

NAMA: TINGKATAN:



SEKOLAH MENENGAH KEBANGSAAN BUKIT MERCHU

PEPERIKSAAN PERCUBAAN SPM 2022

MATEMATIK (1449/2)

KERTAS 2

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

Untuk Kegunaan Pemeriksa			
Bahagian	Soalan	Markah Penuh	Markah diperolehi
1 Tulis nama dan tingkatan anda pada ruang yang disediakan. 2 Kertas soalan ini adalah dalam dwibahasa. 3 Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris. 4 Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Melayu atau bahasa Inggeris.	A	1	4
	2	4	
	3	4	
	4	4	
	5	3	
	6	5	
	7	4	
	8	4	
	9	5	
	10	3	
B	11	8	
	12	10	
	13	8	
	14	9	
	15	10	
C	16	15	
	17	15	
Jumlah			

Kertas soalan ini mengandungi **34** halaman bercetak.

RUMUS MATEMATIK MATHEMATICAL FORMULAE

Rumus-rumus berikut boleh membantu anda untuk menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used

NOMBOR DAN OPERASI NUMBERS AND OPERATIONS

$$1 \quad a^m \times a^n = a^{m+n}$$

$$2 \quad a^m \div a^n = a^{m-n}$$

$$3 \quad (a^m)^n = a^{mn}$$

$$4 \quad a^{\frac{m}{n}} = (a^{\frac{1}{n}})^m$$

$$5 \quad \text{Faedah mudah / Simple interest, } I = Prt$$

$$6 \quad \text{Nilai matang/Maturity value, } MV = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$7 \quad \text{Jumlah bayaran balik / Total repayment, } A = P + Prt$$

PERKAITAN RELATIONS

$$1 \quad \text{Jarak / Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$2 \quad \text{Titik Tengah / midpoint}(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$$3 \quad \begin{aligned} \text{Purata laju} &= \frac{\text{jarak yang dilalui}}{\text{masa yang diambil}} \\ \text{Average speed} &= \frac{\text{distance travelled}}{\text{time taken}} \end{aligned}$$

$$4 \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$5 \quad \begin{aligned} m &= -\frac{\text{pintasan}-y}{\text{pintasan}-x} \\ m &= -\frac{y-\text{intercept}}{x-\text{intercept}} \end{aligned}$$

$$6 \quad A^{-1} = \frac{1}{ad-bc}(d \quad -b \quad -c \quad a)$$

SUKATAN DAN GEOMETRI MEASUREMENT AND GEOMETRY

- 1 Teorem Pythagoras / *Pythagoras Theorem* $c^2 = a^2 + b^2$
- 2 Hasil tambah sudut pedalaman poligon / *Sum of interior angles of a polygon*
 $= (n - 2) \times 180^\circ$
- 3 Lilitan bulatan $= \pi d = 2\pi r$
Circumference of circle $= \pi d = 2\pi r$
- 4 Luas bulatan $= \pi r^2$
Area of circle $= \pi r^2$
- 5
$$\frac{\text{Panjang lengkok}}{2r} = \frac{j}{360^\circ}$$

$$\frac{\text{Arc length}}{2r} = \frac{j}{360^\circ}$$
- 6
$$\frac{\text{Luas sektor}}{r^2} = \frac{j}{360^\circ}$$

$$\frac{\text{Area of sector}}{r^2} = \frac{j}{360^\circ}$$
- 7
$$\text{Luas layang} = \frac{1}{2} \times \text{hasil darab panjang dua pepenjuru}$$

$$\text{Area of kite} = \frac{1}{2} \times \text{product of two diagonals}$$
- 8
$$\text{Luas trapezium} = \frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$$

$$\text{Area of trapezium} = \frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$$
- 9
$$\text{Luas permukaan silinder} = 2\pi r^2 + 2\pi rh$$

$$\text{Surface area of cylinder} = 2\pi r^2 + 2\pi rh$$
- 10
$$\text{Luas permukaan kon} = \pi r^2 + \pi rs$$

$$\text{Surface area of cone} = \pi r^2 + \pi rs$$
- 11
$$\text{Luas permukaan sfera} = 4\pi r^2$$

$$\text{Surface area of sphere} = 4\pi r^2$$
- 12
$$\text{Isipadu prisma tegak} = \text{luas keratan rentas} \times \text{tinggi}$$

$$\text{Volume of right prism} = \text{cross sectional area} \times \text{height}$$

- 13 Isipadu silinder $= \pi j^2 t$
Volume of cylinder $= \pi r^2 h$
- 14 Isipadu kon $= \frac{1}{3} \pi j^2 t$
Volume of cone $= \frac{1}{3} \pi r^2 h$
- 15 Isipadu sfera $= \frac{4}{3} \pi j^3$
Volume of sphere $= \frac{4}{3} \pi r^3$
- 16 Isipadu piramid tegak $= \frac{1}{3} \times \text{luastapak} \times \text{tinggi}$
Volume of right pyramid $= \frac{1}{3} \times \text{base area} \times \text{height}$
- 17 Faktor skala, $k = \frac{PA'}{PA}$
Scale factor, k $= \frac{PA'}{PA}$
- 18 Luas imej $= k^2 \times \text{luas objek}$
Area of image $= k^2 \times \text{area of object}$

STATISTIK DAN KEBARANGKALIAN STATISTICS AND PROBABILITY

- 1 *Min / Mean*, $\bar{x} = \frac{x}{N}$
- 2 *Min / Mean*, $\bar{x} = \frac{fx}{f}$
- 3 *Varians / Variance*, $s^2 = \frac{(x-\bar{x})^2}{N} = \frac{x^2}{N} - \bar{x}^2$
- 4 *Varians / Variance*, $s^2 = \frac{f(x-\bar{x})^2}{f} = \frac{fx^2}{f} - \bar{x}^2$
- 5 *Sisihan piawai / Standard deviation*, $s = \sqrt{\frac{(x-\bar{x})^2}{N}} = \sqrt{\frac{x^2}{N} - \bar{x}^2}$
- 6 *Sisihan piawai / Standard deviation*, $s = \sqrt{\frac{f(x-\bar{x})^2}{f}} = \sqrt{\frac{fx^2}{f} - \bar{x}^2}$
- 7 $P(A) = \frac{n(A)}{n(S)}$
- 8 $P(A') = 1 - P(A)$

Bahagian A / Section A
[40 markah / marks]

Jawab **semua** soalan dalam bahagian ini.
*Answer **all** questions in this section.*

- 1 Jika $A = \begin{pmatrix} 4 & 1 & -7 & -5 \end{pmatrix}$ dan $B = \begin{pmatrix} -8 & 11 & -3 & -6 \end{pmatrix}$, cari setiap yang berikut sebagai satu matriks tunggal.

