

## Assessment Schedule – Term 4, 2023

### Subject: Numeracy (32406)

#### Outcomes

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

#### Evidence

Question 1	Answer / Judgement	Outcome		
		1	2	3
1a	South-west	✓		
1b	(iii) Middle box (3 <sup>rd</sup> from left)		✓	
1c	$22 \div 3.6 = 6.\dot{1}$ (accept answer in range 6–6.5)		✓	
1d	C (9,000 km)	✓		
1e	C	✓		
1f	–9 or –9 m (accept the answer with or without unit)	✓		
1g	<p>Accept Olioli is <b>incorrect</b>. Flight to Tonga takes the shortest time, not the longest. Must be supported by calculations for at least <b>two</b> destinations. One minor calculation error is permitted, providing the position taken is consistent with the calculation. Correct calculations are:</p> <ul style="list-style-type: none"> <li>Nadi flight takes 3 hours and 5 minutes (09:55–13:00)</li> <li>Nuku'alofa flight takes 2 hours and 50 minutes (11:25–14:15)</li> <li>Alofi flight takes 3 hours and 30 minutes (08:15–11:45)</li> </ul>			✓
1h	<p>True statements are:</p> <ul style="list-style-type: none"> <li>A: 10% of the people were hoping to visit Samoa this year</li> <li>B: 200 people were not sure if they would visit Samoa this year</li> <li>D: About <math>\frac{1}{3}</math> of the people hoping to visit Samoa this year were going to visit family or friends.</li> </ul> <p>Must have at least TWO correct, and <b>not</b> include C.</p>		✓	

Question 2	Answer / Judgement	Outcome		
		1	2	3
2a	420 m <sup>2</sup> (units not required)		✓	
2b	Kendra and Tania need to change places (either name order)	✓		
2c	<p>Is he right? No</p> <p>Correct answer of <b>25 minutes</b> is required.</p> <p>Calculations might be:</p> <ul style="list-style-type: none"> <li>• <math>5 \times 40 = 200</math> player minutes. <math>200 \div 8 = 25</math> minutes each</li> <li>• <math>5/8 \times 40 = 25</math> minutes each</li> <li>• 5 players at 30 minutes each equals 150 minutes. That leaves only 5 x 10 minutes to share among the remaining 3 players. That is not enough time.</li> <li>• 8 x 30 minutes equals 240 minutes. There are only 5 x 40 minutes = 200 minutes available.</li> </ul> <p>Other valid variations accepted.</p>			✓
2d	Middle arrow (closest to 45°)		✓	
2e	<p>If Lucy's idea is accepted – must be supported by evidence of probabilistic thinking that connects both free throws and <b>does not just restate</b> the 50% probability of one free throw. e.g.,</p> <ul style="list-style-type: none"> <li>• <math>\frac{1}{4}</math> probability of 2 goals, <math>2/4 = \frac{1}{2}</math> probability of 1 goal. So, probability of <math>\frac{3}{4}</math> for at least 1 goal.</li> <li>• <math>\frac{1}{2}</math> chance Lisa will miss each time. <math>\frac{1}{2}</math> of <math>\frac{1}{2} = \frac{1}{4}</math> so she has only a one quarter chance of missing both shots.</li> <li>• Since the first throw has a 50% chance of success then two throws must give her more than a 50% chance of at least one goal.</li> </ul> <p>If Lucy's idea is rejected – must also be supported by probabilistic thinking that acknowledges both throws.</p> <p><i>Unacceptable answers include: "it is just 'luck' and there is no way to predict what might happen" or "if one misses the other will go in".</i></p>			✓
2f	<p>25,000 (accept 23,000 to 27,000)</p> <p>Accept numbers given for each gender (e.g., Girls about 7,000; Boys about 18,000) which <i>may</i> be accompanied by joining symbols, such as '+' or 'and'.</p>	✓		

