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91037M



910375



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Te Pāngarau me te Tauanga, Kaupae 1, 2015

91037M Te whakaatu māramatanga ki te tūponotanga, raraunga hoki

9.30 i te ata Rāhina 9 Whiringa-ā-rangi 2015
Whiwhinga: Whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga ki te tūponotanga, raraunga hoki.	Te whakaatu māramatanga ki te tūponotanga, raraunga hoki me te parahau i ngā kīanga me ngā kitenga.	Te whakaatu māramatanga ki te tūponotanga, raraunga hoki me te whakaatu i te matatau ki te tauanga.

Tirohia mēnā e rite ana te Tau Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.

Whakaaturia ngā mahinga KATOA.

Mēna ka hiahia whārangi atu anō mō ō tuinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i ngā tau tūmahi.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–21 kei roto i tēnei pukapuka, ā, kāore tētahi o aua whārangi i te takoto kau.

ME HOATU RAWA KOE I TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE Ā TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

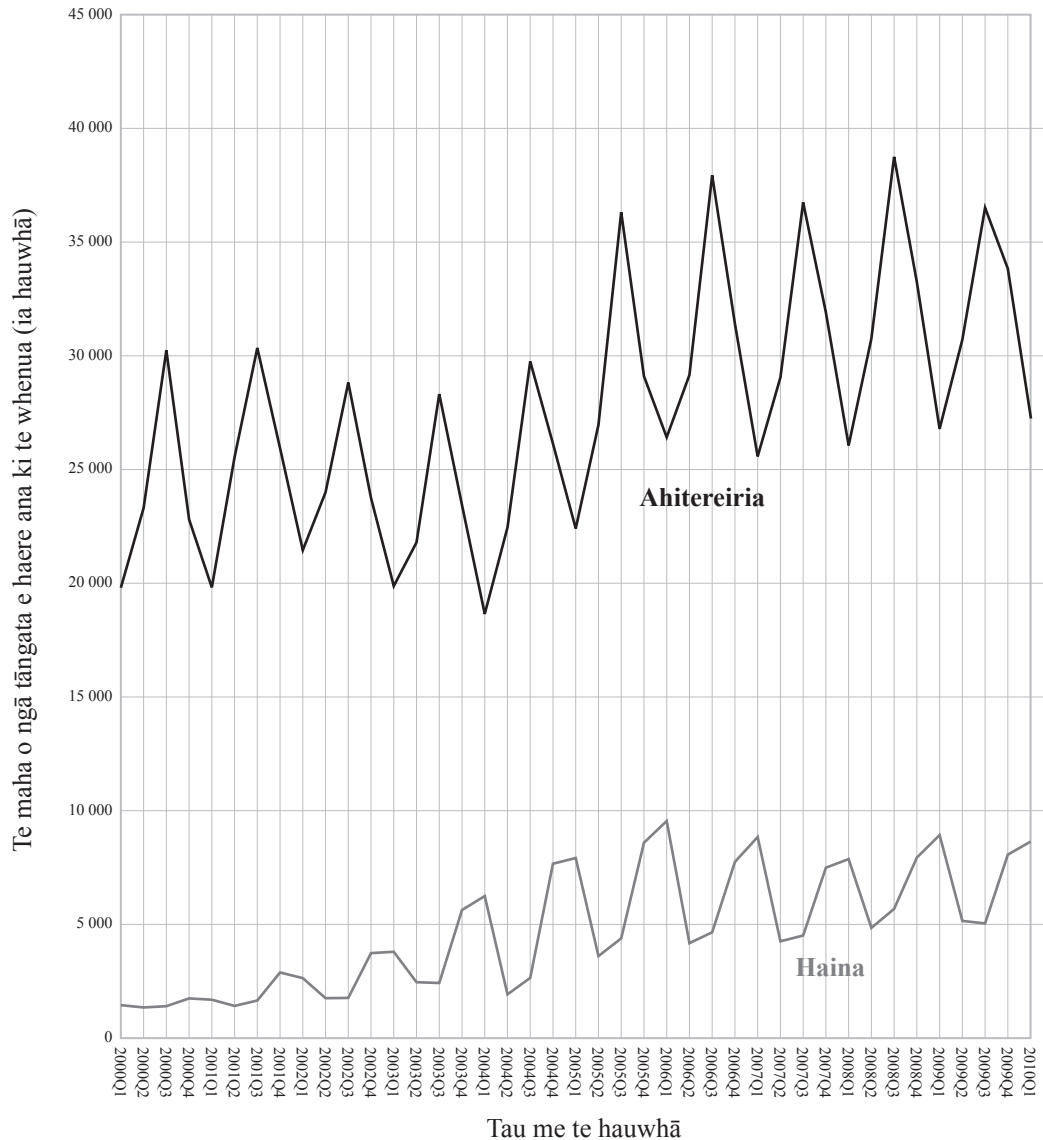
TŪMAHI TUATAHI

E whakaatu ana te kauwhata e whai ake nei i te maha o ngā tāngata e wehe ana i Aotearoa ki te hararei i Ahitereiria, i Haina rānei.

E whakaatu ana te kauwhata i te maha o ngā tāngata e haere ana i ia **hauwhā**, mai i te tau 2000 ki te tau 2009.

He 3 marama ia hauwhā (Q1 = Kohitātea ki te Poutūterangi, Q2 = Paengawhāwhā ki te Pipiri, Q3 = Hōngongoi ki te Mahuru, Q4 = Whiringa-ā-nuku ki te Hakihea).