If $A = \begin{pmatrix} 4 & 1 & -7 & -5 \end{pmatrix}$ and $B = \begin{pmatrix} -8 & 11 & -3 & -6 \end{pmatrix}$, find each of the following as a single matrix.

- (a) $A - B$,
(b) $B - A$.

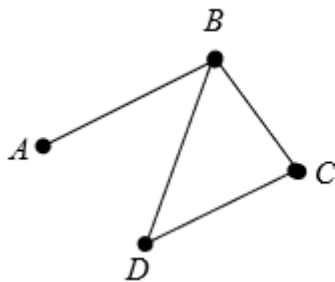
[4 markah]

[4 marks]

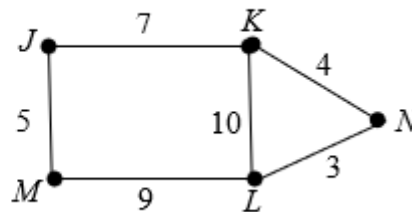
Jawapan / Answer :

2. (a) Rajah di bawah menunjukkan dua jenis graf.

The diagram below shows two types of graphs.



Graf P
Graph P



Graf Q
Graph Q

Rajah 2(a)
Diagram 2(a)

Namakan

Name

- (i) graf P ,
graph P,
- (ii) graf Q .
graf Q.

[2 markah]

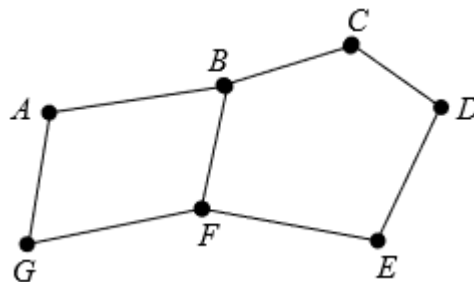
[2 marks]

Jawapan / *Answer* :

(a) (i)

(ii)

- (b) Rajah di bawah menunjukkan suatu graf.
Diagram below shows a graph.



Rajah 2(b)
Diagram 2(b)

Lukis **dua** subgraf daripada graf itu.

*Draw **two** subgraphs from the graph.*

[2 markah]

[2 marks]

Jawapan / Answer :

3. Encik Kamal ingin membeli polisi insurans hayat yang bernilai RM600 000. Dia berumur 45 tahun dan tidak merokok.

En Kamal wants to buy a life insurance policy worth RM600 000. He is 45 years old and don't smoke

Umu r <i>Age</i>	Bukan perokok / <i>Non-smoker</i> (RM)		Perokok / <i>Smoker</i> (RM)	
	Lelaki / <i>Male</i>	Perempuan/ <i>Female</i>	Lelaki / <i>Male</i>	Perempuan/ <i>Female</i>
41	2.85	1.92	3.75	2.42
42	3.07	2.04	4.05	2.60
43	3.35	2.28	4.44	2.82
44	3.68	2.35	4.86	3.03
45	4.03	2.55	5.38	3.30

Hitung premium bulanan insurans hayat yang berikut berdasarkan jadual kadar premium tahunan bagi setiap RM1 000 nilai muka yang diberikan.

Calculate the monthly premium of the following life insurance based on the annual premium rate schedule per RM1 000 face value given.

[4 markah / 4 marks]

Jawapan / *Answer* :

4. Myra memandu kereta dari rumah ke kolej dengan purata laju 60 km/j. Selesai kuliah, dia memandu pulang ke rumah dari kolej dan mengambil masa kurang 7 minit berbanding perjalanan perangnya.

Myra drives a car from her house to college at an average speed of 60 km/h. After the lecture, she drives

home from the college and take 7 minutes shorter comparing to her earlier drive.

- (a) Jika jarak antara rumah dan kolej ialah 45 km, hitung laju purata, dalam km/j, perjalanan Myra. [2 markah]

If the distance between her house and the college is 45 km, calculate the average speed, in km/h, Myra's journey. [2 marks]

- (b) Semasa dalam perjalanan pulang ke rumah, Myra telah menambah kelajuan keretanya dari 65 km/j kepada 90 km/j dalam tempoh masa 24 saat. Hitung pecutan, dalam km/j per minit, kereta dalam tempoh masa itu. [2 markah]

During her drives home, Myra has increased the speed of her car from 65 km/h to 90 km/h in a period of 24 seconds. Calculate the acceleration, in km/h per minute, of her car in that period. [2 marks]

Jawapan / Answer :

(a)

{b}

5. Rajah 5 di ruang jawapan menunjukkan sebuah trapezium $PQRS$ yang dilukis di atas grid segi empat sama. Diberi bahawa Y dan Z ialah dua titik yang bergerak di dalam trapezium.

Diagram 5 in the answer space shows a trapezium $PQRS$ drawn on square grids. Given Y and Z are two moving points in the trapezium.

Pada ruang jawapan,

On the answer space,

- (i) lukis lokus bagi titik Y yang bergerak dengan keadaan jaraknya

sentiasa 3 unit dari titik S ,

draw the locus of point Y which is moving such that its distance from point S is always 3 units,

- (ii) lukis lokus bagi titik Z yang bergerak dengan keadaan jaraknya sentiasa sama dari garis PQ dan garis QR ,

draw the locus of point Z which is moving such that it is equidistant from line PQ and QR ,

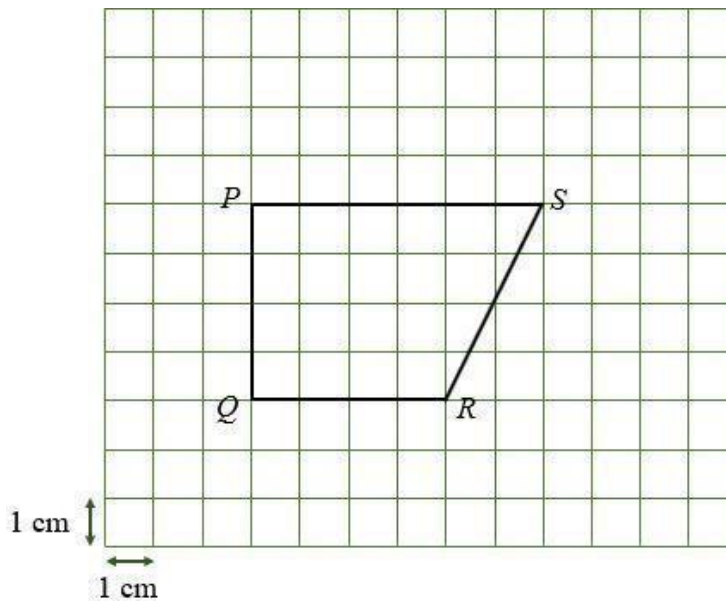
- (iii) tandakan dengan simbol $\otimes$ bagi titik persilangan antara lokus Y dan lokus Z itu.

mark with symbol $\otimes$ the point of intersection between locus of X and locus of Z .

