



**MAJLIS PENGETUA SEKOLAH MALAYSIA
(CAWANGAN PULAU PINANG)**

**MODUL BERFOKUS KBAT SPM 2020
MATHEMATICS
KERTAS 1**

**Answers
Skema Jawapan**

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



MAJLIS PENGETUA SEKOLAH MALAYSIA
(CAWANGAN PULAU PINANG)

MODUL BERFOKUS KBAT SPM TAHUN 2020
1449/2 (PP)

MATEMATIK

KERTAS 2

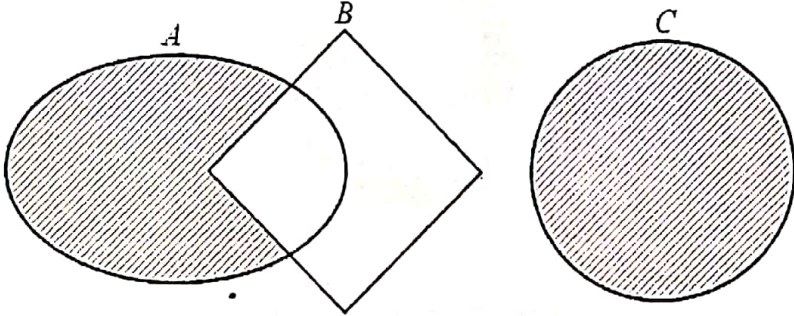
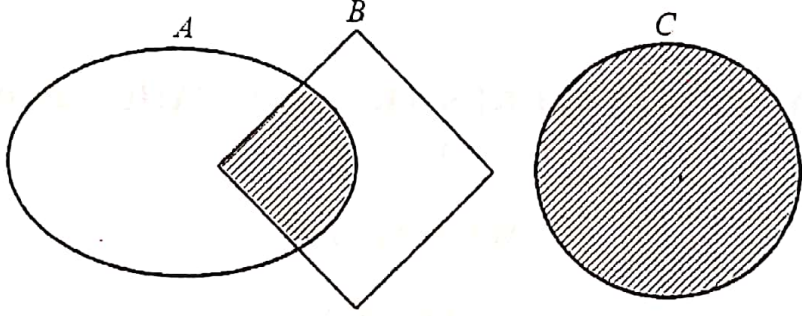
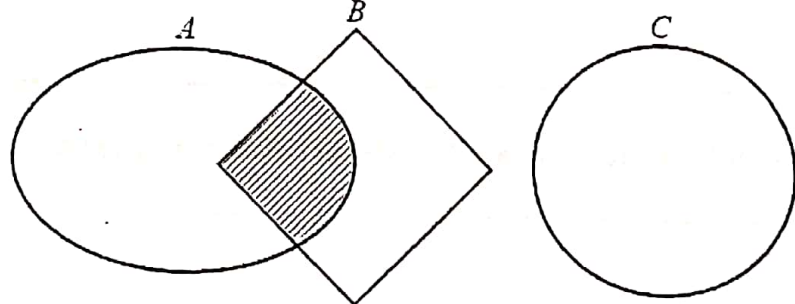
PERATURAN PEMARKAHAN

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini adalah **SULIT** dan **Hak Cipta MPSM Pulau Pinang**. Kegunaannya khusus untuk pemeriksa yang berkenaan sahaja. Sebarang maklumat dalam peraturan pemarkahan ini tidak boleh dimaklumkan kepada sesiapa. Peraturan pemarkahan ini tidak boleh dikeluarkan dalam apa-apa bentuk media.

Peraturan pemarkahan ini mengandungi 12 halaman bercetak

No	Marking Scheme	Marks
1	<p>(a)</p>  <p>(b)</p>  <p><u>Note:</u> Region $A \cap B$ shaded correctly, award K1.</p> 	<p>K1</p> <p>K2</p> <p>3 marks</p>

