

**Education Bureau**  
**Territory-wide System Assessment 2008**  
**Secondary 3 Mathematics**  
**Marking Scheme**

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

\*Mark for Answer:

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

\*\*Mark for Presentation:

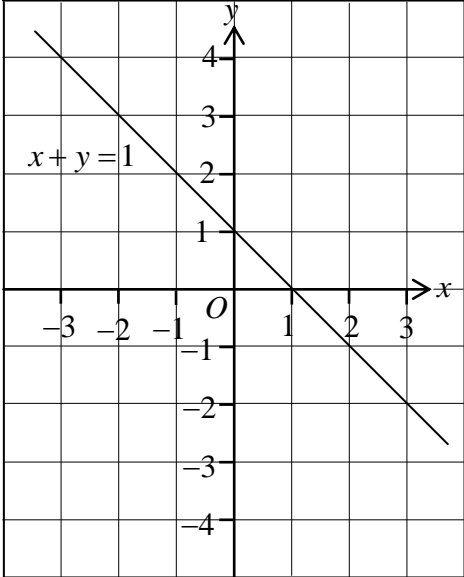
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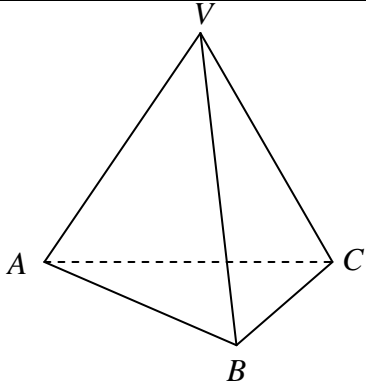
Alternative suggested answers are shown in boxes.

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

1. D (9MC2-1)
2. C (9MC2-2)
3. D (9MC4-2)
4. D
5. C
6. D
7. C
8. A
9. B (9MC4-9)
10. D
11. C
12. A (9MC2-11)
13. D (9MC2-12)
14. B
15. D
16. B
17. B
18. A
19. B
20. B

## Section B – Sub-paper 1 (9ME1)

Question Number	Suggested Answers	Notes	Marks
21. (i) (ii) (9ME2-21)	1000 – 3000	All must be correct	1
22. (9ME2-22)	– 2, 0, 1	All correct and in order	1
23.	$2.35 \times 10^{-8}$		1
24. (i) (ii) (9ME4-22)	Ratio Rate	All must be correct	1
25.	20		1
26.	16		1
27.	$2n$		1
28.	– 7		1
29.	$-7x^2 - 2x$	Expansion	1
30.	$(x+1)(x+2)(x+3)$	Factorization	1
31.	$(x-3)(x+2)$	Factorization	1
32. (9ME2-31)	$(3x+2)(x+1)$	Factorization	1
33. (9ME2-32)	$x - \frac{1}{3}x + 33 = 93$	Equation	1
34. (9ME4-31)			1

35.	$\frac{25x}{6y}$	Simplified rational expression	1
36.	804.2	804.247719 rounded to 804.2	1
37.			1
38.	Similar, AAA	All must be correct	1
39. (9ME4-37)	20		1
40.	72		1
41.	$BD$	$DB$ is accepted	1
42. (9ME2-41)	80		1
43. (9ME2-42)	2, $180^\circ$	All correct and in order	1
44. (9ME4-41)	24		1
45.	$2 \rightarrow 3 \rightarrow 4 \rightarrow 1$		1
46.	75		1
47.	73.5		1
48.	$\frac{3}{8}$		1

