



MODUL PINTAS PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5
TAHUN 2026

MATEMATIK
Kertas 2
Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

- 1. Kertas soalan ini mengandungi tiga bahagian :
Bahagian A, Bahagian B dan Bahagian C.
*This question paper consists of three sections:
Section A, Section B and Section C.*
- 2. Jawab semua soalan dalam Bahagian A, Bahagian B dan hanya satu soalan daripada Bahagian C.
Answer all question in Section A, Section B and only one question from Section C.
- 3. Tulis jawapan anda pada ruang yang disediakan dalam kertas soalan ini.
Write your answer in the answer space provided in the question paper.
- 4. Tunjukkan kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.
Show your working. It may help you to get marks.
- 5. Anda dikehendaki menggunakan kalkulator saintifik yang tidak boleh diprogramkan.
You may use a non-programmable scientific calculator.

Untuk Kegunaan Pemeriksa			
Bahagian	Soalan	Markah Penuh	Markah diperoleh
A	1	2	
	2	4	
	3	3	
	4	4	
	5	5	
	6	5	
	7	5	
	8	4	
	9	4	
	10	4	
B	11	10	
	12	8	
	13	9	
	14	8	
	15	10	
C	16	15	
	17	15	
Jumlah			

Kertas soalan ini mengandungi 49 halaman bercetak dan 3 halaman tidak bercetak

RUMUS MATEMATIK MATHEMATICAL FORMULAE

Rumus-rumus berikut boleh membantu anda 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 $a^m \times a^n = a^{m+n}$
- 2 $a^m \div a^n = a^{m-n}$
- 3 $(a^m)^n = a^{mn}$
- 4 $a^{\frac{m}{n}} = (a^m)^{\frac{1}{n}}$
- 5 Faedah mudah / *Simple interest*, $I = Prt$
- 6 Faedah kompaun / *Compound interest*, $MV = P\left(1 + \frac{r}{n}\right)^n$
- 7 Jumlah bayaran balik / *Total repayment*, $A = P + Prt$

PERKAITAN DAN ALGEBRA RELATIONSHIP AND ALGEBRA

- 1 Jarak / *Distance* $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
- 2 Titik tengah / *Midpoint*, $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
- 3 Laju purata $= \frac{\text{Jumlah jarak}}{\text{Jumlah masa}}$
Average speed $= \frac{\text{Total distance}}{\text{Total time}}$
- 4 $m = \frac{y_2 - y_1}{x_2 - x_1}$
- 5 $m = -\frac{\text{pintasan-}y}{\text{pintasan-}x}$
 $m = -\frac{y\text{-intercept}}{x\text{-intercept}}$
- 6 $A^{-1} = \frac{1}{ad - bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$

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 $\frac{\text{Panjang lengkok}}{2\pi r} = \frac{\theta}{360^\circ}$
 $\frac{\text{Arc length}}{2\pi r} = \frac{\theta}{360^\circ}$
- 6 $\frac{\text{Luas sektor}}{\pi r^2} = \frac{\theta}{360^\circ}$
 $\frac{\text{Area of sector}}{\pi r^2} = \frac{\theta}{360^\circ}$
- 7 Luas layang-layang $= \frac{1}{2} \times$ hasil darab panjang dua pepenjuru
Area of kite $= \frac{1}{2} \times \text{product of two diagonals}$
- 8 Luas trapezium $= \frac{1}{2} \times$ hasil tambah dua sisi selari $\times$ tinggi
Area of trapezium $= \frac{1}{2} \times \text{sum of two parallel sides} \times \text{height}$
- 9 Luas permukaan silinder $= 2\pi r^2 + 2\pi rh$
Surface area of cylinder $= 2\pi r^2 + 2\pi rh$
- 10 Luas permukaan kon $= \pi r^2 + \pi rs$
Surface area of cone $= \pi r^2 + \pi rs$
- 11 Luas permukaan sfera $= 4\pi r^2$
Surface area of sphere $= 4\pi r^2$
- 12 Isi padu prisma = luas keratan rentas $\times$ tinggi
Volume of prism $= \text{area of cross section} \times \text{height}$

13 Isi padu silinder = $\pi j^2 t$
Volume of cylinder = $\pi r^2 h$

14 Isi padu kon = $\frac{1}{3} \pi j^2 t$
Volume of cone = $\frac{1}{3} \pi r^2 h$

15 Isi padu sfera = $\frac{4}{3} \pi j^3$
Volume of sphere = $\frac{4}{3} \pi r^3$

16 Isi padu piramid = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
Volume of 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, $\bar{x} = \frac{\sum x}{N}$

2 Min/ Mean, $\bar{x} = \frac{\sum fx}{f}$

3 Varians/ Variance $\sigma^2 = \frac{\sum (x - \bar{x})^2}{N} = \frac{\sum x^2}{N} - \bar{x}^2$

4 Varians/ Variance $\sigma^2 = \frac{\sum f(x - \bar{x})^2}{\sum f} = \frac{\sum fx^2}{\sum f} - \bar{x}^2$

5 Sisihan piawai/ Standard deviation $\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}} = \sqrt{\frac{\sum x^2}{N} - \bar{x}^2}$

6 Sisihan piawai/ Standard deviation $\sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2}$

7 $P(A) = \frac{n(A)}{n(S)}$

8 $P(A') = 1 - P(A)$

Bahagian A**[40 markah / marks]**

Jawab semua soalan dalam bahagian ini.

