

To be completed by candidate

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School Code

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32406

TERM 4



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Numeracy 2022

32406 Use mathematics and statistics to meet the numeracy demands of a range of situations

Credits: Ten

PILOT ASSESSMENT

OUTCOMES	
1	Formulate a mathematical and/or statistical approach to solving problems in a range of meaningful situations.
2	Use mathematics and statistics to address the numeracy demands of a range of meaningful situations.
3	Explain the reasonableness of mathematical and statistical responses to situations.

You should attempt ALL the questions in this assessment.

Answer all parts of each question by filling in the gaps or selecting (✓) the correct answer.

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 2–24 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 ASSESSMENT.

QUESTION ONE: Hāngī Sales

Kahu and Henrietta raise money for their kapa haka group by selling hāngī packs. They have many costs.

Fixed costs are costs that stay the same no matter how many hāngī packs they sell, like hiring tables, baskets, sacks, cutlery, plates, and a tent.

Some costs vary depending on how many hāngī packs they sell, like the amount of food, firewood, and packaging they use. These are called **variable costs**.

- (a) Kahu and Henrietta know their fixed costs are \$300.00 and their variable costs are \$8.00 per hāngī pack. What is the total amount it will cost them to make 500 hāngī packs?

\$_____

- (b) Meat is the biggest food cost. Henrietta gets a 30% discount from her helpful local butcher. Write the discounted cost of one kilogram of pork chops in the text box in the table.

Meat	Price per kilogram	Discount (30%)	Amount charged per kilogram
Chicken pieces	\$12.00	\$3.60	\$8.40
Lamb chops	\$18.70	\$5.61	\$13.09
Pork chops	\$15.00		\$_____

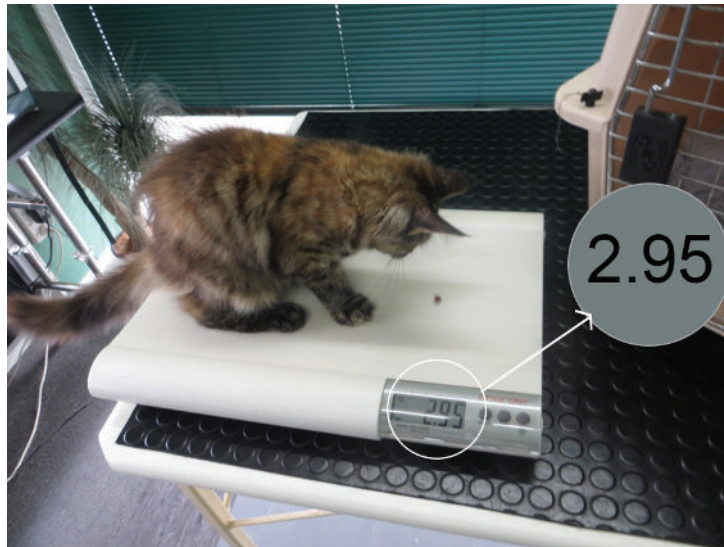
- (c) Kahu and Henrietta create this graph to show how much money they will raise for different numbers of hāngī pack sales.



Kahu says that they will need to sell over 100 hāngī packs before they make any money. Is he right? Explain your answer using information from the graph.

QUESTION TWO: Georgia the Maine Coon

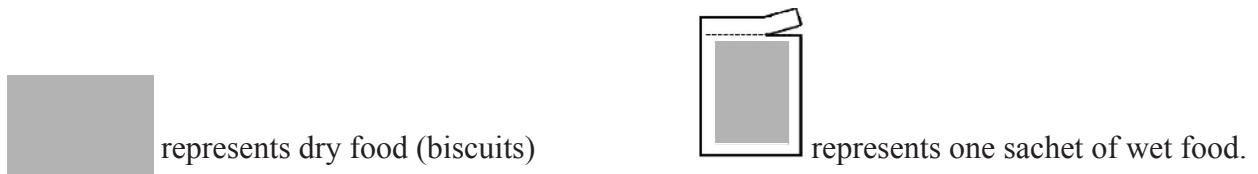
Georgia is a Maine Coon kitten. This picture shows her being weighed.











(a) Which measurement gives her correct weight?

- ☐ 2.95 grams
- ☐ 2.95 tonnes
- ☐ 2950 grams
- ☐ 2950 kilograms

(b) Georgia is fed both dry food and wet food, using this chart.



