Education Bureau
Territory-wide System Assessment 2010
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, usage of symbol, 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.

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Section A – Sub-paper 1 (9ME1) (1 mark each)

1. B (9ME2-1)
2. D (9ME2-2)
3. D (9ME4-2)
4. C
5. B
6. A
7. A
8. C
9. D
10. C
11. D (9ME2-11)
12. A (9ME2-12)
13. A (9ME4-12)
14. B
15. A
16. D
17. C
18. B
19. C
20. B

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Section B – Sub-paper 1 (9ME1)

Question Number	Suggested Answers	Notes	Marks
21. (i) (ii) (9ME2-21)	-7 $+32$ ／ 32	Must be all correct	1
22. (9ME2-22)	36 ／ +36		1
23. (9ME4-22)	(i) Estimated value (ii) Estimated value	Must be all correct	1
24.	148		1
25.	15		1
26.	$(2x-1)^2$ ／ $(2x-1)(2x-1)$	Factorization	1
27.	$(x-5)(x-2)$	Factorization	1
28.	7		1
29.	$\frac{3y}{2x}$	In simplest form	1
30. (9ME2-30)	$\frac{y}{1-y}$	Give mark if '$x=$' is written	1
31. (9ME2-31)	$x \geq 3$		1
32. (9ME4-32)	$\angle VME$ ／ $\angle EMV$		1
33.		The cross-section is a rectangle	1
34.	3		1
35.	110		1
36.	*BCEF* or its correct permutation, or *CDFG* or its correct permutation, or *ABHE* or its correct permutation, or *ACHF* or its correct permutation, or *BDEG* or its correct permutation. (ANY TWO)	1 mark for each correct plane	1 (36-1) 1 (36-2)

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Question Number	Suggested Answers	Notes	Marks
37.	*A*、*B*		1
38.	(4, –1)		1
39.	56.3°	The unit can be omitted	1
40. (9ME2-40)	48		1
41. (i) (ii) (9ME2-41)	Discrete data Continuous data	Must be all correct	1
42. (9ME4-41)	62 000		1
43.	6.7		1

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Section C – Sub-paper 1 (9ME1)

Question Number	Suggested Answers	Marks	Notes
44. (9ME4-44)	Area of the football field $= 40 \times 40 \times \frac{5}{2}$ $= 4000\ \text{m}^2$	1 (44-1) 1* (44-2) 1** (44-3)	For $40 \times \frac{5}{2} \times a$ or $100 \times a$, where a is a positive real number If only the length (100 m) is calculated, no marks will be given.
45. (9ME4-45)	$\frac{x^{-2}}{(y^2)^3}$ $= \frac{x^{-2}}{y^{2\times 3}}$ $= \frac{1}{x^{-(-2)}y^6}$ $= \frac{1}{x^2 y^6}$	1 (45-1) 1 (45-2) 1* (45-3)	Using $(y^m)^n = y^{mn}$ Using $\frac{1}{x^{-k}} = x^k$ or $x^{-k} = \frac{1}{x^{-(-k)}}$ Correct answer (getting marks 1, 1, 1)
46.	$\begin{cases} 3x + y = 70 & ...(1) \\ y = 2x - 30 & ...(2) \end{cases}$ Substitute (2) into (1) $3x + 2x - 30 = 70$ $x = 20$ Substitute $x = 20$ into (2) $y = 2(20) - 30$ $y = 10$	1 (46-1) 1* (46-2) 1 (46-3) 1* (46-4)	Method (eliminating one of the variables) First correct root (either x or y) Method (e.g. using the value of the first root to get the second root) Both roots are the correct answers
47. (a)	Area of the small circle $= 3^2\pi$ $= 9\pi\ \text{cm}^2$ Area of the large circle $= 4^2\pi$ $= 16\pi\ \text{cm}^2$	1 (47a-1) 1* (47a-2) 1* (47a-3)	Use correct method to find either one of the areas Express the answer in terms of π Express the answer in terms of π
(b)	The shaded area $= 16\pi - 9\pi$ $= 7\pi\ \text{cm}^2$ The shaded area is $7\pi\ \text{cm}^2$。	1* (47b) 1** (47-4)	Express the answer in terms of π