Answer all questions in this section.

- 1 Selesaikan $0.000035 + 2.1 \times 10^{-6}$. Berikan jawapan dalam bentuk piawai.

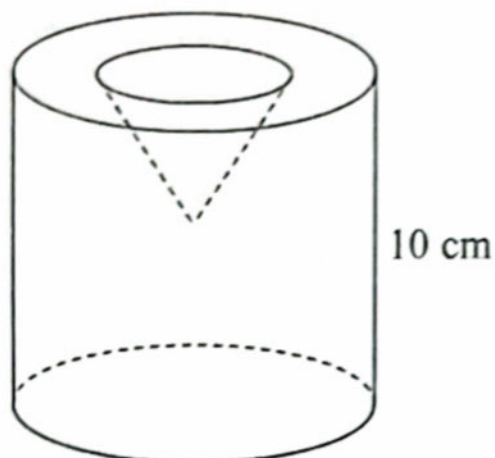
Solve $0.000035 + 2.1 \times 10^{-6}$. Give the answer in standard form.

[2 markah /marks]

Jawapan / Answer :

- 2 Rajah 1 menunjukkan sebuah bekas lilin berbentuk silinder berjejari 7 cm. Sebuah kon dengan jejari dan tinggi masing-masing ialah 3 cm dan 7 cm dikeluarkan dari bahagian tengah silinder itu.

Diagram 1 shows a cylindrical candle container with a radius of 7 cm. A cone with radius and height of 3 cm and 7 cm respectively is removed from the center of the cylinder.



Rajah 1
Diagram 1

Hitung isi padu, dalam cm^3 , bekas lilin yang tinggal.

Calculate the volume, in cm^3 , of the remaining candle container.

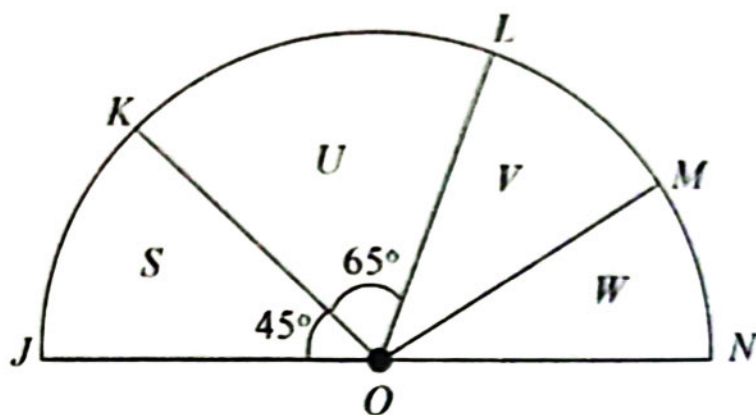
[Guna /Use, $\pi = \frac{22}{7}$]

[4 markah /marks]

Jawapan / Answer :

- 3 Rajah 2 menunjukkan sebuah semibulatan $JKLMNO$ yang dibahagikan kepada 4 sektor, S , U , V dan W . Diberi diameter semibulatan itu ialah 15 cm dan $\angle LOM = \angle MON$.

Diagram 2 shows a semicircle $JKLMNO$ which is divided into 4 sectors, S , U , V and W . Given the diameter of the semicircle is 15 cm and $\angle LOM = \angle MON$.



Rajah 2
Diagram 2

Hitung
Calculate

- (a) nilai $\angle LOM$,
the value of $\angle LOM$,
- (b) luas sektor V , dalam cm^2 .
the area of sector V , in cm^2 .
[Guna / Use, $\pi = \frac{22}{7}$].

[1 markah /mark]

[2 markah /marks]

Jawapan / Answer :

