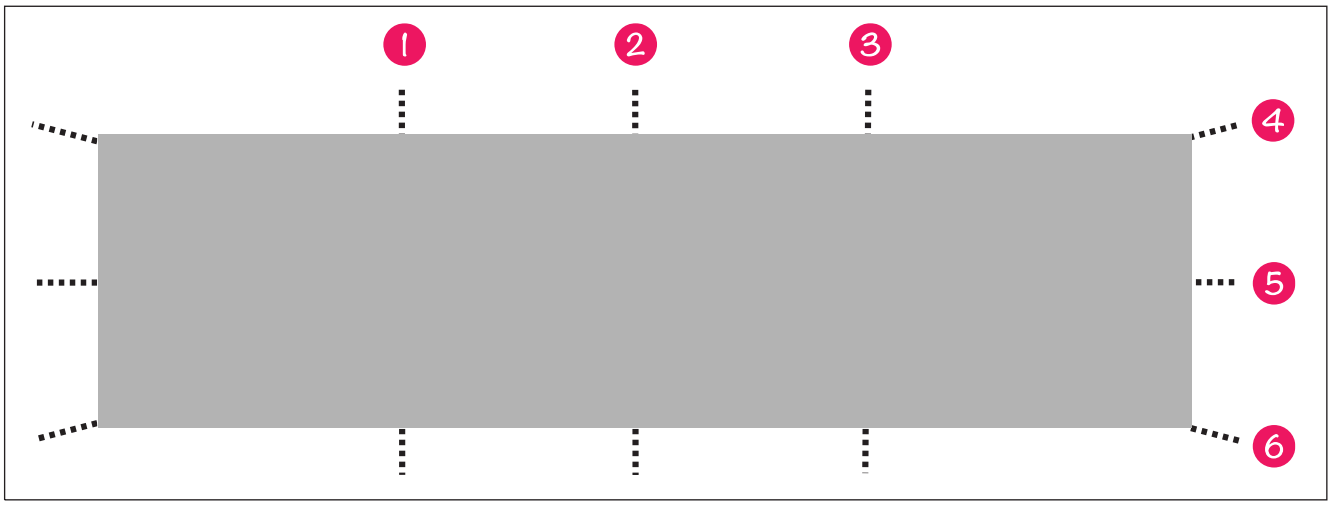
Nicole creates this growing tree design.



(a) To create **Pattern 5**, how many squares would Nicole need, in total?
Include all squares of different sizes.

Ariana is making a new tīpare or kōpare (headband) design for her kapa haka group.

Ariana's design is shown below.



Tīpare or kōpare (headband)

(b) Which numbers show lines of **reflection** symmetry in Ariana's design?

Tick (✓) the circle next to the correct numbers below. There is more than one answer.

1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○

Ko te tūtū i te tua kauī, tē ʻakaāri mai nei tē reira ʻi te tu'anga-nūmero (fractions) e kitea'ia ana ʻi roto i te tūtū mata ʻō te tangata.

Te au tu'anga-nūmero (fractions),
ʻō te tūtū mata tangata

Te kātūnu o te mata o Richie McCaw

(c) ʻI roto ʻi te kātūnu, kua tano te ngā'i ʻi tuku'ia ei ā raro ʻi te putāngi'u o Richie?
Tā'anga'anga ʻi te tu'anga-nūmero (fractions), mei roto mai ʻi ngā tūtū, ʻē te kātūnu,
ʻei ʻakamārama mai ʻi tā'au pa'u'anga

The diagram on the left shows fractions that are usually found in human faces.

Usual fractions in a human face

Cartoon of Richie McCaw's face

(c) In the cartoon, is the bottom of Richie's nose in the right place?
Use fractions from both the diagram and cartoon to explain your answer.

‘E tūtū teia i raro ake, nō tēta’i tiki ‘i roto i tēta’i pāka ‘i Northland. Kua ma’ani’ia tēia tiki ki te ‘āuri muramura, ‘ē te kerekere. ‘I te tua katau, ko te tūtū tērā o te tiki, mē ‘ākara’ia atu nā mua, ‘ē mē ‘ākara’ia atu nā te tua katau mai.

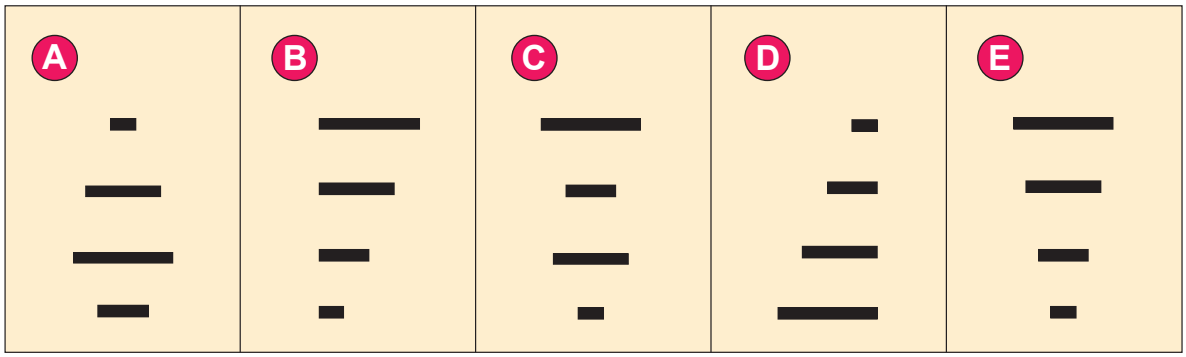
Ko te tiki *kāre ‘e upoko tuatua,*
na Richard Thompson

Mē ‘ākara’ia
atu nā mua

Mē ‘ākara’ia atu nā
te tua katau mai

(d) Ko tē ’ea te reta tano ‘i raro ake e ‘akaāri mai nei ‘i te tiki, mē ‘ākara’ia nā runga mai?

Torō tāpunupunu takapini ‘i te **reta** tano.



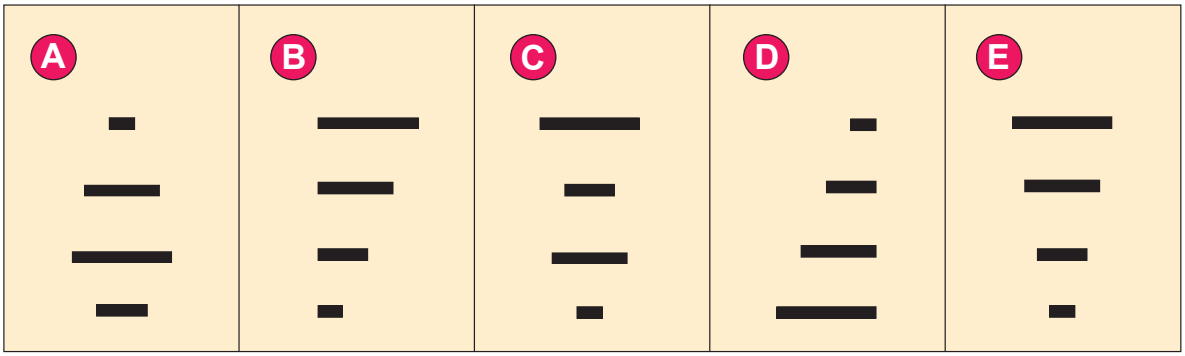
Below is a photo of a sculpture at a park in Northland. The sculpture is made of red and black steel. On the right are the front and right-side views of the sculpture.

Sculpture *Untitled* by Richard Thompson

Front view Right-side view

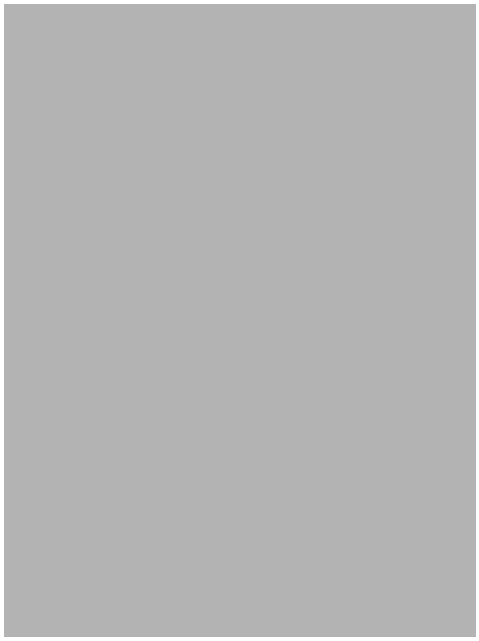
(d) Which letter below shows the correct top view of the sculpture?

Circle ◯ the correct **letter**.



Ko te au puka Kōmiki, ‘e au tu’anga ‘apinga ‘ma’ani’ia tēia, ‘e ma’ata te moni ka rauka mai mē ‘oko’ia. Ko te kapi mua tēia ‘ō te kōmiki o Superman.

‘I te mata’iti 1979, kua ‘oko’ia atu tēia kōmiki ‘ē 1,000 tārā, moni Marike. ‘I te mata’iti 2022, kua ‘oko’ia atu nō tēta’i 2.6 mirioni tārā, moni Marike.



Te kapi ‘ō te kōmiki Superman mua

(e) ‘Ē ’ia kōmiki 1,000 tārā, ka rauka iā koe ‘i te ‘oko mai ki te 2.6 mirioni tārā?

Tuku ‘i te ‘akairo (✓) ki te pae ‘i te pa’u’anga tano.

- 26 ◯
- 260 ◯
- 2,600 ◯
- 26,000 ◯
- 260,000 ◯

Ko Tīrau, ‘e ‘ōire ‘i roto ‘i te North Island, tei rongonui nō tōna ‘are ‘akapū’anga o te manu’iri, tei ‘akatū’ia mei te puakaoa ‘ē ngā māmoe ‘ē rua, tōna tarai’anga.

‘Are ‘Akapū’anga o te Manu’iri ‘i Tīrau

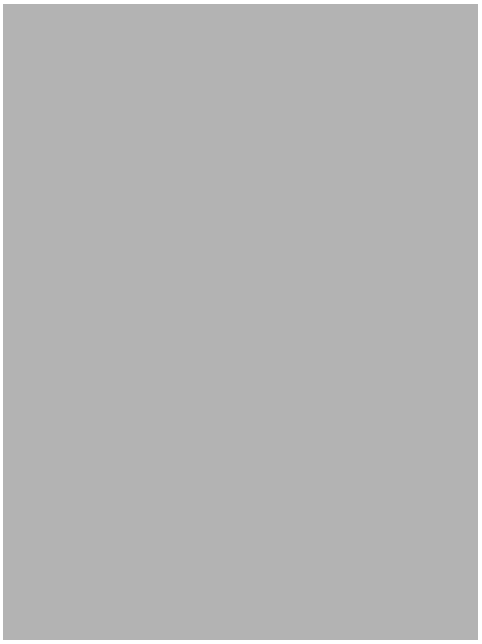
Tē ‘akaāri mai nei te māpu ‘i raro ake ē, mē ‘aka’oro koe mei Pōneke ki Tīrau, kā taeria ‘ē 5 ora, ‘ē 49 meneti.