## Section C – Sub-paper 1 (9ME1)

Question Number	Suggested Answers	Marks	Notes
49. (9ME2-47)	<p>Total cost</p> $= \$149.3 \times 2 + \$84 \times 2 + \$69 \times 3$ $\approx \$150 \times 2 + \$100 \times 2 + \$70 \times 3$ $= \$300 + \$200 + \$210$ $= \$710$ <p>or</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <math>\therefore</math> Round up \$149.3, \$84.0 and \$69.0 respectively as \$150, \$100 and \$70.         </div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 5px;"> <math>\therefore</math> Total cost <math>\approx</math> \$710         </div>	<p>1<sub>49-1</sub></p> <p>1<sub>49-2</sub></p> <p>1<sub>49-1</sub></p> <p>1<sub>49-2</sub></p>	<p>Or other reasonable estimation method</p> <p>Estimated value (must have method shown)</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 10px;">       Or other reasonable estimation method     </div> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 5px;">       Estimated value (must have method shown)     </div>
50. (9ME2-48)	$\text{Amount} = \$30\,000 (1 + 4\%)^2$ $= \$32\,448$ $\text{Interest} = \$ (32\,448 - 30\,000)$ $= \$2\,448$ <p>The total interest is \$2 448.</p>	<p>1<sub>50-1</sub></p> <p>1<sub>50-2</sub></p> <p>1*<sub>50-3</sub></p> <p>1**<sub>50-4</sub></p>	<p>Or other correct method</p> <p>Method (Subtract principal from amount) (50-2 method may be skipped)</p> <p>Units / presentation</p>
51. (9ME4-47)	<p>The amount received by Mr Chan is</p> $= \frac{\text{¥}90}{\text{HK\$}100} \times \text{HK\$}4\,000$ $= \text{¥}3\,600$	<p>1<sub>51-1</sub></p> <p>1*<sub>51-2</sub></p> <p>1**<sub>51-3</sub></p>	<p>Or other correct method</p> <p>Units / presentation</p>
52. (9ME3-50)	$12^2 = 0^2 + 2(3)s$ $144 = 6s$ $s = 24$	<p>1<sub>52-1</sub></p> <p>1*<sub>52-2</sub></p>	<p>Substitute correct value into correct formula</p>

53.	<p>Curved surface area = <math>\pi(6)(10) \text{ cm}^2</math>  <math>= 60 \pi \text{ cm}^2</math></p> <p>Total surface area of the cone  <math>= [60 \pi + \pi(6)^2] \text{ cm}^2</math>  <math>= 96 \pi \text{ cm}^2</math></p> <p>The total surface area of the cone is <math>96 \pi \text{ cm}^2</math> .</p>	<p>1<sub>53-1</sub></p> <p>1*<sub>53-2</sub></p> <p>1**<sub>53-3</sub></p>	<p>(may be skipped)</p> <p>Units / presentation</p>																								
54.	<p><math>\angle ABC = 30^\circ</math></p> <p><math>\angle ADB = \frac{180^\circ - 20^\circ - 30^\circ}{2}</math>  <math>= 65^\circ</math></p>	<p>1<sub>54-1</sub></p> <p>1<sub>54-2</sub></p> <p>1*<sub>54-3</sub></p>	<p>(may be skipped)</p> <p>Or other correct method</p>																								
55.	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; border: none;">Steps</th> <th style="text-align: center; border: none;">Justifications</th> </tr> </thead> <tbody> <tr> <td style="border: 1px dashed black; padding: 5px;"><math>AB = AD</math></td> <td style="border: 1px dashed black; padding: 5px;">(given)</td> </tr> <tr> <td style="border: 1px dashed black; padding: 5px;"><math>AC = AE</math></td> <td style="border: 1px dashed black; padding: 5px;">(given)</td> </tr> <tr> <td style="border: 1px dashed black; padding: 5px;"><math>\angle BAC = \angle DAE</math></td> <td style="border: 1px dashed black; padding: 5px;">(common angle)</td> </tr> <tr> <td colspan="2" style="padding: 5px;"><math>\therefore \triangle ABC \cong \triangle ADE</math> (SAS)</td> </tr> </tbody> </table>	Steps	Justifications	$AB = AD$	(given)	$AC = AE$	(given)	$\angle BAC = \angle DAE$	(common angle)	$\therefore \triangle ABC \cong \triangle ADE$ (SAS)		<p>1<sub>55-1</sub></p> <p>1<sub>55-2</sub></p> <p>1<sub>55-3</sub></p>	<p>Correct steps</p> <p>Correct justifications (with correct steps)</p> <p>Correct conclusion (with correct steps)</p>														
Steps	Justifications																										
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56. (9ME3-56)	<p style="text-align: center;">Table 1</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 60%;">Time needed (mins)</th> <th style="width: 40%;">Frequency</th> </tr> </thead> <tbody> <tr><td>1 – 10</td><td>3</td></tr> <tr><td>11 – 20</td><td>1</td></tr> <tr><td>21 – 30</td><td>5</td></tr> <tr><td>31 – 40</td><td>5</td></tr> <tr><td>41 – 50</td><td>2</td></tr> <tr><td>51 – 60</td><td>4</td></tr> </tbody> </table> <p style="text-align: center; margin-top: 20px;">Table 2</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 60%;">Time needed (mins)</th> <th style="width: 40%;">Frequency</th> </tr> </thead> <tbody> <tr><td>1 – 15</td><td>4</td></tr> <tr><td>16 – 30</td><td>5</td></tr> <tr><td>31 – 45</td><td>6</td></tr> <tr><td>46 – 60</td><td>5</td></tr> </tbody> </table>	Time needed (mins)	Frequency	1 – 10	3	11 – 20	1	21 – 30	5	31 – 40	5	41 – 50	2	51 – 60	4	Time needed (mins)	Frequency	1 – 15	4	16 – 30	5	31 – 45	6	46 – 60	5	<p>1<sub>56-1</sub></p> <p>1<sub>56-2</sub></p>	<p>All must be correct</p> <p>All must be correct</p>
Time needed (mins)	Frequency																										
1 – 10	3																										
11 – 20	1																										
21 – 30	5																										
31 – 40	5																										
41 – 50	2																										
51 – 60	4																										
Time needed (mins)	Frequency																										
1 – 15	4																										
16 – 30	5																										
31 – 45	6																										
46 – 60	5																										