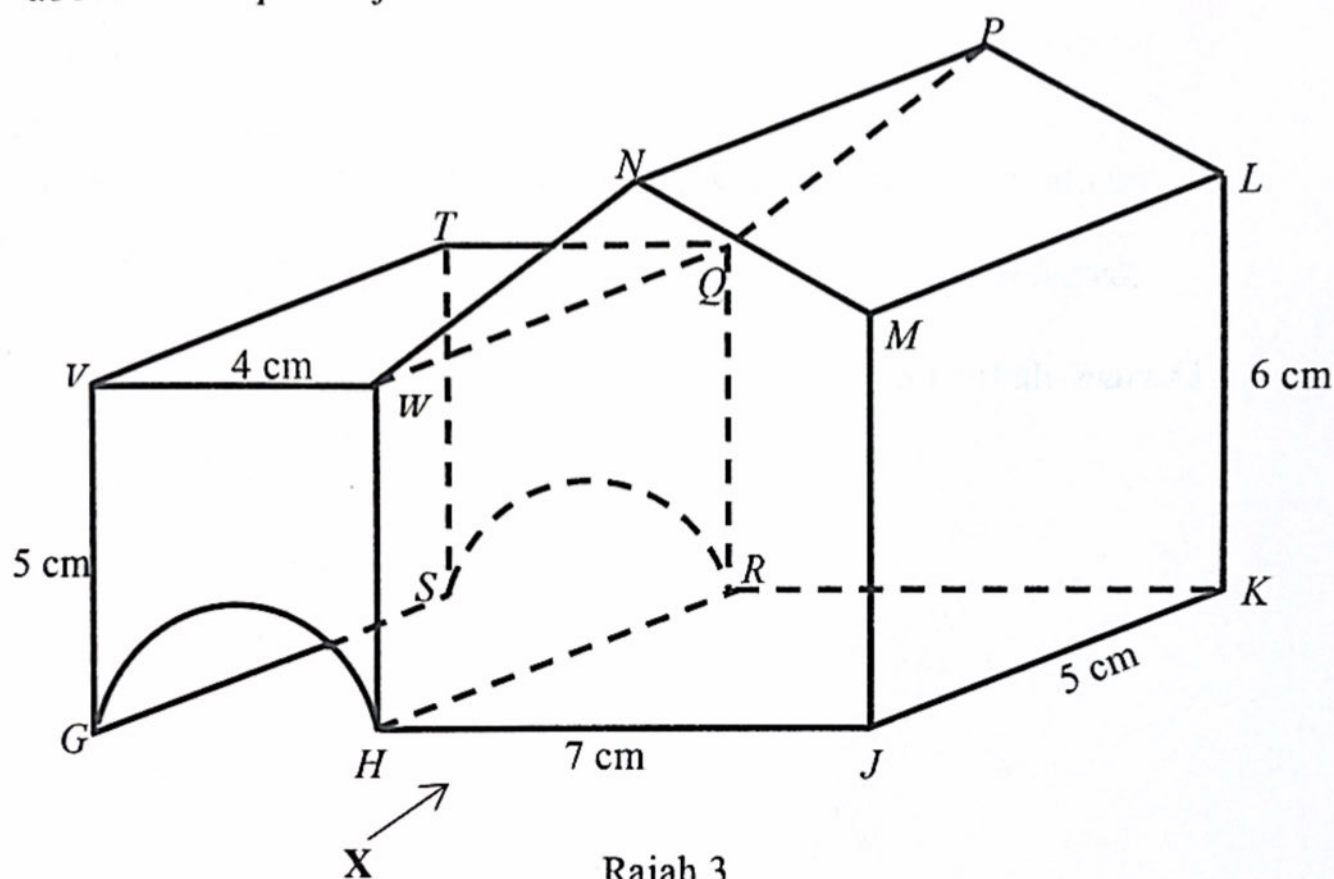
(a)

(b)

- 4 Anda **tidak dibenarkan** menggunakan kertas graf untuk menjawab soalan ini.
*You are **not allowed** to use the graph paper to answer this question.*

Rajah 3 menunjukkan gabungan kuboid dan sebuah prisma tegak dengan tapak segi empat tepat $HJKR$ yang terletak pada satah mengufuk. Sebuah semi silinder dikeluarkan daripada kuboid. $HJMNWVG$ ialah keratan rentas seragam objek itu. Titik N adalah 8 cm tegak di atas titik tengah HJ .

Diagram 3 shows the composite of a cuboid and a right prism with rectangular base $HJKR$ on a horizontal plane. A semi-cylinder is taken out from the cuboid. $HJMNWVG$ is the uniform cross-section of the object. Point N is 8 cm vertically above the midpoint of HJ .



Rajah 3
 Diagram 3

Lukis dengan skala penuh, dongakan objek itu pada satah mencancang yang selari dengan HJ dan HG sebagaimana yang dilihat dari arah X .

Draw to full scale, the elevation of the object on vertical plane parallel to HJ and HG as viewed from X .

[4 markah / marks]

11. Jawapan / Answer :



- 5 Satu tinjauan telah dijalankan oleh sebuah restoran tentang dua menu baharu yang disajikan di restoran itu. Kebarangkalian pelanggan memilih menu P dan menu R masing-masing ialah $\frac{4}{7}$ dan $\frac{8}{13}$.

A survey has been conducted by a restaurant regarding to two new menus served at the restaurant. The probabilities of a customer choosing menu P and menu R are $\frac{4}{7}$ and $\frac{8}{13}$ respectively.