(f) ‘Ē ‘ia ora ‘i tērā, mē ‘akatano’ia ki te **ora vaitata atu**?

_____ ora

Comic books are pieces of art that can be worth a lot of money. This is the cover of the first ever Superman comic.

In 1979, the comic sold for $US 1,000. In 2022, it sold for $US 2.6 million.



Cover of the first Superman comic

(e) How many $1,000 comics can you buy for $2.6 million?

Tick (✓) the correct answer.

- 26 ◯
- 260 ◯
- 2,600 ◯
- 26,000 ◯
- 260,000 ◯

Tīrau, a town in the North Island, is famous for its visitor centre which is in the shape of a dog and two sheep.

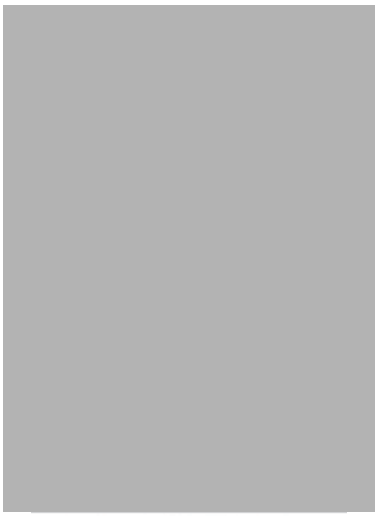
Tīrau Visitor Centre

The map below shows that the drive from Wellington to Tīrau will take five hours and 49 minutes.

(f) How much time is that rounded to the **nearest hour**?

_____ hours

UI'ANGA TORU: Vai



Mō'ina vai ma'atama'ata

Ko te mō'ina vai ma'atama'ata, mē kī, 'ē mou ana 'aia 'ē 15 rita vai, 'ē ko tōna teima'a, 'ē 15.352 kirokarāmu.

(a) Ē 'ia **karāmu** 'i te teima'a o te mō'ina, **kāre 'e vai**, 'i roto?
'Akamārama'anga: 'Ē ta'i rita vai, 'ē ta'i kirokarāmu tōna teima'a.

_____ g

Ko tēia au mō'ina vai tātakita'i 'i raro ake, 'ē mou ana 'ē ta'i mō'ina, 'ē 1.5 rita vai.

'Ē toru 1.5 L mō'ina vai 'ē te 300 mL karāti

(b) 'Ē 'ia au karāti 300 mL, ka rauka iā koe 'i te 'akakī, mei roto mai 'i tēia au mō'ina vai **kātoatoa 'ē toru**?

_____ karāti 300 mL

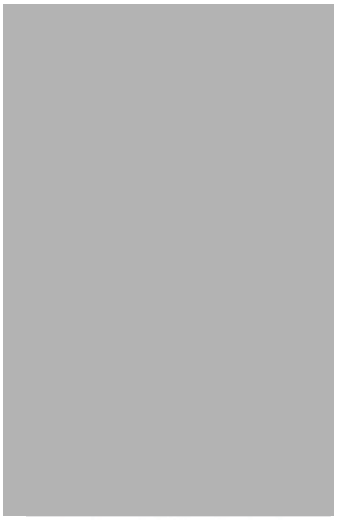
Nā te vai e 'akateima'a ana 'i te kōpapa o te punua puaka, mei tēta'i 75%. Ko tō te puaka pakari, ko te patene, mei te 50%. 'Ē 8 kirokarāmu te paunu o tēia punua puaka, 'ē 120 kirokarāmu te paunu o te puaka pakari.

(c) 'E a'a **te ma'ata atu o te vai**, 'i roto 'i te kirokarāmu, 'ō te puaka pakari 'i roto i tō rātou kopapa, 'i tō te punua puaka vai 'i roto i tō rātou kōpapa?

_____ kirokarāmu

QUESTION THREE: Water

The large water bottle holds 15 litres of water when it is full, and weighs 15.352 kilograms.



Large water bottle

(a) How much does the **empty** water bottle weigh, in **grams**?
Note: One litre of water weighs one kilogram.

_____ g

Each of the three bottles below holds 1.5 litres of water.

Three 1.5 L water bottles and a 300 mL glass

(b) How many 300 mL glasses can you fill from **all three** bottles?

_____ 300 mL glasses

Water makes up about 75% of a piglet's body weight. For adult pigs, the percentage is about 50%. This piglet weighs 8 kilograms, while the adult pig weighs 120 kilograms.

(c) How **much more water**, in kilograms, does the adult pig have in their body than the piglet has in their body?

_____ kg

‘I roto i tēta’i au ‘ōire ma’atama’ata, ‘ē tūtaki ana te tangata ‘i te vai tā rātou e tā’anga’anga ra.

Ko tēia te pīra vai a Cindy, nō te **ta’i marama**.

Te tu’anga tauturu Vai Mā		
Nūmero tei tā’anga’anga’ia (m^3)	**Moni tūtaki ‘i te ta’i kiupiki mita ($/$m^3$)**	**Te tiāti ($)**
24.8	?	$35.96

(d) ‘Ē ’ia a Cindy moni ka tūtaki, nō te au kiupiki mita tātakita’i (m^3), ‘ō te vai tei pou ‘i te tā’anga’anga’ia?
‘Akamārama’anga: ko te ‘āite’anga o te $/$m^3$, ko te moni tūtaki ‘i te ta’i kiupiki mita.

$ _____

Ka ‘inangaro te ngutu’are tangata o Tala ‘i te ‘akaiti mai ‘i te vai tā rātou ka tā’anga’anga. ‘Ē ono tangata ‘i roto i te ngutu’are o Tala.

‘Ē rua o Tala manako nō te tāporoporo’anga ‘i te vai:

- ‘Akaiti mai ‘i te ora pā’ī ki te rua meniti ‘i te tangata ‘i te au rā kātoatoa.
- Tā’anga’anga ‘i te matīni pu’a kāka’u, e ta’i taime ‘i roto ‘i te rua rā, ‘auraka ‘i te au rā kātoatoa.

‘Anga’anga raverave	Tāmanako’anga nō te vai tē ka tā’anga’anga’ia
Tā’anga’anga 'i te kiri vai nō tēta’i 10 meneti	150 rita
Pā'ī ki roto 'i te tāpu vai ('āpa kī)	80 rita
Tuātau pā'ī (4 miniti)	48 rita
Tuātau pā'ī (8 miniti)	96 rita
Tā’anga’anga 'i te mātini pu’a kāka’u (Matīni 6 kg, ka nā mua atu mē ‘akakī)	60 rita

(e) Ko tē ’ea ‘i tēia ngā manako nō Tala, tē ka ‘ākono ma’ata ‘i te vai?

Tā’anga’anga ‘i te au tuatua ‘i roto ‘i te kaingākai, ‘ei ‘akamārama mai ‘i tā’au pa’u’anga.

In some cities, people pay for the amount of water they use.

Here is Cindy's water bill for **one month**.

Wai Mā Services		
Amount used (m^3)	**Rate ($/m^3$)**	**Charge ($)**
24.8	?	$35.96

(d) How much does Cindy pay for each cubic metre (m^3) of water used?
Note: $/m^3$ means dollars per cubic metre.

$ _____

Tala's whānau want to use less water. There are six people in Tala's whānau.

Tala has two ideas for saving water:

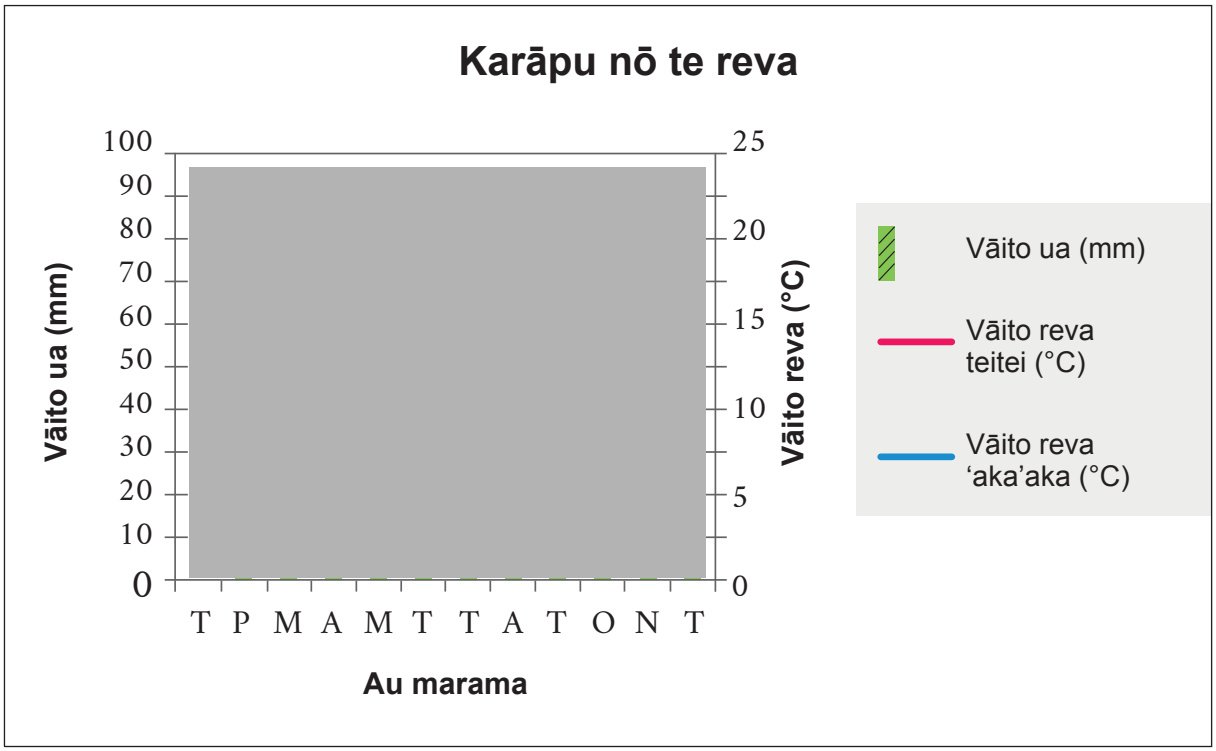
- Cutting the daily shower time to two minutes per person.
- Running the washing machine once every two days rather than every day.

