

1449/2
Matematik
Kertas 2
Oktober 2020



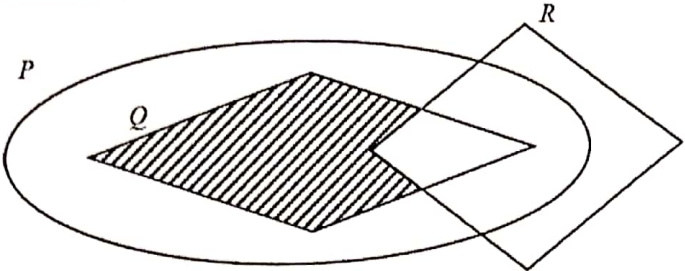
**MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SEMBILAN**

**PROGRAM PENINGKATAN AKADEMIK TINGKATAN LIMA
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2020**

MATEMATIK

Kertas 2

PERATURAN PEMARKAHAN

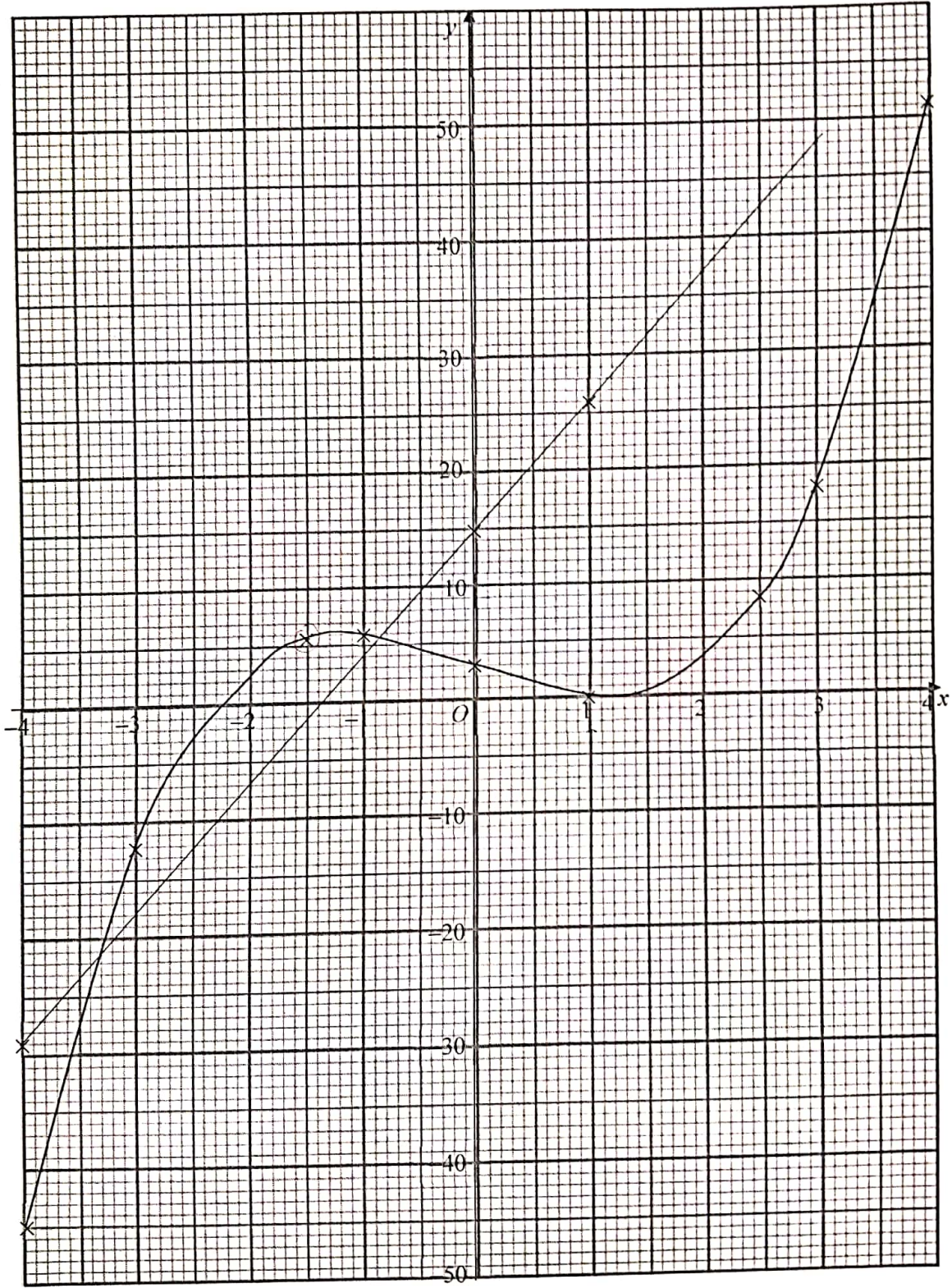
Number	Marking Scheme	Marks
1	<p>(a) </p> <p>(b) $x + 3 + 7 = *15$ $x = 5$ <u>Note:</u> If K1 follow through, award N0.</p>	<p>N1</p> <p>K1</p> <p>N1</p> <hr/> <p>3</p>
2	<p>$0 = -2x^2 + 7x + 15$ or equivalent $0 = (-2x - 3)(x - 5)$ or equivalent $x = -1.5$ or $x = 5$ $x = 5$ Yes. The student will be representing his sport house.</p>	<p>P1</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>N1</p> <hr/> <p>5</p>
3	<p>(a) $y = -0.5x + 4$ or equivalent $y = 2x + 2$ or equivalent</p> <p>(b) $-0.5x + 4 = 2x + 2$ or equivalent $x = 0.8$ or $\frac{4}{5}$ $y = 3.6$ or $\frac{18}{5}$ $Q(0.8, 3.6)$ or $Q\left(\frac{4}{5}, \frac{18}{5}\right)$</p>	<p>N1</p> <p>N1</p> <p>K1</p> <p>K1</p> <p>K1</p> <p>N1</p> <hr/> <p>6</p>
4	<p>(a) $\angle BHJ$ or $\angle JHB$ or $\angle AEK$ or $\angle KEA$</p> <p>(b) $\cos * \theta = \frac{5}{12}$ or $\tan * \theta = \frac{5}{12}$ or $\cos * \theta = \frac{12}{13}$ or equivalent $\cos^{-1}\left(\frac{5}{12}\right) + \tan^{-1}\left(\frac{5}{12}\right)$ OR $\cos^{-1}\left(\frac{5}{12}\right) + \cos^{-1}\left(\frac{12}{13}\right)$ or equivalent 88°</p>	<p>N1</p> <p>K1</p> <p>K1</p> <p>N1</p> <hr/> <p>4</p>