- (a) Lengkapkan rajah pokok di ruang jawapan.
Complete the tree diagram in the answer space.

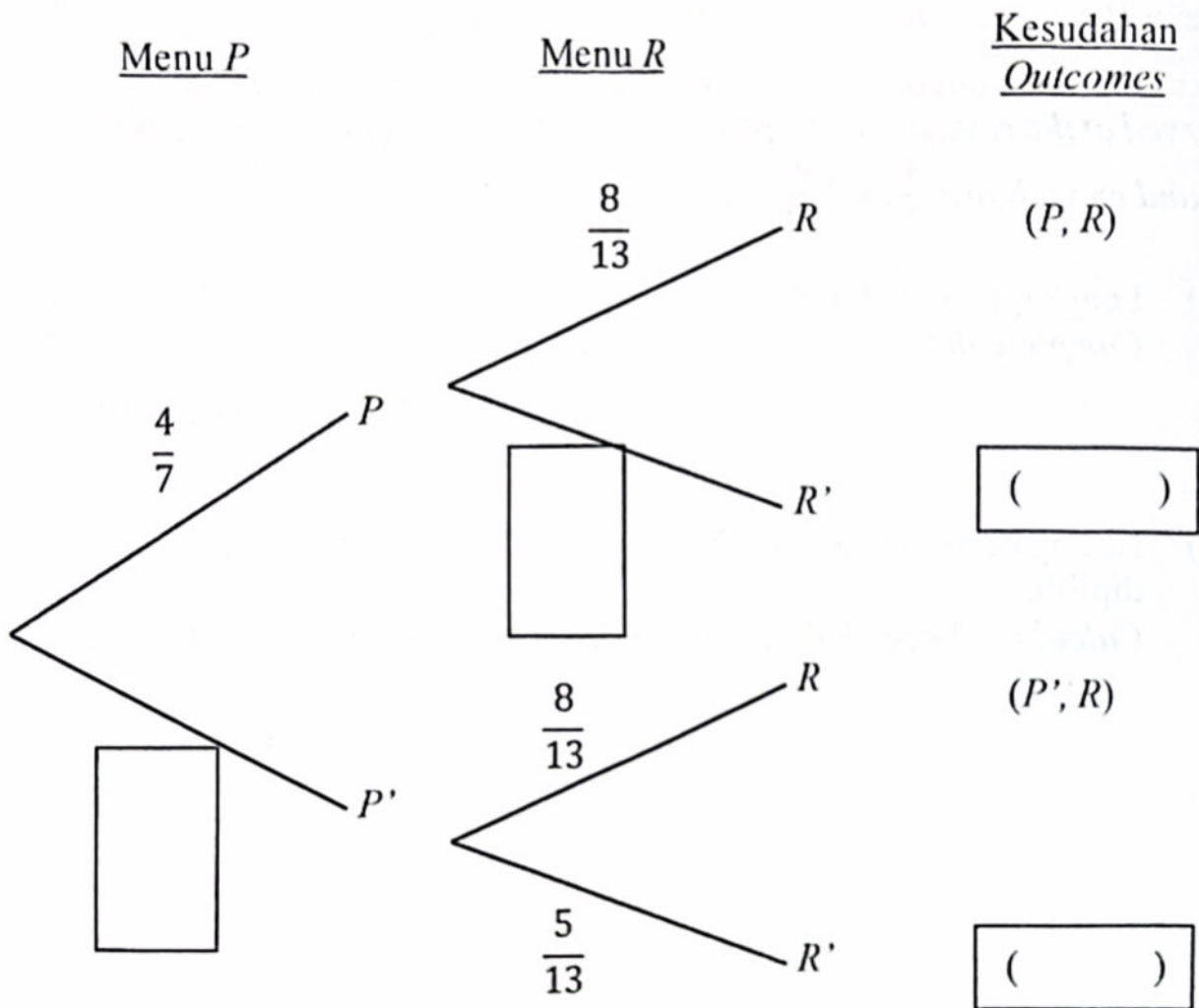
[2 markah / marks]

- (b) Hitung kebarangkalian bahawa sekurang-kurangnya satu menu dipilih.
Calculate the probability that at least one menu is selected.