Activity	Estimated water use
Using a hose for 10 minutes	150 litres
Having a bath (half full)	80 litres
Having a shower (4 minutes)	48 litres
Having a shower (8 minutes)	96 litres
Running a washing machine (6 kg front loader)	60 litres

(e) Which of Tala's two ideas would save the most water?

Explain your answer using information from the table.

Tē ‘akaāri mai nei tēia karāpu ‘i te vāito’anga ‘āverēti ‘ō te ua, ‘ē te vāito ‘ō te reva, ‘i te au marama tātakita’i ‘ō te mata’iti.

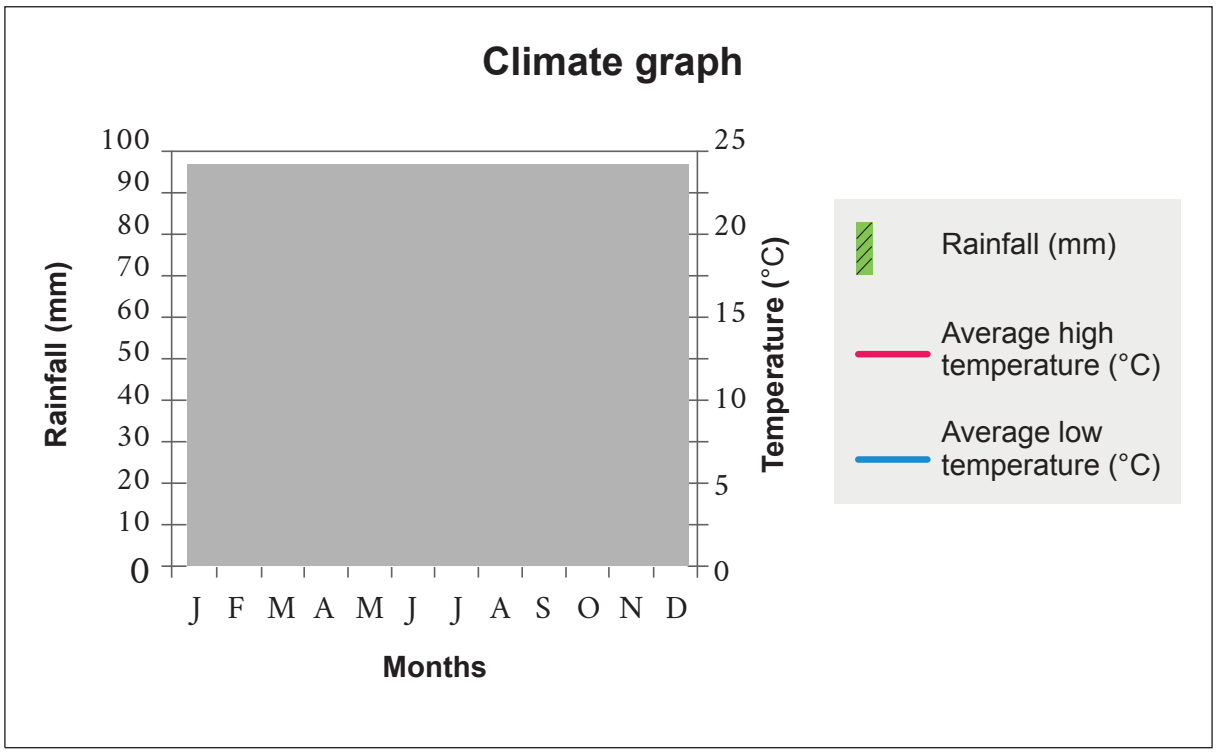


(f) Ko tē’ea te **tuātau** teitei atu tē vāito ‘ō te topa’anga ua? Tā’anga’anga ‘i te tuatua ‘i roto ‘i te karāpu.’

Tuku ‘i te (✓) nō te pa’u’anga tano i raro ake.

- ◯ Tuātau vera (Tītema, Tiānuare, Pēperuare)
- ◯ Tuātau anu (Tiūnu, Tiurai, ‘Aukute)
- ◯ Tuātau pūruru te rau rākau (Māti, ‘Āperira, Mē)
- ◯ Tuātau tupu’anga rākau (Tepetema, ‘Okotopa, Noema)

This graph shows the average rainfall and temperature for each month of the year.



(f) Which **season** has the highest average rainfall? Use information from the graph.

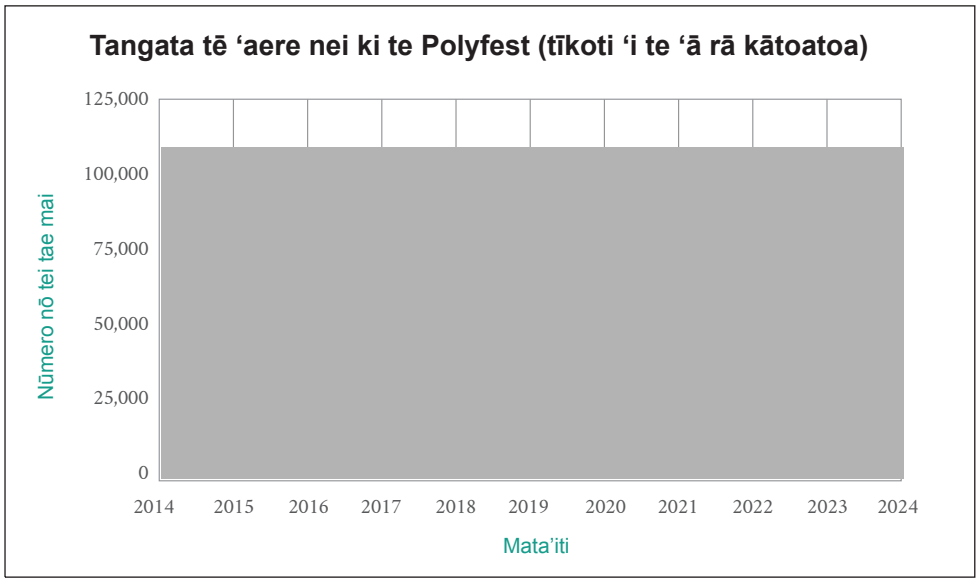
Tick (✓) the correct answer below.

- ◯ Summer (Dec, Jan, Feb)
- ◯ Autumn (Mar, Apr, May)
- ◯ Winter (Jun, Jul, Aug)
- ◯ Spring (Sep, Oct, Nov)

UI'ANGA 'Ā: Polyfest

Ko te polyfest, 'e tāmataora tē reira. 'E 'īmene, 'e 'ura, 'e rākei, 'ē te au kōrero, mei roto mai 'i te au peu Patipika tūkēkē.

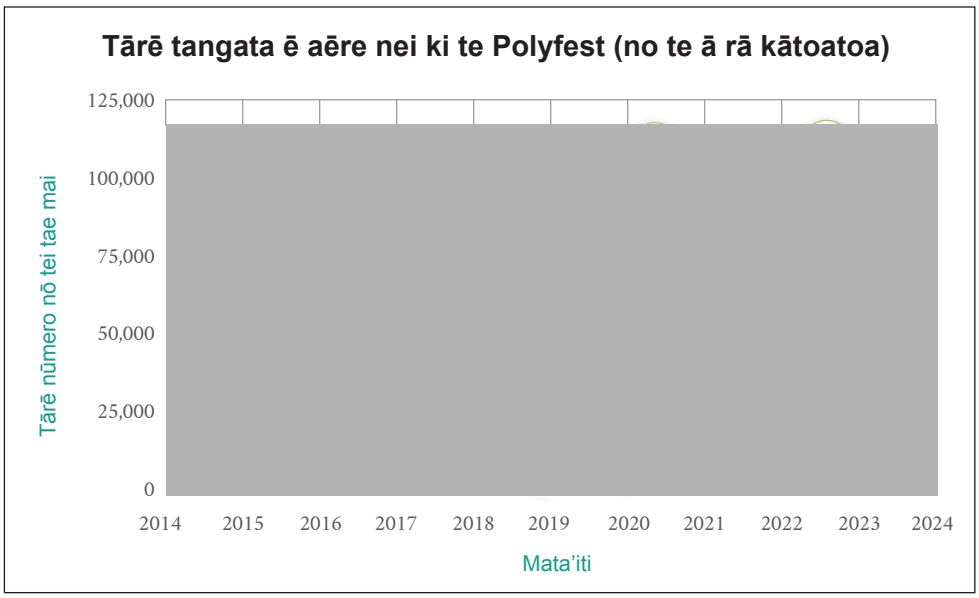
Tēia te karāpu 'ō te au tangata e 'aere ana ki te Polyfest, 'i te au tuātau 'i 'aere 'ia mai.



(a) Mei te a'a te **ma'ata atu** 'ō te tangata tei 'aere ki te Polyfest 'i te mata'iti 2015, 'i tō te 2021?

_____ au tangata

Kua tāmanako mai te au tangata 'akateretere o te Polyfest ē, ka taeria mei tēta'i 100,000 tauatini tangata kā tae ki tēia tāmataora, 'i te mata'iti 2025.

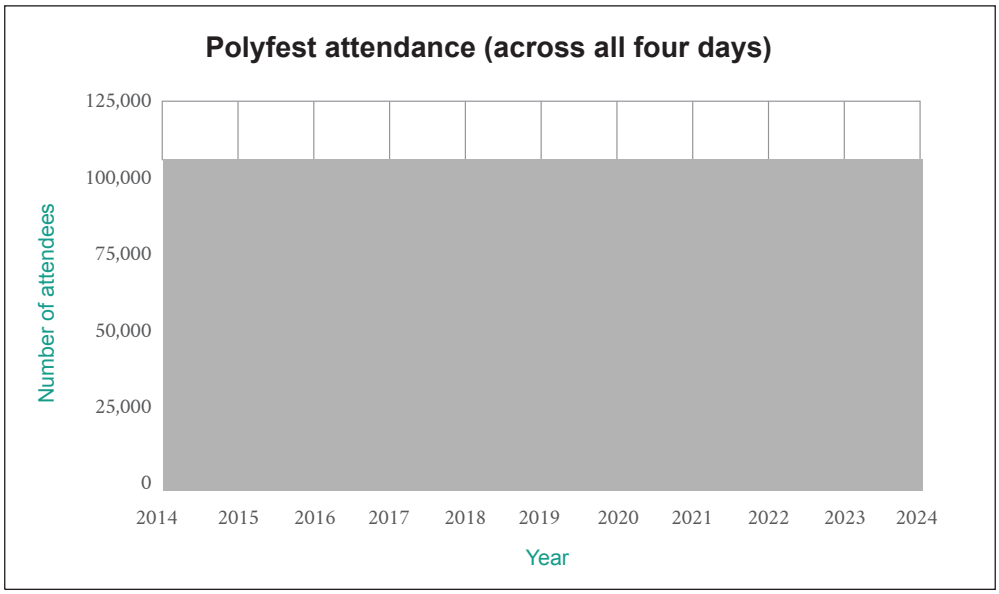


(b) Tē 'āriki āinei koe 'i te manako 'ō te au tangata 'akateretere, mē kāre? Tā'anga'anga 'i te au tuatua 'i roto 'i te karāpu 'i runga ake, 'ei 'akamārama mai 'i tā'au pa'u'anga.