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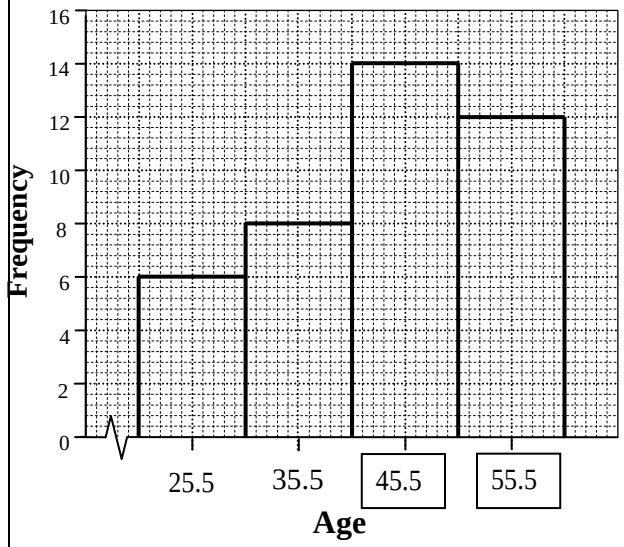
<table>
<tr><th>Question Number</th><th colspan="2">Suggested Answers</th><th>Marks</th><th>Notes</th></tr>
<tr><td rowspan="4">48.</td><td>$\angle KAC = \angle KBD$
$\angle KCA = \angle KDB$
$\angle AKC = \angle BKD$

$\therefore \Delta ACK \sim \Delta BDK$</td><td>alt. $\angle$s, PQ // RS
alt. $\angle$s, PQ // RS
vert. opp. $\angle$s

AAA ／ equiangular</td><td>3</td><td>Any correct proof with correct reasons</td></tr>
<tr><td></td><td></td><td>2</td><td>Any correct proof without reasons or having wrong symbol</td></tr>
<tr><td></td><td></td><td>1</td><td>Incomplete proof with any one correct statement and one corresponding reason</td></tr>
<tr><td></td><td></td><td>0</td><td>Incomplete proof</td></tr>
<tr><td></td><td colspan="2">Alternative solution (1)</td><td colspan="2">Alternative solution (2)</td></tr>
<tr><td></td><td>$\angle KAC = \angle KBD$
$\angle KCA = \angle KDB$
$\therefore \Delta ACK \sim \Delta BDK$</td><td>alt. $\angle$s, PQ // RS
alt. $\angle$s, PQ // RS
AA</td><td>$\angle KAC = \angle KBD$ ／
$\angle KCA = \angle KDB$
$\angle AKC = \angle BKD$
$\therefore \Delta ACK \sim \Delta BDK$</td><td>alt. $\angle$s, PQ // RS／
alt. $\angle$s, PQ // RS
vert. opp. $\angle$s
AA</td></tr>
<tr><td>49.</td><td colspan="2">$\cos 34° = \frac{AB}{800}$
$AB \approx 663.230058$
$AB =$ 663.2 (corr. to 1 d.p.)
The horizontal distance between these two stations is 663.2 m.</td><td>1 (49-1)

1* (49-2)
1** (49-3)</td><td colspan="2">Related and correct set up

r.t. 663.2</td></tr>
<tr><td>50.</td><td colspan="2">The ages of 40 staff in Tai Tai Fast Food Shop
 
</td><td>1 (50-1)

1 (50-2)

1 (50-3)</td><td colspan="2">The class marks match with the corresponding frequencies (6, 8, 14, 12)

2 class marks are correct (45.5, 55.5)

Correct histogram
(No marks will be given if any charts other than histogram are also shown as well)</td></tr>
</table>

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Question Number	Suggested Answers	Marks	Notes
51. (9ME2-52).	(Students should estimate the prices of gifts so as to find the number of gifts. The total costs cannot exceed \$70.) For example : $9.8\times5+18.9\times1$ $\approx10\times5+20\times1$ $=70$ $\therefore$ Terence can buy 6 gifts.	0 (51-1) 0 (51-2) No evidence of using estimation strategy and giving reasonable justification	◆ Give estimate only after exact calculation ◆ Wrong estimation (e.g. $29.4\approx29$) ◆ Exact calculation only ◆ Give an estimate and only one kind of gifts is bought
	Possible answers : (a) $9.8\times5+18.9\times1\approx10\times5+20\times1=70$ $\therefore$ Terence can buy 6 gifts. (b) $9.8\times4+29.4\times1\approx10\times4+30\times1=70$ $\therefore$ Terence can buy 5 gifts. (c) $9.8\times3+18.9\times2\approx10\times3+20\times2=70$ $\therefore$ Terence can buy 5 gifts. (d) $9.8\times2+29.4\times1+18.9\times1$ $\approx10\times2+30\times1+20\times1=70$ $\therefore$ Terence can buy 4 gifts. (e) $9.8\times1+29.4\times2\approx10\times1+30\times2=70$ $\therefore$ Terence can buy 3 gifts.	1 (51-1) 0 (51-2) Partial evidence of using estimation strategy, but the solution is incomplete or contains errors	◆ Correct estimation (e.g. 10, 19/20, 30) ◆ Estimate correctly, but only one kind of gift is bought ◆ Estimate correctly, but the total costs is greater than \$70 or not greater than \$60 ◆ Estimation by using correct method, but minor error occurred
	(f) $9.8\times1+18.9\times3\approx10\times1+20\times3=70$ $\therefore$ Terence can buy 4 gifts. (g) $18.9\times2+29.4\times1\approx20\times2+30\times1=70$ $\therefore$ Terence can buy 3 gifts.	1 (51-1) 1 (51-2) Estimate with reasonable justification	◆ No need to consider unit/presentation ◆ Accept using '$\leq$' instead of '$\approx$'

