Numeracy skills checklist

(self-evaluation)

Numeracy Co-requisite Assessment (CAA)

(Updated for Term 3, 2025)

Using this checklist

This checklist is designed as a preparation tool to give students an idea of which areas/skills tested in the Numeracy CAA they need more practice with. For each skill/competency assessed in the Numeracy CAA, a past exam question has been given.

Students should:

1. Try each question (with the solution covered up).
2. Check the model answer.
3. Tick the box in the right column to indicate how they did.

After this, the student should target their practice towards the particular topics/skills which they struggled with in this checklist (this can be done in consultation with their tutor or teacher).

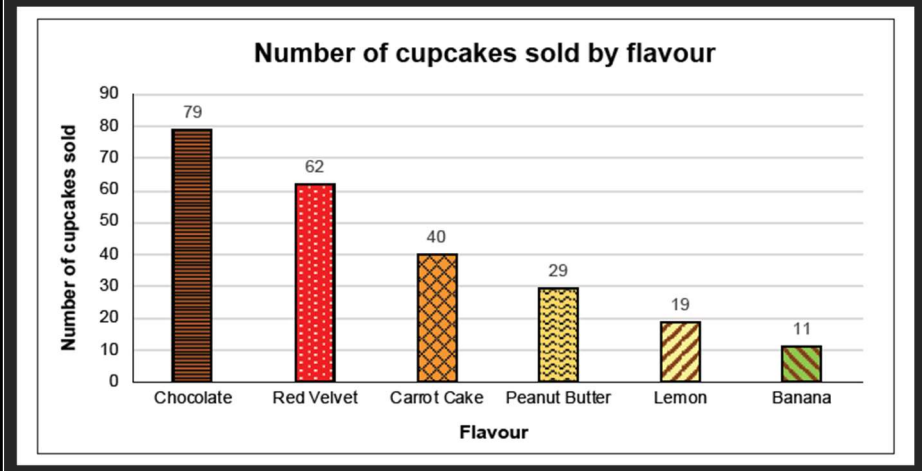
Calculators are permitted in the test, so students should have full use of one when practicing.

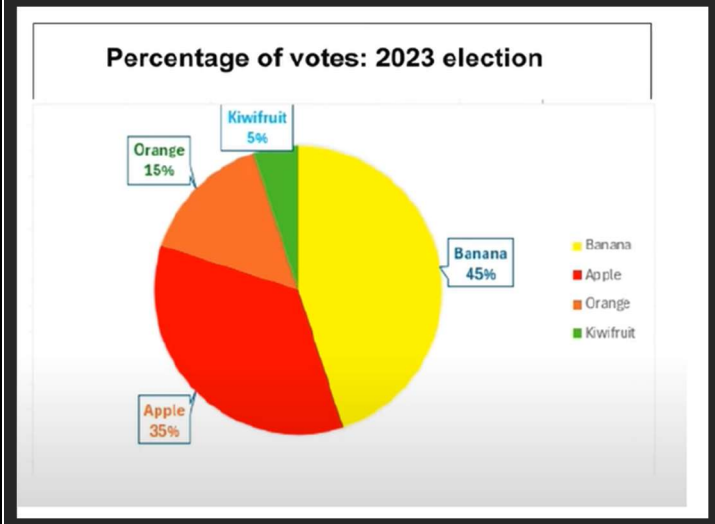
Good luck!
> the team at Trajectory Education

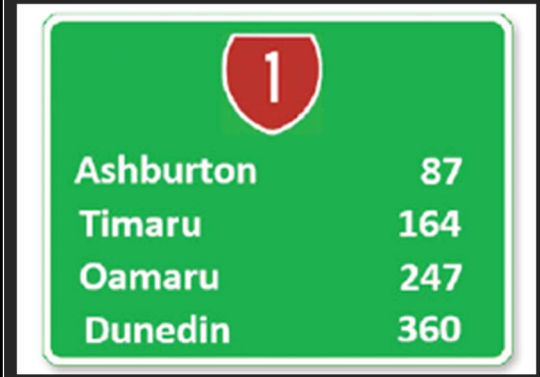
About the Numeracy CAA

The Numeracy CAA is one of the 3 CAAs sat by Year 10 or Year 11 students (the others being the Reading and the Writing CAAs). It requires students to master the Mathematics and Statistics content ideas at Level 4 of the New Zealand Curriculum.