Question 3	Answer / Judgement	Outcome		
		1	2	3
3a	$1.72 - 0.89 = \mathbf{0.83}$ (unit not required)	✓		
3b	$10 \times 55 = \$550$ . $\$550 \div 22 = \mathbf{25}$		✓	
3c	Accept in range \$600 to \$680	✓		
3d	<p>Should state that adults generally give more than school students.</p> <p>Support with evidence such as:</p> <ul style="list-style-type: none"> <li>• Median for adults is about \$22. Median for school students is about \$13.</li> <li>• Clustering for adults is \$5 to \$80. Clustering for school students is \$1 to \$30.</li> </ul>			✓
3e	$200 + 4 \times 35 = \mathbf{\$340}$ or $2 \times 200 = \mathbf{\$400}$ (answer only – unit not required)		✓	

Question 4	Answer / Judgement	Outcome		
		1	2	3
4a	$100 \times 5 = \mathbf{500}$ (accept in range 450–550)		✓	
4b	Top right (or third from left if on paper)		✓	
4c	Claim may be accepted as close to 20 km or rejected because 19,200 m is less than 20 km. Must be supported by correct calculations such as: <ul style="list-style-type: none"> <li><math>12,000 \times 1.6 = 19,200 \text{ m} = 19.2 \text{ km}</math></li> </ul>			✓
4d	$35 \div 3 \times 2 = 23.\dot{3}$ days (accept answers in range 23 to 24 days)		✓	
4e	7.5% of 6,000,000 = <b>450,000</b> Jersey cows (accept answers in the range 400,000 to 500,000) (number only needed – calculation not required). <i>Percentage answers are not acceptable.</i>	✓		
4f	Accepts the claim. Supports the claim with calculations like: <ul style="list-style-type: none"> <li><math>300/500 = 3/5 = 60\%</math></li> <li><math>300/500 = 0.6 = 60\%</math></li> <li><math>300/500 = 3:2</math>, 3:2 is <math>3/5 = 6/10</math> (inferring student knows that <math>6/10 = 60\%</math>).</li> </ul>			✓

Question 5	Answer / Judgement	Outcome		
		1	2	3
5a	1987 <b>was</b> an election year. Correct answers supported by calculations, such as: <ul style="list-style-type: none"> <li>2023, 2020, 2017, 2014, 2011, 2008, 2005, 2002, 1999, 1996, 1993, 1990, 1987 were all election years.</li> <li><math>2023 - 1987 = 36</math>, 36 is a multiple of 3 so 1987 was an election year.</li> <li><math>2023 - 3 - 3 - 3 - 3 - 3 \dots = 1987</math>.</li> </ul>			✓
5b	E ( $3,900,000 \div 72$ )		✓	
5c	$15\% \times 120 = \mathbf{18}$ seats		✓	
5d	TWO coalitions required with no incorrect ones: <ul style="list-style-type: none"> <li>Banana and Orange parties.</li> <li>Apple and Banana parties.</li> <li>Orange, Kiwifruit, and Apple parties.</li> </ul>	✓		
5e	$4 \times 6 = \mathbf{24}$ combinations	✓		

## Assessment Schedule – Term 2, 2024

### Subject: Numeracy (32406)

#### Outcomes

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

#### Evidence

Question 1	Answer / Judgement	Outcome		
		1	2	3
1a	Arrow 5	✓		
1b	<b>40</b> times heavier.		✓	
1c	12 (min) to 30 (max) hatched tuatara <b>and supported</b> by a reasonable calculation. The answer may be a single number, e.g., 25 tuatara, or a range (both values within accepted values), e.g., 15-25 tuatara. Examples (not exhaustive): a. 2 clutches x 6 eggs per clutch = 12 baby tuatara 3 clutches x 10 eggs per clutch = 30 baby tuatara (assumes first clutch laid in first year) b. 2 x 8 eggs per clutch = 16 baby tuatara (using average eggs per clutch) c. $6 \div 4 = 1.5$ eggs per year, $1.5 \times 10 = 15$ tuatara $10 \div 4 = 2.5$ eggs per year, $2.5 \times 10 = 25$ tuatara		✓	
1d	200 (accept between 180 and 220)	✓		
1e	Answer should note some lengths appear to belong to young tuatara based on the main clustering of lengths. The student should reference <b>at least one</b> length of the shorter tuatara from the graph in mm. Not essential for Achieved but evidence of strong reasoning: Students might add that the median of 220 mm and the central clustering suggests adults are mostly between 190mm and 260mm long.  Not achieved: Reference to any length less than the median of 220mm indicating a young tuatara. Reference only to the number of 3 or 6 lower lengths, without at least one of the three measurements associated with those data points.			✓
1f	D.		✓	