Number	Marking Scheme	Marks
5	$x + y = 612$ or $x - y = 20$ <u>OR</u> $100x + 100y = 61\ 200$ or $x - y = 20$	K1
	$\begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 612 \\ 20 \end{pmatrix}$ <u>OR</u> $\begin{pmatrix} 100 & 100 \\ 1 & -1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 61200 \\ 20 \end{pmatrix}$	K1
	$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{(1)(-1) - (1)(1)} \begin{pmatrix} -1 & -1 \\ -1 & 1 \end{pmatrix} \begin{pmatrix} 612 \\ 20 \end{pmatrix}$ <u>OR</u>	K1
	$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{(100)(-1) - (100)(1)} \begin{pmatrix} -1 & -100 \\ -1 & 100 \end{pmatrix} \begin{pmatrix} 61200 \\ 20 \end{pmatrix}$	N1
	$x = 316$ $y = 296$	N1
		5
6	FD = 5 @ FE = 5 or (-5, 4) seen (5, 4) seen	K1
	Gradient, $m = \frac{2}{3}$	K1
	$(4) = \frac{2}{3}(-5) + c$	K1
	$y = \frac{2}{3}x + \frac{22}{3}$ or equivalent	N1
		4
7	(a) Not a statement	P1
	(b) If $n(A) = 4$ then $A = \{B, A, I, K\}$.	K1
	(b) If $A = \{B, A, I, K\}$ then $n(A) = 4$.	K1
	(c) A cylinder not has a cross-sectional area of 10 cm^2 and a height of 5 cm	K1
		4
8	(a) $42 - 18 = 24$ minutes	P1
	(b) $\frac{60}{\left(\frac{18}{60}\right)}$	K1
	200	N1
	(c) $46.5 = \left(\frac{1}{2} \times 0.3 \times 60\right) + (60 \times 0.4) + \left(\frac{1}{2} \times (v + 60) \times 0.2\right)$	K1
	75	N1
		5