No	Marking Scheme	Marks
2	(a) $\angle KPQ$ or $\angle QPK$	P1
	(b) $\tan \angle KPQ = \frac{3}{12}$ $\angle KPQ = 14.04^\circ$ or $14^\circ 2'$	K1 N1
		3 marks
3	$x^2 + 2x(x + 2) = 64$ $3x^2 + 4x - 64 = 0$ $(3x + 16)(x - 4) = 0$ $x = 4$	K1 K1 K1 N1
4	Volume of cone = $\frac{1}{3} \times \frac{22}{7} \times 7^2 \times 24$ Volume of cuboid = $14 \times 16 \times 24$ Volume of remaining solid = $5376 - 1232$ $= 4144$	K1 K1 K1 N1
5	$650x + 728y = 8970$ or $650x + 480y = 7110$ or $300x + 336y = 4140$ or $455x + 336y = 4977$ or equivalent $1240x = 6696$ or $248y = 1860$ or equivalent $x = 5.4$, $y = 7.5$	K1 K1 N1 N1
6	(a) <i>ABCDE is a regular pentagon. / ABCDE ialah pentagon sekata.</i>	P1
	(b) <i>Some / Sebilangan</i>	P1
		P1
		K2
		5 marks

$$T_5 = 1 = 1^2$$

$$T_6 = 4 = 2^2$$

$$T_7 = 9 = 3^2$$

$$n^2$$

$$, n = 1, 2, 3, \dots$$

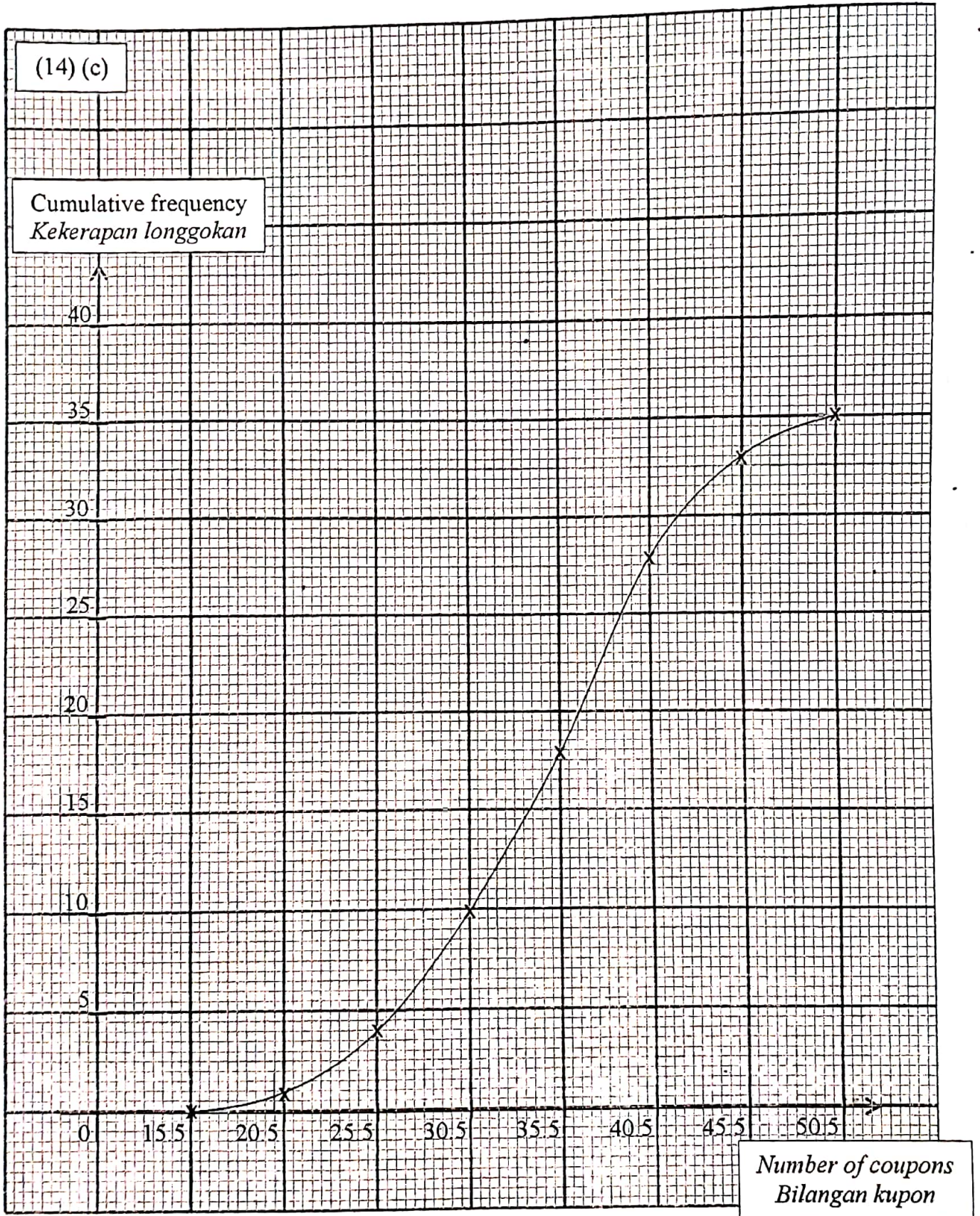
No	Marking Scheme	Marks
7	(a) $m_{QR} = \frac{2-0}{3-0}$ <u>or</u> equivalent	K1
	$4 = \left(\frac{2}{3}\right)(-3) + c$ <u>or</u> $(y-4) = \frac{2}{3}[x - (-3)]$ <u>or</u> equivalent	K1
	$y = \frac{2}{3}x + 6$ <u>or</u> equivalent	N1
	(b) $0 = \frac{2}{3}x + 6$	K1
	$x = -9$	N1
(c) $y = 6$		P1
		6 marks
8	$x + y = 31$	P1
	$60x + 80y = 2240$	P1
	$\begin{pmatrix} 1 & 1 \\ 60 & 80 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 31 \\ 2240 \end{pmatrix}$	P1
	$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{1(80) - 1(60)} \begin{pmatrix} 80 & -1 \\ -60 & 1 \end{pmatrix} \begin{pmatrix} 31 \\ 2240 \end{pmatrix}$	K1
Number of 60 sen stamps / <i>Bilangan setem 60 sen</i> = 12		N1
Number of 80 sen stamps / <i>Bilangan setem 80 sen</i> = 19		N1
<u>Note:</u> $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 12 \\ 19 \end{pmatrix}$ as final answer, award N1.		
		6 marks
9	(a) $v = 60$	P1
	(b) $\frac{100}{2.4}$	K1
	41.67 km j^{-1} <u>or</u> $41\frac{2}{3} \text{ km j}^{-1}$ <u>or</u> $\frac{125}{3} \text{ km j}^{-1}$	N1
	(c) $\frac{1}{2} \times (1.6 + t) \times 60 = 138$	K1
	$t = 3$	N1
		5 marks