QUESTION FOUR: Polyfest

Polyfest is a festival. It has music, dances, costumes, and speeches from different Pacific cultures.

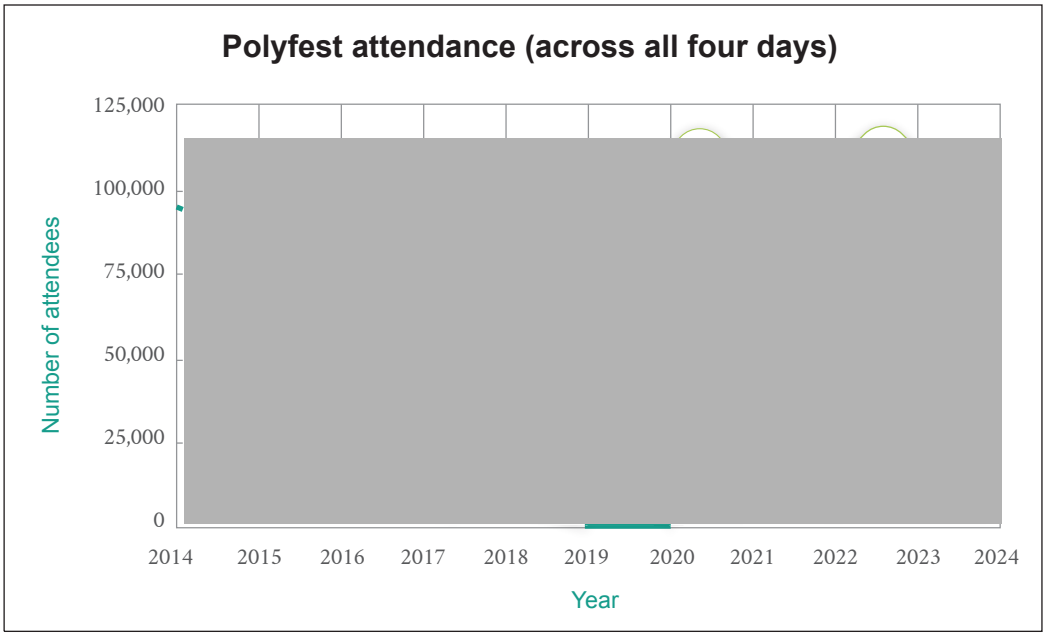
Here is a graph of people attending Polyfest over time.



(a) About how many **more** people attended Polyfest in 2015 than in 2021?

_____ people

Polyfest organisers think that the festival will have around 100,000 attendees in 2025.



(b) Do you agree or disagree with the organisers' comment? Explain your answer using information from the graph above.

Tēia te tūtaki ‘i te tīketi nō te Polyfest. Mē ‘oko koe ‘i te **tīketi Ta’i Rā**, nō tēta’i rua rā, nā runga ‘i te **roro-uira-ao-rangi**, kā topa mai tā’au tūtaki, ‘ē 15% pātene ‘ō te moni kātoatoa.

Moni ‘i te tīketi, nō te tangata ‘okota’i (Kāre e tūtaki te au tamariki ‘i raro ake i te rima mata’iti)	
$6.00	Ta’i Rā (Tūtaki nā runga ‘i te roro-uira-ao-rangi – ta’i ra papu)
$7.00	Tīketi kāre ‘i ‘akakōtinga’ia (Tūtaki nā runga ‘i te roro-uira-ao-rangi – tēta’i ‘ua atu rā ‘ē ta'i)
$8.50	Tūtaki ‘i te rā, ki kō ‘i te ngūtupa

(c) Tē ‘inangaro nei ‘ē ono au tangata pakari ‘i te ‘aere ki te Polyfest ‘i te Ma’anākai ‘ē te Tāpati.

‘E a’a tē moni kātoatoa kā pou ‘i te tūtaki i te tīketi o tēia pupu?

$ _____

Tēia te porokarāmu o te Ma’anākai, nō te ta’ua o te Māori.

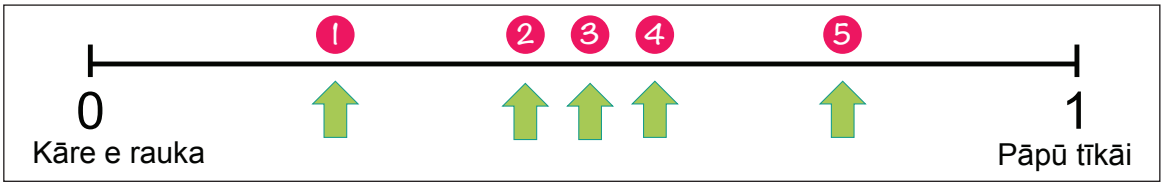
Tē ‘akakite mai nei ‘i te ingoa ‘ō te ‘āpi’i, ‘ē te ngā’i nō reira mai te au tamariki ‘āpi’i, mei tēia te tū, CA, O, SA, me kore, WA.

‘**Āiteite ‘ua te tika’anga** ‘ō te au āpi’i nō te rē’anga.

Ta’ua Māori	
Ingoa ‘ō te ‘Āpi’i	**Ngā’i**
‘Āpi’i Moana	(SA)
‘Āpi’i East Shores	(O)
‘Āpi’i Kowhai	(SA)
‘Āpi’i Manukau Harbour	(SA)
‘Āpi’i Crestview	(CA)
‘Akangāro‘i	
‘Āpi’i Maungakiekie	(CA)
‘Āpi’i Tāne	(WA)
‘Āpi’i Southside	(SA)
‘Āpi’i Redwood	(CA)
‘Akangāro‘i / katikati	
‘Āpi’i Kauri Park	(SA)
‘Āpi’i Hauraki	(WA)

(d) ‘E a’a te tāmanako’anga ē, kā rē tēta’i ‘āpi’i mei te tua SA mai?

‘I roto ‘i te pi’a ‘i raro ake nei, torō tāpunupunu takapini ‘i te ‘ana, tē kā tano te tāmanako’anga ē, ‘e a’a tē kā tupu (probability).



Here are the ticket prices for Polyfest. If you buy **Single Day passes** for two days **online**, you get a 15% discount off the total price.

Ticket prices per person (Free entry for children under five)	
$6.00	Single Day (Online price – fixed day)
$7.00	Flexi Pass (Online price – any single day)
$8.50	Gate entry per day

(c) Six adults want to attend Polyfest on both Saturday and Sunday.

What will the total ticket cost be for the group?

$ _____

Here is the Saturday programme for the Māori stage.

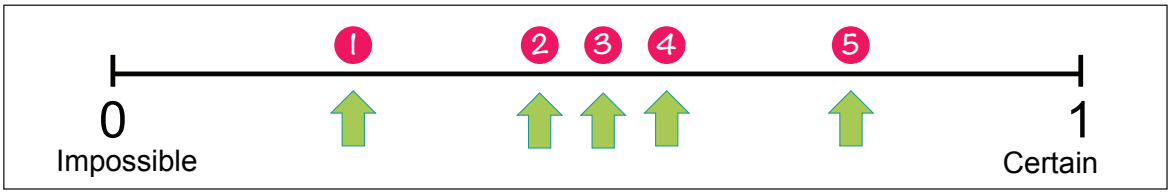
It gives the name of the school and the area students are from, i.e., CA, O, SA, or WA.

Each school has the **same chance** of winning.

Māori stage	
Name of school	**Area**
Moana College	(SA)
East Shores College	(O)
Kōwhai College	(SA)
Manukau Harbour HS	(SA)
Crestview College	(CA)
Break	
Maungakiekie College	(CA)
Tāne HS	(WA)
Southside HS	(SA)
Redwood College	(CA)
Lunch	
Kauri Park College	(SA)
Hauraki HS	(WA)

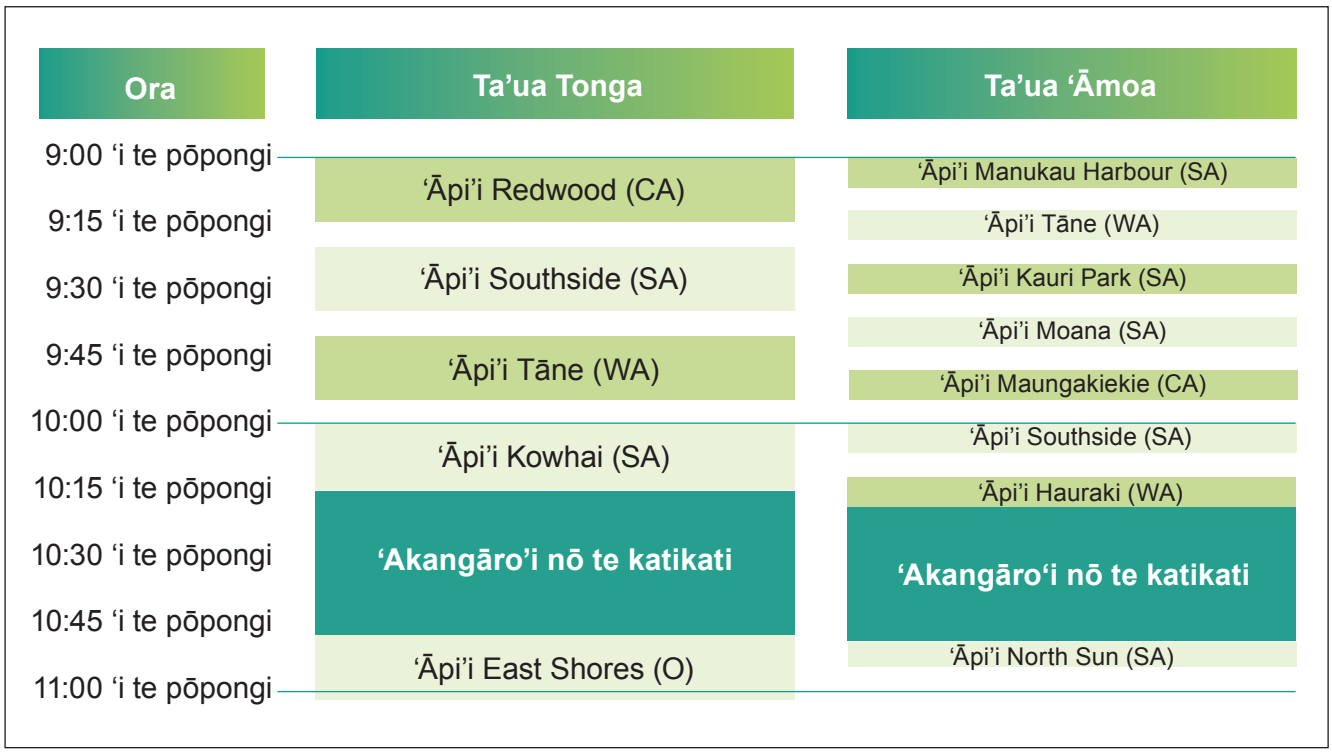
(d) What is the probability of a school from the SA area winning?