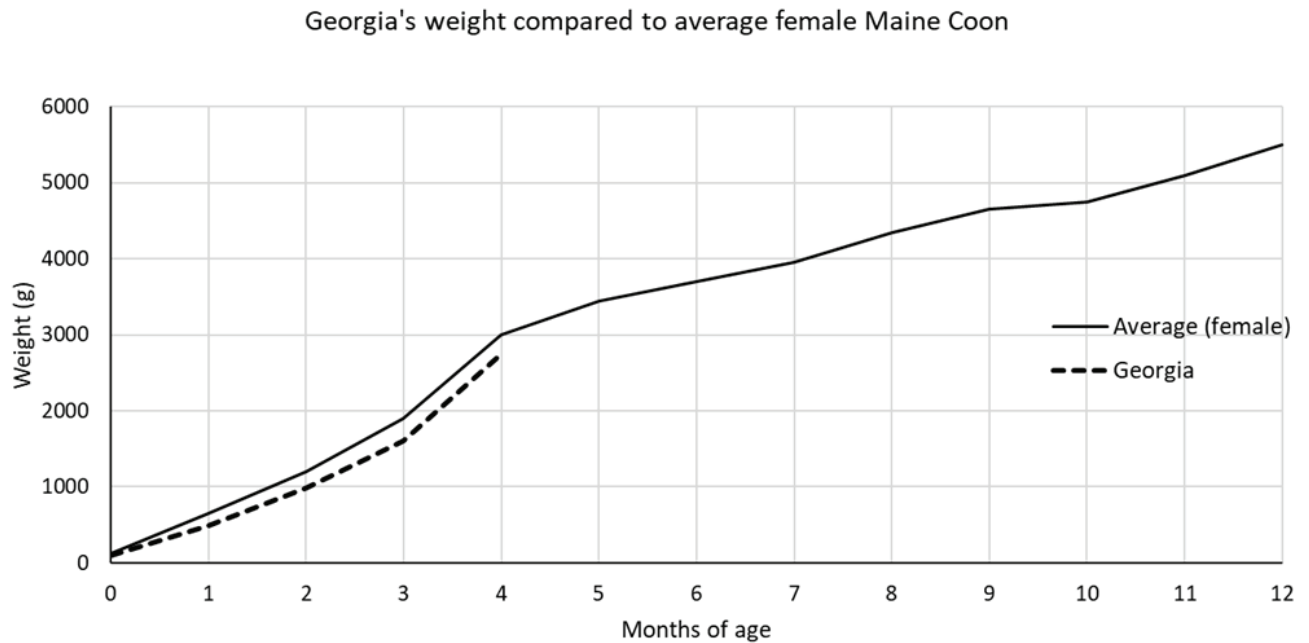
Feeding Table

Kitten's Age	3-4 Months	5-7 Months	8-11 Months
kg 	Kitten's weight 1.5 – 3.6 kg	Kitten's weight 2.6 – 4.8 kg	Kitten's weight 3.4 – 6.3 kg
	69-100g  or 56-87g + $\frac{1}{2}$ 	77-109g  or 56-87g + 1 	77-93g  or 56-72g + 1 

Write on the lines to record your response:

Dry food: _____ g Number of wet food sachets: _____

- (c) Lana weighs Georgia every month and records the data in this graph.

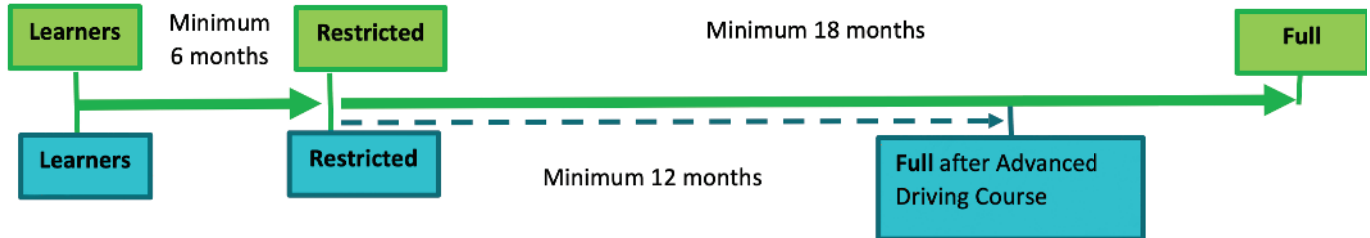


Lana predicts that Georgia will weigh about 5.0 kilograms when she turns one year old. Is Lana's prediction reasonable? Explain your answer using information from the graph.

QUESTION THREE: New Zealand Driver's Licence

Pita is 16 years old. She is finding out how much it will cost to get her Class 1 driver's licence.

- (a) This chart shows the time required to progress from a learner licence to a restricted licence to a full licence.