Question 2	Answer / Judgement	Outcome		
		1	2	3
2a	31 squares.	✓		
2b	Middle vertical axis (2) AND only horizontal axis (5). Both needed with no extras.	✓		
2c	<p>Position is taken (agree or disagree) or can be reasonably inferred from the answer. There should be reference to fractions and comparison of the two diagrams is clear or can be inferred.</p> <p>Disagree. The diagram on the left has the bottom of the nose two thirds down the face or one third up the face. The bottom of Richie's nose is <math>7\frac{1}{2}</math> out of twelve spaces down. Two thirds is eight twelfths so the bottom of the nose is too high. Student may use a similar argument for not one third up the face.</p> <p>Agree. There are 12 horizontal divisions. The bottom of the nose is about 4 spaces up from the chin. Since <math>4/12 = 1/3</math> that approximately matches the diagram. Student may use a similar argument for down the face.</p> <p><i>Other suitable answers considered if fractions are used to justify the position..</i></p>			✓
2d	E.		✓	
2e	2,600		✓	
2f	6 hours. (Watch for 5 hours, as some students may forget that time is base 60).		✓	

Question 3	Answer / Judgement	Outcome		
		1	2	3
3a	352 g.	✓		
3b	<p><math>1.5 \times 3 = 4.5</math> L or 4,500 mL. <math>4,500 / 300 = 15</math> glasses (or <math>4.5 / 0.3 = 15</math> glasses).</p> <p>Accept also if student gives an answer of 5 glasses, inferring that all 3 bottles fill the same number of glasses.</p>		✓	
3c	<p><b>54</b> kg or 54 L. <math>75\% \times 8 = 6</math>kg. <math>50\% \times 120 = 60</math>kg. <math>60 - 6 = 54</math>kg or 54L (since 1 kg of water has a volume of 1 L). <i>Unit not required.</i></p> <p>Also accepted is "ten times more" since <math>10 \times 6 = 60</math>.</p>		✓	
3d	<b>\$1.45</b> ( $\$35.96 \div 24.8$ )	✓		
3e	<p>Students must include information about the savings from reducing shower times, as this is the best option. They need not include a direct comparison with reducing washing. They should use a consistent time period, such as:</p> <p>Over 2 days:</p> <ul style="list-style-type: none"> <li>Shower of 2 minutes gives <math>6 \times 2 \times 24 = 288</math> litres saving (2-minute shower uses 24 L)</li> </ul> <p>Over 1 day:</p> <ul style="list-style-type: none"> <li>Shower of 2 minutes gives <math>6 \times 1 \times 24 = 144</math> litres saving per day</li> </ul> <p>Also accept a calculation based on the usual shower time being 8 minutes. In that case the saving is <math>6 \times 2 \times 72 = 864</math> L every 2 days or 432 L every day.</p> <p><i>Other reasonable responses are acceptable.</i></p> <p><b>Exception:</b> Some students may assume each person uses the washing machine each day. In that case, using the machine once every two days saves <math>6 \times 60 = 360</math>L every two days. Accept this scenario.</p>			✓
3f	Winter (JJA).	✓		

Question 4	Answer / Judgement	Outcome		
		1	2	3
4a	85,000 – 45,000 = <b>40,000</b> people. (Accept between 35,000 to 45,000)	✓		
4b	Accept answers based on a trend of rising attendance or an uncertainty argument based of unpredictable events. For example: Agree – the numbers are trending upwards 2023-2024 and should return to pre-COVID levels of about 100,000. Disagree – removing the 2019 to 2022 numbers (due to issues), there is a relatively constant trend from 2014 to 2018 of attendance mostly under 100,000. Cannot tell – an external factor, e.g., online / hardcopy advertisements, other unforeseen happenings may occur in 2025.			✓
4c	6 adults x \$6.00 x two days = \$72. 15% of \$72 = \$10.8. Online discounted total cost for 6 adults for two days is <b>\$61.20</b> (may be left as \$61.2) <b>Exceptions:</b> Accept 2 x 6 x 7 = \$84 (Assumes flexi-passes) or 2 x 6 x 8.5 = \$102 (assumes gate entry).	✓		
4d	<b>Arrow 2</b> 5 out of 11 acts are from SA. 5/11 or 0.4545 or 45% (45.5%)		✓	
4e	<b>8 minutes longer.</b> (Number only needed) Consider the first hour (9:00 – 10:00am). Tongan performances are <b>15 minutes</b> since (60 – 3 x 5) = 45 minutes of performance. 45 ÷ 3 = 15 minutes per performance. Samoan performances are <b>7 minutes</b> since 60 – (5 x 5) = 35 minutes of performance. 35 ÷ 5 = 7 minutes per performance.	✓		
4f	<b>8</b> performers. Accept also 9 performers if leader is also included.		✓	