[3 markah / marks]

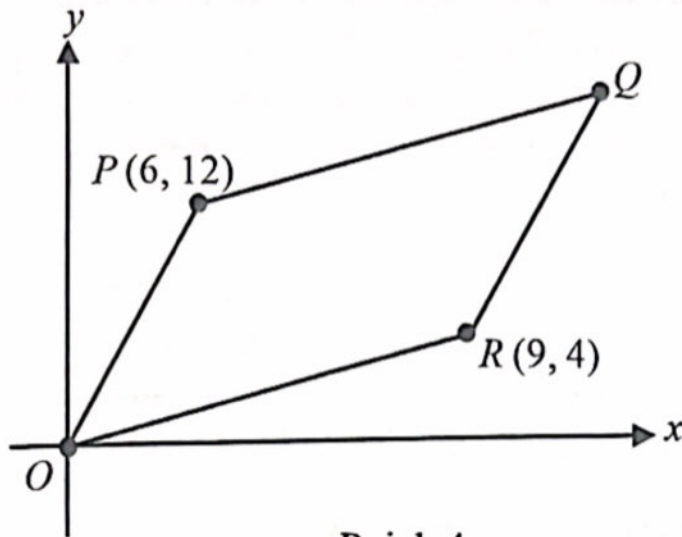
Jawapan / Answer :

(a)



(b)

- 6 Rajah 4 menunjukkan sebuah segi empat selari, $OPQR$. O ialah asalan.
Diagram 4 shows a parallelogram, $OPQR$. O is the origin.



Rajah 4
 Diagram 4

- (a) Cari persamaan garis lurus QR .
Find the equation of the straight line QR .
 [3 markah /marks]
- (b) Tentukan pintasan- x bagi garis lurus QR .
Determine the x -intercept for the straight line QR .
 [2 markah /marks]

Jawapan / Answer :

(a)



(b)



- 7 (a) Tentukan sama ada pernyataan majmuk berikut adalah benar atau palsu.

Determine whether the following compound statement is true or false.

$$6 \times 6 \times 6 = 6^3 \text{ atau } \sqrt{216} = 6$$

$$6 \times 6 \times 6 = 6^3 \text{ or } \sqrt{216} = 6$$

[1 markah /mark]

- (b) Tulis dua implikasi bagi pernyataan berikut:

Write down two implications for the following statement:

2 ialah faktor bagi 8 jika dan hanya jika 8 boleh
dibahagi tepat dengan 2.

2 is a factor of 8 if and only if 8 is divisible by 2.

[2 markah /marks]

- (c) Diberi bahawa isi padu sebuah kon ialah $\frac{1}{3}\pi j^2 t$, dengan keadaan j ialah jejari dan t ialah tinggi. Jika sebuah kon mempunyai jejari 6 cm dan tinggi 7 cm, buat satu kesimpulan secara deduktif bagi isi padu kon tersebut.

It is given that the volume of a cone is $\frac{1}{3}\pi r^2 h$, such that r is the radius and h is the height. If a cone has a radius of 6 cm and a height of 7 cm, make a deductive conclusion for the volume of the cone.

[2 markah /marks]

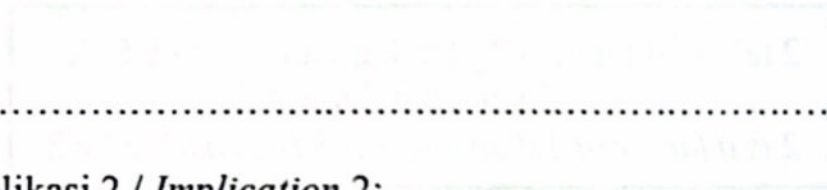
Jawapan / Answer :

(a)



(b) Implikasi 1/ *Implication 1*:

.....



.....

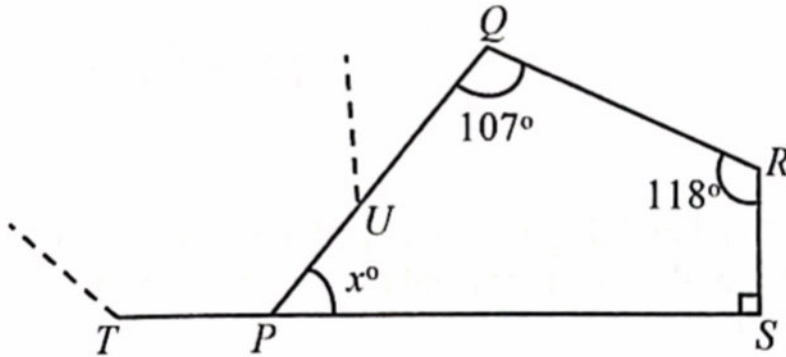
Implikasi 2 / *Implication 2*:

.....

.....

(c)

- 8 Rajah 5 menunjukkan sebuah sisi empat $PQRS$ dan sebuah poligon sekata yang tidak lengkap dengan n sisi. TPS ialah garis lurus. *Diagram 5 shows a quadrilateral $PQRS$ and incomplete regular polygon with n sides. TPS is a straight line.*



Rajah 5
Diagram 5

- (a) Hitung nilai x ,
Calculate the value of x , [2 markah /marks]
- (b) Seterusnya, tentukan bilangan n sisi poligon sekata yang tidak lengkap itu.
Hence, determine the number of n sides of the incomplete regular polygon. [2 markah /marks]

Jawapan / Answer :

(a)

(b)

- 9 (a) Lorekkan kawasan yang mewakili set $P \cup (M \cap N)$ di ruang jawapan yang disediakan.