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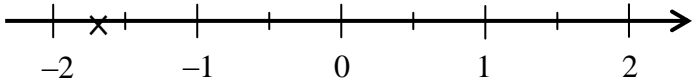
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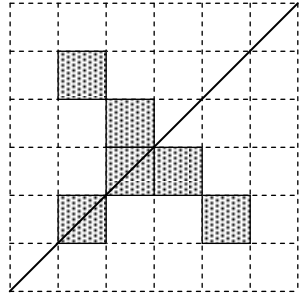
Section A – Sub-paper 2 (9ME2) (1 mark each)

1. D (9MC1-1)
2. C (9MC1-2)
3. D (9MC3-2)
4. B (9MC3-3)
5. C (9MC4-4)
6. B
7. B
8. C
9. B
10. C
11. A (9MC1-12)
12. D (9MC1-13)
13. A (9MC3-13)
14. C (9MC3-14)
15. B (9MC4-13)
16. A
17. A
18. A
19. C
20. B

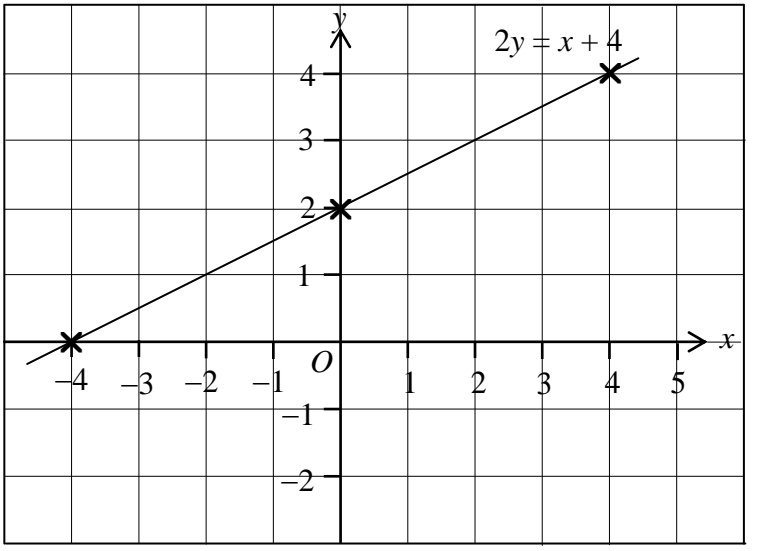


## Section B – Sub-paper 2 (9ME2)

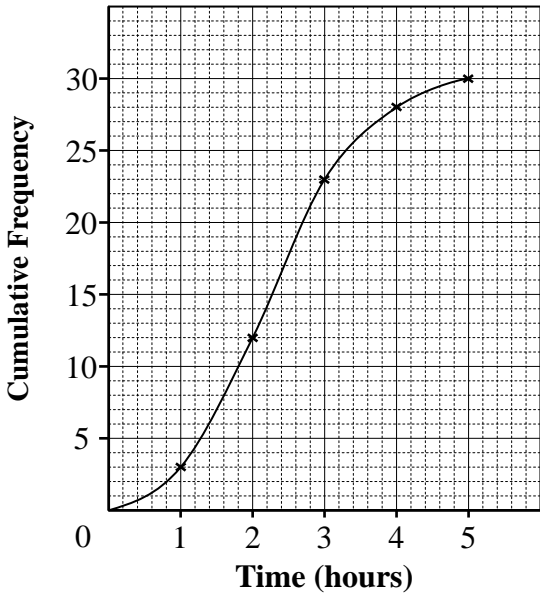
Question Number	Suggested Answers	Notes	Marks
21. (i) (ii) (9ME1-21)	1000 – 3000	All must be correct	1
22. (9ME1-22)	– 2, 0, 1	All correct and in order	1
23. (9ME3-22)			1
24. (9ME3-23)	2000		1
25. (9ME4-24)	4 : 5		1
26.	5		1
27.	120		1
28.	$-2 + 4a - 5a^2 + 3a^3$	Ascending order of powers of $a$	1
29.	$2x^4 + 8x^2 - 6x$	Expansion	1
30.	$3cd(d - 3c)$	Factorization	1
31. (9ME1-32)	$(3x + 2)(x + 1)$	Factorization	1
32. (9ME1-33)	$x - \frac{1}{3}x + 33 = 93$	Equation	1
33. (9ME3-32)	Q,S	All must be correct	1
34. (9ME3-33)	$4x^2 - 25y^2$	Expansion	1

