

SULIT
1449/1
Matematik
Kertas 1
Ogos/Sept. 2018



MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SEMBILAN

PROGRAM PENINGKATAN AKADEMIK TINGKATAN LIMA
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2018

MATEMATIK —

Kertas 1

PERATURAN PEMARKAHAN

PROGRAM PENINGKATAN AKADEMIK TINGKATAN LIMA
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2018

MATEMATIK
Kertas 1

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

SULIT
1449/2
Matematik
Kertas 2
Ogos/Sept. 2018



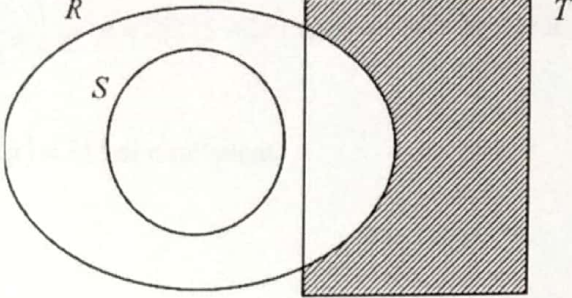
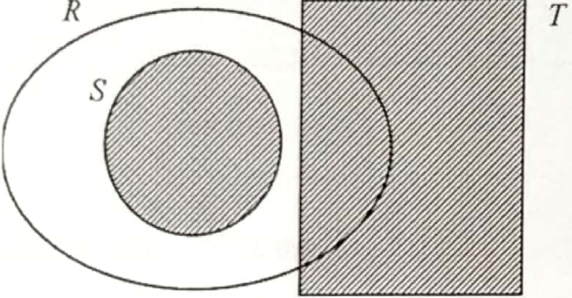
MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SEMBILAN

PROGRAM PENINGKATAN AKADEMIK TINGKATAN LIMA
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2018

MATEMATIK

Kertas 2

PERATURAN PEMARKAHAN

Number	Marking Scheme	Marks
1	<p>(a)</p> 	K1
	<p>(b)</p> 	K2
2	<p>(a) $\angle VXP$ or $\angle PXV$</p> <p>(b) $\tan \theta = \frac{7}{15}$</p> <p>$\theta = 25^\circ 1'$ or 25.02°</p>	<p>P1</p> <p>K1</p> <p>N1</p>
3	<p>$\frac{1}{2} \times (11+5) \times 7 \times 4$ or equivalent</p> <p>$\frac{1}{2} \times \frac{1}{3} \times 3 \cdot 14 \times \left(\frac{5}{2}\right)^2 \times 7$ or equivalent</p> <p>$\left(\frac{1}{2} \times (11+5) \times 7 \times 4\right) - \left(\frac{1}{2} \times \frac{1}{3} \times 3 \cdot 14 \times \left(\frac{5}{2}\right)^2 \times 7\right)$</p> <p>201.1</p>	<p>K1</p> <p>K1</p> <p>K1</p> <p>N1</p>
		3
		4

