

Education Bureau
Territory-wide System Assessment 2012
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” .

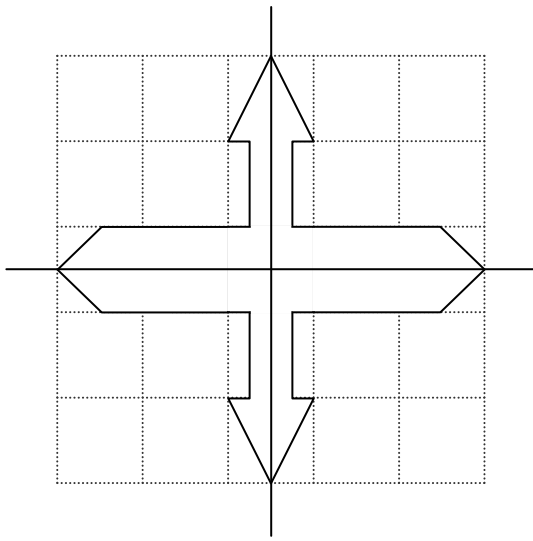
Steps that may be skipped are shown in shade.

Alternative suggested answers are shown in boxes.

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

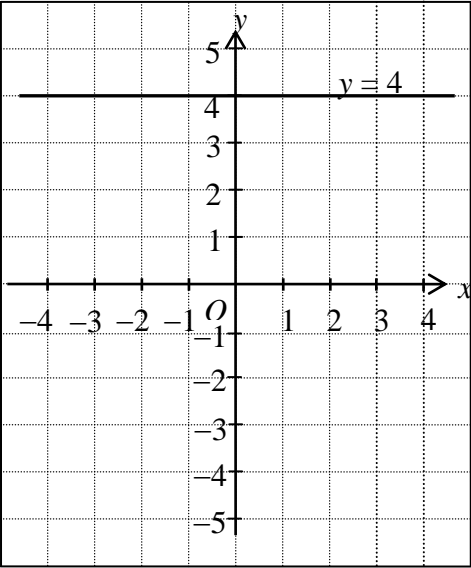
1. **B** (9ME2-1)
2. **D** (9ME2-2)
3. **B** (9ME4-2)
4. **A**
5. **C**
6. **C**
7. **B**
8. **D**
9. **C**
10. **D** (9ME4-10)
11. **A** (9ME2-11)
12. **A** (9ME4-12)
13. **C** (9ME2-12)
14. **B**
15. **C**
16. **B**
17. **D**
18. **D**
19. **A**
20. **A**

Section B – Sub-paper 1 (9ME1)

Question Number	Suggested Answers	Marks	Notes
21. (9ME2-21)	(i) -900 (ii) $+1500$ / 1500	1	Must be all correct
22. (9ME2-22)	(a) $+2$ / 2 (b) -10	1 (22a) 1 (22b)	
23. (9ME4-22)	It will take Fanny <u>4</u> years to receive an amount of \$6 600.	1	
24.	$y = 2x + 20$	1	
25.	Figure n is formed by <u>2^n</u> circles.	1	
26.	$2x^4 + 4x^2 - x$	1	Expansion
27.	$4y^2(y^2 + 2)$	1	Factorization
28.	$(2x - 3)(x - 2)$ / $(3 - 2x)(2 - x)$	1	Factorization
29.	$x^2 - 36$	1	Expansion
30. (9ME4-30)	4	1	
31. (9ME2-31)	(i) -5.5 > -5.7 (ii) -0.5 < -0.05	1	Must be all correct
32. (9ME2-32)	The total surface area of the cube is <u>54</u> cm^2 .	1	
33. (9ME4-32)	The volume of the cone is <u>180π</u> cm^3 .	1	
34.		1	Must be all correct
35.	(a) $x = 55$ (b) $h = 11$	1 (35a) 1 (35b)	

