Education Bureau
Territory-wide System Assessment 2024
Secondary 3 Mathematics
Marking Scheme

Note (for Section B and C of each sub-paper):

*Mark for Answer:
  (1) The Mark for Answer may be given when there is a correct answer without any work shown.
  (2) If the work shown is incorrect, the Mark for Answer will not be given.
  (3) If the work shown is poorly presented but there is a correct answer, the Mark for Answer may be given.

**Mark for Presentation:
  (1) If the work shown is correct but the answer is incorrect, the Mark for Presentation may be given.
  (2) If the work shown is incorrect, the Mark for Presentation will not be given.
  (3) If the numerical value of the answer is correct but not the approximate value as required by the question, the Mark for Presentation will not be given.
  (4) The Mark for Presentation may include overall work such as mathematical expressions, units, written explanations, use of symbols, etc.

r.t. *xxx* means "accept answers which can be rounded to *xxx*".

Steps that may be skipped are shown in shade.

Alternative suggested answers are shown in boxes.

Section A – Sub-paper 4 (9ME4) (1 mark each)

1. D (9ME1-1)
2. D (9ME1-2)
3. A (9ME3-4)
4. C (9ME1-5)
5. A (9ME1-6)
6. D
7. A (9ME1-7)
8. C
9. C
10. D (9ME3-10)
11. B (9ME3-11)
12. C (9ME1-11)
13. A (9ME3-12)
14. C (9ME3-14)
15. B
16. B
17. B
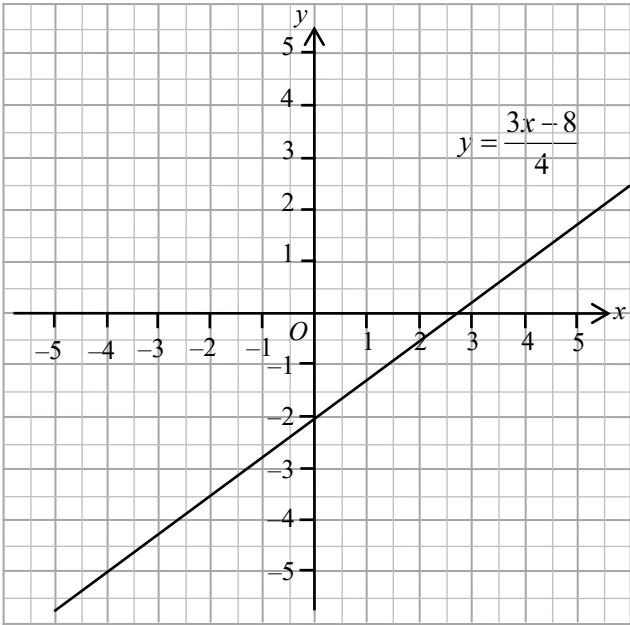18. B (9ME3-18)
19. A (9ME1-19)
20. D (9ME3-20)

Section B – Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Marks	Notes
21.	11^3	1	
22. (9ME3-21)	(i) ___+8 000 / 8 000___ represents that there are 8 000 tourists arriving city A. (ii) ___–2 000___ represents that there are 2 000 tourists leaving city B.	1	Must be all correct
23.	$a =$ ___256___	1	
24. (9ME3-24)	The selling price of the tablet computer is ___$3 900___.	1	No need to consider unit
25. (9ME1-25)	Number of apples : Number of mangoes = ___8___ : ___7___	1	
26.	The value of the 5th term of the sequence is $\dfrac{6}{7}$.	1	
27.	The power of the polynomial is ___3___ .	1	
28. (9ME1-27)	$3x^2 + x - 10$	1	
29. (9ME1-29)	$(x - 1)^2$	1	
30. (9ME1-30)	$a = \dfrac{25}{12}$	1	
31. (9ME1-31)	$x \le -4$	1	
32.	The volume of the prism is ___1 800 cm^3___ .	1	No need to consider unit
33.	$x =$ ___110°___	1	No need to consider unit
34.	$x =$ ___54°___	1	No need to consider unit
35.	$x =$ ___30°___	1	No need to consider unit
36.	The bearing of Q from O is ___N43°E / 043°___.	1	