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(4) The Mark for Presentation may include overall work such as mathematical expressions, units, written explanations, usage of symbol, etc.

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

Steps that may be skipped are shown in shade.

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Section A – Sub-paper 2 (9ME2) (1 mark each)

1. B (9ME1-1)
2. D (9ME1-2)
3. C (9ME3-2)
4. B (9ME3-3)
5. B (9ME4-4)
6. A
7. C
8. D
9. A
10. C
11. D (9ME1-11)
12. A (9ME1-12)
13. B (9ME3-12)
14. D (9ME3-13)
15. C (9ME4-14)
16. A
17. C
18. A
19. D
20. B

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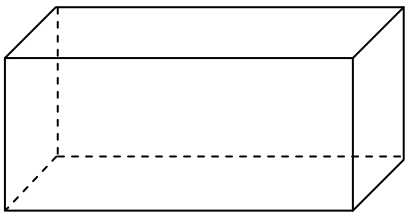
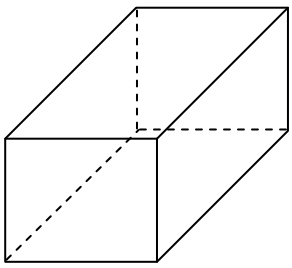
Section B – Sub-paper 2 (9ME2)

Question Number	Suggested Answers	Notes	Marks
21. (i) (ii) (9ME1-21)	-7 $+32$ ／ 32	Must be all correct	1
22. (9ME1-22)	36 ／ +36		1
23. (9ME3-22)	20		1
24. (9ME4-24)	63		1
25.	5 及 $-\frac{5}{2}$ ／ –2.5	Must be all correct	1
26.	6		1
27.	$3ab(3b-5a)$	Factorization	1
28.	Q and S ／ Q , S ／ $Q(-2 , 3)$ and $S(2 , 0)$ ／ $Q(-2 , 3)$, $S(2 , 0)$	Must be all correct	1
29.	x^2-4y^2	Expansion	1
30. (9ME1-30)	$\frac{y}{1-y}$	Give mark if '$x=$' is written	1
31. (9ME1-31)	$x \geq 3$		1
32. (9ME3-30)	3		1
33. (i) (ii) (9ME3-31)	volume surface area	Must be all correct	1
34. (9ME4-34)	 or 	Or other correct cuboids Must use solid lines and dotted lines to show all edges	1

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Question Number	Suggested Answers	Notes	Marks
35.	*A*、*C*	Must be all correct	1
36.	113°	The unit can be omitted	1
37.	3.9		1
38.	20		1
39.	56		1
40. (9ME1-40)	48		1
41. (i) (ii) (9ME1-41)	Discrete data Continuous data	Must be all correct	1
42. (a) (b) (c) (9ME3-40)	15:00 ／ 3:00 p.m. 4.4 12:00 ／ noon	3:00 is not accepted	1 (42a) 1 (42b) 1 (42c)
43. (9ME3-41)	3		1

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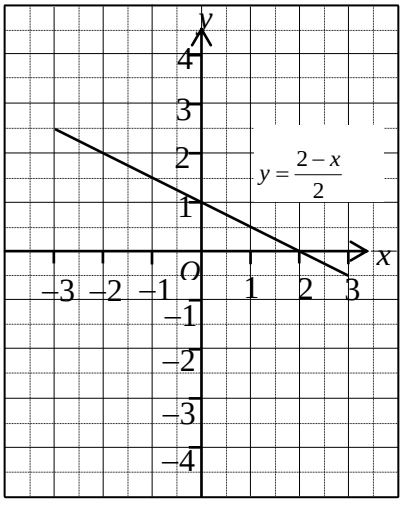
Section C – Sub-paper 2 (9ME2)