In the box below, circle the arrow that matches the probability.



Tēia tēta'i tu'anga 'akapapa'anga ora nō te pōpongi, 'i kō 'i te ta'ua Tonga 'ē te 'Āmoa.

'E ora 'akapāpū'ia tō te au ta'ua tātakita'i nō te au tāmataora'anga, 'ē, **'e rima meneti 'akangāro'i tō rotopū 'i te au tāmataora'anga.**

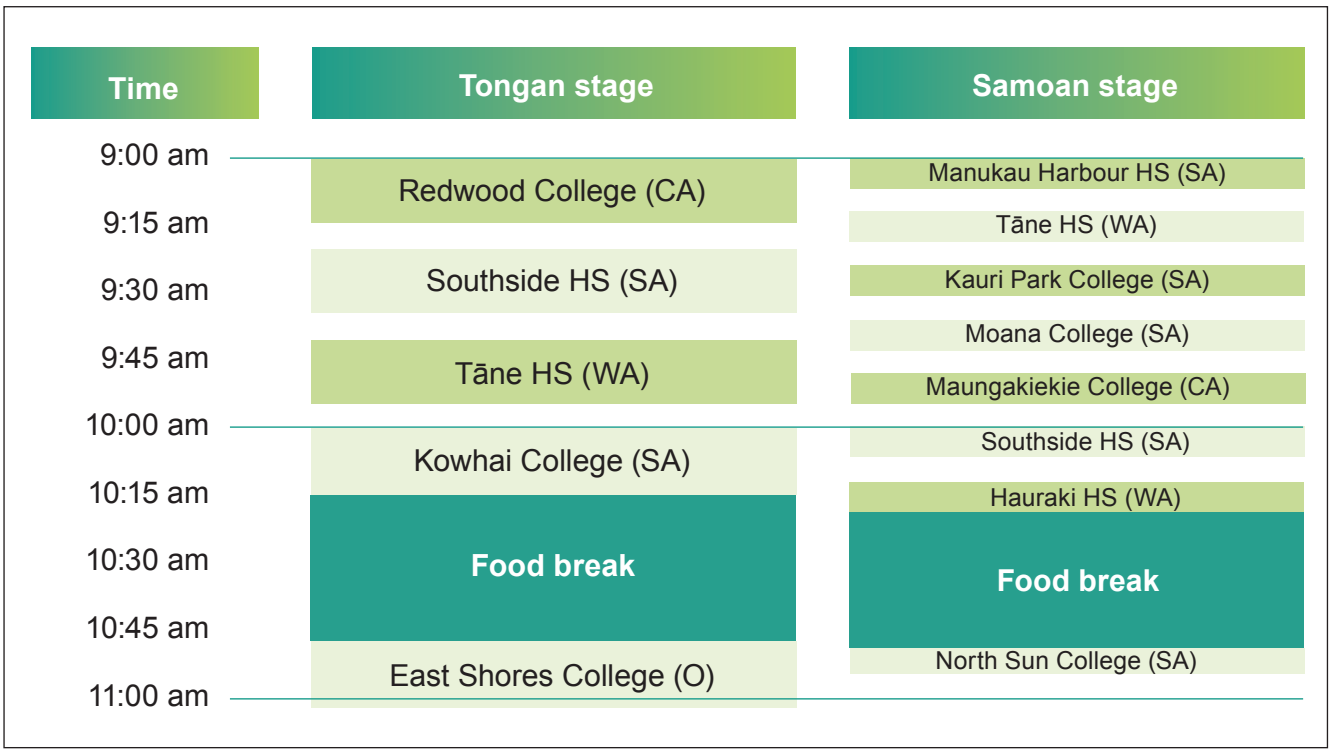


(e) 'I roto 'i te meneti, 'e a'a te roa atu 'i te tāmataora tātakita'i 'i kō 'i te ta'ua o te Tonga, ki te tāmataora tātakita'i 'i ko 'i te ta'ua o te 'Āmoa?

_____ meneti

Here is part of a morning's timetable for the Tongan and Samoan stages.

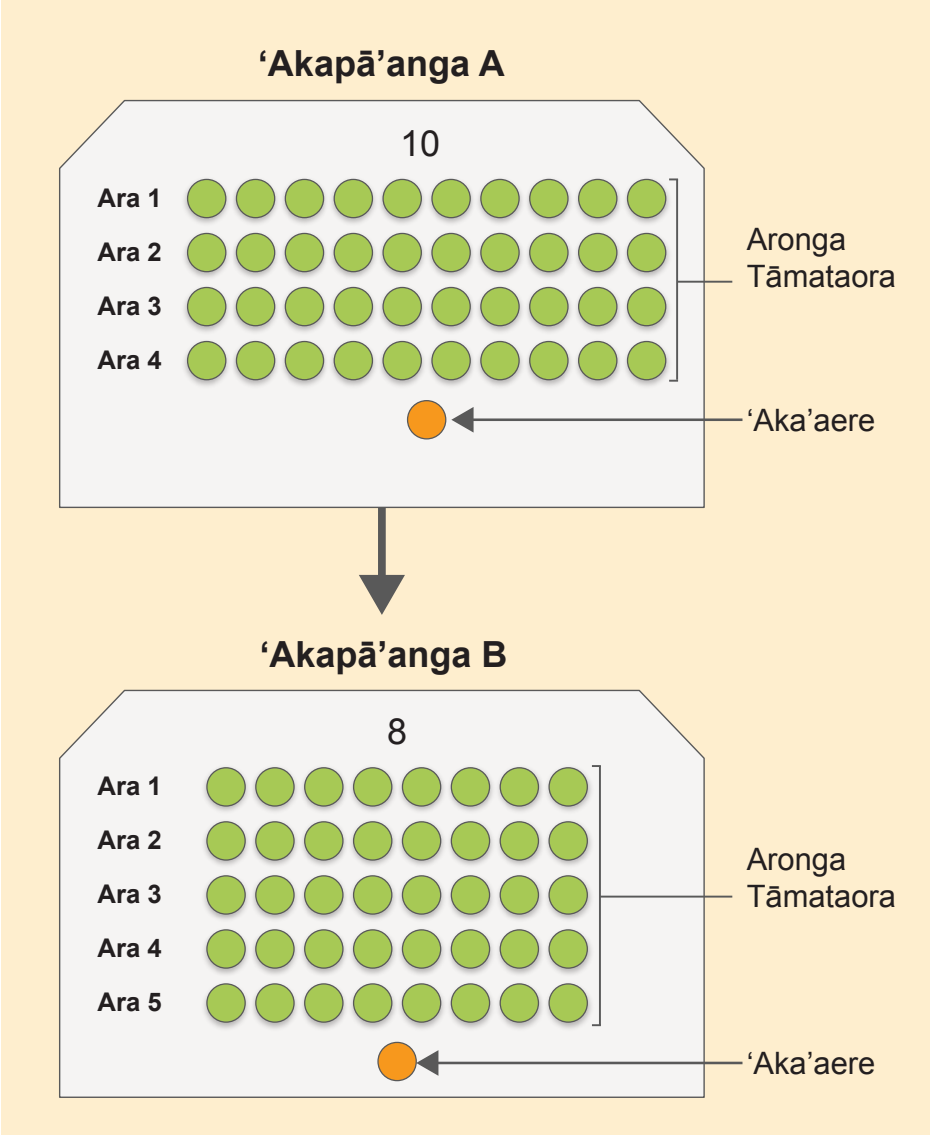
Each stage has a fixed time for performances and a **five-minute break between performances**.



(e) How much longer, in minutes, is each performance on the Tongan stage compared to each performance on the Samoan stage?