Question Number	Suggested Answers	Marks	Notes
37. (9ME1-37)	(a) The basketball team played __20__ matches last year. (b) The lowest score of the basketball team in the matches last year was __40__ . (c) The median score of the basketball team in the matches last year was __67__ .	1 (37a) 1 (37b) 1 (37c)	No need to consider unit
38. (9ME3-38)	Mean = __4.1 m__ Median = __3.9 m__	1 (38-1) 1 (38-2)	No need to consider unit
39.	The required relative frequency = $\dfrac{2}{5}$	1	or 0.4

Section C － Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Marks	Notes
40.	The total amount $= 202 + 256 + 101$ $> 200 + 200 + 100$ $= 500$ $\therefore$ Mr Chan **does not have** enough money to buy these 3 gifts.	0 0 No evidence of using estimation strategies nor giving reasonable justification	◆ Exact calculation only ◆ The estimate is given only after exact calculation ◆ Use wrong methods to get the approximation for the price of each gift
		1 0 Partial evidence of using estimation strategies, but the solution is incomplete or contains errors	◆ Estimate the price of each gift correctly, but the total amount is omitted or wrongly estimated ◆ Estimate the total amount correctly, but the conclusion is omitted or wrong ◆ Correct method used, but errors occurred
		1 1 Estimate with reasonable justification	◆ No need to consider unit/presentation ◆ The conclusion must be correct and aligned with a reasonable explanation
41.	He needs $= \dfrac{0.05 \times 150}{1.25}$ $= 6$ buckets	1 (41-1) 1* (41-2) 1** (41-3)	

Question Number	Suggested Answers	Marks	Notes
42. (9ME1-41)	<table><tr><td>x</td><td>− 4</td><td>0</td><td>4</td></tr><tr><td>y</td><td>−5</td><td>−2</td><td>1</td></tr></table> $y = \dfrac{3x-8}{4}$	1* (41-1) 1 (41-2) 1* (41-3)	Must be all correct In case the data in the above table is incorrect, students can still use the ordered pairs to draw a straight line. The line must pass through (0, −2) and the range of x must include the values from − 4 to 4. Correct graph (include: correct position, use ruler to draw the line, pass through the 3 correct points and extend two ends of the line) If the table is incomplete but no mistakes are found and the graph is correct, (0, 1, 1) can be given.
43. (9ME3-43)	$\dfrac{7x}{2} \times 15 = 420$ $\quad x = 8$	1 (43-1) 1* (43-2)	

Question Number	Suggested Answers	Marks	Notes
44.	$\angle ABC = \angle ADB = 90°$ (Given) $\angle ACB = \angle ABD$ (Given) $\angle BAC = \angle DAB$ (Common) $\therefore \ \triangle ABC \sim \triangle ADB$ (AAA)		Or other correct proofs

Conditions		
(1) Any correct proof with correct reasons	3	
(2) Any correct proof with poor presentation, missing reasons or inappropriate reasons	2	
(3) Incomplete proof with any one correct statement and one corresponding reason	1	
(4) Incomplete proof	0	

Question Number	Suggested Answers	Marks	Notes
45.	$PQ = \sqrt{95^2 - 76^2}$ $= 57$ m	1 (45-1) 1* (45-2) 1** (45-3)	
46. (9ME3-42)	$\sin 20° = \dfrac{x}{155}$ $x \approx 53.013122$ $x = 53.0$ m (Correct to 3 sig. fig.)	1 (46-1) 1* (46-2) 1** (46-3)	r.t. 53.0 m

47.	(a)
	<table><tr><td>Weight (kg)</td><td>3.0 – 3.9</td><td>4.0 – 4.9</td><td>5.0 – 5.9</td><td>6.0 – 6.9</td></tr><tr><td>Class mark (kg)</td><td>3.45</td><td>4.45</td><td>5.45</td><td>6.45</td></tr><tr><td>Frequency</td><td>4</td><td>8</td><td>16</td><td>12</td></tr></table>
	(b) The mean weight of these 40 watermelons
	   $= \dfrac{3.45 \times 4 + 4.45 \times 8 + 5.45 \times 16 + 6.45 \times 12}{4 + 8 + 16 + 12}$
	   $= 5.35$ kg
		1* (47a)
		
		1 (47b1)
		
		1* (47b2)
		1** (47b3)
			Must be all correct