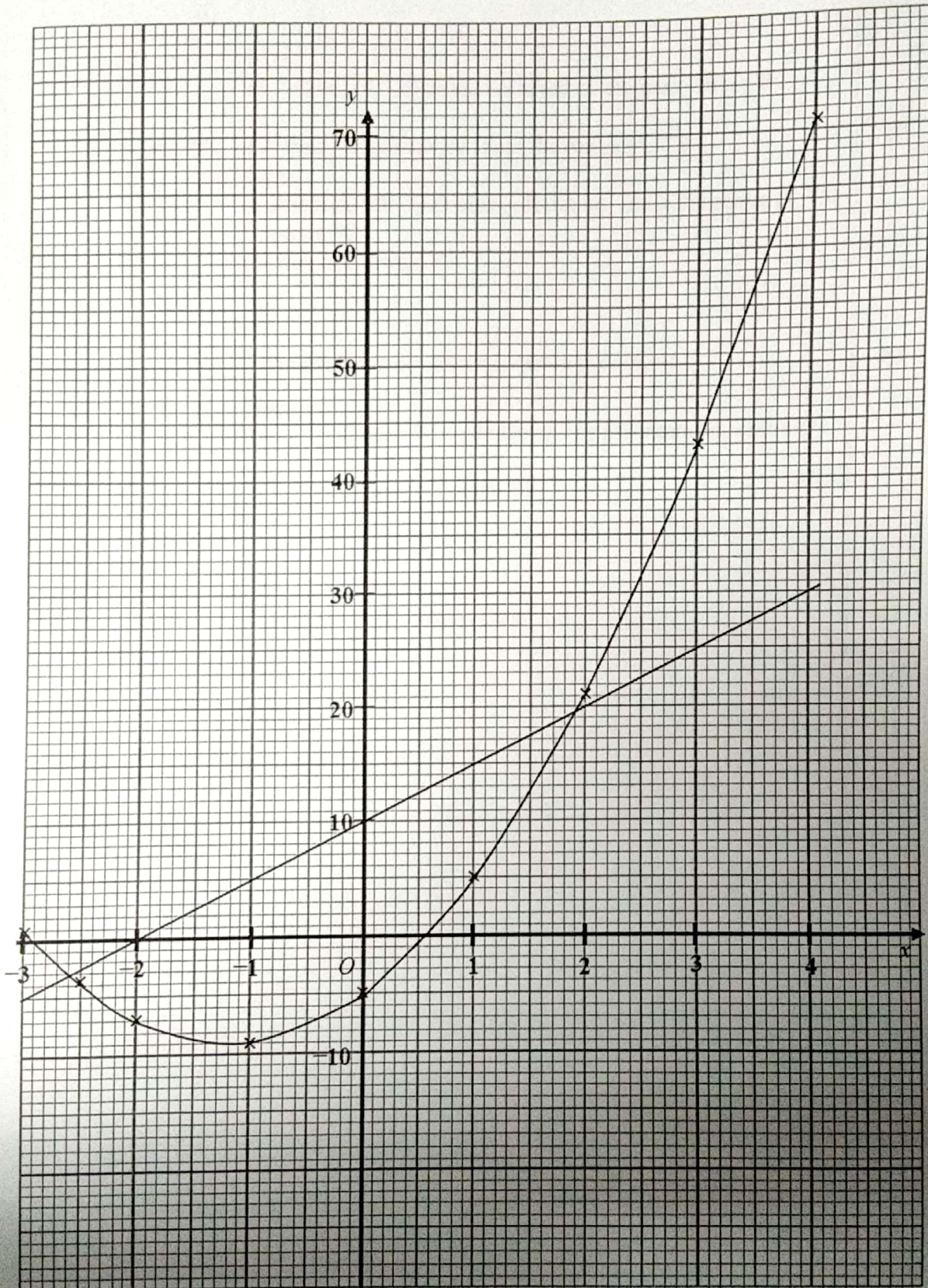
4	$2x + \frac{1}{2}y = 215 \text{ or } 3x + y = 350 \text{ or equivalent}$ $x = \frac{1}{2}\left(215 - \frac{1}{2}y\right) \text{ or } y = 2(215 - 2x) \text{ or } y = 350 - 3x \text{ or } x = \frac{350 - y}{3}$ <p>or equivalent</p> $2x + \frac{1}{2}(350 - 3x) = 215 \text{ or equivalent}$ $x = 80$ $y = 110$	<p>P1</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>N1</p>
5		
5	<p>(a)(i) Some</p> <p>(ii) All</p> <p>(b) Implication 1 : If $b - 5 > 0$, then $b - 7 > 0$ Implication 2 : If $b - 7 > 0$, then $b - 5 > 0$</p> <p>(c) If set M is a subset of set N, then $M \cap N = M$ or If $M \cap N \neq M$ then set M is not a subset of set N</p>	<p>P1</p> <p>P1</p> <p>P1</p> <p>P1</p> <p>P1</p>
5		
6	$\frac{1}{2}(5x + 2 + 10)(x + 2) \times 11 = 484$ $5x^2 + 22x - 64 = 0$ $(5x + 32)(x - 2) = 0$ $x = 2, \quad x = -\frac{32}{5}$ $x = 2$	<p>K1</p> <p>K1</p> <p>K1</p> <p>N1</p>
4		

7	<p>(a) $12x + 13y = 108 \cdot 10$ or $17x + 8y = 102 \cdot 10$</p> <p>(b) $\begin{pmatrix} 12 & 13 \\ 17 & 8 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 108 \cdot 1 \\ 102 \cdot 1 \end{pmatrix}$</p> $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{(12)(8) - (13)(17)} \begin{pmatrix} 8 & -13 \\ -17 & 12 \end{pmatrix} \begin{pmatrix} 108 \cdot 1 \\ 102 \cdot 1 \end{pmatrix}$ <p>$x = 3 \cdot 7$</p> <p>$y = 4 \cdot 9$</p>	<p>P1</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>N1</p>
8	<p>(a) $(6, 0)$</p> <p>(b) $\frac{6-4}{6-0}$ or $\frac{2}{6}$</p> $\frac{1}{3}$ <p>(c) $(0) = \frac{1}{3}(6) + c$ or $c = -2$</p> $y = \frac{1}{3}x - 2$	<p>P1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>
9	<p>(a) $\{(A, N), (A, M), (A, H), (E, N), (E, M), (E, H), (S, N), (S, M), (S, H), (R, N), (R, M), (R, H)\}$</p> <p><u>Note:</u> Allow one mistake for P1.</p> <p>(b)(i) $\{(R, M), (R, H)\}$</p> $= \frac{2}{12}$ <p>(b)(ii) $\{(A, M), (A, H), (E, M), (E, H), (S, M), (S, H), (R, N)\}$</p> $= \frac{7}{12}$	<p>P2</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>
		5
		6