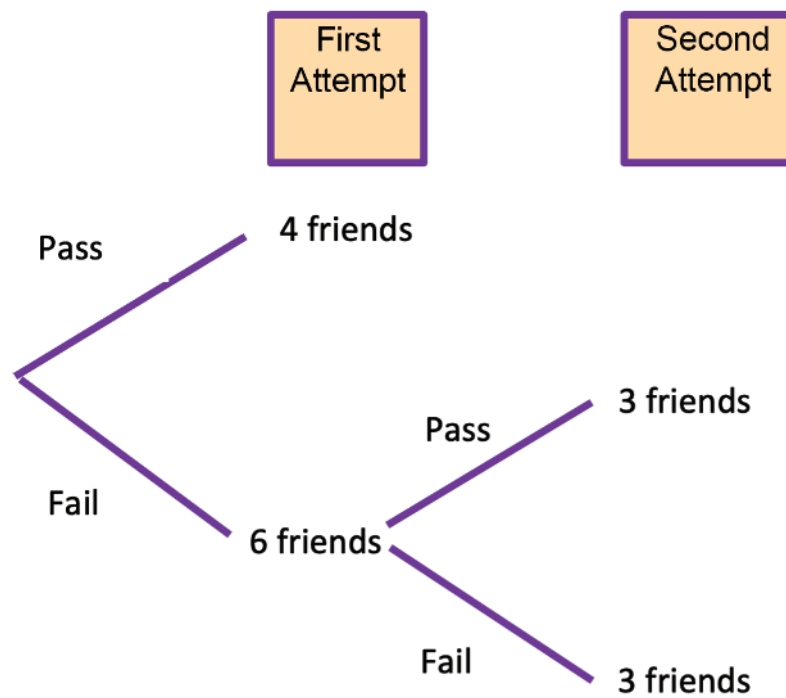
Pita passes her Learner Licence Test of the road code during March 2022, and then takes an Advanced Driving Course. What is the earliest month and year she will be able to get her full licence?

- (b) Use the table below, to work out the final cost for Pita to get her full licence. Assume she passes each test the first time. Ignore the cost of the advanced driving course.

	Application Fee	Test Fee	Total
Learner Licence	\$48.20	\$45.70	\$93.90
Restricted Licence	\$48.20	\$86.60	\$134.80
Full Licence	\$49.60	\$59.90	\$109.50

Final cost: \$_____

- (c) Pita asks ten of her older friends about the difficulty of the Learner Licence test. Four of her friends passed on their first attempt, and another three passed on their second attempt.



Waka Kotahi NZ Transport Agency claims that there is a 70% pass rate for the test, each time it is attempted. Does that claim match the data from Pita's friends? Explain your answer using the information provided.

QUESTION FOUR: Soccer Boots

Kent High School are starting a new women's soccer team. The school will pay for soccer boots, so the teacher in charge investigates the cheapest deal available on soccer boots for the team of 11 players and 1 reserve. The teacher finds two shops with good deals.

Primal Sports	Wholesale Sports
<i>30% off of full price on boots!</i> Full price: \$140.99 per pair	<i>Wholesale Prices every day!</i> \$1180 for a dozen (12) pairs of soccer boots

(a) What is the discounted price of one pair of boots from Primal Sports?

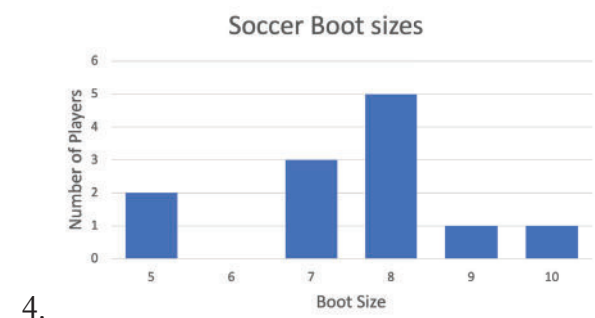
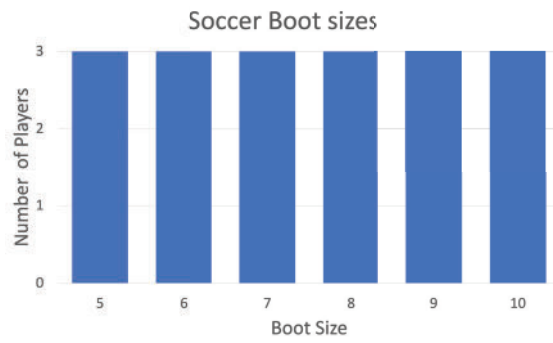
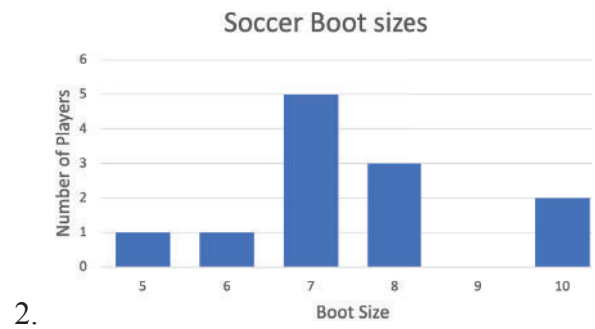
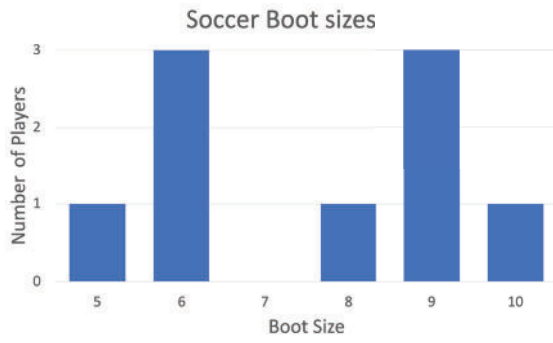
(b) Which is the cheapest place to buy the full team set of boots from?