[3 markah]

[3 marks]

Jawapan / Answer :



Rajah 5 / Diagram 5

- 6 Zack ingin menyimpan wang sebanyak RM30 000 dalam akaun simpanan tetap selama 6 bulan.

Berikut ialah kadar faedah simpanan tetap yang ditawarkan oleh sebuah bank kepada Zack.

Zack wants to deposit RM 30 000 into a fixed deposit account for 6 months. The following are the fixed deposit interest rates for different terms offered by a bank to Zack.

Tempoh <i>Duration</i>	Kadar faedah tahunan <i>Annual interest rate</i>
1 bulan / <i>month</i>	3.10
3 bulan / <i>month</i>	3.40
6 bulan / <i>month</i>	3.75
9 bulan / <i>month</i>	4.00
12 bulan / <i>month</i>	4.25

Hitung jumlah faedah yang akan diterima oleh Zack jika beliau menyimpan selama 6 bulan.

Calculate the amount of interest that will be received by Zack if he is saving for a 6 – month term.

[5 markah / *marks*]

Jawapan / *Answer*:

7. Ahmad menyediakan 1600_8 biji coklat untuk 40 orang rakan sedarjah yang dijemput ke parti hari jadinya. Antara $\frac{1}{8}$ daripada coklat itu adalah berisi badam, $\frac{1}{4}$ adalah berisi kacang hazel dan selebihnya berisi kismis.

Ahmad has prepared 1600_8 pieces of chocolates for 40 classmates who were invited to his birthday party. Among $\frac{1}{8}$ of the chocolates are filled with almonds, $\frac{1}{4}$ are filled with hazelnuts and the rest are filled with raisins.

- (a) Hitung bilangan coklat yang berisi kismis. Nyatakan jawapan anda dalam asas tiga.

Calculate the number of chocolates filled with raisins. State your answer in base three.

- (b) Setiap jenis coklat dibahagikan sama rata antara rakan sedarjah Ahmad. Cari bilangan coklat yang berisi badam dapat diperoleh setiap rakan sedarjah. Nyatakan jawapan

anda dalaam asas dua.

Each type of chocolates is equally divided among Ahmad's classmates. Find the number of chocolates filled with almonds obtained by each classmate. State your answer in base two.

[4 markah / marks]

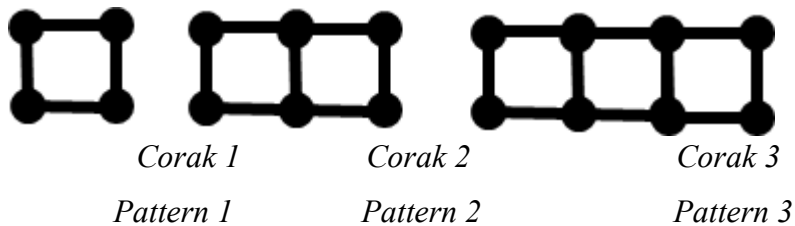
Jawapan / Answer:

(a)

(b)

8. Rajah 8 menunjukkan corak yang dibina oleh sekumpulan murid dengan menggunakan beberapa batang mancis.

Diagram 1 shows the patterns constructed by a group of pupils using several matchsticks.



Rajah 8/ Diagram 8

Cari bilangan batang mancis yang digunakan untuk membina corak ke-4 dan corak ke-5. Seterusnya, buat satu kesimpulan umum secara induktif bagi sebutan ke- n .

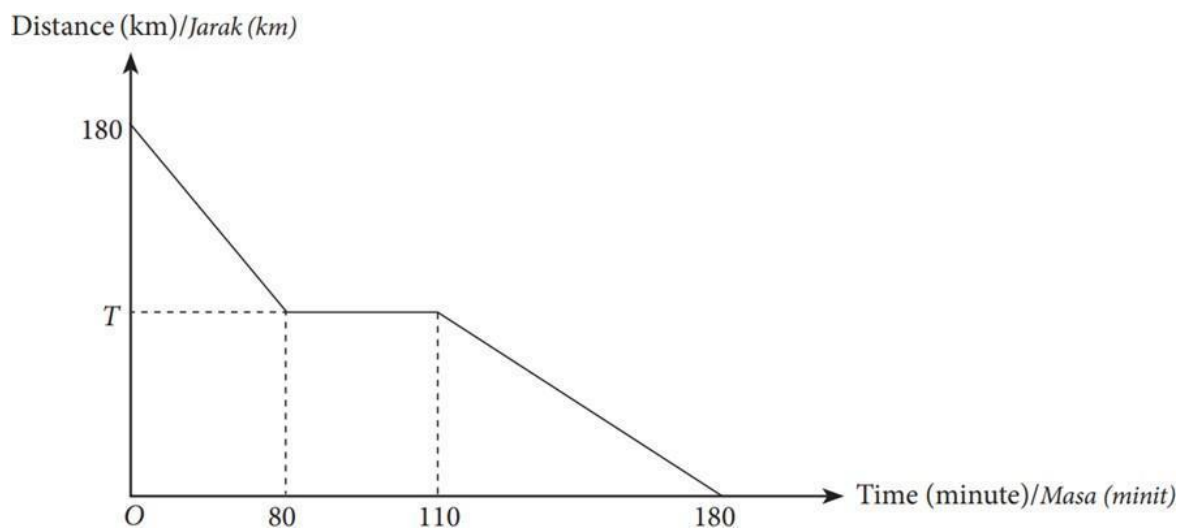
Find the number of matchsticks needed to construct 4th pattern and 5th pattern. Hence, make a general conclusion by induction for the n^{th} term.