_____ minutes

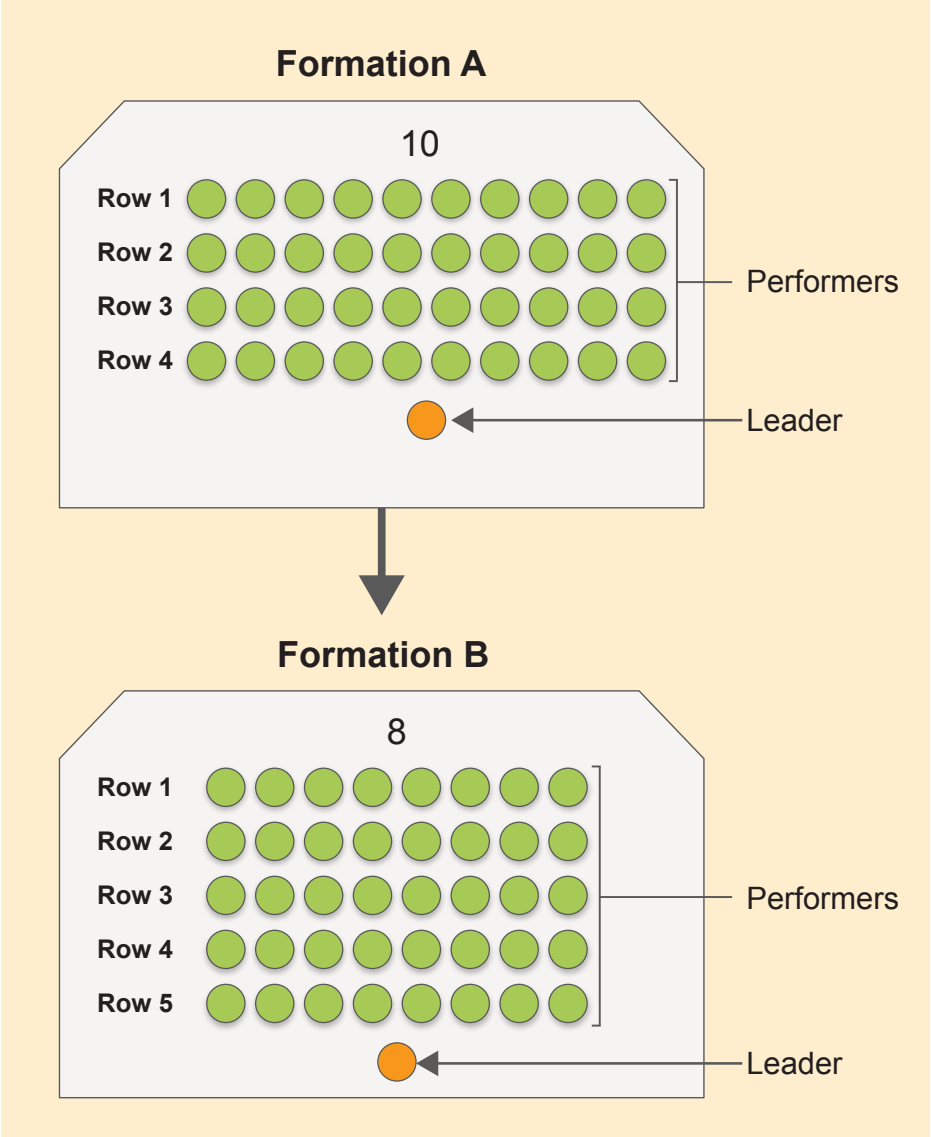
Kua ‘akamata teta’i pupu Niue ‘i tā rātou tāmataora ki roto ‘i te ‘Akapā’anga A. ‘Ē 40 aronga tāmataora, ‘ē ta’i ‘aka’aere ‘i roto ‘i te pupu. ‘I muri mai, kua neke rātou ki roto ‘i te ‘Akapā’anga B.



(f) ‘E a’a te nūmero iti rava atu ‘ō te aronga tāmataora ‘i roto ‘i te ‘Akapā’anga A, tē ka anoano’ia kia neke, kia ma’ani ‘i te ‘Akapā’anga B?

_____ Aronga Tāmataora

A Niuean group starts off their performance in Formation A. There are 40 performers and a leader in the group. After a while, they move to Formation B.

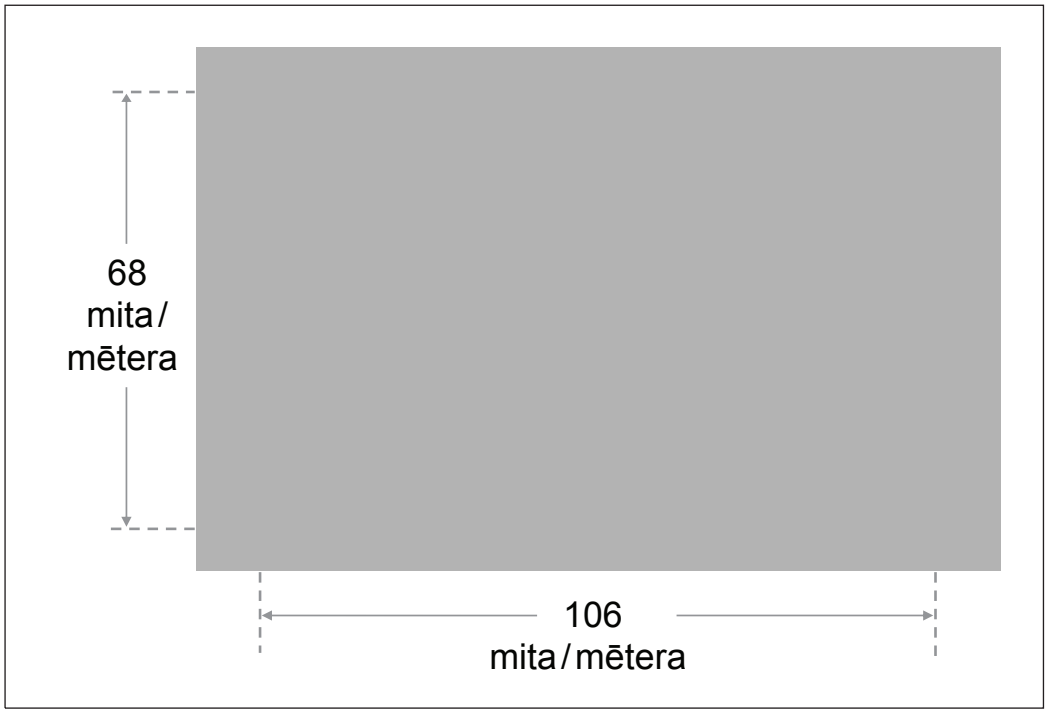


(f) What is the **smallest number** of performers from Formation A that need to move to make Formation B?

_____ performers

UI'ANGA RIMA: Tu'epōro Taki 7

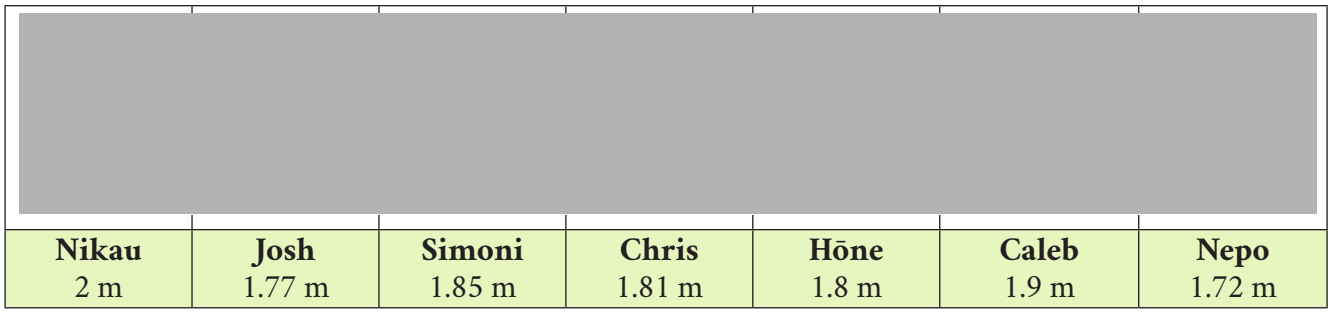
Ko tēia ta'ua tu'epōro, 'ē 106 mita te roa, 'ē, 'ē 68 mita te ātea.



(a) 'E a'a te vāito 'ō tēia ta'ua tu'epōro 'i roto 'i te pi'a mita (square metres)?

_____ m^2

Tēia te kātoatoa'anga i te au tangata tu'epōro 'i roto i te pupu tu'epōro taki 7. Ko tō rātou teitei, kua tātā'ia ki roto 'i te mita.



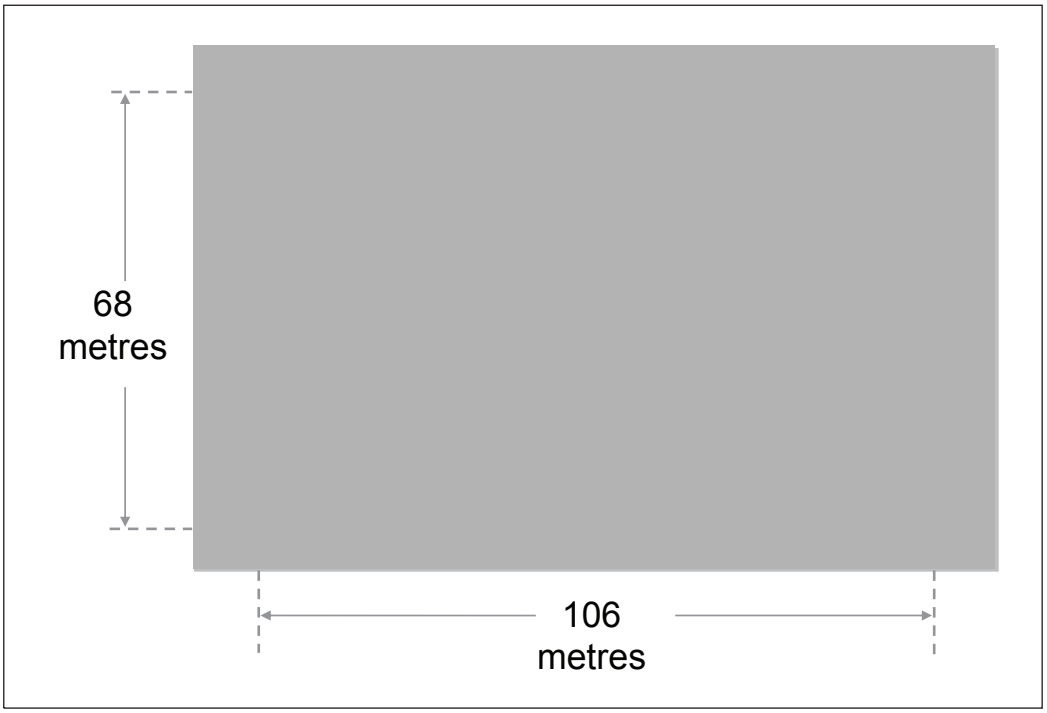
Nikau	Josh	Simoni	Chris	Hōne	Caleb	Nepo
2 m	1.77 m	1.85 m	1.81 m	1.8 m	1.9 m	1.72 m

(b) Ko tē'ea te ngā tangata tu'epōro ka anoano'ia kia tauī 'i tō rāua ngā'i, kia tau te 'akapapa'anga 'ō te teitei, mei te tangata **roa rava atu** ki te tangata **poto rava atu**?