Question Number	Suggested Answers	Marks	Notes
36.	$\angle ABD = 29^\circ$	1	The unit can be omitted
37.	(I), (II) / $\boxed{FG, QT}$ / $\boxed{GF, TQ}$	1	Must be all correct
38.	$\angle VAE$ / $\boxed{\angle EAV}$ / $\boxed{\angle VAC}$ / $\boxed{\angle CAV}$	1	
39.	$x = 23$	1	
40.	The coordinates of E' are $(-3, -1)$.	1	Must be all correct and in order
41. (9ME2-42)	The modal class of the time for 50 teams of students to solve all the problems in the Mathematics competition is <u>14</u> min – <u>16</u> min.	1	
42.	$\frac{1}{6}$	1	

Section C – Sub-paper 1 (9ME1)

Question Number	Suggested Answers	Marks	Notes								
43.	The cost price = $\$930 \div 15\%$ = $\$6200$	1 (43-1) 1* (43-2) 1** (43-3)									
44.	The amount = $62500(1+4\%)^3$ = 70304 \therefore The amount she will receive after 3 years is \$70304.	1 (44-1) 1* (44-2) 1** (44-3)									
45.	Method 1: Let x cm be the actual length of the plane. $\therefore 5.4 : x = 1 : 1500$ $\frac{5.4}{x} = \frac{1}{1500}$ $x = 8100$ \therefore The actual length of the plane is 81 m. Method 2: <table border="1" style="margin-left: 20px;"><tr><td>Let x m be the actual length of the plane.</td></tr><tr><td>$\therefore 0.054 : x = 1 : 1500$</td></tr><tr><td>$\frac{0.054}{x} = \frac{1}{1500}$</td></tr><tr><td>$x = 81$</td></tr><tr><td>$\therefore$ The actual length of the plane is 81 m.</td></tr></table>	Let x m be the actual length of the plane.	$\therefore 0.054 : x = 1 : 1500$	$\frac{0.054}{x} = \frac{1}{1500}$	$x = 81$	\therefore The actual length of the plane is 81 m.	1 (45-1) 1* (45-2) 1** (45-3) <table border="1" style="margin-left: 20px;"><tr><td>1 (45-1)</td></tr></table> <table border="1" style="margin-left: 20px;"><tr><td>1* (45-2)</td></tr></table> <table border="1" style="margin-left: 20px;"><tr><td>1** (45-3)</td></tr></table>	1 (45-1)	1* (45-2)	1** (45-3)	
Let x m be the actual length of the plane.											
$\therefore 0.054 : x = 1 : 1500$											
$\frac{0.054}{x} = \frac{1}{1500}$											
$x = 81$											
\therefore The actual length of the plane is 81 m.											
1 (45-1)											
1* (45-2)											
1** (45-3)											
46.	<table border="1" style="margin-left: 20px;"><tr><td>x</td><td>-3</td><td>0</td><td>3</td></tr><tr><td>y</td><td>4</td><td>4</td><td>4</td></tr></table> 	x	-3	0	3	y	4	4	4	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 $(-3, 4)$ and the range of value of x must include -3 to 3 . 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.
x	-3	0	3								
y	4	4	4								

Question Number	Suggested Answers	Marks	Notes
47.	<p>Method 1:</p> <p>Width of the notice board is about 3 – 3.5 times of the hand span of the boy and length of the notice board is about 5 – 6 times of the hand span of the boy</p> <p>$\therefore \text{Area} \approx (3 \times 20 \times 5 \times 20) \text{ cm}^2 = 6000 \text{ cm}^2$ (Acceptable range: 6000 cm² to 8400 cm²)</p> <p>Method 2:</p> <p>Area of the notice board is about the areas of 15 drawings</p> <p>$\therefore \text{Area} \approx (20 \times 20 \times 15) \text{ cm}^2 = 6000 \text{ cm}^2$ (Acceptable range: 6000 cm² to 8400 cm²)</p>	<p>1 (47-1)</p> <p>1 (47-2)</p> <p>1 (47-1)</p> <p>1 (47-2)</p>	<p>For the estimation of width and length</p> <p>Must have explanation</p> <p>Any reasonable explanation</p> <p>Must have explanation</p>
48. (9ME3-47)	<p>Volume of the prism</p> $= \frac{5 \times 12}{2} \times 20$ $= 600 \text{ cm}^3$	<p>1 (48-1)</p> <p>1* (48-2)</p> <p>1** (48-3)</p>	
49.	<p>Volume of the pyramid</p> $= \frac{5^2 \times 9}{3}$ $= 75 \text{ cm}^3$	<p>1 (49-1)</p> <p>1* (49-2)</p> <p>1** (49-3)</p>	
50.	$\tan \angle ABC = \frac{150}{85}$ <p>$\angle ABC \approx 60.46121774^\circ$</p> <p>$\therefore \angle ABC = 60.5^\circ$ (corr. to 3 sig. fig.)</p> <p>\therefore The angle of elevation of the top C of the tower from B is 60.5°.</p>	<p>1 (50-1)</p> <p>1* (50-2)</p> <p>1** (50-3)</p>	r.t. 60.5
51. (9ME4-51)	<p>(a) $x = \underline{80}$</p> <p>(b) There are <u>144</u> students in Secondary 3.</p> <p>(c) The number of students whose most favorite sport is football is <u>38</u>.</p>	<p>1 (51a)</p> <p>1 (51b)</p> <p>1 (51c)</p>	