[4 markah/marks]

Jawapan / Answer:

9 Graf jarak-masa menunjukkan perjalanan sebuah kereta dalam tempoh 180 minit.

The distance-time graph shows the journey of a car for a period of 180 minutes.



- a) Hitung tempoh masa, dalam jam, kereta itu berhenti rehat.

Calculate the duration, in hours, the car stops to rest.

[1 markah/mark]

- b) Hitung nilai T diberi laju kereta itu bagi tempoh 80 minit pertama ialah 63.75 kmj^{-1} .

Calculate the value of T given that the speed of the car for the first 80 minutes is 63.75 kmh^{-1} .

[2 markah/marks]

- c) Hitung laju, dalam kmj^{-1} , perjalanan kereta itu bagi tempoh 70 minit terakhir.

Calculate the speed, in kmh^{-1} , of the car's journey for the last 70 minutes.

[2 markah/marks]

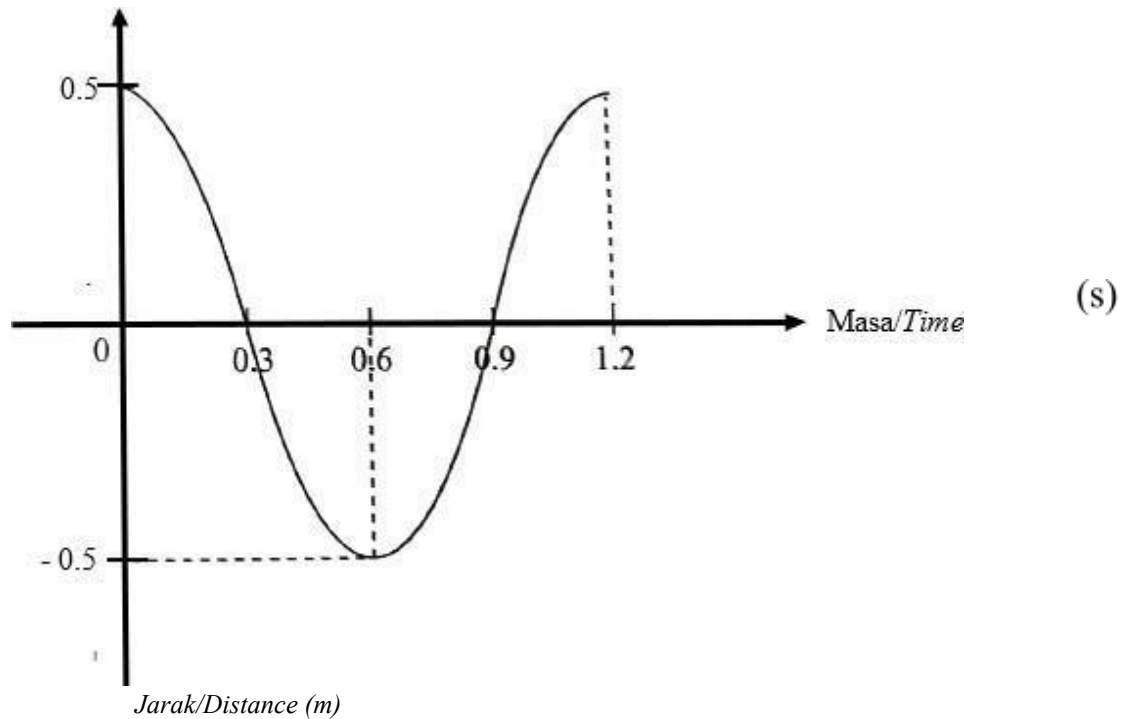
Jawapan / Answer:

(a)

(b)

(c)

10 Rajah 10 mewakili pergerakan suatu jisim yang berada pada hujung suatu spring menegak.
Diagram 1 represents of the movement of a mass at the end of a vertical spring.



- (a) Apakah jenis fungsi trigonometri yang diwakili oleh graf itu?
What is the type of trigonometric function represented by the graph?
- (b) Nyatakan amplitud jisim itu.
State the amplitude of the mass.
- (c) Nyatakan tempoh pergerakan jisim itu.
State the period of the mass motion

[3 markah/ marks]

Jawapan / Answer:

- (a)
 (b)
 (c)

Bahagian B / Section B

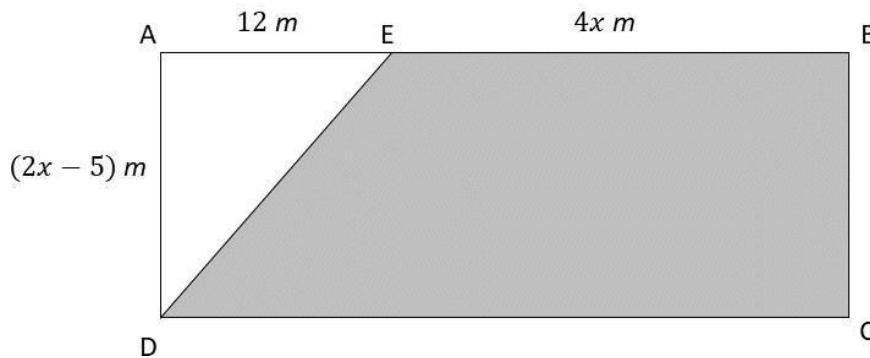
[45 markah / 45 marks]

Jawab **semua** soalan dalam bahagian ini.

*Answer **all** questions in this section*

11 Pak Samad bercadang untuk membina sebuah kebun sayur yang berbentuk segi

empat tepat ABCD seperti dalam rajah di bawah. Diberi panjang AE = 12 m.
Pak Samad plans to build a vegetable garden which is in the shape of rectangle ABCD as shown in diagram below. Given the length of AE = 12 m.



a) Bentuk satu ungkapan bagi luas segi empat ini, $L \text{ m}^2$, dalam sebutan x . *Form an expression for the area of the rectangle, $L \text{ m}^2$, in terms of x*

b) Diberi luas kebun sayur tersebut ialah 252 m^2 . Hitung nilai x .
Given the area of the garden is 252 m^2 . Calculate the value of x .

c) Pak Samad turut bercadang untuk memagari kawasan berlorek dengan pagar dawai bagi mengelakkan pencerobohan haiwan liar. Beliau membeli 2 gulung pagar dawai dengan Panjang setiap gulung ialah 35 m. Tentukan sama ada pagar dawai yang dibeli itu mencukupi untuk memagari kebun tersebut.