- ☐ Primal Sports
- ☐ Wholesale Sports
- ☐ Both places are the same
- ☐ Not possible to decide from the information given

(c) Here are the sizes of the boots needed for the team members.

Boot size	Number of players
5	2
6	0
7	3
8	5
9	1
10	1

Which graph below shows the data in the table on the previous page?



Graph: _____

QUESTION FIVE: In Charge

Electric cars are becoming more common in New Zealand.

The battery display of a 2021 Pulse electric car looks like the picture shown.

The bars show the fraction of the full battery charge that is left.



- (a) All 11 bars light up when the battery is charged to 100%. What percentage charge is left on the battery in this picture?

- ☐ 30–45%
- ☐ 45–60%
- ☐ 60–75%
- ☐ 75–90%

- (b) The 2021 Pulse has a maximum distance of 270 kilometres on a fully charged battery. About how many kilometres can a 2021 Pulse travel on a 60% charge?

_____ km

- (c) Here is the fuel cost, purchase price, and maximum distance of a Pulse compared to similar-sized hybrid and petrol-only cars. A hybrid uses both petrol and electricity.

<i>Vehicle</i>	Fuel cost	Purchase price	Maximum distance (full tank)
Pulse	\$3.00 per 100 km	\$61,990.00	270 km
Hybrid (Petrol + Electric)	\$11.00 per 100 km	\$45,190.00	960 km
Petrol Only	\$15.00 per 100 km	\$32,490.00	780 km

It is often claimed that “Hybrid cars give you the best value for money.”

Do you agree with the claim? Explain your answer using information from the table.

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The examination continues on the following page.**

QUESTION SIX: Visit to Vanuatu

Sofia is planning a trip to Port Vila, the capital city in Vanuatu, to visit her grandmother. Her only other trip by plane was to Christchurch from her home city of Auckland. That flight took 1 hour and 20 minutes.

- (a) Estimate the time of Sofia's direct flight from Auckland to Vanuatu, use the provided map.

_____ hours _____ minutes

- (b) Sofia needs to buy some money (Vanuatu Vatu) using New Zealand dollars.

She looks up the exchange rate

**1 New Zealand Dollar equals
75 Vanuatu Vatu (VUV)**

How many New Zealand dollars will it cost her to buy 10,000 Vanuatu Vatu VUV?