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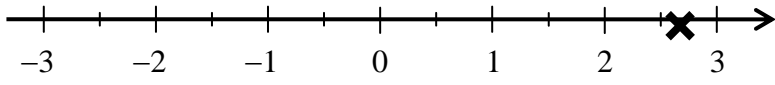

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Section A – Sub-paper 2 (9ME2) (1 mark each)

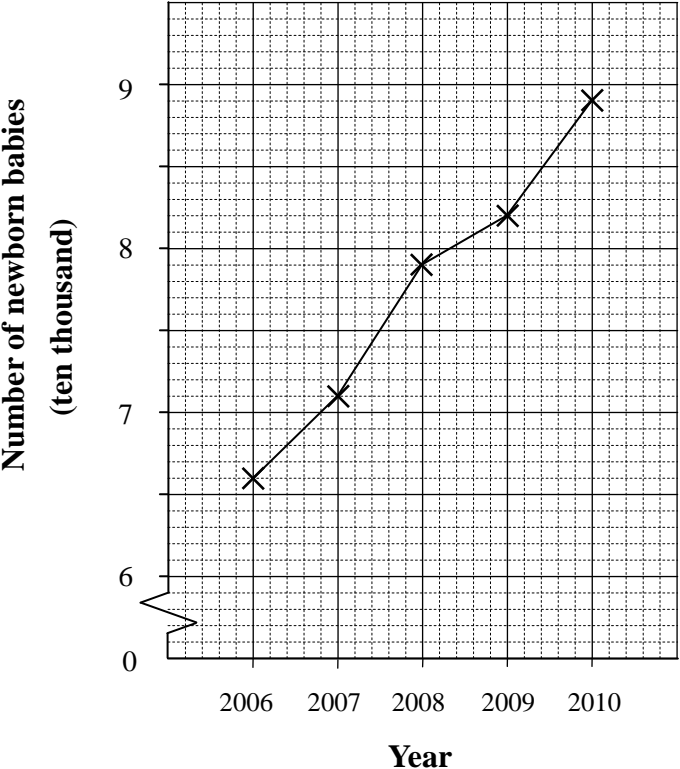
1. B (9ME1-1)
2. D (9ME1-2)
3. C (9ME3-2)
4. D (9ME3-3)
5. A (9ME4-4)
6. B
7. D
8. B
9. D
10. C
11. A (9ME1-11)
12. C (9ME1-13)
13. A (9ME3-12)
14. C (9ME3-13)
15. D (9ME4-14)
16. B
17. C
18. A
19. B
20. A

Section B – Sub-paper 2 (9ME2)