Shade the region represents the set of $P \cup (M \cap N)$ in the answer space provided.

[2 markah /marks]

- (b) Sunny dan Rina bermain permainan kad nombor misteri. Jadual 1 menunjukkan senarai kad nombor misteri yang diterima oleh mereka.

Sunny and Rina play a mystery card game.

Table 1 shows the list of mystery number cards received by them.

Nama <i>Name</i>	Kad nombor misteri yang diterima <i>Mystery number cards received</i>
Sunny (S)	Faktor bagi 15 <i>Factors of 15</i>
Rina (R)	Nombor kuasa dua sempurna kurang dari 18 <i>Perfect squares less than 18</i>

Jadual 1

Table 1

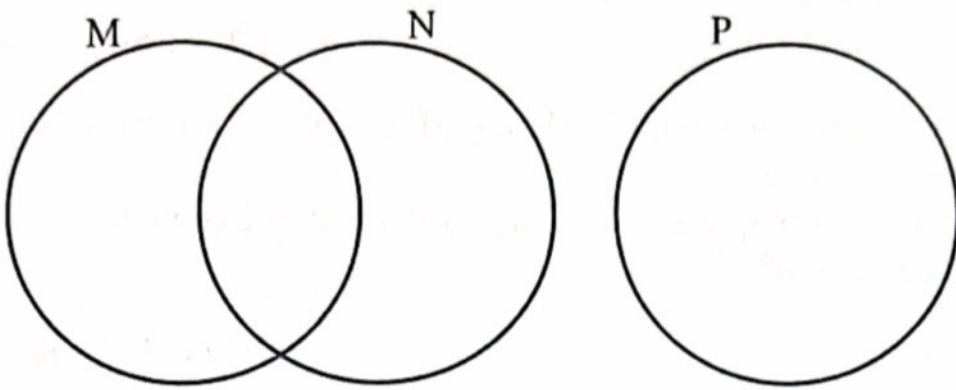
Lukis gambar rajah Venn untuk mewakili kedua-dua set kad nombor yang dinyatakan di Jadual 1.

Draw a Venn diagram to represent both sets of cards stated in Table 1.

[2 markah /marks]

Jawapan / Answer :

(a)



(b)

(d)



- 10 (a) Diberi $\sin \theta = 0.9397$ dan $0^\circ \leq \theta \leq 360^\circ$.
 Hitung sudut θ .
*Given $\sin \theta = 0.9397$ and $0^\circ \leq \theta \leq 360^\circ$.
 Calculate the angle of θ .*

[2 markah /marks]

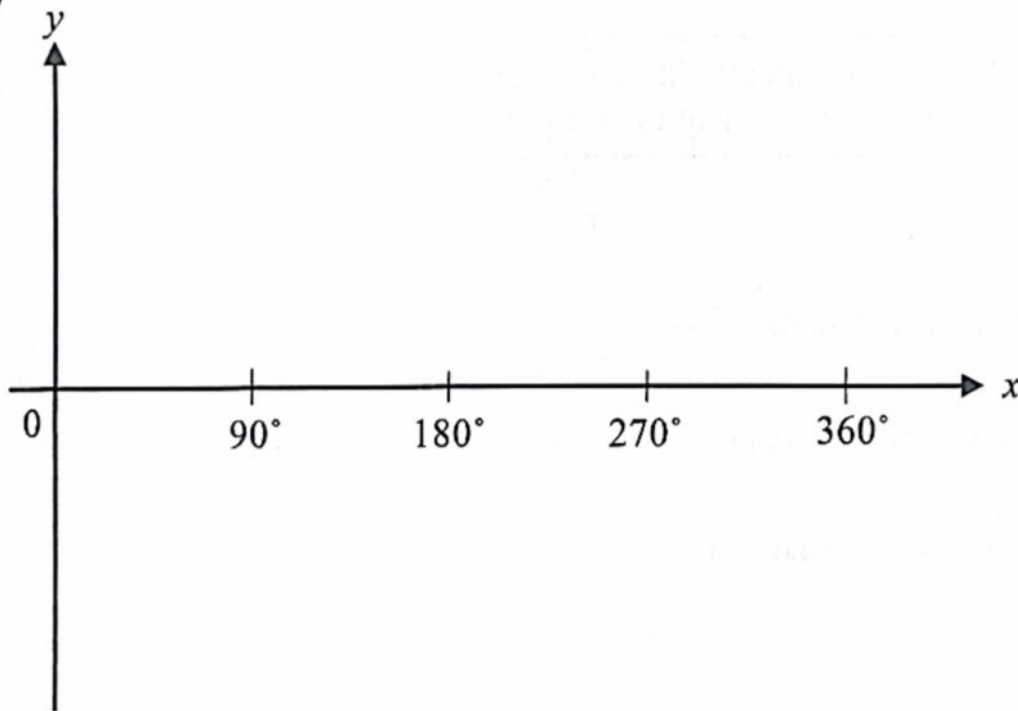
- (b) Pada ruang jawapan, lakarkan graf bagi $y = 2 \cos x$ untuk
 $0^\circ \leq x \leq 360^\circ$.
*In the answer space, sketch a graph of $y = 2 \cos x$ for
 $0^\circ \leq x \leq 360^\circ$.*

[2 markah /marks]

Jawapan / Answer :

(a)

(b)



Bahagian B
[45 markah / marks]

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

- 11 (a) Jadual 2.1 menunjukkan kadar cukai jalan bagi kenderaan persendirian di Semenanjung Malaysia.
Table 2.1 shows the road tax rates for private vehicle in Peninsular Malaysia.