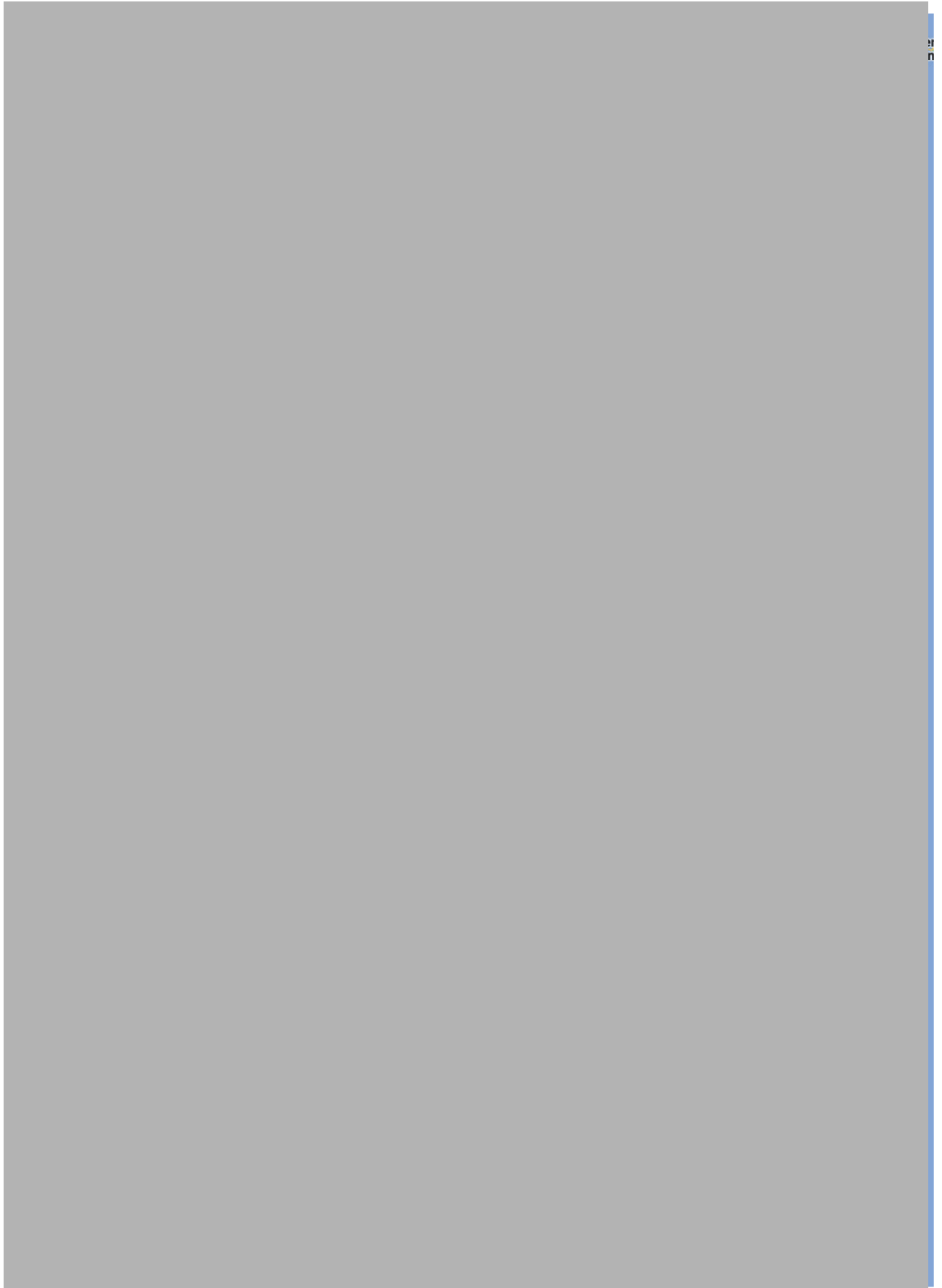
\$NZD _____

- (c) Sofia reads that the cost of food is 10% cheaper in Port Vila (Vanuatu) than Auckland.

Here is a table comparing prices for some items.

Item	Auckland Price	Port Vila Price
Milk 1L	\$NZ 3.12 (VUV 225.35)	VUV 226.00 (\$NZ 3.13)
Twelve Eggs	\$NZ 7.06 (VUV 509.51)	VUV 451.20 (\$NZ 6.25)
Bananas 1kg	\$NZ 2.79 (VUV 201.35)	VUV 50 (\$NZ 0.67)
Loaf of bread	\$NZ 3.30 (VUV 237.99)	VUV 240.15 (\$NZ 3.33)
Rice 1kg	\$NZ 3.21 (VUV 231.32)	VUV 235.31 (\$NZ 3.12)

Is food really 10% cheaper in Port Vila? Explain your answer using the information provided.



QUESTION SEVEN: Online Shopping

Maziah wants to buy a pair of Breezy shoes. She visits Sole Train, her local shoe shop in Whanganui. Maziah also looks at two online shopping sites, Alleyquick and Rainforest, to compare prices.

Here are the current deals.

Sole Train



Breezy Shoes
Normal Price \$180.00
This month only 25% off.

Alleyquick



Breezy Shoes
Great Price \$120.00
Free shipping.

Rainforest

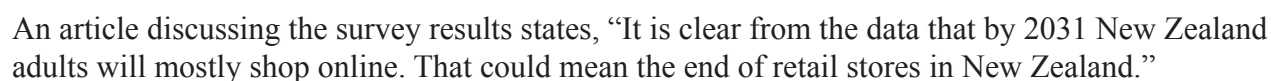


Breezy Shoes
Discount Price \$95.00
+ \$37.00 Shipping.

- (a) Maziah wants the best deal but also likes to buy local if she can. Which place should she buy from? Explain your answer using the information provided.

- (b) If Maziah orders the shoes online, it will take 6–8 weeks for them to arrive. It is now mid-July. When is the earliest she can expect the shoes to arrive?

- ☐ mid-August
☐ late-August
☐ early-September
☐ mid-September
☐ late-September
☐ early-October

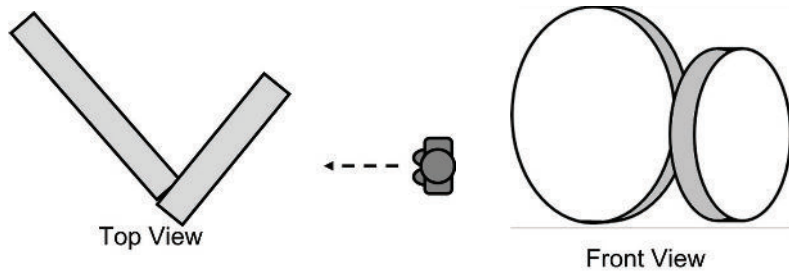


Do you agree? Explain your answer using information from the graph.

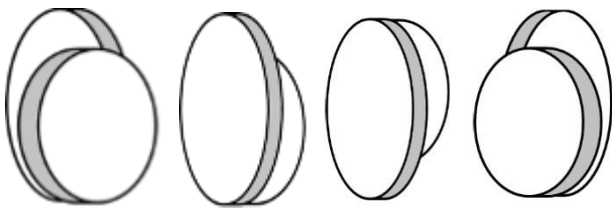
QUESTION EIGHT: Kiwifruit Capital

There are plans for the town of Te Puke to get a new sculpture that reflects its status as “Kiwifruit Capital of the World.”