Question Number	Suggested Answers	Marks	Notes
44. (a)	Interest $= 3270 - 3000$ $= \$270$	1* (44a)	
(b)	Annual interest rate $= 270 \div 3 \div 3000$ $= 0.03$ $= 3\%$	1 (44b-1) 1* (44b-2) 1** (44-3)	
45. (9ME3-44)	$20000 \times (1-20\%)^3$ $= \$10240$ The value of the machine after three years is \$10240. OR $20000 \times 0.8 = 16000$ $16000 \times 0.8 = 12800$ $12800 \times 0.8 = 10240$ The value of the machine after three years is \$10240.	1 (45-1) 1* (45-2) 1** (45-3) 1 (45-1) 1* (45-2) 1** (45-3)	Set up Correct method (multiply 0.8 three times)
46. (9ME3-45)	Water consumed by factory $= \frac{1}{1.31} \times 5240$ $= 4000\ m^3$	1 (46-1) 1* (46-2) 1** (46-3)	Or other correct methods
47. (9ME4-46)	<table><tr><td>x</td><td>-2</td><td>0</td><td>2</td></tr><tr><td>y</td><td>**2**</td><td>1</td><td>**0**</td></tr></table> 	1 (47-1) 1 (47-2) 1* (47-3)	Must be all correct In case the data in the above table is incorrect, student can still use the ordered pairs to draw a straight line. The line must pass through (0, 1) and the range of value of x must include -2 to 2. Correct straight line (include: correct position, use ruler to draw the line, pass through the 3 points and extend in two ends of the line) If the data in the table is correct but not complete and the graph is correct, (0, 1, 1) can be given

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<table>
<tr><th>Question Number</th><th>Suggested Answers</th><th>Marks</th><th>Notes</th></tr>
<tr><td>48.</td><td>The area of the sector
$=\left(\frac{145°}{360°}\right)\pi\left(16^2\right)$
≈ 323.9331092
$= 323.9\ \text{cm}^2$ (Corr. to the nearest 0.1 cm^2)</td><td>1 (48-1)

1* (48-2)
1** (48-3)</td><td>

r.t. 323.9</td></tr>
<tr><td>49.</td><td>$x + x + 70° = 180°$
$\therefore x = 55°$
$y + 30° = 70°$
$\therefore y = 40°$</td><td>1 (49-1)
1* (49-2)

1* (49-3)</td><td>Using correct method to find either x or y</td></tr>
<tr><td></td><td colspan="2">Alternative solution (1)
$x + x + 70° = 180°$
$\therefore x = 55°$
$\angle BDC + 70° = 180°$
$\angle BDC = 110^o$
$30° + \angle BDC + y = 180°$
$\therefore y = 40°$

1 (49-1)
1* (49-2)

1* (49-3)</td><td colspan="2">Alternative solution (2)
$x + x + 70° = 180°$
$\therefore x = 55°$
$x + (x + 30°) + y = 180°$
$55° + 55° + 30° + y = 180°$
$\therefore y = 40°$

1 (49-1)
1* (49-2)

1* (49-3)</td></tr>
<tr><td>50.</td><td>$AB = AC$ given
$BD = CD$ given
$AD = AD$ common side
$\therefore \triangle ABD \cong \triangle ACD$ SSS</td><td>3
2
1
0</td><td>Any correct proof with correct reasons
Any correct proof without reasons or having wrong symbol
Incomplete proof with any one correct statement and one corresponding reason
Incomplete proof</td></tr>
<tr><td>51.
(9ME4-48)</td><td>
<table>
<tr><th colspan="2">Table 1</th></tr>
<tr><th>Number of books borrowed</th><th>Frequency</th></tr>
<tr><td>1 – 8</td><td>4</td></tr>
<tr><td>9 – 16</td><td>5</td></tr>
<tr><td>17 – 24</td><td>4</td></tr>
<tr><td>25 – 32</td><td>3</td></tr>
<tr><td>33 – 40</td><td>2</td></tr>
<tr><td>41 – 48</td><td>2</td></tr>
</table>
<table>
<tr><th colspan="2">Table 2</th></tr>
<tr><th>Number of books borrowed</th><th>Frequency</th></tr>
<tr><td>1 – 12</td><td>6</td></tr>
<tr><td>13 – 24</td><td>7</td></tr>
<tr><td>25 – 36</td><td>5</td></tr>
<tr><td>37 – 48</td><td>2</td></tr>
</table>
</td><td>1 (51-1)