Kapasiti enjin <i>Engine capacity</i>	Kadar cukai jalan <i>Road tax rate</i>	
	Kadar asas <i>Base rate</i>	Kadar progresif <i>Progressive rate</i>
1401 cc - 1600 cc	RM90.00	-
1601 cc - 1800 cc	RM200.00	+RM 0.40 setiap cc melebihi 1600 cc <i>+RM 0.40 each cc exceeding 1600 cc</i>

Jadual 2.1
Table 2.1

- (i) Puan Salmi ingin membayar cukai jalan bagi keretanya dengan kapasiti enjin 1 780 cc. Hitung cukai jalan bagi kereta itu.
Puan Salmi wants to pay road tax for her car with an engine capacity of 1 780 cc. Calculate the road tax for the car.

[2 markah /marks]

- (ii) Jadual 2.2 menunjukkan sebahagian daripada Kadar Cukai Individu untuk Tahun Taksiran 2025.

Table 2.2 shows a part of the Individual Tax Rate for the Year of Assessment 2025.

Pendapatan bercukai <i>Chargeable income</i> (RM)	Pengiraan <i>Calculation</i> (RM)	Kadar <i>Rate</i> (%)	Cukai <i>Tax</i> (RM)
20 000 - 35 000	20 000 pertama <i>First 20 000</i>	3	150
	15 000 berikutnya <i>Next 15 000</i>		450
35 001 - 50 000	35 000 pertama <i>First 35 000</i>	8	600
	15 000 berikutnya <i>Next 15 000</i>		1200

Jadual 2.2

Table 2.2

Pendapatan bercukai Puan Salmi pada tahun taksiran 2025 ialah RM45 000. Hitung cukai pendapatan yang perlu dibayar oleh Puan Salmi bagi tahun taksiran itu.

The chargeable income of Puan Salmi in 2025 assessment year was RM45 000. Calculate the income tax payable of Puan Salmi for that assessment year.

[3 markah /marks]

Jawapan / Answer :

(i)

(ii)

- 11(b) Jadual 2.3 menunjukkan kadar premium tahunan bagi setiap RM1 000 nilai muka.
Table 2.3 shows the annual premium rates schedule for every RM1 000 face value.

Umur <i>Age</i>	Lelaki <i>Male</i>		Wanita <i>Female</i>	
	Bukan perokok <i>Non-Smoker</i>	Perokok <i>Smoker</i>	Bukan perokok <i>Non-Smoker</i>	Perokok <i>Smoker</i>
35	2.12	2.72	1.45	1.78
36	2.18	2.80	1.50	1.84
37	2.26	2.91	1.56	1.93

Jadual 2.3
Table 2.3

Berdasarkan Jadual 2.3, hitung premium tahunan bagi setiap situasi berikut:

Based on Table 2.3, calculate the annual premium for each of the following situation:

- (i) Ivan adalah seorang lelaki berusia 35 tahun dan tidak merokok. Dia bercadang untuk membeli polisi insurans bernilai RM350 000.

Ivan is a 35-year-old man and a non-smoker. He plans to buy an insurance policy worth RM350 000.

[2 markah /marks]

- (ii) Nina berusia 37 tahun dan bukan seorang perokok. Dia bercadang untuk membeli polisi insurans bernilai RM200 000 dan menambah polisi penyakit kritikal. Syarikat insurans menawarkan polisi penyakit kritikal dengan memberikan perlindungan sebanyak 40% nilai muka asas dan kadar premium bagi setiap RM1 000 ialah RM1.90.

Nina is a 37-year-old and a non-smoker. She plans to buy an insurance policy worth RM200 000 and wants to add on critical illness policy. Insurance company offers a critical illness policy with a coverage of 40% of basic face value and the premium rate per RM1 000 is RM 1.90.