_____ e (te) _____

QUESTION FIVE: Rugby 7s

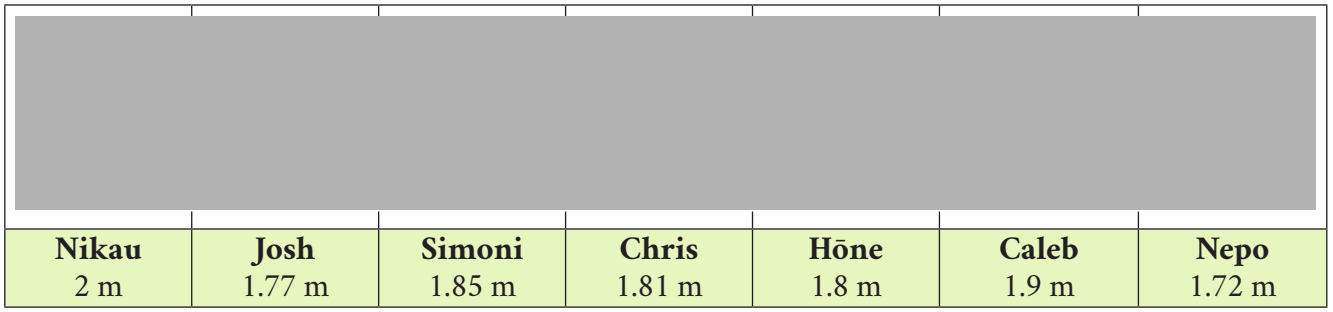
This rugby field is 106 metres long and 68 metres wide.



(a) What is the area of this rugby field in square metres?

_____ m^2

Here are all the players in a rugby 7s team. Their heights are given in metres.



Nikau	Josh	Simoni	Chris	Hōne	Caleb	Nepo
2 m	1.77 m	1.85 m	1.81 m	1.8 m	1.9 m	1.72 m

(b) Which two players need to swap places, so the heights are in order from **tallest to shortest**?

_____ and _____

Kua tu'e 'a Mīkaēra 'ē **14 meneti** 'ō te Tu'epōro taki 'itu, 'ē kua 'oro 'i tēta'i **1,540 mita** 'i te kātoatoa.

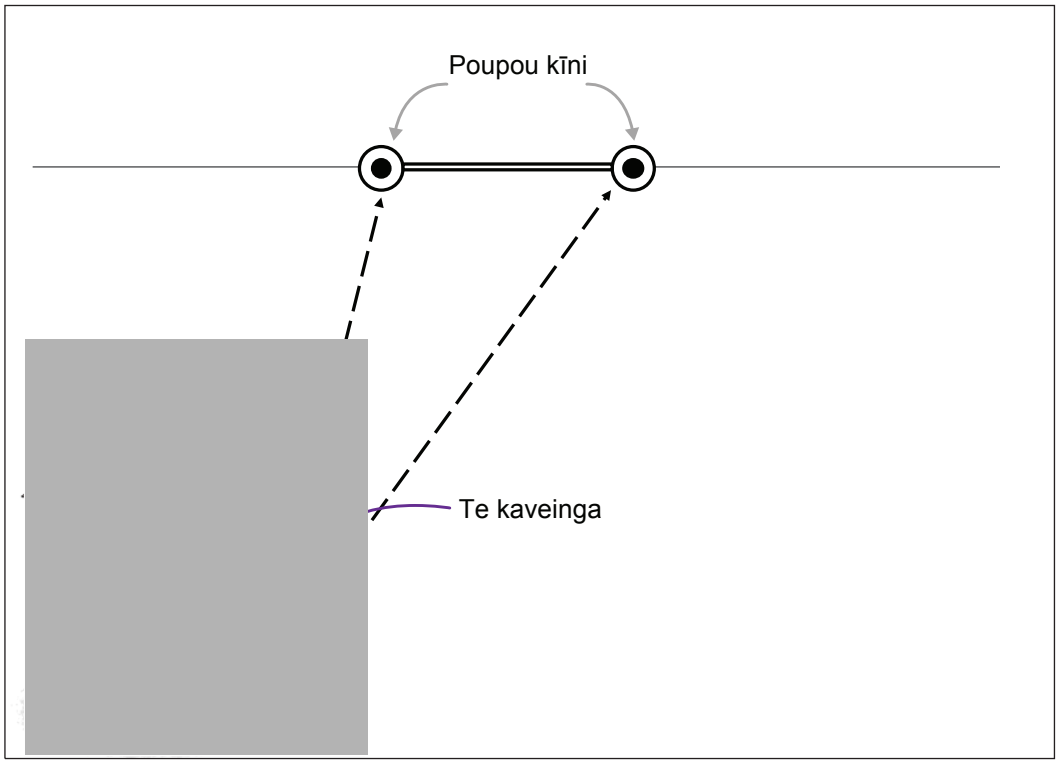
Kua karanga 'a Ani ē, ko te tika'anga tikai, kua 'oro 'a Mikaera 'ē **100 mita** nō te au meneti kātoatoa tāna 'i tu'e ei.

Mikaera e 'oro nei

(c) Kua tau āinei tā Ani tāmanako'anga?

Tā'anga'anga 'i te au vāito'anga tei ōronga'ia mai, 'ei 'akamārama 'i tā'au pa'u'anga.

'I roto 'i te tu'epōro taki 7, ka rauka i te aronga tu'epōro te tu'e 'i te pōro ki roto 'i te kīni, kia rauka 'aka'ou mai tēta'i kai.



Tangata tu'epōro taki 7 e tu'e nei 'i te pōro ki roto 'i te kīni, nā rotopū 'i ngā poupou

(d) Tāmanako 'i te kaveinga tā tēia tangata tu'epōro ka tā'anga'anga, kia 'aere te pōro nā rotopū 'i ngā poupou 'ō te kīni.

_____ °

Michaela played all **14 minutes** of a Rugby 7s game and ran a total of **1,540 metres**.

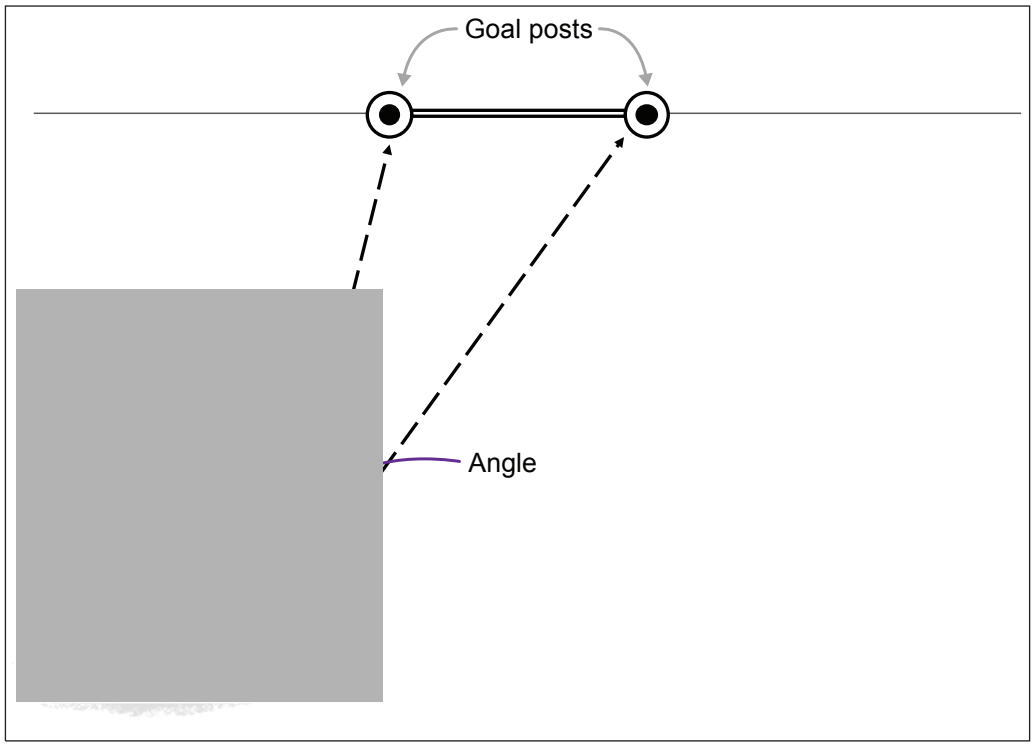
Ani says that, on average, Michaela ran over **100 metres** for every minute she played.

Michaela running

(c) Is Ani's claim reasonable?

Use the measurements provided to explain your answer.

In Rugby 7s, players can score extra points by drop-kicking a goal.



Rugby 7s player drop-kicking a goal between goal posts

(d) Estimate the angle this player must work with to get the ball between the goal posts.

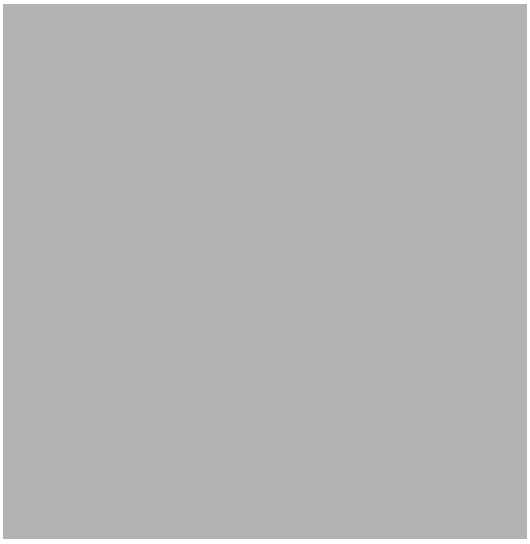
_____ °

I roto ‘i tēta’i au rāvenga matemātika epēpē’i’anga ‘uri moni, ‘ē ‘iki ‘ua ana ‘a Sarah ‘i te tatakitika “ūpoko.”

‘Inārā, ‘i te pē’i’anga ‘openga, kua ‘akaāri mai tē reira ‘i te “‘iku.”

(e) Kā tano āinei kia rauka te tatara ‘iki ‘a Sarah ‘i tetai au ui’anga te “ūpoko,” mē kore ra, ‘i roto te “‘iku,” ‘i tetai au tu’anga raverave te ‘ā ‘ō te pē’i’anga, mē kāre ra, kā tano āinei tēta’i ‘ua o tēia ngā ‘iki’anga?

Tā’anga’anga ‘i te au ra katoatoa. manako nō runga ‘i te tāmanako’anga ē, ‘ea’a tē kā tupu, ‘ei ‘akamārama mai ‘i tā’au pa’u’anga.



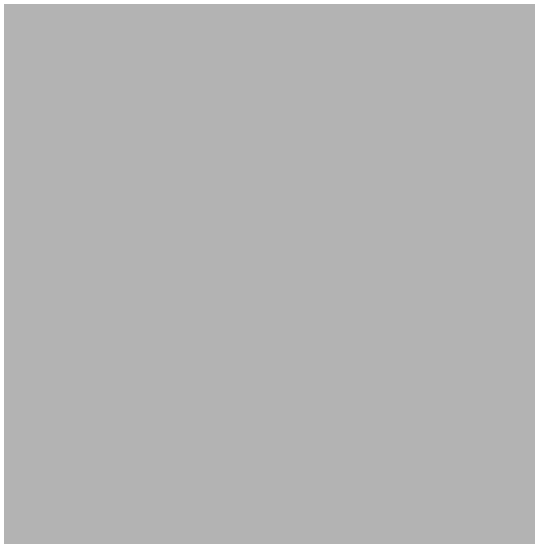
Tē pē’i nei ‘a Sarah ‘i te moni

In a coin toss, Sarah usually picks “heads”.