Te Maha o ngā Tāngata e Wehe ana i Aotearoa ki te Hararei

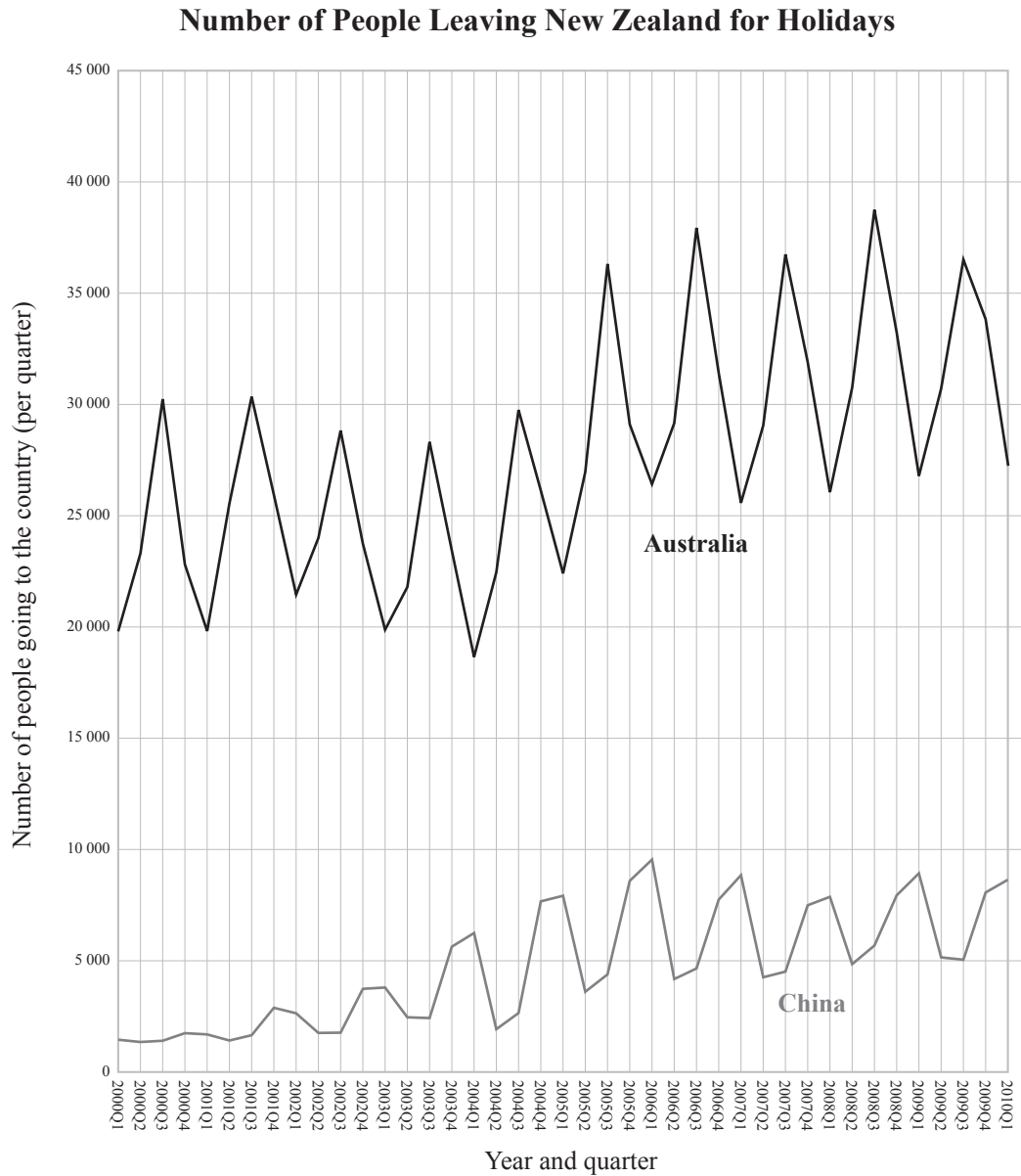


QUESTION ONE

The following graph shows how many people leave New Zealand for holidays to Australia or to China.

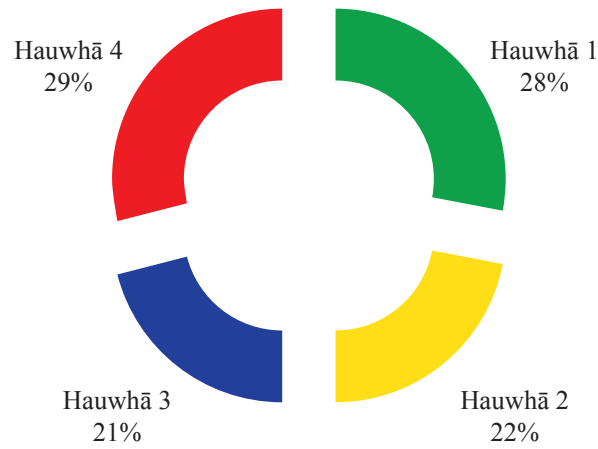
The graph shows the number of people travelling per **quarter**, from 2000 to 2009.

Each quarter is a group of 3 months (Q1 = January to March, Q2 = April to June, Q3 = July to September, Q4 = October to December).



- (c) E whakaatu ana tēnei kauwhata i te ōrau o ngā tāngata haere i haere ki Haina i ia hauwhā o te tau 2014.

Ngā tāngata haere ki Haina 2014



- (i) Ka kōwhirihia matapōkeretia tētahi tangata haere ki Haina mai i te tau 2014.

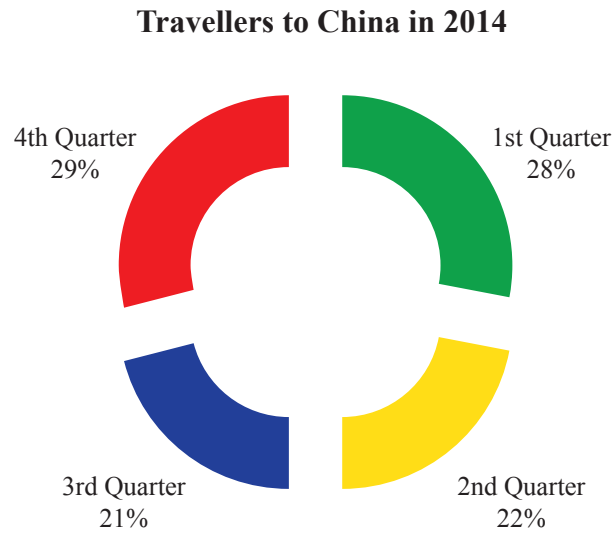
He aha te tūponotanga **kāore** ia i haere i te hauwhā 4 (Q4)?

- (ii) Ka kōwhirihia matapōkerehia tētahi tangata haere ki Haina mai i te tau **2015**.

Whakatau tatahia te tūponotanga **kāore** ia i haere i te hauwhā 4 (Q4) o te tau 2015.

Whakamāramahia ō whakaaro whaitake.

- (c) This graph shows the percentage of travellers who travelled to China in each quarter of 2014.



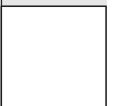
- (i) A traveller to China in 2014 is chosen at random.

What is the probability that they did **not** travel in the 4th quarter (Q4)?

- (ii) A traveller to China in **2015** is chosen at random.

Estimate the probability that they did **not** travel in the 4th quarter (Q4) of 2015.