Question Number	Suggested Answers	Marks	Notes
21. (9ME1-21)	(i) -900 (ii) $+1500$ / 1500	1	Must be all correct
22. (9ME1-22)	(a) $+2$ / 2 (b) -10	1 (22a) 1 (22b)	
23. (9ME3-22)	 $(\text{Acceptable range: } 2.5 < \frac{8}{3} < 3)$	1	$\frac{8}{3} \approx 2.67$
24. (9ME3-23)	Age of Calvin after 3 years : Age of Tim after 3 years = <u>3</u> : <u>4</u>	1	
25. (9ME4-24)	$n = \underline{90}$	1	
26.	The value of the 3 rd term of the sequence is <u>26</u> .	1	
27.	$-x^2y + 2xy^2$ / $2xy^2 - x^2y$	1	Expansion
28.	$(x-4)^2$ / $(x-4)(x-4)$ / $(4-x)^2$ / $(4-x)(4-x)$	1	Factorization
29.	$x = \underline{-3}$	1	
30.	$x^2 + 4x + 4$	1	Expansion
31. (9ME1-31)	(i) -5.5 $>$ -5.7 (ii) -0.5 $<$ -0.05	1	Must be all correct
32. (9ME1-32)	The total surface area of the cube is <u>54</u> cm^2 .	1	
33. (9ME3-33)	<i>PQRS</i>	1	Or other correct answers
34. (9ME4-34)		1	The cross-section is a rectangle

Question Number	Suggested Answers	Marks	Notes
35.	2	1	
36. (9ME4-36)	$x = \underline{42}$	1	
37.	$x = \underline{82}$	1	
38.	$DE \ / \ ED$	1	
39.	$\theta = \underline{33.6^\circ}$	1	Reference value 33.55730976 r.t. 33.6 The unit can be omitted
40.	The gradient of the path AB is $\frac{9}{40}$.	1	Accept 0.225
41.	Mean = $\underline{7.4}$ Median = $\underline{7.5}$	1 (41-1) 1 (41-2)	
42. (9ME1-41)	The modal class of the time for 50 teams of students to solve all the problems in the Mathematics competition is $\underline{14}$ min – $\underline{16}$ min.	1	

Section C – Sub-paper 2 (9ME2)

Question Number	Suggested Answers	Marks	Notes												
43. (9ME4-50)	<p style="text-align: center;">Number of newborn babies in Hong Kong from 2006 to 2010</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data for Question 43</caption> <thead> <tr> <th>Year</th> <th>Number of newborn babies (ten thousand)</th> </tr> </thead> <tbody> <tr> <td>2006</td> <td>6.6</td> </tr> <tr> <td>2007</td> <td>7.1</td> </tr> <tr> <td>2008</td> <td>7.9</td> </tr> <tr> <td>2009</td> <td>8.2</td> </tr> <tr> <td>2010</td> <td>8.9</td> </tr> </tbody> </table>	Year	Number of newborn babies (ten thousand)	2006	6.6	2007	7.1	2008	7.9	2009	8.2	2010	8.9	1* (43-1) 1* (43-2)	For the correct indication of all marks Correct broken line graph (including the points connected by line segments)
Year	Number of newborn babies (ten thousand)														
2006	6.6														
2007	7.1														
2008	7.9														
2009	8.2														
2010	8.9														
44. (9ME3-43)	The selling price of the table = \$2450 (1 – 20%) = \$1960	1 (44-1) 1* (44-2) 1** (44-3)													
45. (9ME4-44)	Method 1: $8000 \times (1 - 25\%)^3$ $= 3375$ The value of the camera after three years is \$3375. Method 2: $8000 \times 0.75 = 6000$ $6000 \times 0.75 = 4500$ $4500 \times 0.75 = 3375$ The value of the camera after three years is \$3375.	1 (45-1) 1* (45-2) 1** (45-3) 1 (45-1) 1* (45-2) 1** (45-3)	Correct method (multiply 0.75 three times)												