Question 5	Answer / Judgement	Outcome		
		1	2	3
5a	$68 \times 106 = 7,208 \text{ m}^2$	✓		
5b	Josh and Caleb. (both needed in either order) Student may use measures 1.77m and 1.9m.		✓	
5c	Position must be taken and supported by measurement-based calculations. Ani's claim is correct as Michaela runs faster than 100 m / min. $540 \text{ metres} / 14 \text{ minutes} = 110 \text{ m} / \text{min}.$ Ani's claim is correct as $14 \times 100\text{m} = 1400\text{m}$ . Michaela ran 1540m so ran faster than 100m per minute. Ani's claim is incorrect as $540 \text{ metres} / 14 \text{ minutes} = 110 \text{ m} / \text{min}$ and that is much faster than 100 m / min.			✓
5d	Accept in range 15 - 40 °.	✓		
5e	It won't matter what she chooses – she could choose H or T. She has a 50% chance of success with either choice. Student need not explain that each toss is independent of previous tosses. Do <b>not</b> accept answers based on misconceptions about non-independence, such as Sarah should choose heads since the last 3 tosses have been tails and the run won't continue.			✓
5f	Agree. New Zealand has been first or second in five of the eight world cups. $5/8 = 62.5\%$ which is greater than 60%. If 62.5% is stated, is it reasonable to assume 5/8 has been used, even if not stated. If student states $5/8 > 60\%$ assume conversion to percentage was done, in some way.			✓

# 32406 Pilot Marking Scheme

Term 2 CAA 1, 2022

Question #	Answer/Judgement	Outcome		
		1	2	3
1a	Grade 6 (third option from left)			
1b	744 (unit already included)			
1c	Agrees with the headline and supports their view using the number information provided. Must include calculation $250 \times 5$ million = 1 250 million and recognise that 1 250 million is equal to 1.25 billion or over 1 billion. Numbers may be written with zeros. Allow minor discrepancies with number of zeros if conclusion is correct.			
2a	12 (unit already included)			
2b	Answer could be either Blanco or Wit but must be supported by weight and/or cost information. Likely answers include: <ul style="list-style-type: none"> <li>Blanco at \$1.40 is cheapest way to get 90g needed.</li> <li>Wit at <math>3.60/2.9 = 1.24</math> so \$1.24 for 100g is cheaper rate. This might include note about buying more buttons allows for further consumption.</li> </ul>			
2c	Multiply each amount of ingredients by at least 2.5 (third option down)			
3a	9 hours 45 minutes (units already included)			
3b	Accept % in the range 30-40			
3c	Either Yes or No is acceptable if supported by referring to the number of people in the sample getting between 8 and 10 hours sleep and uses proportion to comment on claim. Examples might be: <ul style="list-style-type: none"> <li>About 520 students out of 946 are in the range 8 to 10 hours sleep, which is more than one half (may calculate 55%). Disagree with the claim as it is exaggerated.</li> <li>Includes all students getting 8 or more hours sleep, about 580 students. That is well over one half or 50% so rejects the claim.</li> <li>Similar calculations to first answer but accepts the claim as 55% is close enough to one half.</li> </ul>			
4a	Yes or no is accepted if supported with working that uses the admission prices. Examples include: <ul style="list-style-type: none"> <li>Yes. A family of 2 adults and 1 child would normally pay \$82.50 (\$72 for 2 adults plus \$10.50 for 1 child) so they will save \$2.50. A family of 2 or 3 children will save more (\$12.50 and \$20.50).</li> <li>No. Only a family of 2 adults and 3 children will save over \$20. (<math>\\$103.50 - \\$80 = \\$23.50</math>).</li> <li>No. A family with only 1 adult will not save money since <math>\\$36.00 + \\$31.50 &lt; \\$80.00</math>.</li> </ul>			
4b	Acceptable options include: <ul style="list-style-type: none"> <li>Buy two notebooks using the half off deal and the third at normal price (<math>\\$2.99 + \\$1.50 + \\$2.99 = \\$7.48</math>) which is cheaper than 3 notebooks at \$2.99 each.</li> <li>Buy four notebooks using half off deal (cost \$8.97 or \$8.98) since not much dearer than other options and get an extra notebook.</li> <li>Buy three notebooks at normal price (<math>3 \times \\$2.99 = \\$8.97</math>) which is same price as above but don't need the other notebook.</li> </ul>			
4c	More than 25% off (Option 4)			