1 (51-2)</td><td>Must be all correct

Must be all correct</td></tr>
</table>

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Question Number	Suggested Answers	Marks	Notes
52. (9ME1-51)	(Students should estimate the prices of gifts so as to find the number of gifts. The total costs cannot exceed \$70.) For example : $9.8\times5+18.9\times1$ $\approx10\times5+20\times1$ $=70$ $\therefore$ Terence can buy 6 gifts.	0 (52-1) 0 (52-2) No evidence of using estimation strategy and giving reasonable justification	◆ Give estimate only after exact calculation ◆ Wrong estimation (e.g. $29.4\approx29$) ◆ Exact calculation only ◆ Give an estimate and only one kind of gifts is bought
	Possible answers : (a) $9.8\times5+18.9\times1\approx10\times5+20\times1=70$ $\therefore$ Terence can buy 6 gifts. (b) $9.8\times4+29.4\times1\approx10\times4+30\times1=70$ $\therefore$ Terence can buy 5 gifts. (c) $9.8\times3+18.9\times2\approx10\times3+20\times2=70$ $\therefore$ Terence can buy 5 gifts. (d) $9.8\times2+29.4\times1+18.9\times1$ $\approx10\times2+30\times1+20\times1=70$ $\therefore$ Terence can buy 4 gifts. (e) $9.8\times1+29.4\times2\approx10\times1+30\times2=70$ $\therefore$ Terence can buy 3 gifts. (f) $9.8\times1+18.9\times3\approx10\times1+20\times3=70$ $\therefore$ Terence can buy 4 gifts. (g) $18.9\times2+29.4\times1\approx20\times2+30\times1=70$ $\therefore$ Terence can buy 3 gifts.	1 (52-1) 0 (52-2) Partial evidence of using estimation strategy, but the solution is incomplete or contains errors	◆ Correct estimation (e.g. 10, 19/20, 30) ◆ Estimate correctly, but only one kind of gift is bought ◆ Estimate correctly, but the total costs is greater than \$70 or not greater than \$60 ◆ Estimation by using correct method, but minor error occurred
		1 (52-1) 1 (52-2) Estimate with reasonable justification	◆ No need to consider unit/presentation ◆ Accept using '≤' instead of '≈'

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Section A – Sub-paper 3 (9ME3) (1 mark each)

1. D
2. C (9ME2-3)
3. B (9ME2-4)
4. A
5. D (9ME4-5)
6. A
7. B
8. C
9. A
10. C
11. B
12. B (9ME2-13)
13. D (9ME2-14)
14. A
15. C (9ME4-15)
16. D
17. C
18. B
19. A (9ME4-19)
20. D

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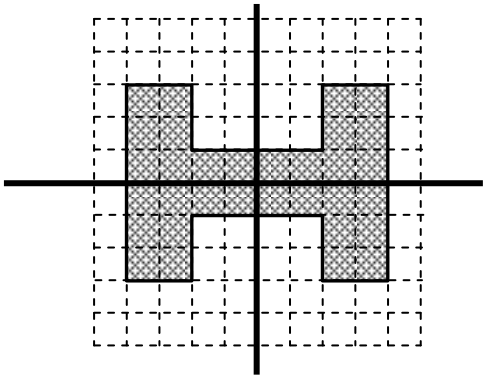
Section B – Sub-paper 3 (9ME3)

Question Number	Suggested Answers	Notes	Marks
21.	$A = -2$ $B = 0$ $C = 6$ $\boxed{C = +6}$	Must be all correct	1
22. (9ME2-23)	20		1
23.	$4 : 5$ ／ $\boxed{0.8 : 1}$ ／ $\boxed{1 : 1.25}$ ／ $\boxed{\frac{4}{5} : 1}$ ／ $\boxed{1 : \frac{5}{4}}$ ／ $\boxed{\frac{4}{5}}$		1
24. (9ME4-25)	$3x < A$ ／ $\boxed{3x - A < 0}$	Not accept $3x \le A$	1
25.	3^n		1
26.	$2x^2 + 3x - 2$	Expansion	1
27.	$(2x - 3)(2x + 3)$	Factorization	1
28.	5		1
29. (i) (ii)	$\frac{3}{4}$ $\boxed{<}$ $\frac{3}{2}$ $-\frac{3}{4}$ $\boxed{>}$ $-\frac{3}{2}$	Must be all correct	1
30. (9ME2-32)	3		1
31. (i) volume (ii) surface area (9ME2-33)		Must be all correct	1
32.	C、D	Must be all correct	1
33. (9ME4-35)			1
34.	60		1
35.	$2x^3 - 6x^2 + 2x$	Expansion	1
36.	BD ／ $\boxed{DB}$		1
37.	(1, 3)		1