Question Number	Suggested Answers	Marks	Notes
46. (9ME4-46)	(a) $C = \frac{5(F-32)}{9}$ / $C = \frac{5F-160}{9}$ / $C = \frac{5F-160}{9}$ (b) $C = \frac{5(104-32)}{9}$ $C = 40$	1* (46a) 1 (46b-1) 1* (46b-2)	Correct method
47.	(a) $r^2\pi = 25\pi$ $r = 5$ (b) The circumference of the circle $= 2 \times 5\pi$ $= 10\pi \text{ cm}$	1 (47a-1) 1* (47a-2) 1 (47b-1) 1* (47b-2) 1** (47-5)	Correct method
48.	Length of \widehat{AB} $= \left(\frac{240^\circ}{360^\circ}\right)(2)(8)\pi$ ≈ 33.51032164 $= 33.5 \text{ cm (corr. to the nearest 0.1 cm)}$	1 (48-1) 1* (48-2) 1** (48-3)	r.t. 33.5
49.	Surface area of the sphere $= 4\pi \times \left(\frac{12}{2}\right)^2$ ≈ 452.3893421 $= 452.4 \text{ cm}^2 \text{ (corr. to the nearest 0.1 cm}^2\text{)}$	1 (49-1) 1* (49-2) 1** (49-3)	r.t. 452.4

Question Number	Suggested Answers	Marks	Notes																
50. (9ME3-50)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Table 1</th> </tr> <tr> <th>Years of service</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>1-10</td> <td>11</td> </tr> <tr> <td>11-20</td> <td>7</td> </tr> <tr> <td>21-30</td> <td>2</td> </tr> </tbody> </table>	Table 1		Years of service	Frequency	1-10	11	11-20	7	21-30	2	1 (50-1)	Must be all correct						
	Table 1																		
Years of service	Frequency																		
1-10	11																		
11-20	7																		
21-30	2																		
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Table 2</th> </tr> <tr> <th>Years of service</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>4</td> </tr> <tr> <td>6-10</td> <td>7</td> </tr> <tr> <td>11-15</td> <td>5</td> </tr> <tr> <td>16-20</td> <td>2</td> </tr> <tr> <td>21-25</td> <td>1</td> </tr> <tr> <td>26-30</td> <td>1</td> </tr> </tbody> </table>	Table 2		Years of service	Frequency	1-5	4	6-10	7	11-15	5	16-20	2	21-25	1	26-30	1	1 (50-2)	Must be all correct
Table 2																			
Years of service	Frequency																		
1-5	4																		
6-10	7																		
11-15	5																		
16-20	2																		
21-25	1																		
26-30	1																		
51.	<p>(Students must find the approximations for their daily bus fares)</p> <p>The approximate 5-day fare for Susan = $\\$10 \times 5$ = \$50</p> <p>The approximate 5-day fare for her brother = $\\$5 \times 5$ = \$25</p>	0 0 No evidence of using estimation strategies nor giving reasonable justification	<ul style="list-style-type: none"> ◆ Exact calculation only ◆ The estimate is given only after exact calculation 																
		1 0 Partial evidence of using estimation strategies, but the solution is incomplete or contains errors	<ul style="list-style-type: none"> ◆ One correct approximation only ◆ Correct method used, but minor errors occurred ◆ Estimate correctly, but the fares cannot be found 																
		1 1 Estimate with reasonable justification	<ul style="list-style-type: none"> ◆ No need to consider unit/presentation 																

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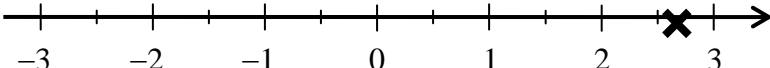
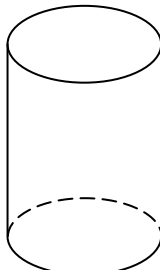
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Section A – Sub-paper 3 (9ME3) (1 mark each)

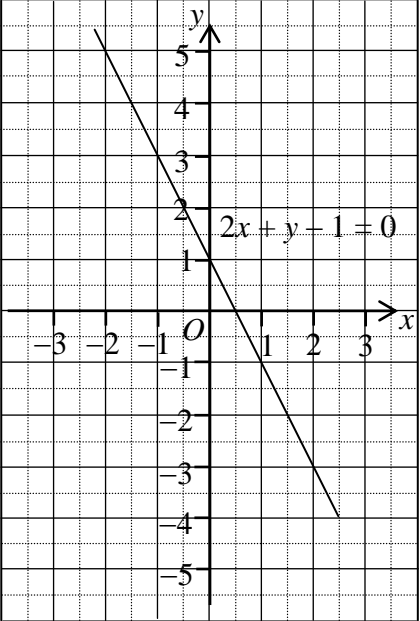
1. B
2. C (9ME2-3)
3. D (9ME2-4)
4. D
5. B (9ME4-5)
6. D
7. D
8. A
9. C
10. C
11. B
12. A (9ME2-13)
13. C (9ME2-14)
14. A
15. A (9ME4-15)
16. C
17. B
18. B
19. D
20. A