Explain your reasoning.



TŪMAHI TUARUA

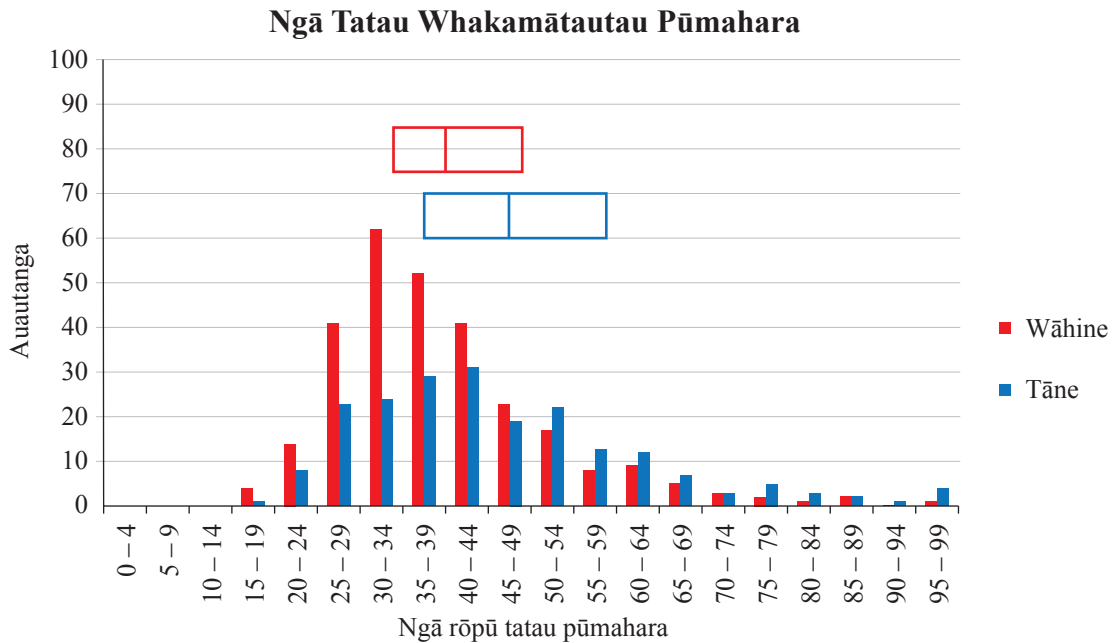
E kī ana te whaea o Rei “he pai ake te pūmahara o ngā wāhine i ngā tāne”.

Ka whakaaro a Rei mēnā he pono tēnei.

Ka whakamahia e ia ētahi raraunga mai i *Te Tatauranga i ngā Kura* hei whakautu i tana pātai. He mea kōhi ngā raraunga mai i ngā ākonga i whakauru ki tētahi whakamātautau pūmahara tuihono e whakamāramahia ana e ēnei kupu:

Whakamātauhia tō pūmahara. He pēhea tō tere ki te tūhono i ngā pikitia takirua katoa?

- *Pāwhirihia te Tīmata ka pāwhiri i ngā tapawhā e rua hei hura i ana pikitia.*
- *Ka noho hura ngā tapawhā ōrite.*
- *Me pāwhiri tonu kia kitea e hia ngā takirua ka huraina e koe i roto i te 3 meneti. Koinei tō tatau pūmahara.*



- (a) Whakatauritehia te tuaritanga o ngā tatau whakamātautau pūmahara mō ngā tāne me ngā wāhine.