To gain an NCEA qualification at any level, students need to obtain 20 co-requisite credits. The usual way to achieve this is by passing the Numeracy, Reading, and Writing CAAs.

Competency	Past exam question	Solution	How am I doing? (tick)		
			Not well	Need a bit more practice	Great!
Topic #1: Number					
Find **fractions** of amounts	Here is a graph of cupcake sales at a school for *Treat Week*. In total, 240 cupcakes were sold.  Is the following statement true? *About one third of sales were chocolate-flavoured cupcakes.* *Source: Numeracy CAA past exam, Term 2 2023*	1/3 of 240 cupcakes = 1/3 x 240 = **80** **80 is approximately 79, so the statement is true.**			
Form **percentages**	Here is the price of a pair of jeans at the op shop. These jeans are priced at $120 when new.  What **percentage** of the new price for jeans, is the op shop price? *Source: Numeracy CAA past exam, Term 3 2024*	= (24/120) x 100 = **20%**			

Find **percentages** of amounts	**EXAMPLE 1:** There are 120 seats in parliament. The Apple Party receives 35% of votes, so they get 35% of the seats in parliament. That's 42 seats. How many seats do the Orange Party get?  *Source: Numeracy CAA past exam, Term 4 2023. Image: Courtesy of 'Infinity Plus One' on YouTube* **EXAMPLE 2:** Deena is learning to drive. A one-hour driving lesson costs $80. If Deena takes five lessons, there is a 30% discount. How much do five driving lessons cost, with the discount? *Source: Numeracy CAA past exam, Term 4 2024*	**EXAMPLE 1:** 15% of 120 = 0.15 x 120 = **18 seats** **EXAMPLE 2:** $80 x 5 = $400. 30% of $400 = 0.30 x 400 = $120 discount Final price = $400 - $120 = **$280**	

Convert between **decimals, fractions and percentages**	**EXAMPLE 1:** Only one in every 100 baby turtles survive to become adults. What is the decimal of the probability of a 1 in 100 chance? *Source: Numeracy CAA past exam, Term 4 2024* **EXAMPLE 2:** Deena drives out of Christchurch on her way to Dunedin. She will pass through Oamaru on her way to Dunedin. She sees this road sign, just out of Christchurch  When Deena reaches Oamaru, about what fraction of her journey will she have completed? i) 5/10 ii) 6/10 iii) 7/10 iv) 8/10 v) 9/10 *Source: Numeracy CAA past exam, Term 3 2024 (adapted)*	**EXAMPLE 1:** 1/100 = **0.01** **EXAMPLE 2:** When she's at Oamaru, 247km out of 360km of her journey will have been completed. 247/360 = 0.6861... Out of all the possibilities: i) 5/10 = 0.05 ii) 6/10 = 0.06 iii) 7/10 = 0.07 iv) 8/10 = 0.08 v) 9/10 = 0.08 0.07 is the closest to 0.6861..., so the answer is **iii) 7/10**
Working with **decimals**	Here are the players in a basketball team. Their heights are given in metres. **Nia** 1.57 m | **Ani** 1.6 m | **Kendra** 1.94 m | **Sue** 1.7 m | **Mere** 1.78 m | **Lucy** 1.8 m | **Tania** 1.61 m | **Sina** 2.01 m Which two players need to swap places so that the heights are in order, shortest to tallest? _____ and _____ *Source: Numeracy CAA past exam, Term 4 2023 (adapted)*	**Tania** and **Kendra**