Section B – Sub-paper 3 (9ME3)

Question Number	Suggested Answers	Marks	Notes
21.	$A = 20$ $B = 0$ $C = -40$	1	Must be all correct
22. (9ME2-23)	 (Acceptable range: $2.5 < \frac{8}{3} < 3$)	1	$\frac{8}{3} \approx 2.67$
23. (9ME2-24)	Age of Calvin after 3 years : Age of Tim after 3 years = <u>3</u> : <u>4</u>	1	
24.	It takes Stanley <u>3</u> hours to make 12 paper planes.	1	
25. (9ME4-25)	$x = \underline{55}$	1	
26.	The variable of the polynomial is <u>x</u> .	1	
27.	$2x^2 + 7x + 6$	1	Expansion
28.	$(x + 5)(x - 5)$	1	Factorization
29.	$y = \underline{24}$	1	
30.	$\frac{10y}{3x}$	1	In simplest form
31.	$x > -2$	1	
32.	The circumference of the circle is <u>14π</u> cm.	1	
33. (9ME2-33)	<i>PQRS</i>	1	Or other correct answers
34.		1	Or other correct answers

Question Number	Suggested Answers	Marks	Notes
35. (9ME4-35)	(a) $x = \underline{42}$ (b) $y = \underline{18}$	1 (35a) 1 (35b)	
36.	$x = \underline{262}$	1	
37.	$x = \underline{38}$	1	
38.	$x = \underline{49}$	1	
39.	The polar coordinates of point C are ($\underline{2}$, $\underline{90^\circ}$).	1	Must be all correct and in order
40.	(3) \rightarrow (4) \rightarrow (1) \rightarrow (2)	1	
41.	The weighted mean mark of Jackson is $\underline{5.25}$.	1	Or $\frac{21}{4}$
42.	(a) not reasonable (b) (ii)	1	Must be all correct

Section C – Sub-paper 3 (9ME3)

Question Number	Suggested Answers	Marks	Notes								
43. (9ME2-44)	The selling price of the table $= \$2450 (1 - 20\%)$ $= \$1960$	1 (43-1) 1* (43-2) 1** (43-3)									
44. (9ME4-45)	(a) $(x^3)^2$ $= x^6$ (b) $\frac{(x^3)^2}{x^{-5}}$ $= \frac{x^6}{x^{-5}}$ $= x^{6-(-5)}$ $= x^{11}$	1* (44a) 1 (44b-1) 1* (44b-2)	using $\frac{1}{x^{-5}} = x^5$ or $\frac{x^m}{x^{-5}} = x^{m-(-5)}$ Correct final answer (getting marks 1 1)								
45.	<table border="1" data-bbox="347 1048 715 1146"> <tr> <td>x</td> <td>-2</td> <td>0</td> <td>2</td> </tr> <tr> <td>y</td> <td>5</td> <td>1</td> <td>-3</td> </tr> </table> 	x	-2	0	2	y	5	1	-3	1 (45-1) 1 (45-2) 1* (45-3)	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 (2, -3) 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.
x	-2	0	2								
y	5	1	-3								