QUESTION TWO

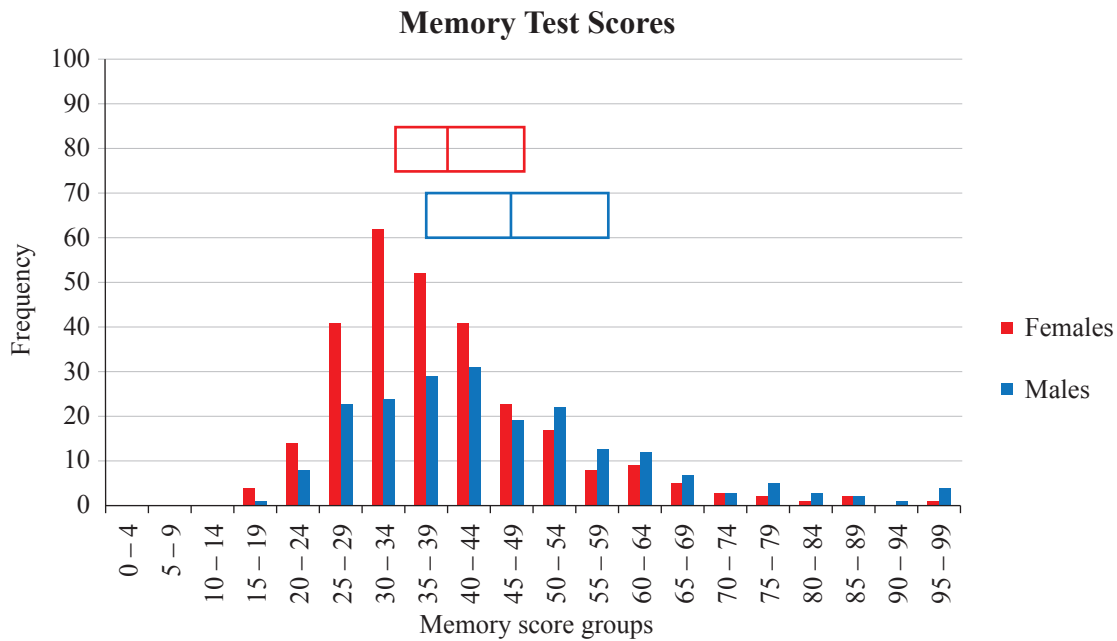
Rei’s mother says that “females have better memories than males”.

Rei wonders if this is true.

He uses some data from *Census at Schools* to try to answer his question. The data was collected from students who took part in an online memory test described by these words:

Test your memory. How quickly can you match all the pairs of pictures?

- *Click on “Start” and then click on two squares to uncover their pictures.*
- *Matching squares will remain uncovered.*
- *Keep clicking to see how many pairs you can uncover in 3 minutes. This is your memory score.*



(a) Compare the distribution of memory test scores for males and for females.

- (c) He pai anō ngā raraunga o tēnei whakamātautau hei whakamātau mā Rei i te tauākī a tōna whaea “he pai ake ngā pūmahara o ngā wāhine i ngā tāne”?

Parahautia tō tuhinga.

- (d) Ka āta tiro tiro a Rei ki te kauwhata pou me tana kite anō he nui ake ngā raraunga mai i ngā wāhine tēnā i ngā tāne.

He aha ngā mea ka taea e ia ināianei me ana raraunga, me tana kauwhata rānei kia pai ake te whakaatu a tana kauwhata pou i ngā raraunga?

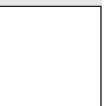


- (c) Is the data from this experiment a good way for Rei to test his mother's statement that "females have better memories than males"?

Justify your answer.

- (d) Rei looks closely at his bar graph and realises that there was more data from females than from males.

What could he now do with his data or his graph to make his bar graph display the data better?



TŪMAHI TUATORU

Kei te tūtohi i raro nei ngā tauanga mō ngā raraunga a Rei:

	Mōkito	Hauwhā Raro	Tau Waenga	Toharite	Hauwhā Runga	Mōrahi	Rahi o te Tīpako
wahine	21	36	42	44.88	50	94	284
tāne	23	39	48	50.7	59	98	203

- (a) Mā te whakamahi i ngā raraunga i roto i tēnei tūtohi, he aha te inenga whānui i waenga hauwhā mō ngā wāhine?

- (b) He nui ake ngā wāhine i ngā tāne i roto i tēnei tīpako. E kī ana te hoa o Rei a Waiari kāore i te tika ngā otinga me ngā kauwhata nā tēnei take.

Kei te whakaae koe, kāore rānei?

Whakamahia te whakaaro whaitake o te tauanga hei parahau i tō tuhinga.

- (c) (i) Ki te kōwhirihia matapōkeretia tētahi ākonga mai i tēnei tīpako, he aha te tūponotanga he tāne te ākonga?

- (ii) Ki te kōwhirihia matapōkeretia tētahi **tāne** mai i tēnei tīpako, he aha te tūponotanga he 59, iti ake rānei tana tatau whakamātautau pūmahara?

- (d) I tāpirihia te tatau a Brianna ki te tīpako mō ngā wāhine. I piki te tatau toharite mō ngā wāhine, ā, i noho ōrite tonu te tatau waenga.