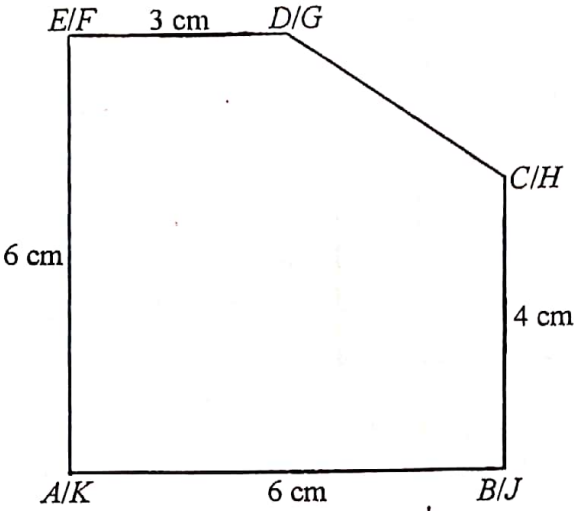
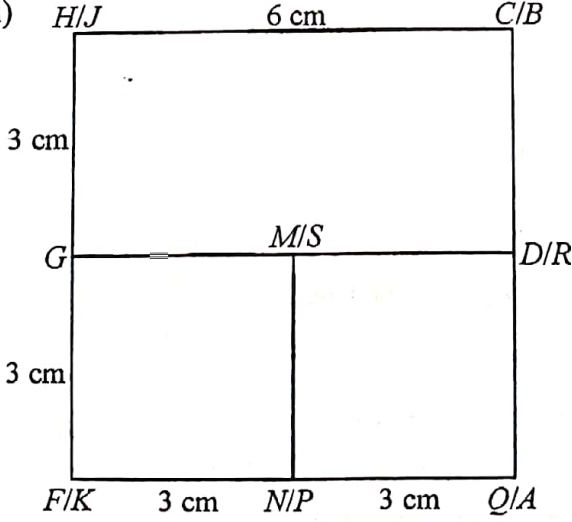
No	Marking Scheme	Marks
10	<p>(a) $S = \{(M, 2), (M, 0), (M, 2), (M, 1), (A, 2), (A, 0), (A, 2), (A, 1), (T, 2), (T, 0), (T, 2), (T, 1), (H, 2), (H, 0), (H, 2), (H, 1)\}$</p> <p><u>Note:</u> 14 or 15 outcomes correctly listed, award P1.</p> <p>(b) (i) $\{(M, 0), (T, 0), (H, 0)\}$ $\frac{3}{16}$</p> <p>(ii) $\{(M, 2), (M, 0), (M, 2), (A, 2), (A, 0), (A, 2), (A, 1), (T, 2), (T, 0), (T, 2), (H, 2), (H, 0), (H, 2)\}$ $\frac{13}{16}$</p>	<p>P2</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p> <p>6 marks</p>
11	<p>(a) Area of large clock = $\frac{22}{7} \times 18^2$ or Area of a small clock = $\frac{22}{7} \times 6^2$ $= 1018\frac{2}{7}$ $= 113\frac{1}{7}$</p> <p>Total area of three small clocks = $3 \times 113\frac{1}{7}$ $= 339\frac{3}{7}$</p> <p>Portion of large clock = $339\frac{3}{7} \div 1018\frac{2}{7}$ $= \frac{1}{3}$</p> <p>(b) $2 \times \frac{22}{7} \times 15 \times n = 900$</p> <p><u>Note:</u> $2 \times \frac{22}{7} \times 15$ seen, award K1.</p> <p>minimum complete spins = 10</p> <p>or</p> <p>$2 \times \frac{22}{7} \times 15 = 94\frac{2}{7}$ K1</p> <p>$n = 900 \div 94\frac{2}{7}$ K1</p> <p>minimum complete spins = 10 N1</p>	<p>K1</p> <p>K1</p> <p>N1</p> <p>K2</p> <p>N1</p> <p>6 marks</p>