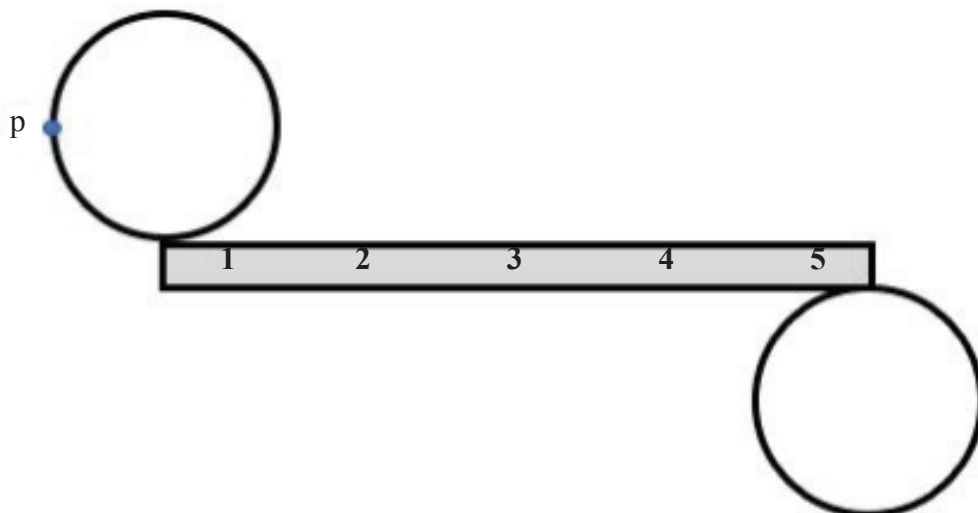
Here are the top and front views:



- (a) Which image of the kiwifruit sculpture shows what the person in the top view diagram would see?



- (b) The sculpture is to be made of steel. Here is the flat pattern for the smaller cylinder of the kiwifruit slices. Circle the number on the grey rectangle in the image to show where point “p” will join the cylinder when the pattern is put together into a kiwifruit slice.

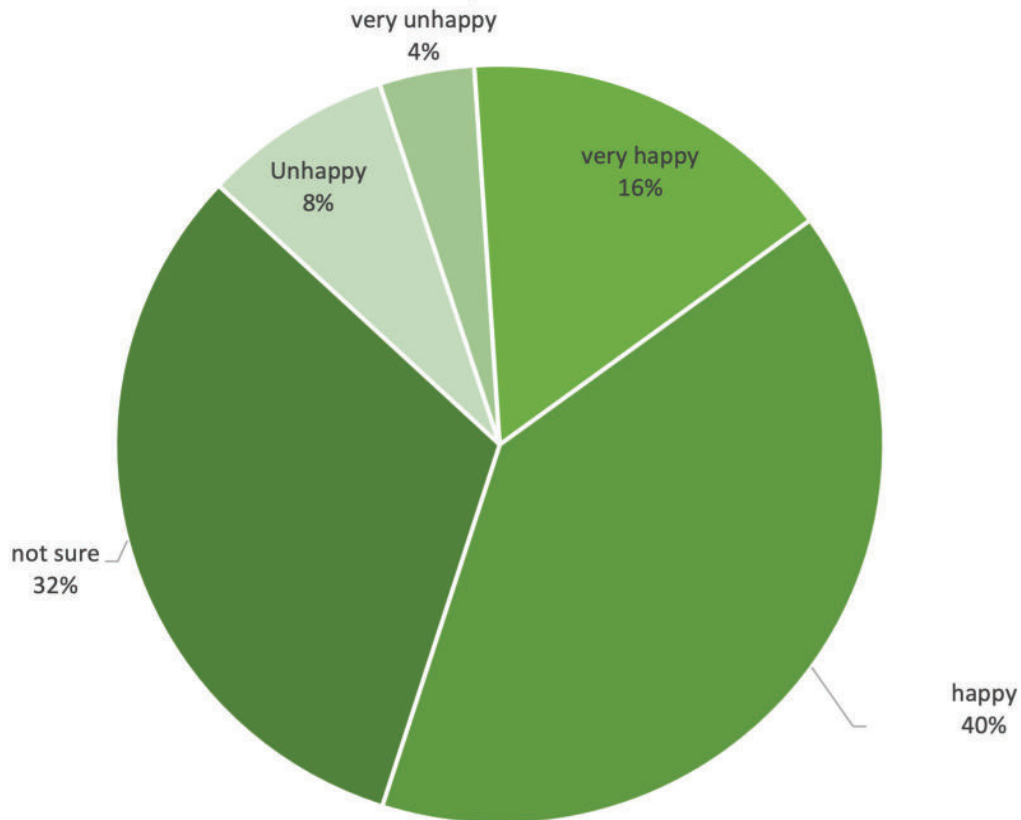


- (c) The business group in the town surveys people in the main street on Saturday morning. People are asked: “How pleased are you about the design of the kiwifruit slices sculpture?” and they can respond with choosing from

“very happy”, “happy”, “not sure”, “unhappy”, or “very unhappy”.

Here is a graph of their responses:

How pleased are you about the design of the kiwifruit slices sculpture?