10	<p>(a) $\left(\frac{1}{2} \times 2 \times \frac{22}{7} \times \frac{7}{2}\right)$ $7(16) + \left(\frac{1}{2} \times 2 \times \frac{22}{7} \times \frac{7}{2}\right) (8)$ 95</p> <p>(b) $\left(\frac{1}{2} \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2\right)$ $(21 \times 21 \times 3) - \left(\frac{1}{2} \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2\right)$ 1284.5</p>	K1 K1 N1 K1 K1 N1
6		
11	<p>(a)</p> <p>Distance Porsche = $\left(\frac{1}{2} \times 150 \times 2\right) + \left(\frac{1}{2} \times 150 \times 0.5\right) = 187.5$</p> <p>Distance Bently = $\frac{1}{2} \times 150 \times 4 = 300$</p> <p>Distance Mazda = $\frac{1}{2} \times (2.5 + 5) \times 80 = 300$</p> <p>Mazda because the time taken is 5 seconds or Porsche because disqualified</p> <p>(b) $\frac{300}{5}$</p> <p>60</p>	K1 K1 K1 N1 K1 N1
6		

12	(a)	<table border="1"> <tr> <td>x</td> <td>-2.5</td> <td>3</td> </tr> <tr> <td>y</td> <td>-3.75</td> <td>43</td> </tr> </table>	x	-2.5	3	y	-3.75	43	P1P1
x	-2.5	3							
y	-3.75	43							
	(b) Axes drawn in the correct directions with uniform scales for $-3 \leq x \leq 4$ and $-9 \leq y \leq 71$.		P1						
	All 7 points and *2 points correctly plotted or curve passes through all points for $-3 \leq x \leq 4$ and $-9 \leq y \leq 71$.		K2						
	A smooth and continuous curve without any straight line and passes through all 9 correct 9 points using the given scale $-3 \leq x \leq 4$ and $-9 \leq y \leq 71$.		N1						
	<u>Notes:</u> 1. 7 or 8 points correctly plotted, award K1. 2. Ignore curve out of range.								
	(c) (i) $-7.5 \leq y \leq -9.5$		N1						
	(ii) $2.5 \leq x \leq 2.7$		N1						
	(d) Straight line $y = 5x + 10$ correctly drawn The straight line $y = 5x + 10$ passes through any two of these points $(-2,0)$ and $(0,10)$		K2						
	<u>Notes:</u> Identify equation $y = 5x + 10$ seen, award K1.								
	$x = -2.6 \pm 0.1$		N1						
	$x = 1.9 \pm 0.1$		N1						
			12						

Graph for Question 12
Graf untuk Soalan 12



13	(a) (i) (8, 2)	P1
	(ii) (-1, -6)	P2
	<u>Note:</u> (7, -6) or (-1, -6) seen or marked on diagram, award P1	
	(b)(i)(a) Rotation 90° clockwise about the centre (4, -7)	P3
	<u>Note:</u> 1. Rotation, 90° clockwise <u>or</u> Rotation, about the centre (4, -7) award P2 2. Rotation, award P1	
(b) Enlargement, scale factor 2, centre Q or (6, -5)	P3	
<u>Note:</u> 1. Enlargement, scale factor 2 or Enlargement, centre Q or (6, -5), award P2 2. Enlargement, award P1		
(ii) $2^2 \times 15.5 - 15.5$ or equivalent	K2	
<u>Note:</u> $2^2 \times 15.5$, award K1		
46.5	N1	
	12	

14 (a)

Time Masa (min)	Frequency Kekerapan	Cumulative Frequency Kekerapan Longgokan	Upper Boundary Sempadan Atas
15 – 19	0	0	19.5
20 – 24	2	2	24.5
25 – 29	4	6	29.5
30 – 34	6	12	34.5
35 – 39	9	21	39.5
40 – 44	11	32	44.5
45 – 49	6	38	49.5
50 – 54	2	40	54.5

