Assessment Schedule – Term 3, 2024

Numeracy: Apply mathematics and statistics in a range of everyday situations (32406)

Assessment Criteria

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	Key element is correct reading of the time scale. **Achievement criteria** • Must agree that turtles lived in the age of dinosaurs. • Must demonstrate correct reading of timeline by: - stating the time-period when dinosaurs existed, e.g. 300 to 180 mya or 180 to 300 mya. In this case, accept the student knows the period coincides with 230 mya, even if not explicitly stated. OR - giving a single time for dinosaurs, e.g. 225 or 300 mya. This must be accompanied by a statement connecting the stated time to the time of turtles, e.g. "turtles came before the end of dinosaurs" or "turtles existed around the same time or close to the same time." A directionality of time is **not** necessary but, if given, check it is correct, e.g. 230 mya is after 200 mya is incorrect. *Accept if student neglects to use millions when referring to years.* *Accept if student states 230 mya coincides with graphic of the dinosaurs.*			✓
1b	**Achievement criteria** • Question posed must be answerable from the data table, so must include groups and/or measures from the table. If measures are used, they must be stated as they are in variable within the table, i.e. weight and shell length. • Question might be answerable by referring only to the six turtles in the table, though that is not ideal. • Question might be framed as an instruction, e.g. "Find the …" <u>Examples:</u> Summary questions such as: - How heavy are turtles in the data set? - What are the shell lengths of turtles in the data set? Comparison questions such as: - Are the shell lengths of male turtles greater than the shell lengths of female turtles? (*Could compare species not genders.*) - Are Green turtles heavier than Loggerhead and Hawksbill turtles? (*Could compare genders.)* Relationship questions such as: - Is there a relationship between the shell length of a turtle and its weight?	✓		

	Other appropriate questions accepted.			
1c	**0.01** Third option.		✓	
1d	**Achievement criteria** • Must take a position, yes – facing extinction, no – not facing extinction, or not possible to tell. • Must read information correctly from the graph, or it can be reasonably inferred from their writing that they have done so. • Must describe a pattern or relationship that is consistent with the information they use and supports their position. - Pattern might be numbers of all or one species between seasons. - Relationship might be relative numbers of species in one season, e.g., less Loggerheads than Hawksbills suggest that species is more at risk. For example: Agree – The number of Hawksbill sighting reduces from wet to dry seasons, 78 to 23 sightings. This is evidence that the Hawksbill population is declining so the extinction claim is justified. Disagree – paper is only using the dry seasons (23 Hawksbill) to make their call. They are ignoring the numbers from the wet seasons (78 Hawksbill). This suggests that the Hawksbill turtles are more common in the wet seasons and might migrate away from Fiji during the dry season. Disagree – there are far less turtles of all species around in the dry season than in the wet season. The fraction of Hawksbill turtles in the wet season is 78/221 = 35.3% which about the same as the fraction for the dry season which is 23/80 = 28.8%. The fraction of turtles that are Hawksbills stays about the same. Other similar answers accepted.			✓
1e	**(i)**		✓	
1f	**150** L (100 mm = 10 cm. 10 x 15 = 150)	✓		

Question 2	Answer / Judgement	Outcome		
		1	2	3
2a	**5** km (1 hour = 60 minutes. 60 ÷ 12 = 5)		✓	
2b	Jeans are **20%** of the new price (24 / 120 x 100). 24/120 = 0.2 = **20%.**	✓		
2c	No (reflective) and Yes (rotational)		✓	
2d	**(iv)**		✓	
2e	**5** L (20 x 0.25)	✓		
2f	**Achievement criteria** • Must take a position of 'yes' or 'no'. • Must read percentages correctly for 2002 (*allow 17-19%)* and 2022 (*allow 52 – 55%)* • Must explicitly show a 'three times' connection, e.g. 3 x 18 = 54 or 54 ÷ 18 = 3 <u>Examples:</u> Agree: In 2002, the percentage of New Zealanders buying from op shops was about 18%. In 2022, the percentage was about 54% (3 x 18% = 54%), so the claim is right. Disagree: In 2002, the percentage of New Zealanders buying from op shops was about 18%. In 2022, the percentage was about 53% (3 x 18% = 54%), so the claim is not quite right. *Accept any answer based on reasonable reading of the graph and a correct 'times three' calculation.*			✓