35. (i) (ii) (9ME4-33)	> <	All must be correct	1
36.	$AB$ or $CB$	One of the answers suffices ( $BA$ or $BC$ are accepted)	1
37.		Enough to show symmetry	1
38.	50		1
39.	35		1
40.	100		1
41. (9ME1-42)	80		1
42. (9ME1-43)	2, $180^\circ$	All correct and in order	1
43. (9ME3-42)	5		1
44. (9ME3-43)	70.5	70.528779 rounded to 70.5	1
45. (a)	20		1 <sub>45a</sub>
(b)	2		1 <sub>45b</sub>
(c) (9ME4-43)	58		1 <sub>45c</sub>
46.	55.8		1

Section C – Sub-paper 2 (9ME2)

Question Number	Suggested Answers	Marks	Notes								
47. (9ME1-49)	<p>Total cost</p> $= \$149.3 \times 2 + \$84 \times 2 + \$69 \times 3$ $\approx \$150 \times 2 + \$100 \times 2 + \$70 \times 3$ $= \$300 + \$200 + \$210$ $= \$710$ <p>or</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <math>\therefore</math> Round up \$149.3, \$84.0 and \$69.0 respectively as \$150, \$100 and \$70.                     </div> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <math>\therefore</math> Total cost <math>\approx</math> \$710                     </div>	1 <sub>47-1</sub>  1 <sub>47-2</sub>   1 <sub>47-1</sub>  1 <sub>47-2</sub>	Or other reasonable estimation method Estimated value (must have method shown)  Or other reasonable estimation method Estimated value (must have method shown)								
48. (9ME1-50)	$\text{Amount} = \$30\,000 (1 + 4\%)^2$ $= \$32\,448$ $\text{Interest} = \$ (32\,448 - 30\,000)$ $= \$2\,448$ <p>The total interest is \$2 448.</p>	1 <sub>48-1</sub>  1 <sub>48-2</sub>  1* <sub>48-3</sub>   1** <sub>48-4</sub>	Or other correct method Method (Subtract principal from amount) (48-2 method may be skipped)  Units / presentation								
49. (9ME3-48)	<table border="1" style="margin-bottom: 10px;"> <tr> <td style="padding: 5px;"><math>x</math></td> <td style="padding: 5px;">-4</td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">4</td> </tr> <tr> <td style="padding: 5px;"><math>y</math></td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4</td> </tr> </table> 	$x$	-4	0	4	$y$	0	2	4	1 <sub>49-1</sub>  1 <sub>49-2</sub>	All must be correct  Method: straight line passing through the points in table
$x$	-4	0	4								
$y$	0	2	4								