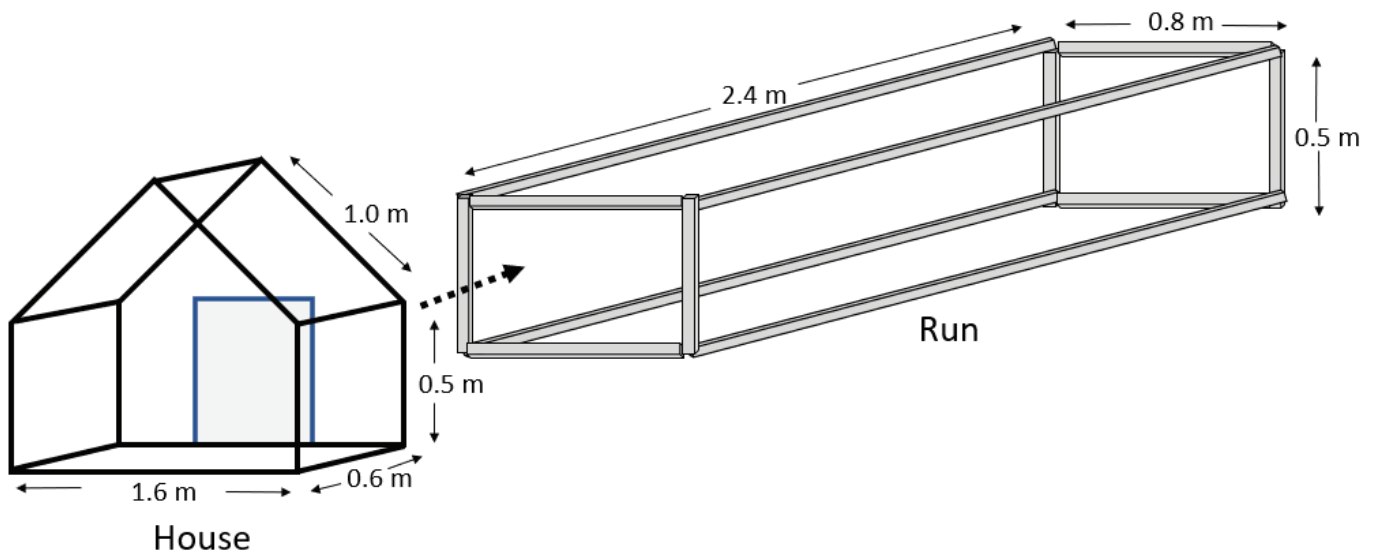
Is the following claim justified?

“Over half of people in the sample of Te Puke residents were pleased with the design.”

Explain your answer using the information provided.

QUESTION NINE: The Rabbit Hutch

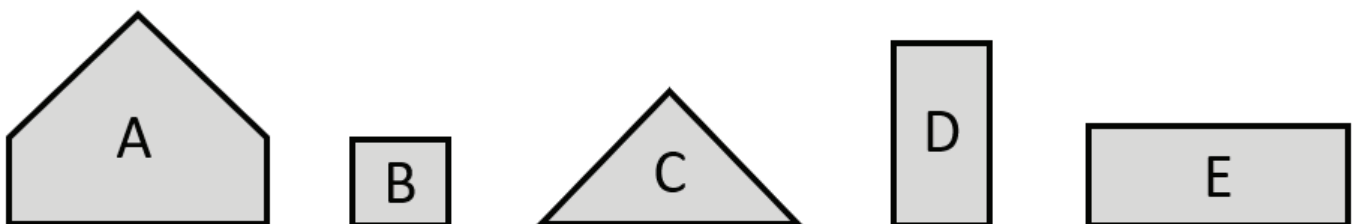
Kendra gets a new pet rabbit for her birthday. She designs this hutch for her new pet. It has two parts; the house, and the run, where the rabbit can be outside.



- (a) Kendra builds the run from framing timber that comes in lengths of three metres. How many lengths does she need to buy to make the run?

- ☐ Four
☐ Five
☐ Six
☐ Seven
☐ Eight

- (b) Kendra builds the house from plywood. Here are some pieces she might cut out:



How many of each piece should she use?

_____ of Piece A _____ of Piece B _____ of Piece C _____ of Piece D _____ of Piece E

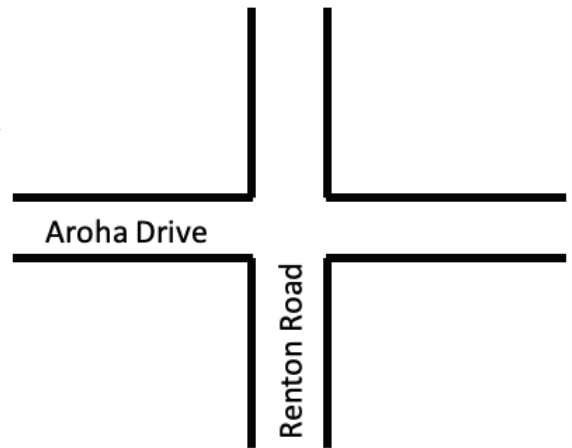
- (c) All faces of the run are covered in netting except the face that joins the house. The bottom of the run must have netting or the rabbit will dig its way out. Calculate the area of netting that Kendra needs.