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Question Number	Suggested Answers	Notes	Marks
38.	26		1
39.	(2) → (4) → (1) → (3)		1
40. (a) (b) (c) (9ME2-42)	15:00 ／ 3:00 p.m. 4.4 12:00 ／ noon	3:00 is not accepted	1 (40a) 1 (40b) 1 (40c)
41. (9ME2-43)	3		1
42.	0.26 ／ $\frac{13}{50}$	Need simplification $\frac{52}{200}$ no mark will be given	1

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Section C – Sub-paper 3 (9ME3)

Question Number	Suggested Answers	Marks	Notes
43. (a)	$\text{Amount} = 25000 \times (1+4\%)^2$	1 (43a-1)	Set up
	$= \$27040$	1* (43a-2)	
(b)	$\text{Interest} = 27040 - 25000$		
	$= \$2040$	1* (43b)	
		1** (43-3)	
44. (9ME2-45)	$20000 \times (1-20\%)^3$	1 (44-1)	Set up
	$= \$10240$	1* (44-2)	
	The value of the machine after three years is \$10240.	1** (44-3)	
	OR		
	$20000 \times 0.8 = 16000$	1 (44-1)	Correct method (multiply 0.8 three times)
	$16000 \times 0.8 = 12800$		
	$12800 \times 0.8 = 10240$	1* (44-2)	
	The value of the machine after three years is \$10240.	1** (44-3)	
45. (9ME2-46)	Water consumed by Rainbow factory		
	$= \frac{1}{1.31} \times 5240$	1 (45-1)	Or other correct methods
	$= 4000\ \text{m}^3$	1* (45-2)	
		1** (45-3)	

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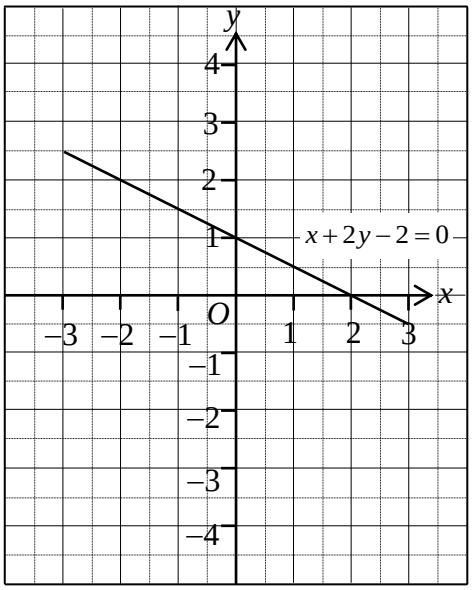
Question Number	Suggested Answers	Marks	Notes
46.	<table><tr><td>x</td><td>-2</td><td>0</td><td>2</td></tr><tr><td>y</td><td>2</td><td>1</td><td>0</td></tr></table> 	1 (46-1) 1 (46-2) 1* (46-3)	Must be all correct In case the data in the above table is incorrect, student can still use the ordered pairs to draw a straight line. The line must pass through (0, 1) and the range of value of x must include -2 to 2. Correct straight line (include: correct position, use ruler to draw the line, pass through the 3 points and extend in two ends of the line) If the data in the table is correct but not complete and the graph is correct, (0, 1, 1) can be given
47.	$V = 3^2 \times \pi \times (5-4)$ $= 9\pi$	1 (47-1) 1* (47-2)	Or other correct methods
48.	The volume of the sphere is $\frac{4}{3}\pi\left(\frac{6}{2}\right)^3$ $= 36\pi \text{ cm}^3$	1 (48-1) 1* (48-2) 1** (48-3)	
49.	$\because AB = BC = CA$ $\therefore \angle ACB = 60°$ $\because BC = DC$ $\therefore \angle CBD = \angle CDB = 35°$ $(\angle ACD + 60°) + 35° + 35° = 180°$ $\therefore \angle ACD = 50°$	1 (49-1) 1 (49-2) 1* (49-3)	For finding $\angle ACB = 60°$ OR $\angle CDB = 35°$; can be absorbed Or other correct methods

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Question Number	Suggested Answers	Marks	Notes
50.	$x + 70 + 70 = 180$ $x = 40$	1 (50-1) 1* (50-2)	Or other correct methods
51. (a)	Mode	1 (51a)	
(b)	Disagree. There are only 2 months whose maximum relative humidity is 43% but the maximum relative humilities of other months (10 months) are higher than 43%.	1 (51b-1) 1 (51b-2)	Reasonable attempt to explain Explanation
	There are only 2 months whose maximum relative humidity is 43% and lower than the maximum relative humilities of other months.	1 (51b-2)	Explanation If 'agree' is chosen, the mark (0, 0) will be given to part (b)

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Education Bureau
Territory-wide System Assessment 2010
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, usage of symbol, 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.