Question Number	Suggested Answers	Marks	Notes
46.	$\begin{cases} x = 3y - 1 & \dots(1) \\ y = x - 5 & \dots(2) \end{cases}$ Substitute (1) into (2) $y = 3y - 1 - 5$ $y = 3$ Substitute $y = 3$ into (1) $x = 3(3) - 1$ $x = 8$	1 (46-1) 1* (46-2) 1 (46-3) 1* (46-4)	Correct method (eliminating one of the variables) Correct value of x (or y) Correct method Both values are correct
47. (9ME1-48)	Volume of the prism $= \frac{5 \times 12}{2} \times 20$ $= 600 \text{ cm}^3$	1 (47-1) 1* (47-2) 1** (47-3)	
48. (9ME4-48)	Area of the sector $= \left(\frac{105^\circ}{360^\circ} \right) \pi (3^2)$ ≈ 8.246680715 $= 8.25 \text{ cm}^2 \text{ (corr. to 3 sig. fig.)}$	1 (48-1) 1* (48-2) 1** (48-3)	r.t. 8.25
49.	In the figure, $\angle BAP = 90^\circ$ $AB^2 + 9^2 = 10.2^2$ $AB^2 = 23.04$ $AB = 4.8$ \therefore The distance between A and B is 4.8 km.	1 (49-1) 1* (49-2) 1** (49-3)	

Education Bureau
Territory-wide System Assessment 2012
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.

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

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

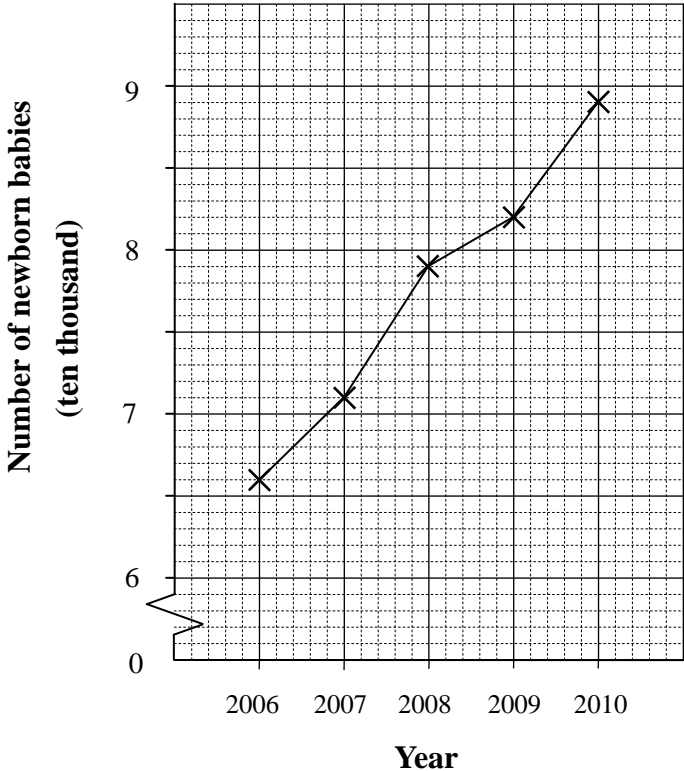
Section B – Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Marks	Notes
21.	0.027	1	
22. (9ME1-23)	It will take Fanny <u>4</u> years to receive an amount of \$6 600.	1	
23.	Donald gets \$ <u>1200</u> .	1	
24. (9ME2-25)	$n = \underline{90}$	1	
25. (9ME3-25)	$x = \underline{55}$	1	
26.	$3y^2 + 2$	1	
27.	$2x^3 - 3x^2 - 11x + 6$	1	
28.	$(x-4)(x+3)$ / $(-x+4)(-x-3)$	1	Factorization
29.	P and S / $P(4, -4)$ and $S(0, -1)$ / $(4, -4)$ and $(0, -1)$	1	Must be all correct
30. (9ME1-30)	$t = \underline{4}$	1	
31.	$x \geq -8$	1	
32. (9ME1-33)	The volume of the cone is <u>180π</u> cm^3 .	1	
33.	P, Q	1	Must be all correct
34. (9ME2-34)		1	The cross-section is a rectangle
35. (9ME3-35)	(a) $x = \underline{42}$ (b) $y = \underline{18}$	1 (35a) 1 (35b)	
36. (9ME2-36)	$x = \underline{42}$	1	
37.	$ABHE$ or $ACHF$ (ANY ONE)	1	$ABHE$ or its correct permutation / $ACHF$ or its correct permutation