P1
P1
P1
P1

(b) (i) 40 – 44

P1

$$(ii) \frac{*0 \times 17 + *2 \times 22 + *4 \times 27 + *6 \times 32 + *9 \times 37 + *11 \times 42 + *6 \times 47 + *2 \times 52}{*0 + *2 + *4 + *6 + *9 + *11 + *6 + *2}$$

K2

$$\text{or } \frac{1525}{40}$$

$$38.125$$

N1

(c) Ogive (Refer graph on page 10)

Axes are drawn in the correct direction, uniform scale for $19.5 \leq x \leq 54.5$ and $0 \leq y \leq 40$

P1

Horizontal axis is labelled using upper boundary and *8 plots drawn correctly using upper boundary.

K2

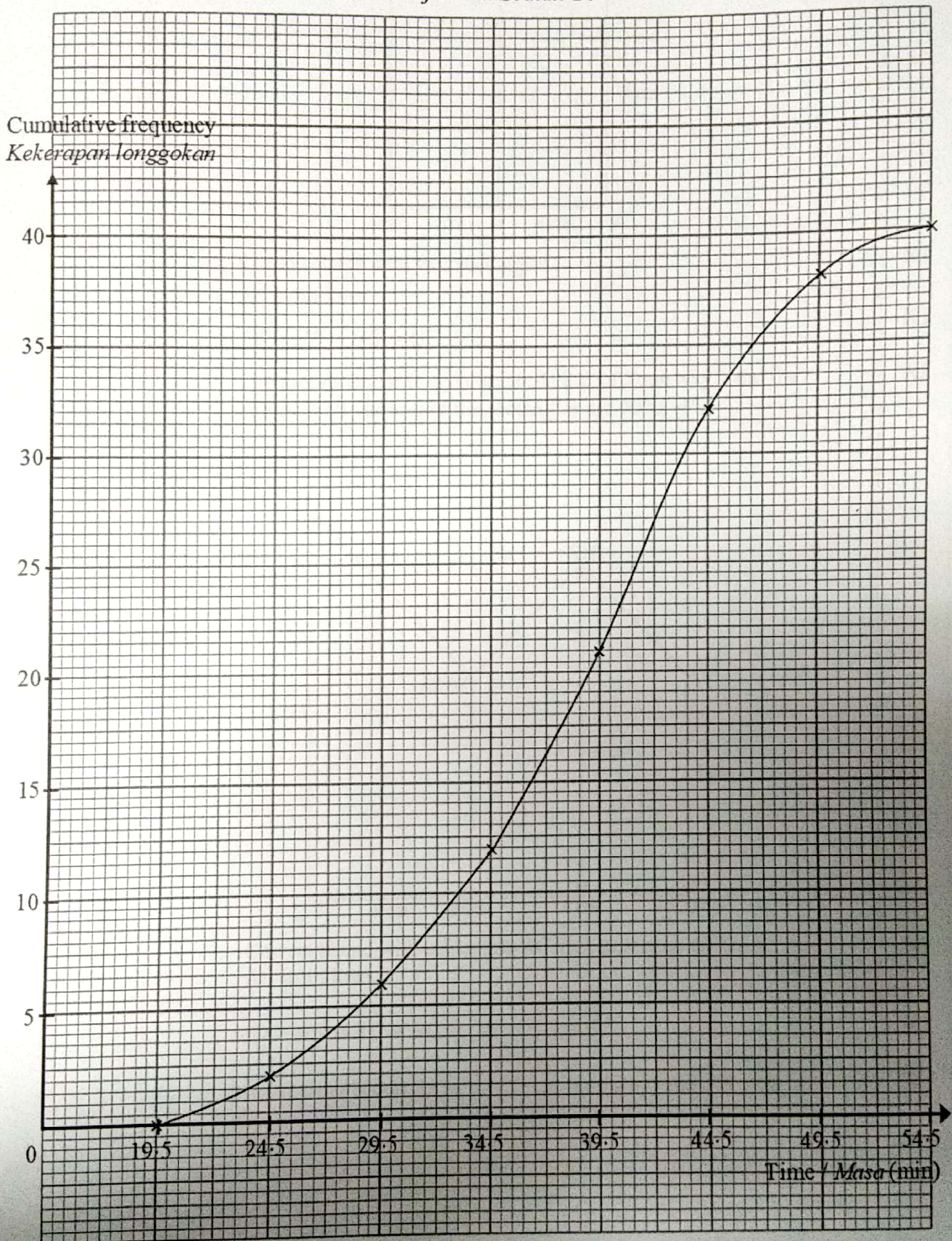
Note : *6 or *7 plots drawn correctly, award K1