Working with **fractions**	Awa wants to set a crab trap using bait. Awa's koro (grandfather) recommends using a bait mixture that is 3/8 squid and the rest is chicken. If Awa has 150g of squid, how many grams of chicken does Awa need? *Source: Numeracy CAA past exam, Term 4 2024*	3/8 is equal to 150g. Therefore 1/8 is equal to 50g (150 / 3). If 3/8 is squid, the other 5/8 must be chicken. Since 1/8 is equal to 50g, 5/8 will be 50g x 5 = **250g chicken**	
Increasing/ decreasing by a **percentage**	In 2023, the SPCA hopes to increase the amount of $47,307 raised in 2022 by 5%. What is the total amount the SPCA hope to fundraise in 2023? *Source: Numeracy CAA past exam, Term 2 2023*	5% of $47,307 = 0.05 x $47,307 = $2,365.35 $47,307 + $2,365.35 = **$49,672.35**	
Use equivalent **ratios**	Awa has a boat with a small two-stroke motor. The fuel for the motor is petrol mixed with oil in a ratio of 50:1. If Awa has 10 litres of petrol, how much oil, **in millilitres,** should he add? *Source: Numeracy CAA past exam, Term 3 2024*	Set the problem up like... 50 : 1 10,000 ml : ? To find 'scale factor' 10,000/50 = 200 1 x 200 = **200ml**	
Share quantities in **ratios**	Zion makes 84 candles using the ratio: five Manuka Smoke candles to every two Leather candles (5:2).  How many Manuka Smoke candles does he make? *Source: Numeracy CAA past exam, Term 4 2024*	= 84 / (5 + 2) = 12 Therefore each 'part' of the ratio represents 12 candles. 12 x 5 = **60 Manuka Smoke candles**	

<table>
<tr>
<td>Forming and using rates</td>
<td>
<u>EXAMPLE 1:</u>

Here is Cindy's water bill for one month.

<table>
<tr><th colspan="3">Wai Mā Services</th></tr>
<tr><th>Amount used (m³)</th><th>Rate ($/m³)</th><th>Charge ($)</th></tr>
<tr><td>24.8</td><td>?</td><td>$35.96</td></tr>
</table>

How much does Cindy pay for each cubic metre of water used?

Source: Numeracy CAA past exam, Term 2 2024

<u>EXAMPLE 2:</u>

Taro costs $7.00 per kilogram. What is the cost of a taro that weighs 510 grams?

a) $2.83
b) $3.57
c) $4.28
d) $5.10

Source: Numeracy CAA past exam, 2021 (pilot exam)
</td>
<td>
<u>EXAMPLE 1</u>

$35.96 / 24.8 = $1.45 per cubic metre

<u>EXAMPLE 2</u>

$7.00 / 1000 = $0.007 per 1 gram

$0.007 x 510 = $3.57

Students may also find the correct answer by identifying that 510 grams is approx. half of 1 kg, and $3.57 is approx. half of $7.
</td>
<td></td>
</tr>
<tr>
<td>Comparing rates</td>
<td>
At the supermarket, Aloma finds two different brands of white chocolate buttons.

Blanco buttons cost $1.40 for 100 grams.

Wit Buttons cost $3.60 for 290 grams.

Which is the best buy for Aloma – Blanco Buttons or Wit Buttons? Explain your answer using the price information above.

Source: Numeracy CAA past exam, Term 2 2022
</td>
<td>
Blanco: $1.40 / 100 grams = $0.014 per gram