Pak Samad also plans to fence the shaded region with mesh wire for preventing the aggression of wild animals. He bought 2 rolls of mesh wire with a length of each roll is 35 m. Determine whether the mesh wire bought is sufficient to fence the garden.

[8 markah/marks]

Jawapan / Answer:

(a)

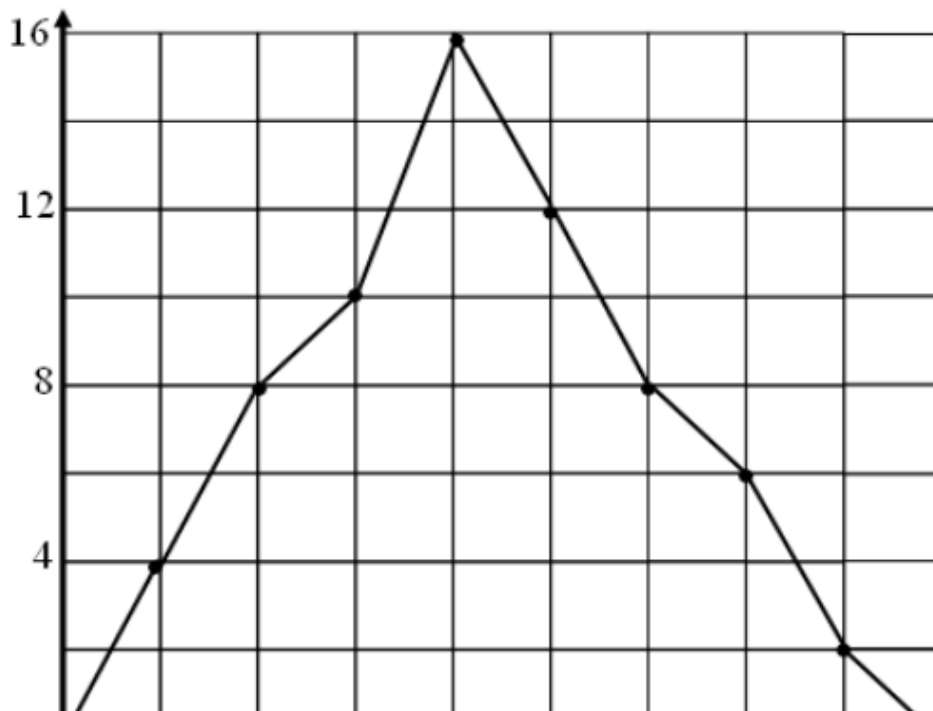
(b)

(c)

12 Poligon kekerapan dibawah menunjukkan hasil jualan bagi sekumpulan peserta Jualan Lelong Bundle Amal yang dijalankan oleh sebuah Badan NGO.

The frequency polygon below shows the sales results for a group of participants in the Charity Bundle Auction Sale conducted by an NGO

Bilangan Peserta



Hasil

(a) Berdasarkan poligon kekerapan diatas, lengkapkan jadual kekerapan di ruang jawapan.

Based on the frequency polygon above, complete the table in the answer space.

[3 markah/ marks]

Jawapan / Answer:

Kutipan (RM) <i>Collection</i>	Kekerapan <i>Frequency</i>	Titik Tengah <i>Midpoint</i>
1 – 10		
11 – 20		

(b) Berdasarkan jadual kekerapan, hitung min kutipan, dalam RM, bagi seorang peserta.

Based on the frequency table, calculate the mean collection, in RM, for one participant.

[3 markah/ marks]

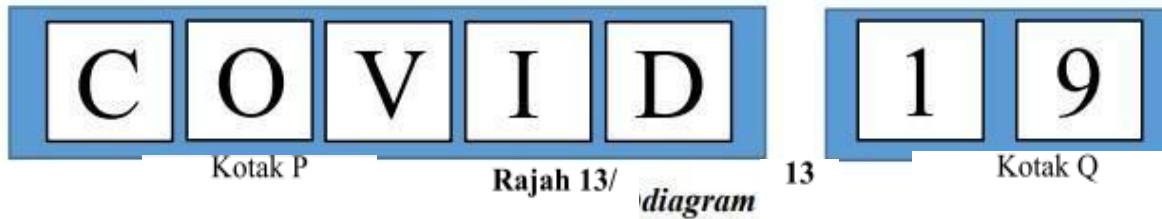
Jawapan / Answer:

(c) Dengan menggunakan skala 2cm kepada RM 10 pada paksi-x dan 2cm kepada 2 pelajar pada paksi-y, lukis histogram bagi mewakili jadual (b).

Using a scale of 2cm to RM 10 on the horizontal axis and 2cm to 2 students on the vertical axis, draw a histogram to represent the table (b).

[4 markah/mark]

- 13 Rajah menunjukkan lima kad berlabel di Kotak P dan dua kad berlabel di Kotak Q.
Diagram shows five labelled cards in Box P and two labelled cards in Box Q.



Dua kad dipilih secara rawak, satu kad daripada kotak P dan satu kad lagi daripada kotak Q.
Two cards are picked at random, one card from Box P and another card from Box Q.

- a) Senaraikan ruang sampel,
List the sampel space,
- b) Senaraikan semua kesudahan peristiwa yang mungkin dan cari kebarangkalian bahawa
List all the possible outcomes of the events and find the probability that
 - (i) kod adalah gabungan huruf konsonan atau nombor gandaan 3.
the code is a combination of a consonant or multiples of 3.
 - (ii) kod adalah gabungan huruf vokal dan nombor 9.
the code is a combination of a vokal and number 9.
- c) Nyatakan kebarangkalian memperoleh gabungan huruf vokal dan nombor perdana.
State the probability of getting the combination of a vocal and a prime number.

[7 m [6 markah/marks]
- d) Kad berlabel nombor 9 dikeluarkan daripada kotak Q. Seterusnya dua keping kad berlabel nombor 2 dan sekeping kad berlabel nombor 0 dimasukkan ke dalam kotak Q. Sekeping kad dipilih secara rawak daripada setiap kotak, masing-masing daripada Kotak P dan Kotak Q. Dengan menyenaraikan semua kesudahan peristiwa yang mungkin, cari kebarangkalian peristiwa memilih huruf vokal dan nombor perdana.
The card labelled 9 is removed from Box Q. Then two card labelled number 2 and a card labelled number 0 are put into Box Q. A card is randomly selected from each box. Box P dan Box Q respectively. By listing all possible outcomes of the event, find the probability of choosing a vocal and a prime number.