Question #	Answer/Judgement	Outcome		
		1	2	3
5a	3½ (fourth option down)			
5b	93.25			
5c	<p>Agrees or disagrees with the presenter's estimation and argument is supported by measurements from the diagram and/or angle sense. Examples might be:</p> <ul style="list-style-type: none"> <li>• Agree. A drop of 66 m over 66 m is 45° so a drop of 64-10.55 = 53.45m must be close to 40°. (Accept 66 m used instead of 53.45 m)</li> <li>• Agree. Angle between the horizontal and vertical is 90°. The side lengths suggest the angle is about half of 90° so 45°. 40° is reasonable.</li> <li>• Disagree. Same calculations but concludes the angle is close to 45° and 40° is not close enough.</li> </ul> <p>Trigonometry is not expected but is marked correct if attempted:</p> <ul style="list-style-type: none"> <li>• <math>Tan\theta = \frac{53.45}{66} = 0.81, Tan^{-1}(0.81) = 39^\circ.</math></li> </ul>			
6a	Every 50 minutes (3 <sup>rd</sup> option down)			
6b	79 (units already included)			
6c	<p>Answer supported by information from graph. Examples might be:</p> <ul style="list-style-type: none"> <li>• Agree. -1 and 0 minutes indicate early or on time. 15 times are -1 or 0 out of a total of 31 times and 15/31 is close to one half.</li> <li>• Disagree. Same working but says 15/31 is not equal to one half.</li> </ul>			
7a	\$2.03 (2nd option down)			
7b	185 but 180 -190 accepted			
7c	<p>Any approximation to a correct graph accepted (Tools are quite unfriendly). Explanation for use of line required, that leads to an answer in the range \$3.00 - \$3.40 for a weight of 1.2 kg. Example might be:</p> <ul style="list-style-type: none"> <li>• Find 1200g on bottom axis, draw a vertical line to the line then trace across to the price axis. Read off the price.</li> </ul>			
8a	\$350 (3 <sup>rd</sup> option down)			
8b	First, second and last statements (2 or 3 correct, no incorrect statements).			
8c	<p>Answer about the claim uses information from both graphs to support it. Examples might be:</p> <ul style="list-style-type: none"> <li>• Carla's claim makes sense. Aquaculture has the highest number of claims for time off of all the areas and lifting, carrying and moving objects are part of the work of her Dad, who works in aquaculture.</li> </ul>			
9a	North-West (4 <sup>th</sup> option down)			
9b	29 280 (units already given)			
9c	<p>Explanation includes 11 days x 24 hours in a day = 264 hours and division (possibly multiplication). Options for calculation are:</p> <ul style="list-style-type: none"> <li>• <math>11\ 680 \div 11 \approx 1061</math> km per day. <math>1061 \div 24 \approx 44</math> km/hr.</li> <li>• <math>11\ 680 \div 264 \approx 44</math> km per day</li> </ul>			
10a	A			
10b	6 packs (ideally) though 5 packs accepted			
10c	<p>2.2 kW heat pump. Explanation uses provided information. Both the formula and the table suggest a 2.2 kW heat pump. Formula: <math>0.12 \times 3.1 \times 5.5 = 2.046</math> kW so buy 2.2 kW.</p>			

	Table: $3.1 \times 5.5 = 17.05 \text{ m}^2$ . Round up to $20 \text{ m}^2$ and buy 2.2 kW.			
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# 32406 Numeracy Assessment Schedule

June CAA 1, 2023

## Outcomes

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

## Notes

Given the platform is digital, allow for typos where it can be reasonably inferred the candidate is correct based on what else is recorded. Allow for minor errors, such as miscounting, if the argument is strong and assumes that error in the answer. Accept reasonable rounding, even in situations where money amounts are given to 3dp. In the case of typos and minor errors, take a position that favours the candidate.