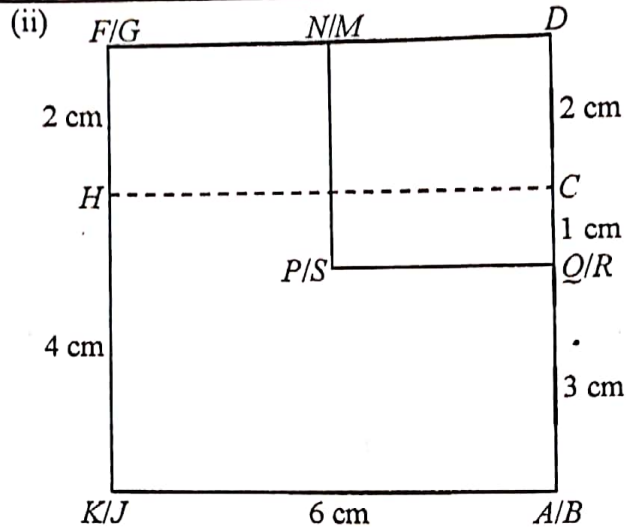
No	Marking Scheme	Marks
13	(a) (i) $(-2, -2)$ <u>Note:</u> $(-5, 2)$ seen, award P1	P2
	(ii) $(7, 2)$ <u>Note:</u> $(3, 1)$ seen, award P1	P2
	(b) (i) (a) $V =$ Relection, line $x = 1$. $V =$ <i>Pantulan</i> , garis $x = 1$.	P2
	(b) $W =$ Enlargement, scale factor 3, centre L . $W =$ <i>Pembesaran</i> , faktor skala 3, pusat L .	P3
	(ii) $3^2 \times 30$ $270 - 30$ 240	K1 K1 N1