<p>51. (9ME3-52)</p>	<p><math>1\ 960\ \pi = \pi r^2</math> (10)</p> <p><math>r = 14</math></p>	<p><math>1_{51-1}</math> <math>1^*_{51-2}</math></p>	<p>Substitute correct value into formula</p>												
<p>52. (9ME4-51)</p>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; border: none;">Steps</td> <td style="text-align: center; border: none;">Justifications</td> </tr> <tr> <td style="border: 1px dashed black; padding: 5px;"> <math display="block">\frac{AC}{EC} = \frac{BC}{DC} = \frac{1}{2}</math> <math display="block">\angle ACB = \angle ECD</math> </td> <td style="border: 1px dashed black; padding: 5px;">                     (Vert. Opp. <math>\angle</math>s)                 </td> </tr> <tr> <td colspan="2" style="border: none; padding-top: 10px;"> <math>\therefore \triangle ABC \sim \triangle EDC</math> (Ratio of two sides incl. <math>\angle</math>s)                 </td> </tr> </table>	Steps	Justifications	$\frac{AC}{EC} = \frac{BC}{DC} = \frac{1}{2}$ $\angle ACB = \angle ECD$	(Vert. Opp. $\angle$ s)	$\therefore \triangle ABC \sim \triangle EDC$ (Ratio of two sides incl. $\angle$ s)		<p><math>1_{52-1}</math> <math>1_{52-2}</math> <math>1_{52-3}</math></p>	<p>Correct steps Correct Justifications (with correct steps) Correct conclusion (with correct steps)</p>						
Steps	Justifications														
$\frac{AC}{EC} = \frac{BC}{DC} = \frac{1}{2}$ $\angle ACB = \angle ECD$	(Vert. Opp. $\angle$ s)														
$\therefore \triangle ABC \sim \triangle EDC$ (Ratio of two sides incl. $\angle$ s)															
<p>53.</p>	<p>(a) <math>AC = \underline{4}</math></p> <p>(b) <math>\triangle BDC</math> is a right-angled triangle.</p> $BC^2 + BD^2 = 5^2 + 12^2 = 169$ $CD^2 = 13^2 = 169$ $\therefore BC^2 + BD^2 = CD^2$ <p>According to the converse of Pythagoras Theorem, <math>\angle CBD</math> is a right angle. Hence, <math>\triangle BDC</math> is a right-angled triangle.</p>	<p><math>1_{53a}</math> <math>1_{53b-1}</math> <math>1_{53b-2}</math></p>	<p>Must have explanation Reasonable explanation</p>												
<p>54. (9ME4-53)</p>	<p style="text-align: center;"><b>Time taken by 30 students to do their projects</b></p>  <table border="1" style="margin-top: 10px;"> <caption>Data points from the cumulative frequency graph</caption> <thead> <tr> <th>Time (hours)</th> <th>Cumulative Frequency</th> </tr> </thead> <tbody> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>12</td></tr> <tr><td>3</td><td>23</td></tr> <tr><td>4</td><td>28</td></tr> <tr><td>5</td><td>30</td></tr> </tbody> </table>	Time (hours)	Cumulative Frequency	1	3	2	12	3	23	4	28	5	30	<p><math>1_{54-1}</math> <math>1_{54-2}</math> <math>1_{54-3}</math></p>	<p>Correct y coordinates (with respect to x coordinates) Curve passing through at least 2 correct y coordinates All correct</p>
Time (hours)	Cumulative Frequency														
1	3														
2	12														
3	23														
4	28														
5	30														

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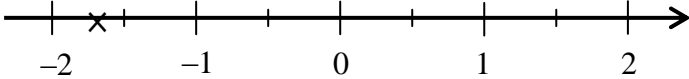
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Alternative suggested answers are shown in boxes.

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

1. B
2. D (9MC2-3)
3. B (9MC2-4)
4. B
5. C (9MC4-5)
6. B
7. B
8. C
9. D
10. D
11. B
12. C (9MC4-11)
13. A (9MC2-13)
14. C (9MC2-14)
15. C
16. B
17. B
18. C
19. C (9MC4-19)
20. A

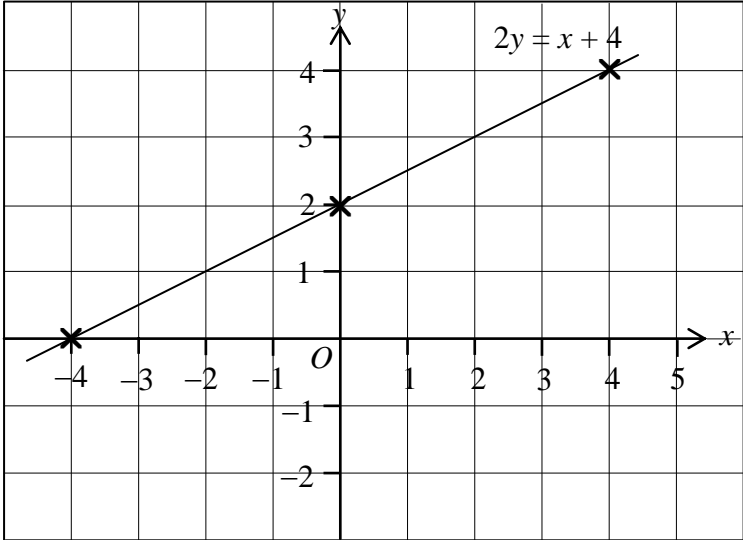
## Section B – Sub-paper 3 (9ME3)

Question Number	Suggested Answers	Notes	Marks
21.	2		1
22. (9ME2-23)			1
23. (9ME2-24)	2000		1
24.	15		1
25. (9ME4-25)	$\frac{50x - 5}{9}$	Or equivalent polynomial	1
26.	$x + y = 3x$	Equation	1
27.	2, 9	All correct and in order	1
28.	$3m - 5m^2$	Simplified polynomial	1
29.	$y^2 - 3y + 2$	Expansion	1
30.	$(a + b)(x + 2)$	Factorization	1
31.	-1		1
32. (9ME2-33)	Q,S	All must be correct	1
33. (9ME2-34)	$4x^2 - 25y^2$	Expansion	1