Ignore extraneous information that does not add to an answer, but regard contradictions in an argument as incorrect.

## Evidence

Question	Answer/Judgement	Outcome		
		1	2	3
1a	$8 \times \$22.70 + 10 = \$191.60$ (Any equivalent calculation accepted. Answer, \$191.60 is not required). Ignore 'running arithmetic' that disregards equality. Accept $8 \times 22.70 + 20 = \$201.60$ as candidate counts two-way travel. Do <b>not</b> accept just $8 \times 22.70$ .	✓		
1b	$\$27.30 \div 1.5 = \$18.20$ per hour (Answer only required). Accept $\$27 \div 1.5 = \$18.00$ (rounding).		✓	
1c	$\frac{3}{4} \times 5 \times 2.76 = \$10.35$ (Answer only required).		✓	
1d	In the range 60,000 to 70,000. Accept also if students record each occupation separately, possibly with a '+' or ',' sign or 'and' as this shows correct reading of the scale. (About 39,500 '+' 26,500).		✓	
1e	At least 2 angles correct: $90^\circ$ , $60^\circ$ , $45^\circ$ in the correct order.	✓		
1f	Must justify a position. Finds area of deck $8 \times 2 = 16 \text{ m}^2$ (Note that superscript for 'square metres may not be used, and ^2 or words used instead – all accepted). Calculates $16 \times 11.5 = 184$ linear metres. Assume units if numbers are correct. Yes, she is correct – it is <i>about/just under</i> 190. (Or 'no', as it is not exactly 190, or allowing for wastage.)			✓
1g	$1\frac{1}{3} \times 33 \times 10 = \$440$ . Accept if student uses $1.3 \times 33 \times 10 = \$429$ . Accept if student uses $1.33 \times 33 \times 10 = \$438.90$ . Accept if student uses $1.333 \times 33 \times 10 = \$439.89$ . Accept rounding of answer to dollars, e.g., <b>\$429 to \$430, or \$438.90 to \$438 or \$439.</b>	✓		

1h	<p>Must make a comparative statement between the groups (Y11 and Y13). Any legitimate position accepted but must be supported by evidence of correct reading from the graph. Numbers used in justification can be:</p> <ul style="list-style-type: none"> <li>Year (Most likely position in 2023) coupled with reference to percentage or difference between percentages for Y11 and Y13.</li> <li>Trend that references percentages, possibly only to one or two years.</li> <li>Specific points referring to both values (year and percentage)</li> <li>Accurate use of percentages but years can be reasonably inferred.</li> </ul> <p>Do <b>not accept</b> totalling percentages or treating percentages as numbers of people.</p>			✓
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2a	$\frac{6}{14}$ or $\frac{3}{7}$ or 0.4286 or 42.86% (allow for rounding).	✓		
2b	<b>d (4<sup>th</sup> option).</b> $200 \div 10$	✓		
2c	<b>32%</b>		✓	
2d	69 – 70 times heavier.	✓		
2e	7,000 – 7,500 votes.		✓	
2f	<p>Must take a position and give numbers from the graph to support their answer. About 210 in 2022 and about 52 in 1994 (Rounding to 200 – 220 and 50-55 allowed). Uses those numbers to justify position, for example:          Agree – 200 is four times 50.          Disagree – 52 in 1994 and 210 in 2022 so not exactly four times as many.</p>			✓
2g	<b>b. (Option 2)</b> 7,000 m		✓	

3a	Height: 1,700 mm – 2,100 mm. Accept answers in other units if given.	✓		
3b	<b><math>22 \times 7</math> or <math>7 \times 22 = 154</math>.</b> Must show the working. Answer only <b>not</b> accepted.	✓		
3c	<b>E</b>		✓	