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

1. B
2. D (9ME1-3)
3. A
4. B (9ME2-5)
5. D (9ME3-5)
6. C
7. D
8. D
9. C
10. D
11. A
12. A (9ME1-13)
13. A
14. C (9ME2-15)
15. C (9ME3-15)
16. B
17. B
18. C
19. A (9ME3-19)
20. B

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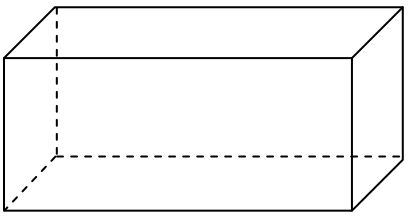
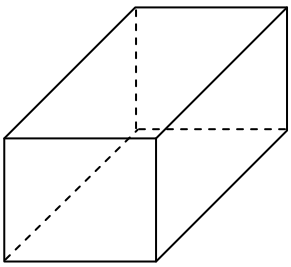
Section B – Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Notes	Marks
21.	-2		1
22. (i) (ii) (9ME1-23)	Estimated value Estimated value	Must be all correct	1
23. (i) (ii)	Ratio Rate	Must be all correct	1
24. (9ME2-24)	63		1
25. (9ME3-24)	$3x < A$ ／ $\boxed{3x - A < 0}$	Not accept $3x \leq A$	1
26.	26		1
27.	$a^2 + 4ab$ ／ $\boxed{a(a+4b)}$	Simplification	1
28.	$x = 2, y = 1$	Must be all correct	1
29.	$4x^2 - 20x + 25$	Expansion	1
30.	$(2x-1)(x+3)$	Factorization	1
31.	$x > 8$		1
32. (9ME1-32)	$\angle VME$ ／ $\boxed{\angle EMV}$		1
33.	$\angle QSR$ ／ $\boxed{\angle RSQ}$		1
34. (9ME2-34)	 or 	Or other correct cuboids Must use solid lines and dotted lines to show all edges	1

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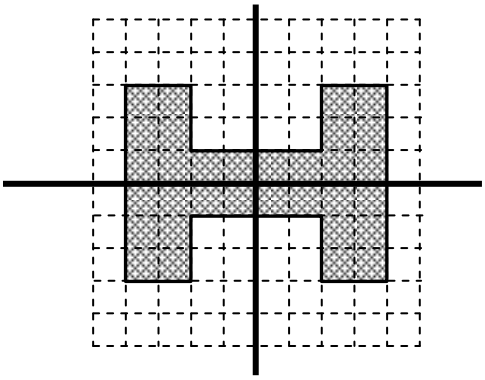
Question Number	Suggested Answers	Notes	Marks
35. (9ME3-33)			1
36. (a) (b)	66 10		1 (36a) 1 (36b)
37.	A, C ／ (A), (C) A 及 C ／ (A) 及 (C) ／ A 或 C ／ (A) 或 (C) ／ AC ／ (A)(C) ／ *YZ*, *QT*	Must be all correct	1
38.	(2, 270°)	Must be all correct and in order	1
39.	5.5	Reference value 5.45598688 r.t. 5.5	1
40. (a) (b) (c)	D 90 300		1 (40a) 1 (40b) 1 (40c)
41. (9ME1-42)	62 000		1
42.	6		1
43.	$\frac{3}{8}$ ／ 0.375		1