Number	Marking Scheme	Marks	
9	(a) $\{(4, 2), (3, 2), (1, 2), (1, 2), (5, 2), (3, 4), (1, 4), (1, 4), (5, 4), (1, 3), (1, 3), (5, 3), (1, 1), (5, 1), (5, 1)\}$ <u>Note:</u> Allow any 2 mistakes for P1	P2	
	(b)(i) (1, 3) (1, 3) (1, 1) (5, 1) (5, 1) (5, 3) $\frac{6}{15}$ or $\frac{2}{5}$	K1 N1	
	(ii) (4, 2), (5, 1), (5, 1) $\frac{3}{15}$ or $\frac{1}{5}$	K1 N1	
		6	
10	$\frac{22}{7} \times 14 \times 14 \times 7$ $\frac{4}{3} \times \frac{22}{7} \times 2 \times 2 \times 2$ $(\frac{22}{7} \times 14 \times 14 \times 7) \div 2 (\frac{4}{3} \times \frac{22}{7} \times 2 \times 2 \times 2)$ 64	K1 K1 K1 N1	
		4	
	11	(a) $\frac{235}{360} \times 2 \times \frac{22}{7} \times 8$ or $\frac{125}{360} \times 2 \times \frac{22}{7} \times 12$ $\frac{235}{360} \times 2 \times \frac{22}{7} \times 8 + \frac{125}{360} \times 2 \times \frac{22}{7} \times 12 + 4 + 4$ or equivalent $\frac{4222}{63} @ 67 \frac{1}{63} @ 67.02$	K1 K1 N1
		(b) $\frac{125}{360} \times \frac{22}{7} \times 12^2$ or $\frac{55}{360} \times \frac{22}{7} \times 8^2$ or $\frac{180}{360} \times \frac{22}{7} \times 8^2$ $\frac{180}{360} \times \frac{22}{7} \times 8^2 + \frac{125}{360} \times \frac{22}{7} \times 12^2 - \frac{55}{360} \times \frac{22}{7} \times 8^2$ or equivalent $\frac{14300}{63} @ 226 \frac{22}{63} @ 226.98$	K1 K1 N1
	6		

Number	Marking Scheme	Marks						
12	<p>(a)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>-1.5</td> <td>3</td> </tr> <tr> <td>y</td> <td>5.6</td> <td>18</td> </tr> </table>	x	-1.5	3	y	5.6	18	P1P1
x	-1.5	3						
y	5.6	18						
	<p>(b) Axes drawn in the correct directions with uniform scales for $-4 \leq x \leq 4$ and $-45 \leq y \leq 51$</p> <p>All 7 points and *2 points correctly plotted or curve passes through all points for $-4 \leq x \leq 4$ and $-45 \leq y \leq 51$</p> <p>A smooth and continuous curve without any straight line and passes through all 9 correct 9 points using the given scale $-4 \leq x \leq 4$ and $-45 \leq y \leq 51$</p> <p><u>Notes:</u> 1. 7 or 8 points correctly plotted, award K1. 2. Ignore curve out of range.</p>	P1 K2 N1						
	<p>(c)(i) 1.5 ± 0.5 $(1 \rightarrow 2)$</p>	N1						
	<p>(ii) -3.55 ± 0.1 $(-3.65 \rightarrow -3.45)$</p>	N1						
	<p>(d) Straight line $y = 11x + 15$ correctly drawn The straight line $y = 11x + 15$ passes through any two of these points $(-3, 18)$ and $(-1, 4)$.</p> <p><u>Note:</u> Identify equation $y = 11x + 15$ seen, award K1</p>	K2						
	<p>-0.85 ± 0.1 $(-0.95 \rightarrow -0.75)$</p>	N1						
	<p>-3.35 ± 0.1 $(-3.45 \rightarrow -3.25)$</p>	N1						
		12						