4a	$6 \div 8 = 0.75$ m (Answer only required). No rounding accepted, e.g., 0.8.	✓		
4b	135°		✓	
4c	\$248		✓	
4d	<p>The supporting argument should clearly state what is being found by each calculation of Rob's working, i.e., connect to the geometric shapes.  <math>1.72 \times 1.72 = 2.96</math> m<sup>2</sup> gives the area of the square than includes the octagon.  <math>2 \times (0.5 \times 0.5) = 0.5</math> m<sup>2</sup> gives the combined area of the four triangles (or corners).  <math>2 \times</math> is significant because corners are half a square.  <math>2.96 - 0.5 = 2.46</math> m<sup>2</sup> gives the removal of the corners.          Do <b>not accept</b> rewording of the calculations given.</p>			✓
4e	$0.8 \times 1000 = 800$ litres $800 \div 25 = 32$ bags (Only <b>32</b> $\times$ 25L bags is required).	✓		
4f	<p>Rob is incorrect. His ratio of white to purple is 9:16. The student may use any valid argument to show the ratios are not equivalent. For example:  <b>Percentages:</b> 2:3 is 40% white and 60% purple. 9:16 is 36% white and 64% purple.  <b>Ratios:</b> <math>2:3 = 18:27</math> and <math>9:16 = 18:32</math> so not equivalent (finding a common measure).  <math>9:16</math> cannot be simplified (no common factor) so cannot be equivalent to 2:3.</p>			✓

	2:3 can be copied repeatedly but that leaves 1:4 which is not 2:3. <b>Unit rate:</b> 2:3 = 1:1.5 (1 white to 1.5 purple). 9:16 = 1: 1.77...) so not equivalent.			
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5a	\$229.65 or \$229.64 (Accept rounding to whole number of dollars, \$229 or \$230 and rounding to \$229.60 or \$229.70).	✓		
5b	\$49,672.35 (Allow 49,000 – 50,000)	✓		
5c	Must use information from the graph to justify their position with reference to 1/3. For example: 79 muffins were chocolate. $79/240 = 0.329 \dots$ which is very close to one third (0.3̄). Other calculations might be used to agree or disagree with the claim, such as: $80/240 = 1/3$ and 79 is close to 80 so accept claim or reject claim because 79 is less than 80.			✓
5d	\$1.44 (accept \$1.40 – \$1.50 range).		✓	
5e	28 cm and 42 cm (accept either way around).		✓	
5f	F (Bottom right)	✓		

End of Assessment Schedule

# 32406 Numeracy Assessment Schedule

September CAA 2, 2022

Question #	Answer/Judgement	Outcome		
		1	2	3
1a	<b>4 300</b>			
1b	<b>10.50</b> (unit already given)			
1c	Yes, Kahu is right. Reference to the intercept at (100, 0) meaning that they make a loss for less than 100 hāngi packs. Accept if 100 or less is used. May be expressed in an informal way such as “They only start making money after 100 packs. Before 100 packs they lose money” or “The money they make grows after 100, it is negative before 100 packs.”			
2a	<b>C 2950 grams</b>			
2b	<b>1568 – 2697</b> grams of dry food and <b>14 – 16</b> sachets of wet food.			
2c	Any prediction that appropriately uses data from the graph. Inference that student interprets the growth curve correctly. Examples might be: Agree: Georgia is below average weight at 4 months. 5 Kilograms is below average weight at 12 months. Disagree: Georgia is closing in on average weight at 4 months. 5.5 kilograms, average weight for 12 months, is a better prediction.			
3a	<b>September 2023.</b> Accept only September.			
3b	<b>338.20</b> (Unit already included)			
3c	Accept any valid argument derived from the tree diagram information and the 70% pass claim. Examples might be: Claim not supported: Only 4/10 or 40% of Pita’s friends pass on the first try and only 3/6 or 50% pass on the second try. Claim could still be valid: Ten is a small group so the results might vary from the results of all people sitting the test. Pita’s friends might not have studied very hard for the test, so their results are poor (Percentages as given above).			
4a	<b>\$98.69</b> or <b>\$98.70</b> (Accept if unit not given) May have calculated for 12 pairs \$1184.32.			
4b	<b>Wholesale Sports Option 2</b>			
4c	<b>Graph 4</b>			
5a	<b>45-60%</b> Option 2			
5b	<b>160-165</b> (Unit already given)			
5c	Any valid argument that is supported by data from the table and compares the models by at least two variables (price, fuel consumption, range). Examples might be: Agree that Hybrids are best value Purchase price is more than petrol and less than electric (\$45,190 vs \$61,990 and \$32,490. Might be coupled with fuel cost being cheaper than petrol but dearer than electric (\$11.00 per 100km vs \$3.00 and \$15.00). Might mention that hybrids also give better max. distance (960 km vs 270km and 780 km). Disagree that Hybrids are best value Purchase price is dearer than petrol vehicle (\$45,190 vs \$32,490) Higher fuel cost than electric (\$11.00 per 100 km vs \$3.00)			