He aha ō mōhio mō te tatau whakamātautau a Brianna?

Whakamāramahia ō whakaaro whaitake.

QUESTION THREE

The statistics for Rei's data are given in the table below:

	Min.	Lower Quartile	Median	Mean	Upper Quartile	Max.	Sample Size
female	21	36	42	44.88	50	94	284
male	23	39	48	50.7	59	98	203

- (a) Using the data in this table, what is the interquartile range for the females?

- (b) There are more females than males in this sample. Rei's friend Waiari said that the results and the graphs are not fair because of this.

Do you agree or disagree?

Use statistical reasons to justify your answer.

- (c) (i) If a student from this sample was chosen at random, what is the probability that the student is male?

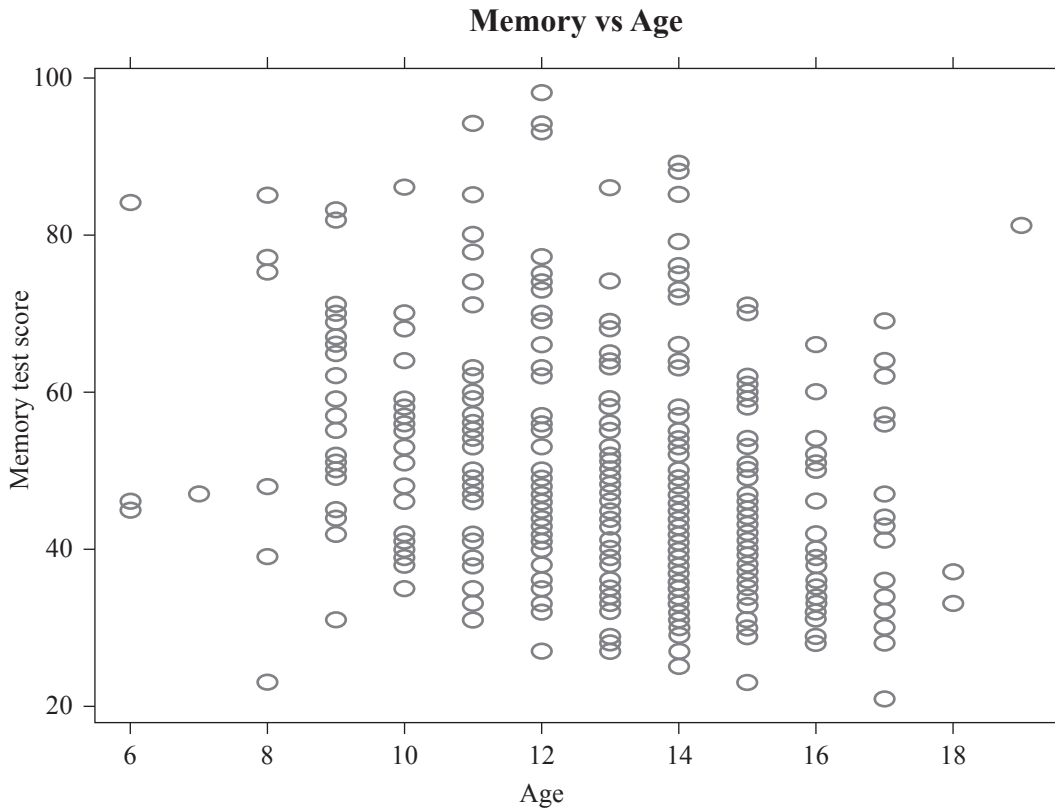
- (ii) If a **male** from this sample was chosen at random, what is the probability that his memory test score is 59 or less?

- (d) Brianna's score was added to the sample of females used here. The mean score for the females then went up, while the median score stayed the same.

What can you deduce about Brianna's test score?

Explain your reasoning.

- (e) Rei wondered if the ages of the students doing the memory test affected how well they scored. He drew the scattergraph below.



English translation of the wording on the front cover

Level 1 Mathematics and Statistics, 2015
91037 Demonstrate understanding of chance and data

9.30 a.m. Monday 9 November 2015
Credits: Four

91037M

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of chance and data.	Demonstrate understanding of chance and data, justifying statements and findings.	Demonstrate understanding of chance and data, showing statistical insight.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

Show ALL working.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–21 in the correct order and that none of these pages is blank.

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