Wit: $3.60 / 290 grams = $0.0124... per gram

Wit buttons are cheaper, so Aloma should buy them (assuming she needs that much).
</td>
<td></td>
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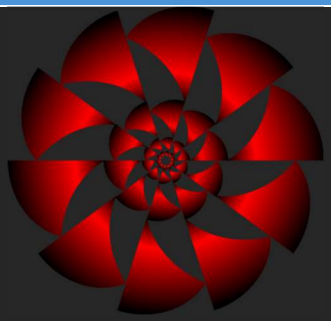
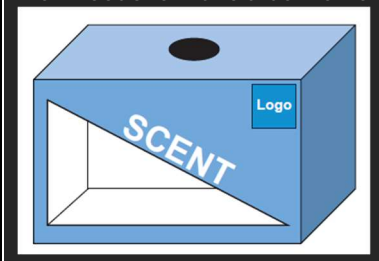
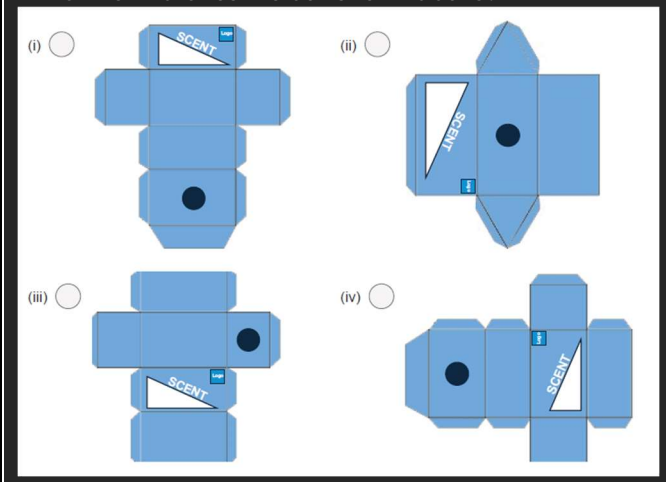
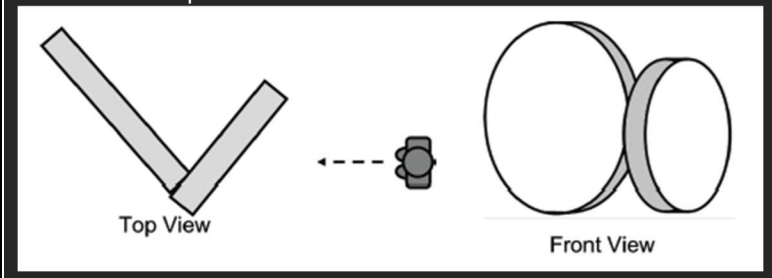
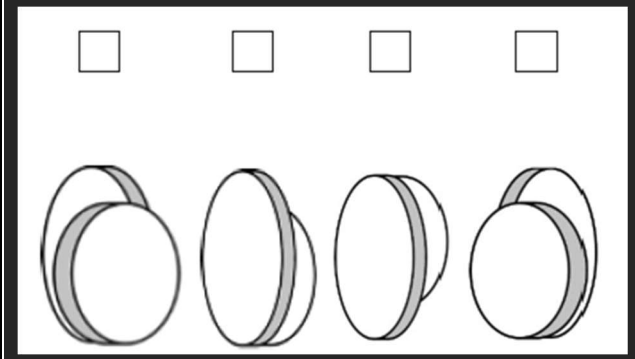
</table>

Topic #2: Shape

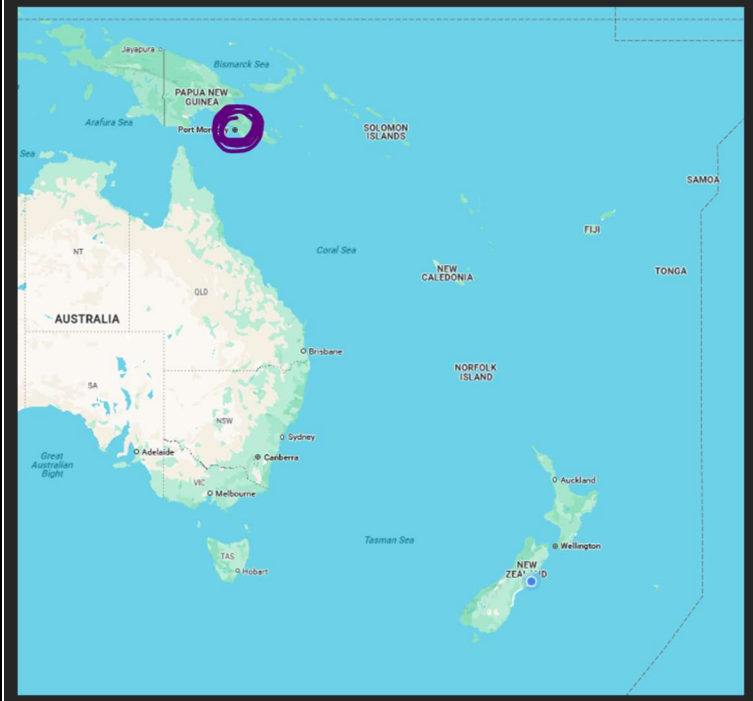
Understand **reflectional** and **rotational symmetry**	 i. Does this design have **reflectional** (mirror) symmetry? (Yes/No) ii. Does this design have **rotational** (turn) symmetry? (Yes/No) *Source: Numeracy CAA past exam, Term 4 2024 (adapted), using a different image*	**i. No** **ii. Yes**	
Nets	Zion needs to make a box to hold one candle. The box will look like this:  Which net matches the box shown above?  *Source: Numeracy CAA past exam, Term 4 2024*	**iv)**	

2D views	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:  Which image of the kiwifruit sculpture shows what the person in the top view diagram would see?  *Source: Numeracy CAA past exam, Term 4 2022*		

Topic #3: Location and Navigation

Navigation

Port Moresby is Papua New Guinea's capital city. It is marked on the map in purple.