_____ m²

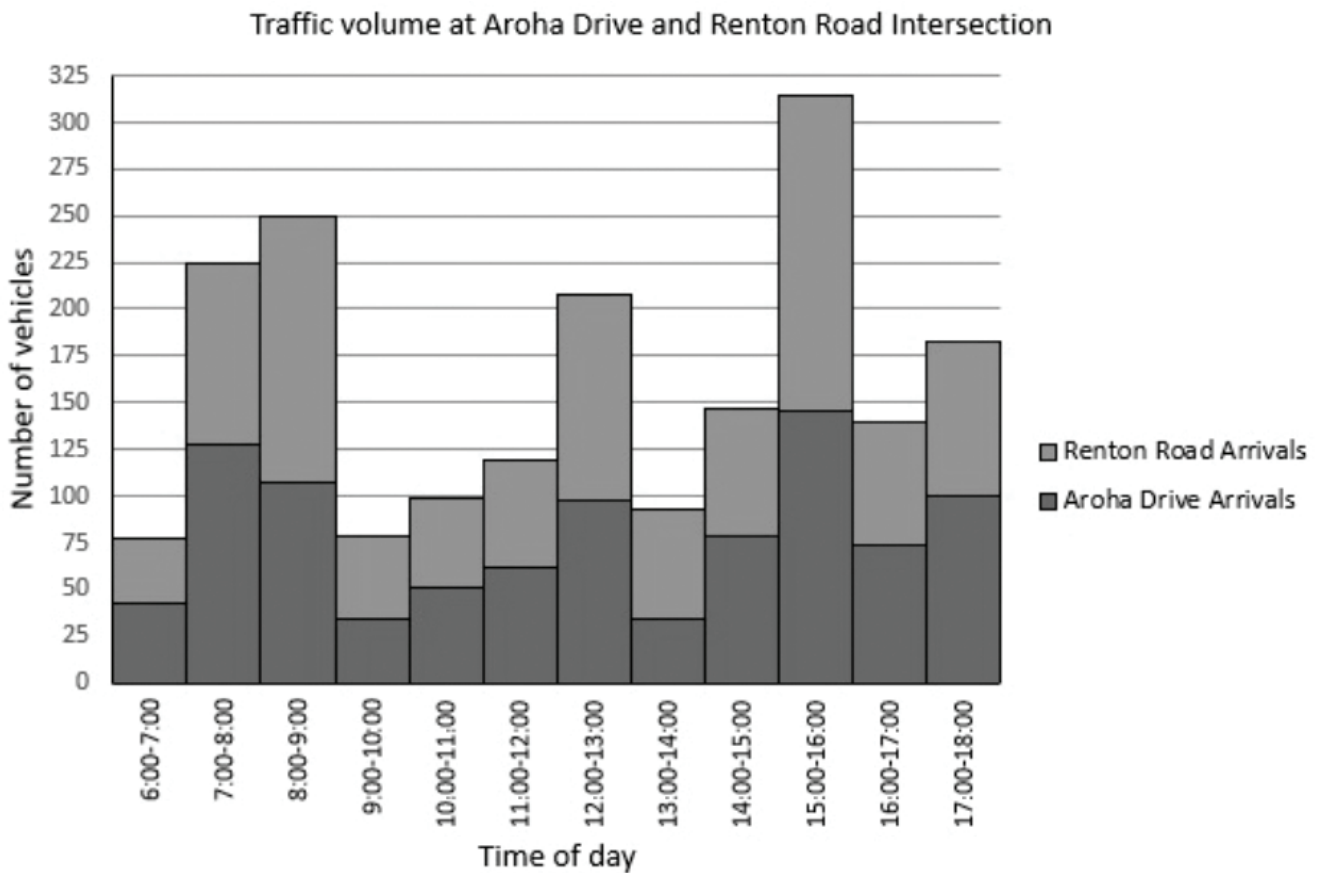
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QUESTION TEN: Crash Course

Aroha Drive and Renton Road meet at a busy intersection. An electronic counter records how many vehicles go through the intersection.



The graph below shows how many vehicles go through the intersection between 6:00am and 6:00pm on a Friday.



- (a) About how many vehicles in total go through the intersection between 4:00pm and 5:00pm?

- ☐ 14
- ☐ 74
- ☐ 147
- ☐ 314

- (b) About how many more vehicles pass through the intersection in the busiest hour than in the quietest hour?

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

QUESTION
NUMBER

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

QUESTION
NUMBER

Acknowledgements

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

Question One

<https://www.newzealand.com/nz/feature/maori-hangi/>

Question Two

<https://www.istockphoto.com/photo/maine-coon-kitten-8-weeks-old-in-front-of-white-background-gm1067755362-285571576>

Question Seven

<https://www.zhihu.com/question/421887016>

<https://www.flightclub.com/yeezy-boost-350-v2-beluga-reflective-gw1229>

<https://www.fukexie.com/37840.html>

Question Eight

<https://www.nzherald.co.nz/bay-of-plenty-times/news/new-kiwifruit-icon-for-te-puke/CEM7QGZE3EUCBKULIQKYAOXEA/>