Question Number	Suggested Answers	Marks	Notes
38.	F, G	1	Must be all correct
39.	The coordinates of point K are (<u>1</u> , <u>-2</u>).	1	Must be all correct and in order
40.	$x = \underline{27.9}$	1	Reference value 27.89931555 r.t. 27.9
41.	The mean number of times 40 members practised in the yoga centre last month is <u>11.5</u> °.	1	
42.	The required empirical probability is <u>0.15</u> .	1	or $\frac{3}{20}$ or 15%

Section C – Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Marks	Notes
43.	Let $r\%$ be the annual interest rate. $9600 \times \frac{1}{2} \times r\% = 144$ $r = 3$ \therefore The interest rate is 3% p.a.	1 (43-1) 1* (43-2) 1** (43-3)	
44. (9ME2-45)	Method 1: $8000 \times (1 - 25\%)^3$ $= 3375$ The value of the camera after three years is \$3375. Method 2: $8000 \times 0.75 = 6000$ $6000 \times 0.75 = 4500$ $4500 \times 0.75 = 3375$ The value of the camera after three years is \$3375.	1 (44-1) 1* (44-2) 1** (44-3) 1 (44-1) 1* (44-2) 1** (44-3)	Correct method (multiply 0.75 three times)
45. (9ME3-44)	(a) $(x^3)^2$ $= x^6$ (b) $\frac{(x^3)^2}{x^{-5}}$ $= \frac{x^6}{x^{-5}}$ $= x^{6-(-5)}$ $= x^{11}$	1* (45a) 1 (45b-1) 1* (45b-2)	using $\frac{1}{x^{-5}} = x^5$ or $\frac{x^m}{x^{-5}} = x^{m-(-5)}$ Correct final answer (getting marks 1 1)
46. (9ME2-46)	(a) $C = \frac{5(F-32)}{9}$ / $C = \frac{5F-160}{9}$ / $C = \frac{5F-160}{9}$ (b) $C = \frac{5(104-32)}{9}$ $C = 40$	1* (46a) 1 (46b-1) 1* (46b-2)	Correct method

Question Number	Suggested Answers	Marks	Notes												
47.	Curved surface area $= 2 \times \pi \times 10 \times 16$ $= 320\pi \text{ cm}^2$	1 (47-1) 1* (47-2) 1** (47-3)													
48. (9ME3-48)	Area of the sector $= \left(\frac{105^\circ}{360^\circ} \right) \pi (3^2)$ ≈ 8.246680715 $= 8.25 \text{ cm}^2$ (corr. to 3 sig. fig.)	1 (48-1) 1* (48-2) 1** (48-3)	r.t. 8.25												
49.	The area of trapezium $ABCD$ $= \frac{3(5+7)}{2}$ $= 18$ \therefore The area of trapezium $ABCD$ is 18 square units.	1 (49-1) 1* (49-2) 1** (49-3)													
50. (9ME2-43)	<p style="text-align: center;">Number of newborn babies in Hong Kong from 2006 to 2010</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data for Question 50</caption> <thead> <tr> <th>Year</th> <th>Number of newborn babies (ten thousand)</th> </tr> </thead> <tbody> <tr> <td>2006</td> <td>6.6</td> </tr> <tr> <td>2007</td> <td>7.1</td> </tr> <tr> <td>2008</td> <td>7.9</td> </tr> <tr> <td>2009</td> <td>8.2</td> </tr> <tr> <td>2010</td> <td>8.9</td> </tr> </tbody> </table>	Year	Number of newborn babies (ten thousand)	2006	6.6	2007	7.1	2008	7.9	2009	8.2	2010	8.9	1* (50-1) 1* (50-2)	For the correct indication of all marks Correct broken line graph (including the points connected by line segments)
Year	Number of newborn babies (ten thousand)														
2006	6.6														
2007	7.1														
2008	7.9														
2009	8.2														
2010	8.9														

Question Number	Suggested Answers	Marks	Notes
51. (9ME1-51)	(a) $x = \underline{80}$ (b) There are <u>144</u> students in Secondary 3. (c) The number of students whose favorite sport is football is <u>38</u> .	1 (51a) 1 (51b) 1 (51c)	