In what direction is the flight path from New Zealand to Port Moresby?

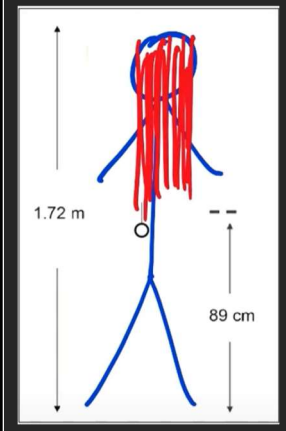
i. North
ii. West
iii. North-east
iv. North-west

Source: Numeracy CAA past exam, Term 2 2022 (adapted)

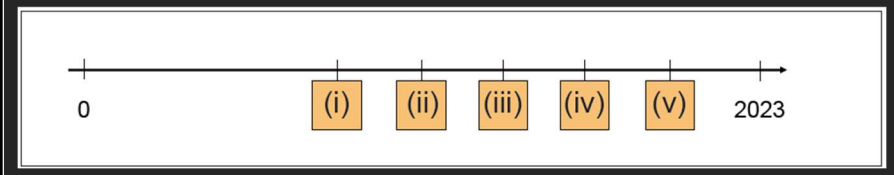
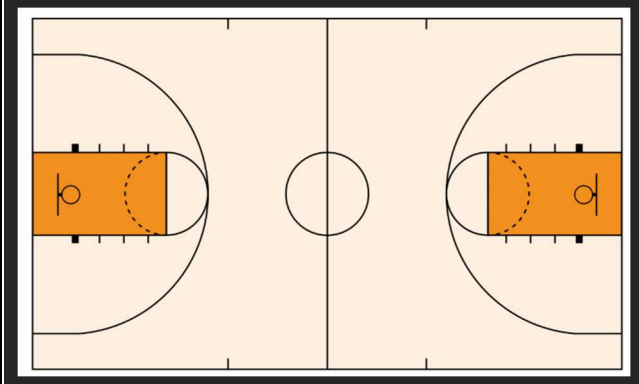
iv. North-west

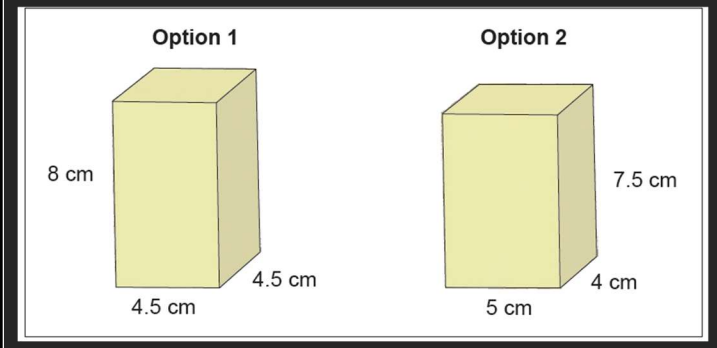
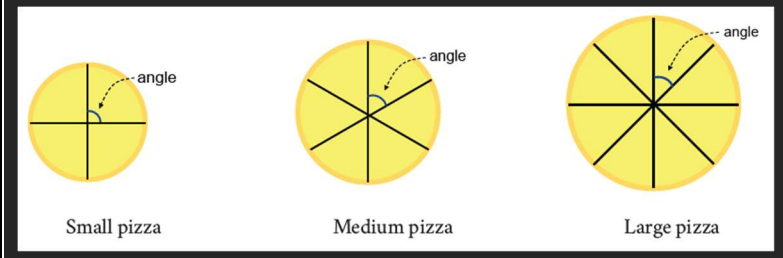
Using **scales** on plans/maps	This map shows the route taken on a journey from Auckland to Hawai'i.  Using the scale on the map, which of the following estimates is closest to the total distance of the trip? i. 5,000 km ii. 7,000 km iii. 9,000 km iv. 11,000 km v. 13,000 km *Source: Numeracy CAA past exam, Term 3 2024. Image: Courtesy of 'Infinity Plus One' on YouTube*	**iv. 9,000 km**	