Correct ogive using the given scale for $19.5 \leq x \leq 54.5$

N1

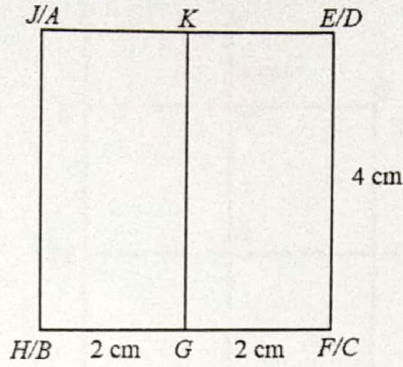
12

Graph for Question 14
Graf untuk Soalan 14



15

(a)



Correct shape with two rectangles.

All solid lines.

$$JH = HF > HG = GF$$

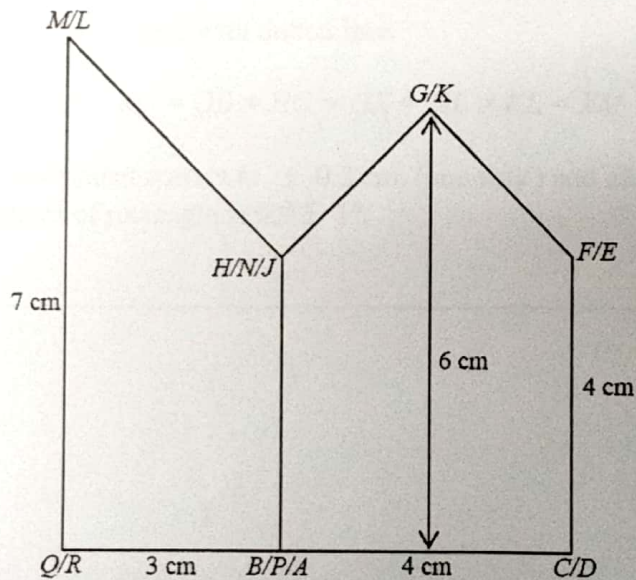
The measurement is accurate to ± 0.2 cm (one way) and the angles at all vertices of the rectangles are $90^\circ \pm 1^\circ$.

K1

K1

N1

(b)(i)



Correct shape with trapezium $MHBQ$, pentagon $GFCBH$.

All solid lines

$$MQ > HB = FC = BC > QB > HG = GF$$

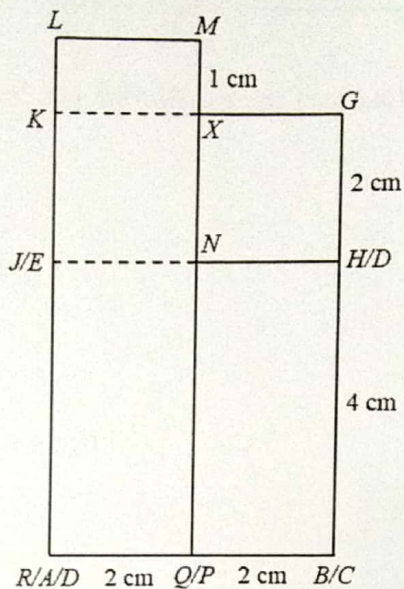
Measurements correct to ± 0.2 cm (one way) and $\angle R, \angle B, \angle C = 90^\circ$

K1

K1

N2

(b)(ii)



Correct shape three quadrilaterals.
All solid lines

K1

KX and JN joined with dotted line.

K1

$$JR = HB > RQ = QB = HG = GX = ML > KL = XM$$

K1

Measurement correct to ± 0.2 cm. (one way) and all angles at vertices of rectangle is $90^\circ \pm 1^\circ$.

N2

12

16	<p>(a) $(60^\circ S, 140^\circ W)$ <u>Notes</u> If only $60^\circ S$ or $140^\circ W$ correct, award K1</p> <p>(b)(i) $\frac{5400}{60}$ $90 - 60$ $x = 30$</p> <p>(ii) $\theta \times 60 \times \cos 60^\circ = 2\ 010$ $\theta = \frac{2010}{60 \cos 60^\circ}$ $= 67^\circ$ $y = 67 - 40$ $y = 27^\circ W$ <u>Note:</u> 1. If 27° shown, award N1</p> <p>(c) 110×60 $\frac{2010 + 110(60)}{t} = 450$ 19.13 hrs</p>	<p>K1K1</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>K1</p> <p>N2</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>12</p>
----	---	---