[2 markah/marks]

Jawapan / *Answer*:

(a)

(b)

i.

ii.

(c)

(d)

14 Jadual di bawah menunjukkan pelan kewangan Cik Sara.
The table below shows Cik Sara's financial plan.

Pendapatan & Perbelanjaan / <i>Income & Expenditure</i>	R M	
Gaji Bulanan / <i>Monthly income</i>	3700	
Pendapatan pasif / <i>Passive income</i>	300	
Jumlah Pendapatan Bulanan / <i>Total monthly income</i>	S	
Simpanan tetap / <i>Fixed deposits</i>	0	
Dana kecemasan / <i>Emergency savings</i>	100	
Baki Pendapatan / <i>Income balance</i>		T
Perbelanjaan Tetap Bulanan / <i>Monthly Fixed Expenses</i>		
Pinjaman perumahan / <i>Housing loan</i>	1300	
Ansuran kereta / <i>Car installments</i>	600	
Jumlah perbelanjaan tetap bulanan / <i>Total monthly Fixed Expenses</i>		19 00
Perbelanjaan tidak tetap bulanan / <i>Non-fixed monthly expenses</i>		
Makanan & Minuman / <i>Foods & drinks</i>	1000	
Bil Telefon / <i>Phone bill</i>	400	
Melancong / <i>Travel</i>	600	
Jumlah perbelanjaan tidak tetap bulanan / <i>Total Non-fixed monthly expenses</i>		U
Pendapatan Lebihan / <i>Surplus income</i>		V

- (a) Hitung nilai S, T, U dan V dalam jadual di atas.
Calculate the value of S, T, U and V in the table above.

[4 markah / *marks*]

- (b) Adakah Cik Sara menguruskan kewangannya dengan cekap? Berikan Justifikasi anda.

Is Cik Sara managing her finances efficiently? Give your Justification.

[2 markah / marks]

- (c) Cik Sara bercadang untuk membeli sebidang tanah lot dengan harga RM36000 dalam tempoh 3 tahun. Berikan cadangan penambahbaikan untuk beliau mencapai matlamat tersebut.

Cik Sara plans to buy a plot of land for RM30000 within 3 years. Provide improvement suggestions for her to achieve that goal.

[3 markah / marks]

Jawapan / *Answer*:

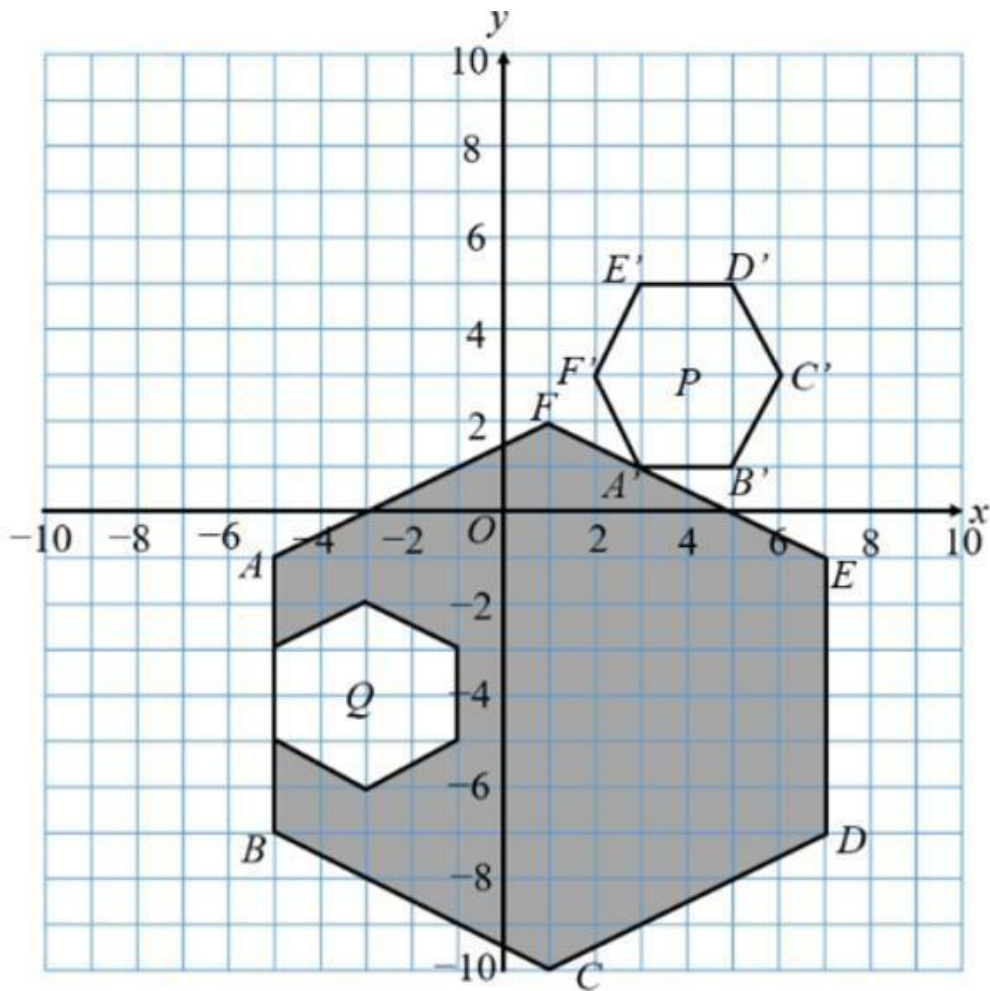
(a)

(b)

(c)

15 Rajah di bawah menunjukkan peta bagi suatu kawasan hutan lipur. Kawasan berwarna merupakan habitat sekawan hidupan liar. Kawasan heksagon P dan Q merupakan pondok pemerhatian. Konsep transformasi digunakan untuk membina pondok pemerhatian dengan keadaan P ialah imej bagi ABCDEF di bawah gabungan transformasi UV .

Diagram below shows the map of a tropical forest. The coloured region is the habitat of a group of wildlife. The hexagon region P and Q are the wildlife observatories. The concept of transformation is used to construct the observatory such that P is the image of ABCDEF under the combined transformation UV .