Graph for Question 12

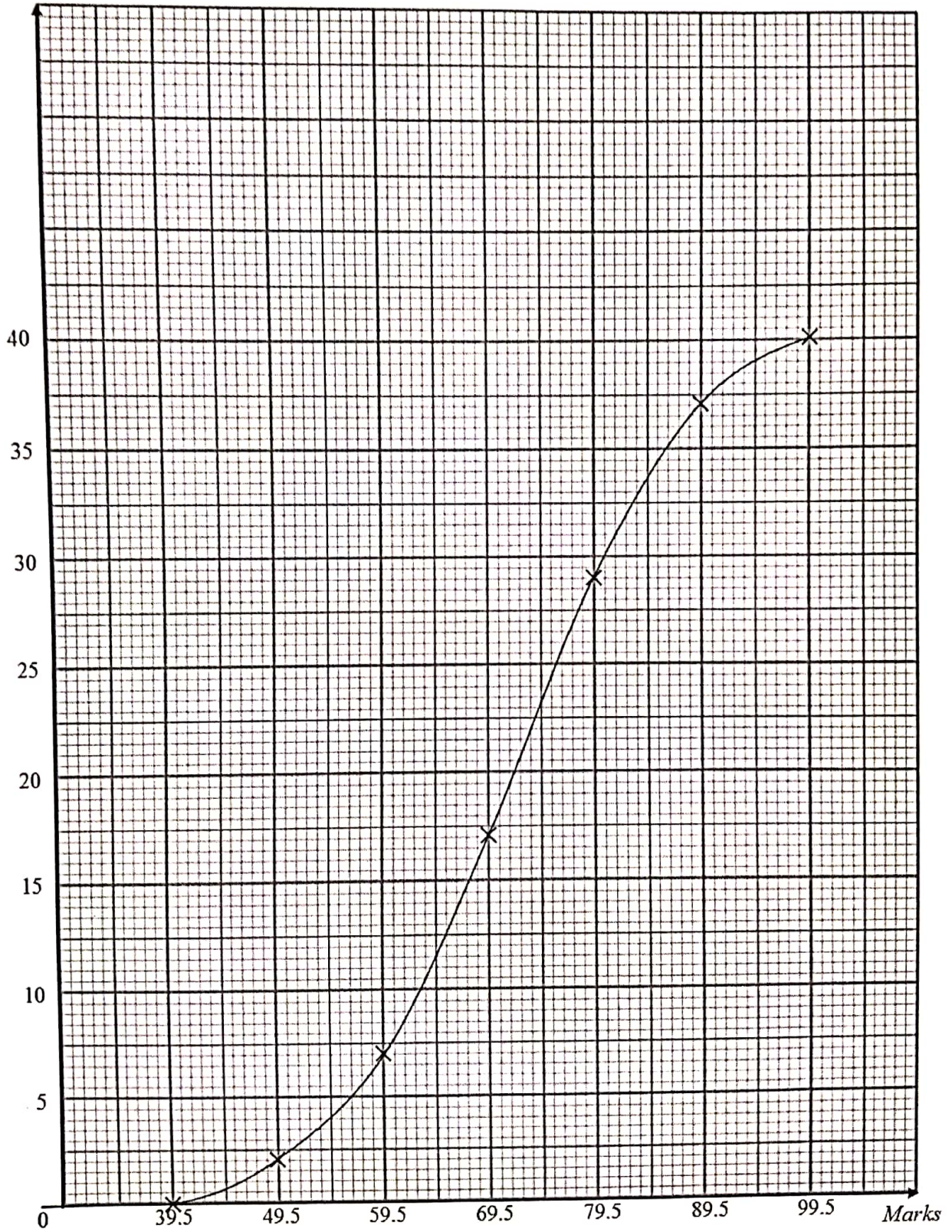


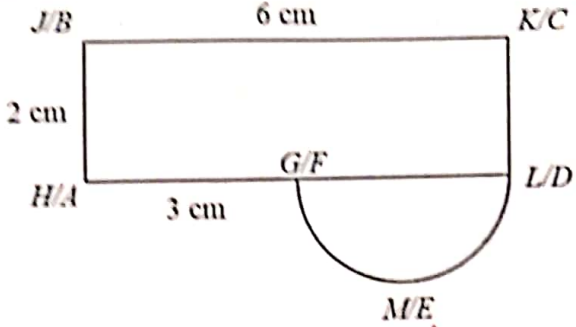
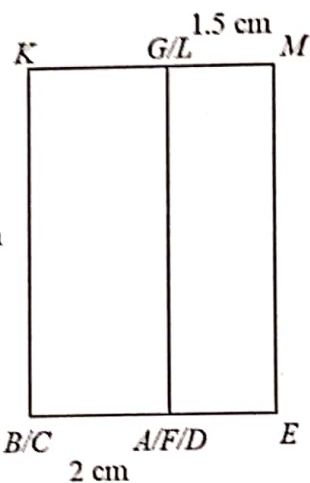
Number	Marking Scheme	Marks
13	(a)(i) $(-1, 5)$	P2
	<u>Note:</u> $(-1, 5), (2, 3)$ seen or marked, award P1	
	(ii) $(-1, 3)$	P2
	<u>Note:</u> $(-1, 3), (-5, 5)$ seen or marked, award P1	
	(b)(i) Reflection along x -axis	P2
	<u>Note:</u> 1. Reflection, award P1	
	(ii) Enlargement, scale factor $\frac{1}{2}$, centre O	P3
<u>Note:</u> 1. Enlargement, award P1 2. Enlargement, scale factor $\frac{1}{2}$ or Enlargement, centre O , award P2 3. Accept the answers (b)(ii) for (b)(i) and (b)(i) for (b)(ii).		
(c) $\frac{1}{2} \times (4 + 6) \times 4$ or $\frac{1}{2} \times (8 + 12) \times 8$	K1	
$\frac{1}{2} \times (8 + 12) \times 8 - \frac{1}{2} \times (4 + 6) \times 4$ <u>OR</u> $80 - \left(\frac{1}{2}\right)^2 \times 80$	K1	
60	N1	
	12	