Topic #4: Measurement

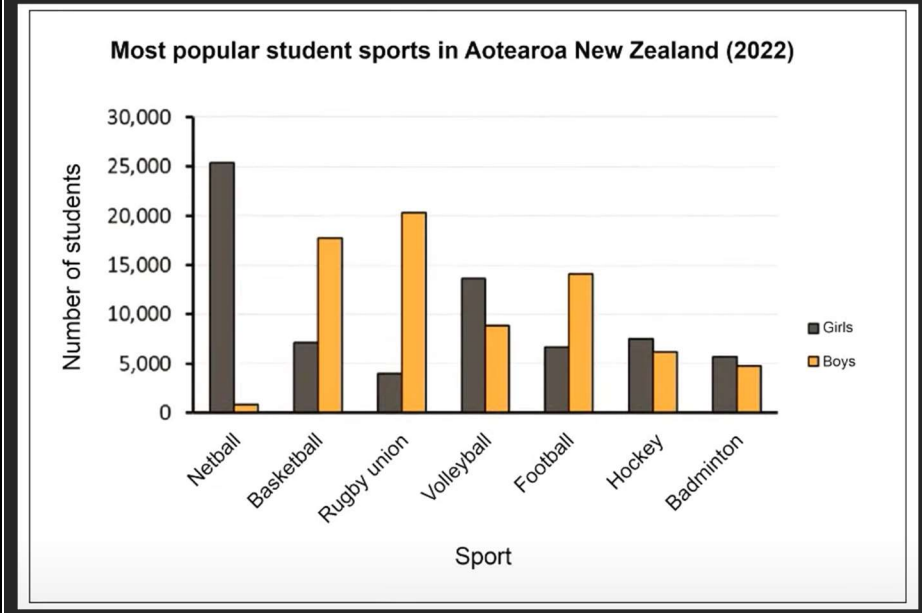
Metric units - **distance**	Mia is shaving her hair to raise money for charity. She is 1.73 metres tall. The distance from her hair to the ground is 89 centimetres. What is the length of Mia's hair in metres?  *Source: Numeracy CAA past exam, Term 4 2023. Image: Courtesy of 'Infinity Plus One' on YouTube*	89cm = 0.89m (89cm / 100) 1.73m – 0.89m = **0.84 metres**	
Metric units - **weight**	A large moa weighed about 230 kilograms. A large kiwi weights about 3,300 grams. About how many times heavier was a moa than a kiwi? *Source: Numeracy CAA past exam, Term 2 2023*	3,300 grams = 3.3 kg (3,300 / 1,000). 230 kg / 3.3 kg = **69.70 times heavier**	
Metric units – **volume/ capacity**	A large jar holds 20 glasses of water. A glass holds 250 ml of water. How many **litres** of water does the jar hold? *Source: Numeracy CAA past exam, Term 2 2024*	250ml x 20 = 5,000 ml 5,000 ml = **5 litres** (5,000 / 1,000)	