Rajah/Diagram

- a) Huraikan selengkapnya transformasi UV
Describe in full, the transformations UV

[6 markah/marks]

Jawapan / Answer:

- b) Diberi bahawa luas pondok P ialah 60 m^2 , hitung luas dalam m^2 bagi kawasan habitat hidupan liar.
Given that the area of P is 60 m^2 . calculate the area, in m^2 , of the wildlife region.

[4 markah/marks]

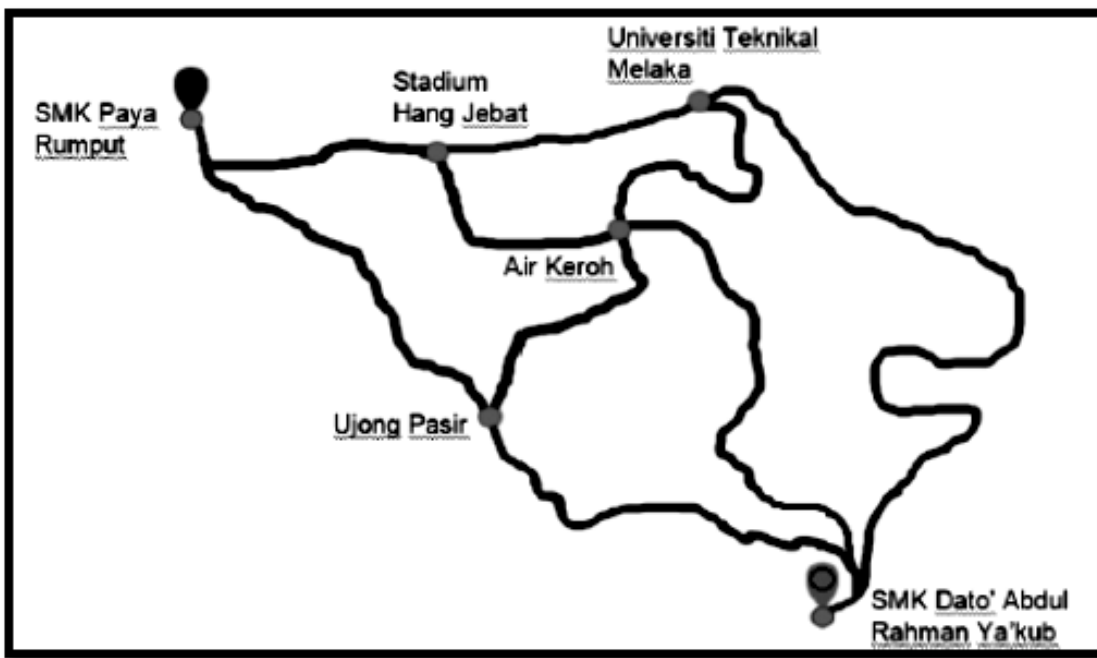
Jawapan / Answer:

Bahagian C / Section C
[15 markah / 15 marks]

Jawab mana-mana **satu** soalan dalam bahagian ini.
*Answer any **one** question in this section.*

- 16 Encik.Chan ialah seorang guru yang bekerja di SMK Dato' Abdul Rahman Ya'kub. Encik Chan dan rakan- rakan sekerjanya Encik Husin dan Encik Selva perlu menghadiri satu taklimat di SMK Paya Rumpit. Rajah 16 menunjukkan peta perjalanan Encik Husin, Encik Chan dan Encik Selva dari SMK Dato' Abdul Rahman Ya'kub ke SMK Paya Rumpit.

Mr Chan is a teacher who works at SMK Dato' Abdul Rahman Ya'kub. Mr Chan and his colleagues Mr Husin and Mr Selva had to attend a briefing at SMK Paya Rumpit. Diagram 16 shows the travel map of Mr Husin, Mr Chan and Mr Selva from SMK Dato' Abdul Rahman Ya'kub to SMK Paya Rumpit.



Rajah 16
Diagram 16

Mereka menggunakan aplikasi Google Maps untuk mendapatkan jarak dan masa memandu. Jadual 16(a) di bawah menunjukkan nama tempat dan Jadual 16(b) di bawah menunjukkan pilihan laluan yang dilalui oleh mereka menggunakan kenderaan masing-masing.

They use the Google Maps app to get driving distances and times. Table 16(a) below shows the names of the places and Table 16(b) below shows the route options chosen by them using their respective vehicles.

Nama tempat <i>Name of places</i>	Bucu (V) <i>Vertex (V)</i>
SMK Dato' Abdul Rahman Ya'kub	RY
Ujong Pasir	U
Air Keroh	K
Universiti Teknikal Melaka	T
Stadium Hang Jebat	H
SMK Paya Rumpit	PR

Jadual 16(a) / Table 16(a)

	Pilihan laluan <i>Choice of route</i>	Masa (minit) <i>Time (minutes)</i>	Jarak (km) <i>Distance (km)</i>
Encik Husin	$RY \rightarrow U \rightarrow PR$	23	35.9
Encik Chan	$RY \rightarrow K \rightarrow H \rightarrow PR$	25	40.7
Encik Selva	$RY \rightarrow T \rightarrow H \rightarrow PR$	32	47.0

Jadual 16(b)/Table 16(b)

- (a) (i) Siapakah yang menggunakan laluan yang paling optimum berdasarkan masa dan jarak yang paling minimum.

Who uses the most optimal route based on minimum time and distance.

- (ii) Jika had laju memandu di jalan raya ialah 90 km/j di semua laluan di Rajah 16, siapakah di antara mereka yang mematuhi dan memandu di bawah had kelajuan yang ditetapkan. Berikan justifikasi anda berserta jalan pengiraan.

If the driving speed limit on the road is 90 km/h on all routes in Diagram 16, who among them complies and drives below the prescribed speed limit. Provide your justification along with the calculation path.

[4 markah/ marks]

- (b) Selepas menghadiri Taklimat berkaitan Taksiran Cukai Pendapatan di SMK Paya Rumpit, Encik Chan membuat keputusan untuk mengira cukai pendapatan dengan sendiri bagi tahun 2020. Pada tahun 2020, Encik Chan dan isterinya mendapat gaji tahunan sebanyak RM 70 600 dan RM 54 950. Mereka masing-masing telah mendermakan RM 700 kepada badan kebajikan yang diluluskan oleh kerajaan pada tahun tersebut.