But the last three tosses have all come up “tails”.

(e) Should Sarah choose “heads” or “tails” for the fourth toss, or is either choice acceptable?

Explain your answer using ideas about probability.



Sarah tossing a coin

Kua ‘akamata’ia te Kapu Tu’epōro taki ‘itu mua o Teia nei Ao ‘ā te tāne, ‘i te mata’iti 1993. Tē ‘akaāri mai nei tēia kaingākai ‘i te tūranga ‘ō te au pupu tāne, ‘i roto ‘i te Kapu o Tēia nei Ao, mei te mata’iti 1993 mai.

	Team	1993	1997	2001	2005	2009	2013	2018	2022
	Argentina	9th	13th	3rd	5th	**2nd**	11th	5th	5th
	Australia	**2nd**	5th	**2nd**	3rd	10th	5th	10th	4th
	Canada	15th	21st	5th	18th	13th	9th	12th	13th
	England	**1st**	5th	5th	3rd	5th	**2nd**	**2nd**	9th
	Fiji	3rd	**1st**	3rd	**1st**	5th	3rd	4th	**1st**
	France	15th	5th	21st	5th	13th	5th	8th	6th
	Hong Kong	17th	10th	21st	21st	19th	21st	18th	19th
	New Zealand	7th	3rd	**1st**	**2nd**	5th	**1st**	**1st**	**2nd**
	South Africa	5th	**2nd**	5th	5th	5th	5th	3rd	7th
	United States	17th	18th	13th	13th	13th	13th	6th	11th
	Wales	11th	13th	11th		**1st**	5th	11th	15th

Ko te pupu rē ta’i, ‘ē te rē rua, tei kanga atu ki roto ‘i te tu’epōro’anga ‘openga. Ko tēia tei tuatua’ia ‘i raro ake.

‘Ē 60 patene o Nū Tīreni ō’anga ki roto ‘i te tu’epōro’anga ‘openga, ‘ō te Kapu Tu’epōro taki ‘itu o Teia nei Ao.”

(f) Kua tika āinei tēia tuatua? Tā’anga’anga ‘i te au tuatua ‘i roto ‘i te kaingākai, ‘ei ‘akamārama mai ‘i tā’au pa’u’anga.

The first Rugby 7s World Cup for men was in 1993. This table shows the placing of men's teams in the World Cup since 1993.

	Team	1993	1997	2001	2005	2009	2013	2018	2022
	Argentina	9th	13th	3rd	5th	**2nd**	11th	5th	5th
	Australia	**2nd**	5th	**2nd**	3rd	10th	5th	10th	4th
	Canada	15th	21st	5th	18th	13th	9th	12th	13th
	England	**1st**	5th	5th	3rd	5th	**2nd**	**2nd**	9th
	Fiji	3rd	**1st**	3rd	**1st**	5th	3rd	4th	**1st**
	France	15th	5th	21st	5th	13th	5th	8th	6th
	Hong Kong	17th	10th	21st	21st	19th	21st	18th	19th
	New Zealand	7th	3rd	**1st**	**2nd**	5th	**1st**	**1st**	**2nd**
	South Africa	5th	**2nd**	5th	5th	5th	5th	3rd	7th
	United States	17th	18th	13th	13th	13th	13th	6th	11th
	Wales	11th	13th	11th		**1st**	5th	11th	15th

The first and second teams played in the final. The following statement was made.

"New Zealand has been in the men's final for over 60% of the Rugby 7s World Cups."

(f) Is this statement true? Explain your answer using information from the table.

‘Akameitaki’anga

Apinga tauturu mei kō mai 'i te aronga/ngā'i turuturu, kua ‘akatano’ia nō te tā’anga’anga'anga kī roto 'i tēia vāito’anga kite.

Ui’anga Ta’i

Tuatara, https://www.kayak-newzealand.com/wp-content/uploads/2017/09/kayak-nature-tour-tuatara-reptile.jpg
Tuatara, wētā, https://www.ryanphotographic.com/tuatara.htm
Tuatara hatchling, https://www.bbc.co.uk/programmes/articles/2hjZs1Yq7xK0WCgjMRck0Cb/filming-tiny-time-travell
Tuatara Lengths graph, https://tiritirimatangi.org.nz/wp-content/uploads/2020/11/Tiritiri-10-year-Tuatara-Survey-20150217-Final-Version.pdf
Map, https://www.google.com/maps/

Ui’anga Rua

Richie McCaw. 9 September, 2007. Webb, Murray, 1947- :Digital caricatures. Ref: DCDL-0003904. Alexander Turnbull Library, Wellington, New Zealand, https://www.natlib.govt/records/22669945
Head proportions, https://mammothmemory.net/art/techniques/painting-and-drawing-techniques/proportions-of-a-face.html
Sculpture, https://www.gibbsfarm.org.nz/images/thompson/thompson_05.jpg
Superman comic cover, https://news.artnet.com/market/top-10-comic-book-auction-records-2180493
Tīrau Visitor Centre – Dog, https://places.nz/13825
Tīrau Visitor Centre – Sheep, https://www.nzherald.co.nz/travel/road-trip-must-dos-an-ironclad-pit-stop-in-tirau/QIGPDODM6LXUHZ5ZBRRJCCBWGU/
Map – Wellington to Tīrau, https://www.aa.co.nz/travel/time-and-distance-calculator/

Ui’anga Toru

Large water bottle, https://springnz.co.nz/wp-content/uploads/2021/11/water-bottle-600x700-2.jpg
Three 1-litre water bottles, https://www.annaricco.com/products/mineral-water-1-5-liter
Pig, https://www.pinterest.nz/pin/pig-png-image--584482857867545266/
Piglet, https://kids.nationalgeographic.com/animals/mammals/facts/pig
Water use table icons, https://www.nzherald.co.nz/nz/watercare-to-increase-auckland-water-bills-by-7-per-cent-from-july/JUXW5IREDRG7BQ6VF77HAAQDOQ/
Climate graph, https://viticulture.weebly.com/graphs--maps.html

Ui’anga Rima

Rugby player sillouhettes, https://stock.adobe.com
Rugby player, https://www.cbc.ca/sports/olympics/summer/rugby/rugby-sevens-women-gold-1.6125318
Drop-kick, https://www.istockphoto.com/vector/a-woman-kicking-a-rugby-ball-gm1528107920-524973341
Coin toss, https://t4.ftcdn.net/jpg/01/12/32/65/240_F_112326523_2obxVUfbRCvvrZO1FSP1lR10s0jMDB96.jpg
Flags, https://stock.adobe.com

Acknowledgements

Material from the following sources has been adapted for use in this assessment:

Question One

Tuatara, https://www.kayak-newzealand.com/wp-content/uploads/2017/09/kayak-nature-tour-tuatara-reptile.jpg
Tuatara, wētā, https://www.ryanphotographic.com/tuatara.htm
Tuatara hatchling, https://www.bbc.co.uk/programmes/articles/2hjZs1Yq7xK0WCgjMRck0Cb/filming-tiny-time-travell
Tuatara Lengths graph, https://tiritirimatangi.org.nz/wp-content/uploads/2020/11/Tiritiri-10-year-Tuatara-Survey-20150217-Final-Version.pdf
Map, https://www.google.com/maps/

Question Two

Richie McCaw. 9 September, 2007. Webb, Murray, 1947- :Digital caricatures. Ref: DCDL-0003904. Alexander Turnbull Library, Wellington, New Zealand, https://www.natlib.govt/records/22669945
Head proportions, https://mammothmemory.net/art/techniques/painting-and-drawing-techniques/proportions-of-a-face.html
Sculpture, https://www.gibbsfarm.org.nz/images/thompson/thompson_05.jpg
Superman comic cover, https://news.artnet.com/market/top-10-comic-book-auction-records-2180493
Tīrau Visitor Centre – Dog, https://places.nz/13825
Tīrau Visitor Centre – Sheep, https://www.nzherald.co.nz/travel/road-trip-must-dos-an-ironclad-pit-stop-in-tirau/QIGPDODM6LXUHZ5ZBRRJCCBWGU/
Map – Wellington to Tīrau, https://www.aa.co.nz/travel/time-and-distance-calculator/

Question Three

Large water bottle, https://springnz.co.nz/wp-content/uploads/2021/11/water-bottle-600x700-2.jpg
Three 1-litre water bottles, https://www.annaricco.com/products/mineral-water-1-5-liter
Pig, https://www.pinterest.nz/pin/pig-png-image--584482857867545266/
Piglet, https://kids.nationalgeographic.com/animals/mammals/facts/pig
Water use table icons, https://www.nzherald.co.nz/nz/watercare-to-increase-auckland-water-bills-by-7-per-cent-from-july/JUXW5IREDRG7BQ6VF77HAAQDOQ/
Climate graph, https://viticulture.weebly.com/graphs--maps.html

Question Five

Rugby player sillouhettes, https://stock.adobe.com
Rugby player, https://www.cbc.ca/sports/olympics/summer/rugby/rugby-sevens-women-gold-1.6125318
Drop-kick, https://www.istockphoto.com/vector/a-woman-kicking-a-rugby-ball-gm1528107920-524973341
Coin toss, https://t4.ftcdn.net/jpg/01/12/32/65/240_F_112326523_2obxVUfbRCvvrZO1FSP1lR10s0jMDB96.jpg
Flags, https://stock.adobe.com

Kia ma'ata atu te vā te ka anoano'ia.
Tātā 'i te (au) nūmero 'ō te ui'anga mē ka anoano'ia.

QUESTION NUMBER

Extra space if required.
Write the question number(s) if applicable.

UI'ANGA

English translation of the wording on the front cover

Numeracy 2024

32406 Apply mathematics and statistics in a range of everyday situations

Credits: Ten

32406

OUTCOMES	
1	Formulate mathematical and statistical approaches to solving problems in a range of everyday situations.
2	Use mathematics and statistics to meet the numeracy demands of a range of everyday situations.
3	Explain mathematical and statistical responses to situations.

Enter your National Student Number (NSN) and School Code into the space above.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–43 in the correct order and that none of these pages is blank.

Do not write in the margins (▨). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.