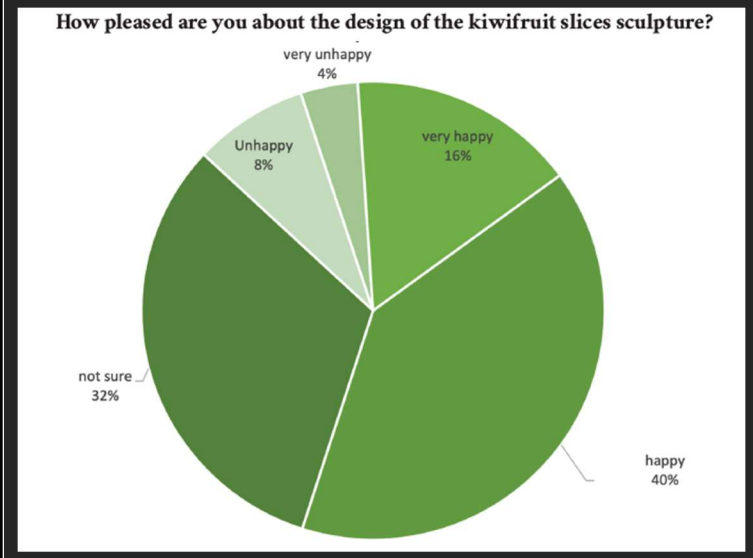
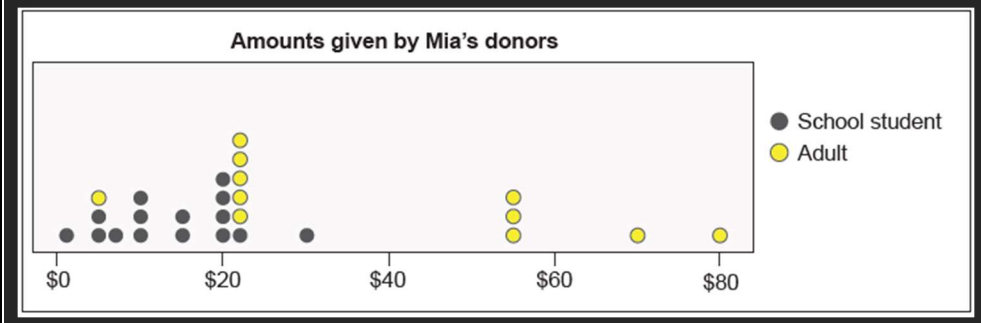
Reading **scales/gauges**	When Deena stops at a fuel station, the gauge on her car looks like this.  Deena knows that the fuel tank holds 48 litres when it is full. About how many litres of fuel does Deena need to buy to fill the tank?	Each notch is about 12 liters (48 / 4). The needle is at 2 and a bit notches, which could be about 28 liters. 48 – 28 = **20 litres** *Tip: Since this is an 'about' question, we aren't required to find an exact answer. Any answer between 18 – 23 L would have been accepted as correct.*	
Performing **time** calculations	Three flights leave from Auckland airport. Olioli claims that compared to flight times to Fiji and Niue, the flight to Tonga takes the longest. | Destination	Leave (NZ time)	Arrive (NZ time) | |---|---|---| | Nadi (Fiji) | 09:55 | 13:00 | | Nuku'alofa (Tonga) | 11:25 | 14:15 | | Alofi (Niue) | 08:15 | 11:45 | Is Olioli right? Use times to explain your answer. *Source: Numeracy CAA past exam, Term 4 2023*	Fiji = 3 hours and 5 minutes. Tonga = 2 hours and 50 minutes. Niue = 3 hours and 30 minutes. Olioli is not correct, because the flight to Tonga is the shortest.	

Working with **timelines**	This year it is 2023. Māori arrived in Aotearoa New Zealand around the year 1250. That is almost 800 years ago.  Select the answer that marks where 1250 would be on the timeline. *Source: Numeracy CAA past exam, Term 4 2023*	**(iii)** *Tip: The best way to do these is to find the 'halfway' point, and then estimate from there. The halfway point for this timeline would be between 0 and 2023, which is about 1000. (iii) is chosen because it's a little above 1000.*	
Reading **charts/timetables**	This chart shows the time required to progress from a learner 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? *Source: Numeracy CAA past exam, Term 4 2022*	**September 2023** (18 months following).	
Perimeter/Area	Here is a diagram of a basketball court that measures 15 metres in width and 28 metres in length.  What is the area of the basketball court in square metres?	15 x 28 = **420 square metres**.	