Jadual 16(c) menunjukkan Banjaran Pendapatan Bercukai dan Jadual 16(d) menunjukkan maklumat taksiran cukai bersama dan taksiran cukai berasingan yang boleh dituntut oleh Encik Chan dan isterinya.

After attending a Briefing on Income Tax Assessment at SMK Paya Rumpit, Mr Chan decided to calculate his own income tax for the year 2020. In 2020, Mr Chan and his wife get an annual salary of RM 70 600 and RM 54 950. They have each donated RM 700 to charity which was approved by the government that year.

Table 16(c) shows the Range of Taxable Income and Table 16(d) shows the information of joint tax assessment and separate tax assessment that can be claimed by Mr Chan and his wife.

Banjaran pendapatan bercukai <i>Chargeable income</i> (RM)	Pengiraan <i>Calculations</i> (RM)	Kadar <i>Rate</i> (%)	Cukai <i>Tax</i> (RM)
20 001 – 35 000	20 000 pertama <i>On the first 20 000</i> 15 000 berikutnya <i>Next 15 000</i>	3	150 1 200
35 001 – 50 000	35 000 pertama <i>On the first 35 000</i> 15 000 berikutnya <i>Next 15 000</i>	8	600 1 200
100 001 – 250 000	100 000 pertama <i>On the first 100 000</i> 15 000 berikutnya <i>Next 15 000</i>	24	10 900 36 000

Jadual 16(c)/Table 16(c)

Perkara <i>Item</i>	Taksiran cukai Bersama <i>Joint tax assessment</i>	Taksiran cukai berasingan <i>Separate tax assessment</i>	
		Suami <i>Husband</i>	Isteri <i>Wife</i>
Jumlah pendapatan <i>Total income</i>	RM 125 550	RM 70 600	RM 54 950

Pengecualian cukai <i>Tax exemption</i>	RM 1 400	RM 700	RM 700
Pelepasan cukai <i>Tax relief</i>			
Individu <i>Individual</i>	RM 9 000	RM 9 000	RM 9 000
Gaya hidup <i>Lifestyle</i>	RM 2 500	RM 2 500	RM 1 850
Insurans hayat <i>Life insurance</i>	RM 7 000	RM 6 480	RM 7 000
Insurans perubatan <i>Medical insurance</i>	RM 3 000	RM 3 000	RM 2 640

Jadual 16(d) /Table 16(d)

- (i) Hitung jumlah cukai pendapatan bagi Encik Chan dan isterinya dengan menggunakan cara Taksiran Cukai Bersama dan Taksiran Cukai Berasingan.
Calculate the total income tax for Mr Chan and his wife using the method of Joint Tax Assessment and Separate Tax Assessment.
- (ii) Antara taksiran cukai bersama dan taksiran cukai berasingan, yang manakah lebih sesuai digunakan oleh Encik Chan dan isterinya? Jelaskan jawapan anda.
Between joint tax assessment and separate tax assessment, which is more appropriate used by Mr Chan and his wife? Explain your answer.

[11 markah/marks]

Jawapan / *Answer* :

(a)(i)

(a)(ii)

(b)(i)

(b)(ii)

- 17 (a) Jadual 17(a) di bawah menunjukkan bilangan kes harian Coronavirus 2019 (COVID-19) bagi empat hari berturut-turut di Malaysia.

Table 17(a) below shows the number of daily cases of Coronavirus 2019 (COVID-19) for four consecutive days in Malaysia.

Tarikh <i>Date</i>	Bilangan kes <i>Number of cases</i>
26/04/2021	2 776
27/04/2021	2 733
28/04/2021	3 142
29/04/2021	3 332

Jadual 17(a)

Table 17(a)

- (i) Berdasarkan Jadual 17(a), nyatakan julat kes Covid dalam nombor asas tujuh?

Based on Table 17(a), state the range of Covid cases in base seven?

- (ii) Antara tarikh-tarikh tersebut, tarikh manakah kes meningkat paling ketara berbanding hari sebelumnya?

Among those dates, which date increased the most significantly compared to the day before?

- (iii) Hitung bilangan kes peningkatan di soalan (a)(ii) dalam asas empat.

Calculate the number of cases of increase in question (a)(ii) in base four.

[6 markah]

[6 marks]

- (b) Berikutan peningkatan kes Covid yang mendadak, pihak kerajaan telah membuka lebih banyak Pusat Vaksinasi di seluruh negara. Rakyat diseru untuk mendapatkan vaksin bagi mengelakan komplikasi kesihatan berpunca daripada virus ini. Rajah 17(b) di bawah menunjukkan data umur penerima vaksin di salah satu Pusat Pemberian Vaksin di Kedah.

Following the rapid increase in Covid cases, the government has opened more Vaccination Centers throughout the country. The people are urged to get vaccinated to prevent health complications caused by this virus. Diagram 17(b) below shows the age data of vaccine recipients at one of the Vaccination Centers in Kedah.

27	34	37	39	42	43	46	48	52
29	35	37	40	42	44	47	49	52
31	35	38	40	42	44	47	49	53
32	36	38	41	42	45	47	52	54

Rajah 17(b)

Diagram 17(b)

- (i) Wakilkan data dalam Rajah 17(b) dalam satu plot batang-dan-daun.
Represent the data in Diagram 17(b) in a stem-and-leaf plot.
- (ii) Berikan komen anda berkenaan taburan umur penerima vaksin.
Give your comments on the age distribution of vaccine recipients.
- (iii) Berdasarkan data dalam Rajah 17(b), lengkapkan plot kotak di ruang jawapan.
Based on the data in Diagram 17(b), complete the box plot in the answer space.

[9 markah]

[9 marks]

Jawapan / Answer :

(a)(i)

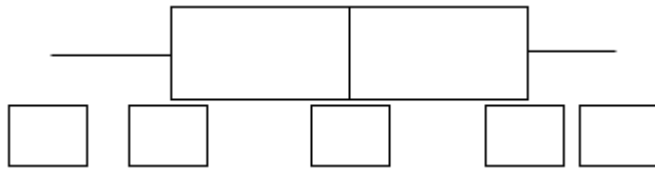
(a)(ii)

(a)(iii)

(b)(i)

(b)(ii)

(b)(iii)



KERTAS SOALAN TAMAT
END OF QUESTION PAPER

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Disemak oleh:

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