Number	Marking Scheme				Marks	
14	(a)	Marks	Frequency	Cumulative Frequency	Upper Boundary	P1 P2 P1
	30 – 39	0	0	39.5		
	40 – 49	2	2	49.5		
	50 – 59	5	7	59.5		
	60 – 69	10	17	69.5		
	70 – 79	12	29	79.5		
	80 – 89	8	37	89.5		
	90 – 99	3	40	99.5		
	(b) <i>Ogive</i>	Axes are drawn in the correct direction , uniform scale for $39.5 \leq x \leq 99.5$ and $0 \leq y \leq 40$				P1
		Horizontal axis is labelled using upper boundary and 6 point drawn correctly using upper boundary. <u>Note</u> : *4 or *5 line drawn correctly, award K1				K2
		Ogive completes from x -axis and passess through 6 points correctly.				N1
	(c)(i) 71 ± 1					P1
	(ii) 24 ± 1 seen					P1
	40 – *24					K1
	*16					N1
					12	

Cummulative
Frequency

Graph for Question 14



Number	Marking Scheme	Marks
15	<p>(a)</p>  <p><u>Correct shape with three rectangles.</u> All solid lines.</p> <p>$JK = HL > GH > HJ = KL$</p> <p>The measurement is accurate to ± 0.2 cm (one way) and the angles at all vertices of the rectangles are $90^\circ \pm 1^\circ$.</p>	<p>K1</p> <p>K1</p> <p>N1</p>
	<p>(b)(i)</p>  <p><u>Correct shape with one rectangle and one irregular hexagon.</u> All solid lines.</p> <p>$BK > BE > AB > AE$</p> <p>Measurements correct to ± 0.2 cm (one way) and angles at all vertices of the rectangles are $90^\circ \pm 1^\circ$.</p>	<p>K1</p> <p>K1</p> <p>N2</p>

Number	Marking Scheme	Marks
(b)(ii)	<div data-bbox="582 257 1125 728" data-label="Diagram"> </div> <p data-bbox="470 772 1077 840">Correct shape with one rectangle and one triangle. All solid lines.</p> <p data-bbox="470 907 798 940">LN joined with dotted line.</p> <p data-bbox="470 1019 662 1052">$DL > DF = AF$</p> <p data-bbox="470 1108 1236 1187">Measurements correct to ± 0.2 cm (one way) and angles at all vertices of the rectangles are $90^\circ \pm 1^\circ$.</p>	<p data-bbox="1284 772 1332 806">K1</p> <p data-bbox="1284 884 1332 918">K1</p> <p data-bbox="1284 996 1332 1030">K1</p> <p data-bbox="1284 1108 1332 1142">N2</p> <hr/> <p data-bbox="1284 1232 1332 1265">12</p>

Number	Marking Scheme	Marks
16	(a) 60° N	K1
	(b) $(60^\circ - 20^\circ) \times 60^\circ$	K1
	2400 nautical miles	N1
	(c) $(120^\circ - 50^\circ) \times 60 \times \cos 60^\circ$	K1
	$2100 \times \frac{2}{3}$	K1
	1400	N1
	$\frac{1400}{60 \times \cos 60^\circ} + 50^\circ$	K1
	$(60^\circ \text{ N}, 96.67^\circ \text{ E})$	N1
	(d) $(96.67^\circ - 80^\circ) \times 60 \times \cos 60^\circ$	K1
	2400 + 500.1	K1
	$\frac{2900.1}{420}$	K1
	6.905 hours or 6.91 hours	N1
		12

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MATEMATIK

Kertas 1

PERATURAN PEMARKAHAN

PROGRAM PENINGKATAN AKADEMIK TINGKATAN LIMA
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2020

MATEMATIK
Kertas 1

- | | | | |
|-------|-------|-------|-------|
| 1. B | 11. B | 21. D | 31. C |
| 2. C | 12. A | 22. A | 32. B |
| 3. D | 13. A | 23. A | 33. D |
| 4. C | 14. C | 24. D | 34. C |
| 5. B | 15. A | 25. C | 35. C |
| 6. A | 16. B | 26. A | 36. D |
| 7. D | 17. C | 27. B | 37. B |
| 8. A | 18. C | 28. C | 38. D |
| 9. D | 19. C | 29. C | 39. B |
| 10. B | 20. A | 30. B | 40. B |