34.	$x \geq -1$		1
35. (9ME4-34)	$x > -10$		1
36.	<i>ABEF</i> or <i>BCDE</i>	One of the answers suffices ( <i>BEFA</i> , <i>CDEB</i> , etc are accepted)	1
37.	2		1
38.	7		1
39.	75		1
40.	<i>BGED</i>	<i>GEDB</i> , etc are accepted	1
41.	-3, 1	All correct and in order	1
42. (9ME2-43)	5		1
43. (9ME2-44)	70.5	70.528779 rounded to 70.5	1
44. (a)	60		1 <sub>44a</sub>
(b)	30		1 <sub>44b</sub>
45. (9ME4-44)	28		1
46.	16		1

Section C – Sub-paper 3 (9ME3)

Question Number	Suggested Answers	Marks	Notes								
47.	<p>The estimate of John is not reasonable.</p> <p>The height of a pack of paper should not be under-estimated.</p> <p>or</p> $\boxed{60 \text{ cm} \div 5.4 \text{ cm} < 60 \text{ cm} \div 5 \text{ cm}}$ $\boxed{\phantom{60 \text{ cm} \div 5.4 \text{ cm} < 60 \text{ cm} \div 5 \text{ cm}} = 12}$ <p>Fewer than 12 packs of paper can be placed in the drawer.</p>	<p>1<sub>47-1</sub></p> <p>1*<sub>47-2</sub></p> <p>1*<sub>47-2</sub></p>	<p>Must have explanation</p> <p>Reasonable explanation</p> <p>Reasonable explanation</p>								
48. (9ME2-49)	<table border="1" data-bbox="284 958 783 1059"> <tr> <td><math>x</math></td> <td>-4</td> <td>0</td> <td>4</td> </tr> <tr> <td><math>y</math></td> <td>0</td> <td>2</td> <td>4</td> </tr> </table> 	$x$	-4	0	4	$y$	0	2	4	<p>1<sub>48-1</sub></p> <p>1<sub>48-2</sub></p>	<p>All must be correct</p> <p>Method: straight line passing through the points in table</p>
$x$	-4	0	4								
$y$	0	2	4								

<p>49. (9ME2-50)</p> $\begin{cases} 2x + 5y = 9 & \dots(1) \\ 3x - 4y = 2 & \dots(2) \end{cases}$ <p>(1) <math>\times</math> 3: <math>\begin{cases} 6x + 15y = 27 &amp; \dots(3) \end{cases}</math>  (2) <math>\times</math> 2: <math>\begin{cases} 6x - 8y = 4 &amp; \dots(4) \end{cases}</math></p> <p>(3) <math>-</math> (4),  <math>23y = 23</math>  <math>y = 1</math></p> <p>Substitute <math>y = 1</math> into (2),  <math>3x - 4(1) = 2</math>  <math>x = 2</math></p> <p><math>\therefore x = 2</math> and <math>y = 1</math></p>		<p>1<sub>49-1</sub></p> <p>1*<sub>49-2</sub></p> <p>1<sub>49-3</sub></p>	<p>Method (Other methods are accepted: Elimination of <math>y</math> or substitution)  First correct root (<math>y = 1</math> or <math>x = 2</math>)</p> <p>Use the value of the first root to find the value of second root</p>
<p>50. (9ME1-52)</p>	$12^2 = 0^2 + 2(3)s$ $144 = 6s$ $s = 24$	<p>1<sub>50-1</sub></p> <p>1*<sub>50-2</sub></p>	<p>Substitute correct value into correct formula</p>
<p>51. (9ME4-49)</p>	<p>(a) 28</p> <p>(b) The area of the island is approximately the area of 7 squares.</p>	<p>1<sub>51a</sub></p> <p>1<sub>51b</sub></p>	<p>Range: 24 to 32</p> <p>Reasonable explanation  Other examples such as:  Area of island  <math>\approx 7 \times 4 \text{ km}^2 = 28 \text{ km}^2</math></p>



**Education Bureau**  
**Territory-wide System Assessment 2008**  
**Secondary 3 Mathematics**  
**Marking Scheme**

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

\*Mark for Answer:

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

\*\*Mark for Presentation:

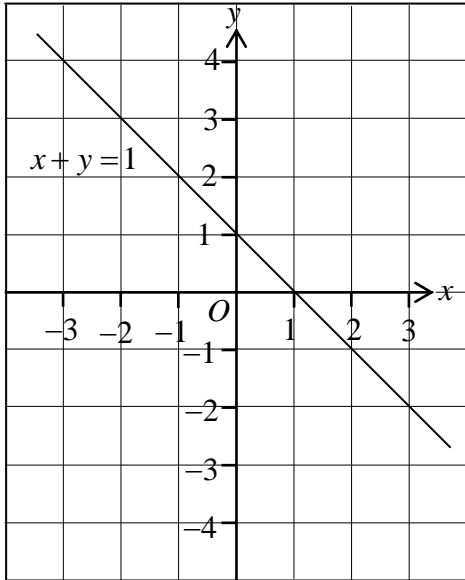
- (1) If the work shown is correct but the answer is incorrect, Mark for Presentation may be given.
- (2) If the work shown is incorrect, Mark for Presentation is not given.
- (3) Mark for Presentation may include overall work such as mathematical expressions, units, written explanations, usage of symbol, etc.

Alternative suggested answers are shown in boxes.

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

1. B
2. D (9MC1-3)
3. C
4. C (9MC2-5)
5. C (9MC3-5)
6. B
7. A
8. C
9. B (9MC1-9)
10. D
11. C (9MC3-12)
12. C
13. B (9MC2-15)
14. A
15. C
16. A
17. D
18. A
19. C (9MC3-19)
20. B

## Section B – Sub-paper 4 (9ME4)

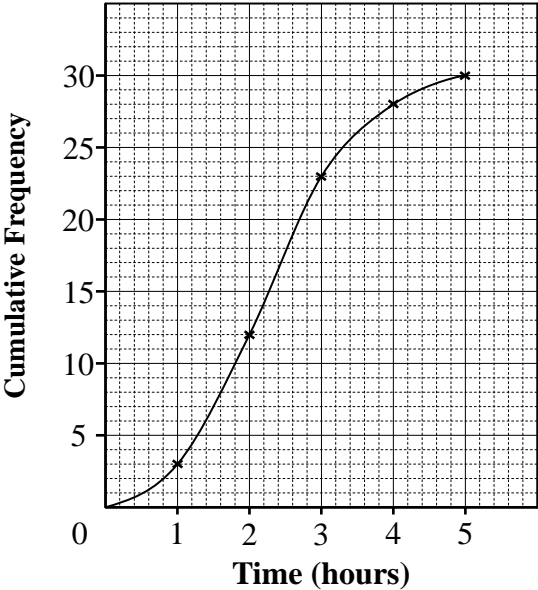
Question Number	Suggested Answers	Notes	Marks
21. (i) (ii)	Exact value Estimated value	All must be correct	1
22. (9ME1-23)	$2.35 \times 10^{-8}$		1
23.	2	“Two” is accepted	1
24. (9ME2-25)	4 : 5		1
25. (9ME3-25)	$\frac{50x - 5}{9}$	Or equivalent polynomial	1
26.	-2		1
27.	$3x - y$	Simplified polynomial	1
28.	$m^6 n^4$	Simplified rational expression	1
29.	$(2 + 3y)(2 - 3y)$	Factorization	1
30.	$x = -3$	Or -3	1
31. (9ME1-34)			1
32.	$4x^2 - 4xy + y^2$	Expansion	1
33. (i) (ii) (9ME2-35)	> <	All must be correct	1

34. (9ME3-35)	$x > -10$		1
35.	$B, D$	All must be correct	1
36.	$A, C$	All must be correct	1
37. (9ME1-39)	20		1
38.	58		1
39.	$\angle AED$ or $\angle BFC$	One of the answers suffices ( $\angle DEA$ or $\angle CFB$ are accepted)	1
40.	3, 0	All correct and in order	1
41. (9ME1-44)	24		1
42.	3.8	3.8302222 rounded to 3.8	1
43. (a)	20		1 <sub>43a</sub>
(b)	2		1 <sub>43b</sub>
(c) (9ME2-45)	58		1 <sub>43c</sub>
44. (9ME3-45)	28		1
45.	\$10001 – \$11000		1