Question 3	Answer / Judgement	Outcome		
		1	2	3
3a	2 hours and 30 minutes. (Also accept 2.5 hours and 150 minutes)	✓		
3b	Difference in low tide from one day to the next is 12 hours and 21 minutes. Therefore, 6:14 pm + 12 hours and 21 minutes = 6.35 am. *Accept in range 6:15 am – 6:50 am. Also accept a sensible time band spanning these times, e.g. 6 – 7 am.* *If student does not put am or pm, assume the answer is referring to am, and accept or reject the answer.* *Also accept **6:30 – 7:00 pm** as the student may consider early morning a bad time to collect seafood.*		✓	
3c	**250** g chicken (Mix is 5/8 chicken. 1/3 of 150 = 50. 5 x 50 = 250).		✓	
3d	Accurate reading is 295 mm (29.5 cm). This is less than 30 cm. Minimum means the snapper must be at least 30 cm. Snapper must be put back. **Achievement Criteria** • Must take a 'put fish back' position. • Must show evidence of reading the length of the fish correctly (this might be inferred from their wording) • 'Put back' is supported by a statement that the fish does **not** meet the minimum length requirements / is too short, etc.			✓
3e	**Achievement Criteria** • Must take a position – 'yes', 'no', or 'uncertain'. • Must explain from the data that about 50% of snapper are keepable or over 50% of the snapper are keepable (considering the number of points at 30 cm), preferably referring to the median. • A connection is made between the 50%-or-more probability and 5–10 fish. *Also accept arguments about uncertainty (sample variation).* *Also accept the 'contextual' interpretation that Awa may not be able to catch 10 fish due to weather conditions, fish not biting, lunar phase, etc.* <u>Examples:</u> • There are 100 snapper lengths shown on the graph, 50 on each side of the median value of 30.5 cm. The probability of each snapper caught being 30 cm or more is about half or 0.5. Awa can reasonably expect 5 out of 10 snappers to be keepable. • There is likely to be a lot of variation in the length of the fish caught. 10 is not a big sample, so it is very uncertain whether 5 of the 10 will be at length.			✓
3f	**200** mL (10 L = 10,000 mL, 0.02 x 10,000 = 200 mL)		✓	

Question 4	Answer / Judgement	Outcome		
		1	2	3
4a	**$280** (70% of $400). Accept also **$56** as that is the discounted price of one lesson.	✓		
4b	**Achievement Criteria** • Must take a position, either agree or disagree. • Must make some reference to the car being more than a car length away from the corner, preferably 1½ car lengths. • Must connect distance to the corner with number of car lengths x 4.5 metres. <u>Example:</u> Agree: The car is 1½ lengths from the corner. Given that 1½ x 4.5 = 6.75 metres, the car is more than 6 metres from the corner.			✓
4c	*Accept in the range **120 – 150 metres**.* *Note that less than 120 metres suggests the student incorrectly applies a linear relationship.*		✓	
4d	5/12 x 48 = 20 L so amount might be **about 20 L**. *Accept in the range **18 – 23 L***	✓		
4e	(iii) $^{7}/_{10}$	✓		
4f	**Achievement Criteria** • Must take a position. • Must reference percentages correctly. <u>Examples:</u> Agree: May use the higher frequency of green ($^{12}/_{25}$ = 48%) to predict that green has a higher likelihood than the other colours. Disagree: May use the frequency of green ($^{12}/_{25}$ = 48%) to say that 52% of the sample are not green, and predict that red or amber has a higher likelihood than green. Disagree: May use percentages from the sample, as above, but acknowledge that 25 events constitute a small sample, therefore not a reliable basis for prediction.			✓

Question 5	Answer / Judgement	Outcome		
		1	2	3
5a	Manuka Smoke and Leather. *Accept also if 50% and 20% are given rather than candle scent names.*	✓		
5b	**60** manuka smoked candles (5 + 2 = 7. 84 / 7 = 12. 12 x 5 = 60)		✓	
5c	**Achievement Criteria** Must disagree. Must show evidence of correct volume calculations. (Option 1 is sufficient) State, or can be inferred from comments, that Option 1 is greater than 150 cm^3 (unit not necessary), preferably give 162 cm3, to support the position. <u>Example:</u> Disagree with Zion. The capacity of Option1 is 162 cm^3 (4.5 x 4.5 x 8) which is greater than 150 cm^3. Option 2 (8 x 4.5 x 4.5 = 150 cm^3) has a capacity of 150 cm^3, as required to maximise profit.			✓
5d	**$3.30** Total is $277.70. $277.20 ÷ 84 = $3.30.	✓		
5e	**(i)** (top left)		✓	
5f	**Achievement Criteria** • Must take a position by choosing an option or accepting both. • Must correctly calculate using percentages, i.e. 70% x 18 = $12.60. • May use context to justify decision, e.g. Jules gets an extra candle for only 60 cents. <u>Example:</u> Two candles cost $12.00. Three candles normally cost $18, but with 30% discount, cost drops by $5.40. Total for three candles is $12.60. Best to buy three candles as the third one only cost 60 cents. Two candles cost $12.00. Three candles normally cost $18, but with 30% discount, cost drops by $5.40. Total for three candles is $12.60. Best to buy two candles as it is cheaper than buying three.			✓