Volume	Zion makes candles that are the shape of rectangular prisms. To keep costs down, the candles cannot be too big.  Zion says that both options have a volume of 150cm^3 or less. Is Zion right? Explain your answer using measurements from **both** options above. *Source: Numeracy CAA past exam, Term 4 2024*	Option 1 = 8 x 4.5 x 4.5 = 162cm^3 Option 2 = 7.5 x 4 x 5 = 150cm^3 No, Zion is not right. Only Option 2 has a volume of 150cm^3 or below.	
Understand **angles**	Lilly cuts pizzas so that each pizza has slices of equal size. Calculate the angle that is marked on each pizza.  *Source: Numeracy CAA past exam, Term 2 2023*	**Small pizza = 90 degrees** (360 / 4) **Medium pizza = 60 degrees** (360 / 6) **Large pizza = 45 degrees** (360 / 8)	

Topic #5: Statistics and Data

Interpreting **frequency tables/graphs**, **bar graphs** and **histograms**	This graph shows the most popular sports among students in Aotearoa New Zealand in 2022.  What was the approximate total number of boys and girls playing basketball in 2022? *Source: Numeracy CAA past exam, Term 4 2023. Image: Courtesy of 'Infinity Plus One' on YouTube*	Using the graph, approx. 18,000 boys and 7,000 girls played basketball. 18,000 + 7,000 = **25,000**. *Tip: Since this question asks for an 'approximate' answer, we aren't required to find an exact answer. Any answer between 23,000 and 27,000 would have been accepted as correct.*	

Interpreting **pie graphs**	This pie chart shows Te Puke residents' responses in relation to a proposed new kiwifruit 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. *Source: Numeracy CAA past exam, Term 4 2022*	Yes, the claim is justified. 40% of people were 'happy' and 16% were 'very happy' with the design, which together makes up 56% who were at least 'happy' (over half).	
Interpreting d**ot plots**	Mia is shaving her hair to raise money for charity. The graph shows the amounts given by Mia's donors.  How are the amounts donated by school students different from the amounts donated by adults? Use numbers from the graph to support your answer. *Source: Numeracy CAA past exam, Term 2 2024*	The amounts donated by school students are lower than the amounts donated by adults. The median amount donated by adults is about $20, and the median amount donated by school students is about $15. *TIP: Comparing the medians is only one way to get full marks for this question. You could also compare other figures on the graph (e.g. min, max, clusters).*	

Interpreting **time series graphs**	A TV presenter claims the percentage of New Zealanders buying at op shows has tripled in the 20 years from 2002 to 2022.  Is the TV presenter right? Use information from the graph to say why you agree, or disagree, with their claim. *Source: Numeracy CAA past exam, Term 4 2024*	Approx 18% in 2002, according to the graph. Approx 53% in 2022, according to the graph. 18% x 3 = 54%, therefore the TV presenter is not quite right because it is not quite 54% in 2022. *TIP: The alternative conclusion can also be reached, depending what numbers are picked.*	

Topic #6: Probability

Finding **probabilities**	Here are 14 New Zealand birds: - Rock Wren - Kakapo - Yellow-eyed Penguin - Kereru - Kea - Kokako - Bar-tailed Godwit - Fairy Tern - Yellowhead - New Zealand Falcon - Pukeko - Kakariki - Kiwi - Saddleback One bird will be chosen randomly. What is the probability that the chosen bird has a name starting with **K**? Use a percentage, decimal, or fraction. *Source: Numeracy CAA past exam, Term 2 2023*	**6/14** or **0.43** [= 6 / 14] or **43%** [= 6 / 14 x 100]	

Sequences of events	**EXAMPLE 1:** In a coin toss, Sarah usually picks “heads”. But the last three tosses have all come up “tails”. Should Sarah choose “heads” or “tails” for the fourth toss, or is either choice acceptable? Explain your answer using ideas about probability. *Source: Numeracy CAA past exam, Term 2 2024* **EXAMPLE 2:** Lucy plays basketball. Including all games she has played, her average success rate for free throws is 50%. Lucy is taking two free throws, one after the other. She is very confident that one of her shots will go in. Do you think she is right? Explain your answer using ideas about chance. *Source: Numeracy CAA past exam, Term 4 2023*	**EXAMPLE 1:** Either choice is acceptable. It doesn’t matter what has happened in the past, there is still a 50% chance that Sarah guesses the coin’s outcome correctly. **EXAMPLE 2:** If Lucy takes 2 shots, there are 4 equally possible outcomes: 1. Score, Score 2. Score, Miss 3. Miss, Score 4. Miss, Miss Lucy scores in 3 out of 4 of these outcomes, which is 75% (3 / 4 x 100). Therefore, she is right.	

That’s it!

*How did you do? Looking for some 1:1 help? Get in touch for a **free first lesson.***