## Section C – Sub-paper 4 (9ME4)

Question Number	Suggested Answers	Marks	Notes
46.	The present value of the watch $= \$50\,000 \times (1 + 10\%)^3$ $= \$66\,550$	$1_{46-1}$ $1^*_{46-2}$ $1^{**}_{46-3}$	Or other correct method  Units / presentation
47. (9ME1-51)	The amount received by Mr Chan is $= \frac{\text{¥}90}{\text{HK\$}100} \times \text{HK\$}4\,000$ $= \text{¥}3\,600$	$1_{47-1}$  $1^*_{47-2}$ $1^{**}_{47-3}$	Or other correct method  Units / presentation
48.	(a) $l = \frac{P}{2} - w \quad \text{or} \quad l = \frac{P - 2w}{2}$ (b) $l = \frac{18 - 2(3)}{2}$ $= 6$ or $\boxed{18 = 2(l + 3)}$ $\boxed{l = \frac{18}{2} - 3}$ $\boxed{= 6}$	$1_{48-1}$  $1_{48-2}$ $1^*_{48-3}$  $\boxed{1}_{48-2}$  $\boxed{1^*}_{48-3}$	Substitute values into formula found in (a)      $\boxed{\text{Substitute values into original formula}}$
49. (9ME3-51)	(a) 28  (b) The area of the island is approximately the area of 7 squares.	$1_{49a}$  $1_{49b}$	Range: 24 to 32  Reasonable explanation Other examples such as: Area of island $\approx 7 \times 4 \text{ km}^2 = 28 \text{ km}^2$

<p>50. (9ME3-53)</p>	<p>The area of the signboard is</p> $= [\pi(1.4)^2 \times \frac{300^\circ}{360^\circ}] \text{ m}^2$ $= 5.1 \text{ m}^2$	<p>1<sub>50-1</sub></p> <p>1*<sub>50-2</sub></p> <p>1**<sub>50-3</sub></p>	<p>5.131268 rounded to 5.1</p> <p>Units / presentation</p>												
<p>51. (9ME2-52)</p>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 50%; border-bottom: 1px dashed black;"> <p>Steps</p> <math display="block">\frac{AC}{EC} = \frac{BC}{DC} = \frac{1}{2}</math> <math display="block">\angle ACB = \angle ECD</math> </td> <td style="text-align: center; width: 50%; border-bottom: 1px dashed black;"> <p>Justifications</p> <p>(Vert. Opp. <math>\angle</math>s)</p> </td> </tr> <tr> <td colspan="2" style="border-top: 1px dashed black;"> <p><math>\therefore \triangle ABC \sim \triangle EDC</math> (Ratio of two sides incl. <math>\angle</math>s)</p> </td> </tr> </table>	<p>Steps</p> $\frac{AC}{EC} = \frac{BC}{DC} = \frac{1}{2}$ $\angle ACB = \angle ECD$	<p>Justifications</p> <p>(Vert. Opp. <math>\angle</math>s)</p>	<p><math>\therefore \triangle ABC \sim \triangle EDC</math> (Ratio of two sides incl. <math>\angle</math>s)</p>		<p>1<sub>51-1</sub></p> <p>1<sub>51-2</sub></p> <p>1<sub>51-3</sub></p>	<p>Correct steps</p> <p>Correct Justifications (with correct steps)</p> <p>Correct conclusion (with correct steps)</p>								
<p>Steps</p> $\frac{AC}{EC} = \frac{BC}{DC} = \frac{1}{2}$ $\angle ACB = \angle ECD$	<p>Justifications</p> <p>(Vert. Opp. <math>\angle</math>s)</p>														
<p><math>\therefore \triangle ABC \sim \triangle EDC</math> (Ratio of two sides incl. <math>\angle</math>s)</p>															
<p>52.</p>	<p>(a) <math>\tan \theta = \frac{1}{5}</math></p> <p><math>\theta = 11^\circ</math></p> <p>(b) <math>111^\circ</math></p>	<p>1<sub>52a-1</sub></p> <p>1*<sub>52a-2</sub></p> <p>1<sub>52b</sub></p> <p>1**<sub>52-4</sub></p>	<p>Method</p> <p>(11.309932 rounded to 11)</p> <p>Use value of <math>\theta</math> in (a) and add <math>100^\circ</math></p> <p>(a) and (b): Units / presentation</p>												
<p>53. (9ME2-54)</p>	<p style="text-align: center;"><b>Time taken by 30 students to do their projects</b></p>  <table border="1" style="margin-top: 10px; width: 100%; text-align: center;"> <caption>Data points from the cumulative frequency graph</caption> <thead> <tr> <th>Time (hours)</th> <th>Cumulative Frequency</th> </tr> </thead> <tbody> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>12</td></tr> <tr><td>3</td><td>23</td></tr> <tr><td>4</td><td>28</td></tr> <tr><td>5</td><td>30</td></tr> </tbody> </table>	Time (hours)	Cumulative Frequency	1	3	2	12	3	23	4	28	5	30	<p>1<sub>53-1</sub></p> <p>1<sub>53-2</sub></p> <p>1<sub>53-3</sub></p>	<p>Correct y coordinates (with respect to x coordinates)</p> <p>Curve passing through at least 2 correct y coordinates</p> <p>All correct</p>
Time (hours)	Cumulative Frequency														
1	3														
2	12														
3	23														
4	28														
5	30														