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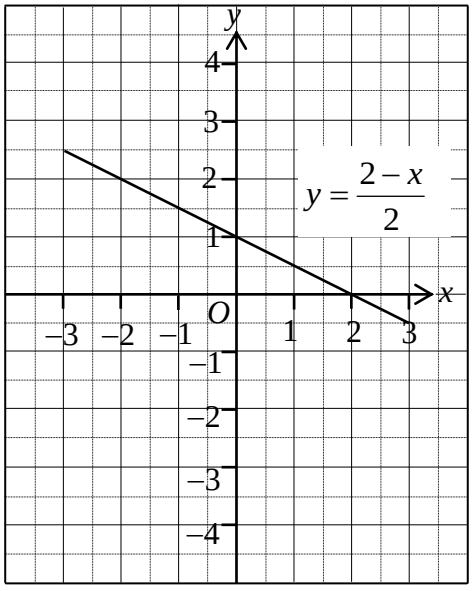
Section C – Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Marks	Notes
44. (9ME1-44)	Area of the football field $= 40 \times 40 \times \frac{5}{2}$ $= 4000\ \text{m}^2$	1 (44-1) 1* (44-2) 1** (44-3)	For $40 \times \frac{5}{2} \times a$ or $100 \times a$, where a is a positive real number If only the length (100 m) is calculated, no marks will be given.
45. (9ME1-45)	$\frac{x^{-2}}{(y^2)^3}$		
	$= \frac{x^{-2}}{y^{2\times 3}}$	1 (45-1)	Using $(y^m)^n = y^{mn}$
	$= \frac{1}{x^{-(-2)} y^6}$	1 (45-2)	Using $\frac{1}{x^{-k}} = x^k$ or $x^{-k} = \frac{1}{x^{-(-k)}}$
	$= \frac{1}{x^2 y^6}$	1* (45-3)	Correct final answer (getting marks 1, 1, 1)
46. (9ME2-47)	<table><tr><td>x</td><td>-2</td><td>0</td><td>2</td></tr><tr><td>y</td><td>2</td><td>1</td><td>0</td></tr></table> 	1 (46-1) 1 (46-2) 1* (46-3)	Must be all correct In case the data in the above table is incorrect, student can still use the ordered pairs to draw a straight line. The line must pass through (0, 1) and the range of value of x must include -2 to 2. Correct straight line (include: correct position, use ruler to draw the line, pass through the 3 points and extend in two ends of the line) If the data in the table is correct but not complete and the graph is correct, (0, 1, 1) can be given

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<table>
<tr><th>Question Number</th><th>Suggested Answers</th><th>Marks</th><th>Notes</th></tr>
<tr><td>47.</td><td>Selling price $= 300 + 200$
$= 500$
Marked price $= 500 \div 0.8$
$= 625$
$\therefore$ Marked price is \$625.</td><td>1 (47-1)

1* (47-2)
1** (47-3)</td><td>Show the relation between selling price and marked price correctly</td></tr>
<tr><td>48.
(9ME2-51)</td><td>
<table>
<tr><th colspan="2">Table 1</th></tr>
<tr><th>Number of books borrowed</th><th>Frequency</th></tr>
<tr><td>1 – 8</td><td>4</td></tr>
<tr><td>9 – 16</td><td>5</td></tr>
<tr><td>17 – 24</td><td>4</td></tr>
<tr><td>25 – 32</td><td>3</td></tr>
<tr><td>33 – 40</td><td>2</td></tr>
<tr><td>41 – 48</td><td>2</td></tr>
</table>
<table>
<tr><th colspan="2">Table 2</th></tr>
<tr><th>Number of books borrowed</th><th>Frequency</th></tr>
<tr><td>1 – 12</td><td>6</td></tr>
<tr><td>13 – 24</td><td>7</td></tr>
<tr><td>25 – 36</td><td>5</td></tr>
<tr><td>37 – 48</td><td>2</td></tr>
</table>
</td><td>1 (48-1)

1 (48-2)</td><td>Must be all correct

Must be all correct</td></tr>
<tr><td>49.</td><td>Range：24 to 32</td><td>1 (49-1)</td><td>Must have explanation</td></tr>
<tr><td></td><td>The length of the living room is about the total length of 7 pieces of floor tiles.
$\therefore$ area $\approx 7 \times 4\ m^2 = 28\ m^2$.</td><td>1 (49-2)</td><td>The unit must be m^2
Other reasonable explanation (e.g. : In the figure, the width of the living room is about 4 m, the length is about 7 m, the area of the living room is about $4 \times 7 = 28\ m^2$.)</td></tr>
<tr><td>50. (a)</td><td>Volume of the cone
$= \frac{1}{3} \times 12^2 \times \pi \times 5$
$= 240\pi\ cm^3$</td><td>
1 (50a-1)
1* (50a-2)</td><td>
Correct set up</td></tr>
<tr><td>(b)</td><td>Curved surface area of the cone
$= \pi \times 12 \times 13$
$= 156\pi\ cm^2$</td><td>
1 (50b-1)
1* (50b-2)
1** (50-3)</td><td>
Correct set up</td></tr>
</table>

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Question Number	Suggested Answers		Marks	Notes
51.	$\angle ACB + \angle ACD = 180°$	adj. $\angle$s on a st. line	3	Any correct proof with correct reasons
	$\angle ACD = 26°$			
	$\angle ACD = \angle CDE = 26°$		2	Any correct proof without reasons or having wrong symbol
	$\therefore AC // DE$	alt $\angle$s equal	1	Incomplete proof with any one correct statement and one corresponding reason
			0	Incomplete proof

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