Question #	Answer/Judgement	Outcome		
		1	2	3

6a	<b>3 hours 20 minutes.</b> Accept in range 3 - 4 hours			
6b	<b>133 -134</b> (Units already given)			
6c	Any valid argument based on data from the table that uses 10% as a reference when needed. Any comparisons made in one currency. May include observation that some prices are higher in Vanuatu (Milk and bread). Example answers might be: Agree Vanuatu is 10% cheaper based on examples such as 1 dozen eggs ( $6.25 \div 7.06 = 0.885$ or 88.5%) and bananas ( $0.67 \div 2.75 = 0.244 = 24.4\%$ ). Disagree based on examples where Vanuatu prices are dearer such Milk (\$3.13 vs \$3.12), and bread (\$3.33 and \$3.30). Note rice is 3% cheaper in Vanuatu, not 10%. Student might compare total of prices: Vanuatu \$16.50 and NZ \$19.48 and calculate $16.50 \div 19.48 = 0.847 = 84.7\%$ and argue Vanuatu prices are more than 10% cheaper.			

7a	Any valid argument based on information from the advertisements. Inference that $\$180 - 25\% = \$135$ has been calculated. Examples might be: Price. Sole Train (\$135), Alleyquick (\$120) and Rainforest (\$132). Availability: Alleyquick is cheapest but Sole Train has immediate pickup compared to the online retailers.			
7b	Option 3 Early September. Accept Late August as well.			
7c	Any valid argument based on information from the graph that includes reference to a trend over the three years (2001, 2011, 2021). Might be stated informally. Examples might be: Disagree Almost 50% of adults rarely or never shop online in 2021. Unlikely that these people will now switch to online shopping. Agree The percentage of people shopping online always and often has grown for 10% in 2001 to over 50% in 2021. By 2031 the percentage will be higher.			

8a	Option 4			
8b	Box located $\frac{1}{4}$ along the rectangle from left/ $\frac{3}{4}$ from the right.			
8c	Accept any valid position that is supported by information. Examples might be: Accept claim based on 56% (16% + 40%) of respondents chose Happy or Very Happy with the design. Reject claim based on a sample to population inference. While 56% of respondents chose Happy or Very Happy the sample is gathered on Saturday morning and is unlikely to be representative of all Te Puke residents. Note this goes beyond the standard (inference) and is a misreading of the claim statement. Accept these answers.			

9a	Six (3rd option down)			
9b	<b>1 or 2</b> x Piece A, 2 x Piece B, 0 x Piece C, 2 x Piece D, 1 x Piece E			
9c	6.64 m <sup>2</sup> (Accept in range 6 – 7 m <sup>2</sup> )			

Question #	Answer/Judgement	Outcome		
		1	2	3
10a	147 (Option 3)			
10b	225 – 250 Accepted			
10c	<p>Any valid claim based on the information in the graph. Some inference may be required that students have read the graph correctly.</p> <p>Examples might be:            Support the case since 225 (7-8 am) and 250 (8-9 am) vehicles pass through the intersection in the morning and about 315 (3-4 pm) vehicles pass through in the evening rush hour. May include reference to only one hour block having over 200 vehicles.            Reject the case by selecting times that should be busy and do <b>not</b> meet the 200+ vehicles requirement. About 180 vehicles pass through the intersection in the 5- 6 pm period.</p>			

End of Assessment Schedule