No	Marking Scheme				Marks																															
14	(a)	<table border="1"> <thead> <tr> <th>Number of coupons <i>Bilangan kupon</i></th> <th>Frequency <i>kekerapan</i></th> <th>Upper boundary <i>Sempadan atas</i></th> <th>Cumulative frequency <i>Kekerapan longgokan</i></th> </tr> </thead> <tbody> <tr> <td>16 – 20</td> <td>1</td> <td>20.5</td> <td>1</td> </tr> <tr> <td>21 – 25</td> <td>3</td> <td>25.5</td> <td>4</td> </tr> <tr> <td>26 – 30</td> <td>6</td> <td>30.5</td> <td>10</td> </tr> <tr> <td>31 – 35</td> <td>8</td> <td>35.5</td> <td>18</td> </tr> <tr> <td>36 – 40</td> <td>10</td> <td>40.5</td> <td>28</td> </tr> <tr> <td>41 – 45</td> <td>5</td> <td>45.5</td> <td>33</td> </tr> <tr> <td>46 – 50</td> <td>2</td> <td>50.5</td> <td>35</td> </tr> </tbody> </table>	Number of coupons <i>Bilangan kupon</i>	Frequency <i>kekerapan</i>	Upper boundary <i>Sempadan atas</i>	Cumulative frequency <i>Kekerapan longgokan</i>	16 – 20	1	20.5	1	21 – 25	3	25.5	4	26 – 30	6	30.5	10	31 – 35	8	35.5	18	36 – 40	10	40.5	28	41 – 45	5	45.5	33	46 – 50	2	50.5	35		P2 P1 P1
Number of coupons <i>Bilangan kupon</i>	Frequency <i>kekerapan</i>	Upper boundary <i>Sempadan atas</i>	Cumulative frequency <i>Kekerapan longgokan</i>																																	
16 – 20	1	20.5	1																																	
21 – 25	3	25.5	4																																	
26 – 30	6	30.5	10																																	
31 – 35	8	35.5	18																																	
36 – 40	10	40.5	28																																	
41 – 45	5	45.5	33																																	
46 – 50	2	50.5	35																																	
	(b)	$\frac{(18 \times 1^*) + (23 \times 3^*) + (28 \times 6^*) + (33 \times 8^*) + (38 \times 10^*) + (43 \times 5^*) + (48 \times 2^*)}{1^* + 3^* + 6^* + 8^* + 10^* + 5^* + 2^*}$ $\frac{242}{7} \quad \text{or} \quad 34\frac{4}{7} \quad \text{or} \quad 34.57$				K2 N1																														
		<p><u>Note:</u></p> <ol style="list-style-type: none"> 1. Allow two mistakes in *frequency for K1. 2. Allow two mistakes for the multiplication of *frequency and midpoint for K1. 																																		
	(c)	<p><u>Ogive:</u> Axes drawn in the correct directions with uniform scales for $15.5 \leq x \leq 50.5$ and $0 \leq y \leq 35$.</p> <p>*8 points plotted correctly using correct values of upper boundary.</p> <p><u>Note:</u> *6 or *7 points plotted correctly, award K1.</p> <p>Smoothness of the graph using the given scales.</p>				P1 K2 N1																														
	(d)	22.86 20				N1																														
					12 marks																															

Graph for Question 14
Graf untuk Soalan 14



No	Marking Scheme	Marks
15	<p>(a)</p>  <p>Correct shape with all solid lines. $EA = AB > BC > DE$ Measurements correct to ± 0.2 cm (one way) and all angles at vertices = $90^\circ \pm 1^\circ$.</p>	K1 K1 N1
	<p>(b) (i)</p>  <p>Correct shape with all solid lines. $HF = FQ = GD > HG = GF = FN = NQ$ Measurements correct to ± 0.2 cm (one way) and all angles at vertices = $90^\circ \pm 1^\circ$.</p>	K1 K1 N2



Correct shape with squares $ADFK$ and $QDNP$.

Note : Ignore dashed line HC .

HC joined by a dashed line to form a rectangle $KACH$.

$AK = KF > FN = ND = NP = PQ = QA > DC > CQ$

Measurements correct to ± 0.2 cm (one way) and all angles at vertices = $90^\circ \pm 1^\circ$.

K1

K1

K1

N2

12 marks

16 (a) $(0^\circ, 150^\circ \text{ W})$ or $(0^\circ, 150^\circ \text{ B})$

P1P1

(b) $\frac{4320}{60}$ or 72

K1

$\frac{4320}{60} \sim 40$ or $72 \sim 40$

K1

32° N / U

N1

(c) $(180^\circ - 40^\circ - 40^\circ) \times 60$ or equivalent
6000

K1

N1

(d) $(80 - 30) \times 60 \times \cos 40^\circ$ or equivalent
 $(80 - 30) \times 60 \times \cos 40^\circ + 4320$ or equivalent
 $\frac{(80-30) \times 60 \times \cos 40^\circ + 4320}{10.5}$ or equivalent

K2

K1

K1

630.3

N1

12 marks