[3 markah /marks]

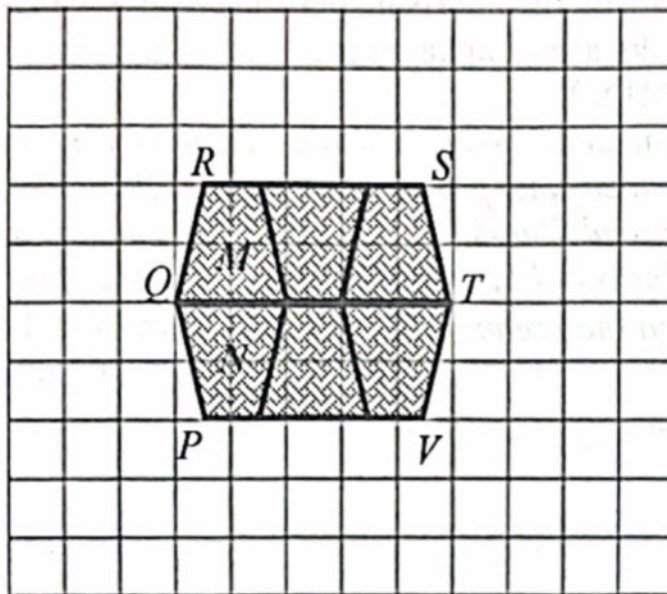
Jawapan / Answer :

(i)

(ii)

- 12 (a) Rajah 6 menunjukkan satu bentuk teselasi yang dihasilkan dengan transformasi isometri.

Diagram 6 shows a tessellation which are produced by isometric transformation.



Rajah 6
Diagram 6

Huraikan selengkapnya transformasi yang terlibat untuk menghasilkan bentuk N daripada bentuk M.

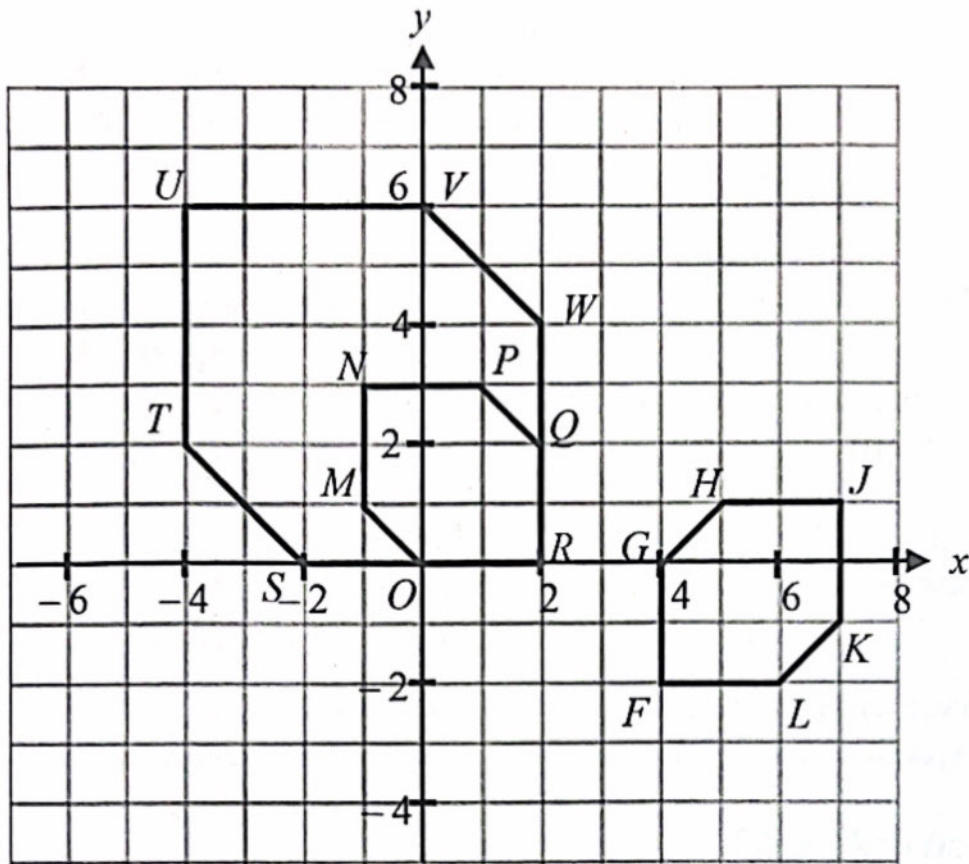
Describe fully the transformation involved to produce shape N from shape M.

[2 markah /marks]

Jawapan / Answer :

- (b) Rajah 7 menunjukkan tiga poligon, $FGHJKL$, $OMNPQR$ dan $RSTUVW$, dilukis pada suatu satah Cartes.

Diagram 7 shows three polygons, $FGHJKL$, $OMNPQR$ and $RSTUVW$, drawn on a Cartesian plane.



Rajah 7
Diagram 7

Diberi bahawa poligon $RSTUVW$ ialah imej bagi poligon $FGHJKL$ di bawah gabungan transformasi YZ .
Huraikan selengkapnya, transformasi

Given that polygon $RSTUVW$ is the image of polygon $FGHJKL$ under the combined transformation YZ .

Describe fully, the transformation

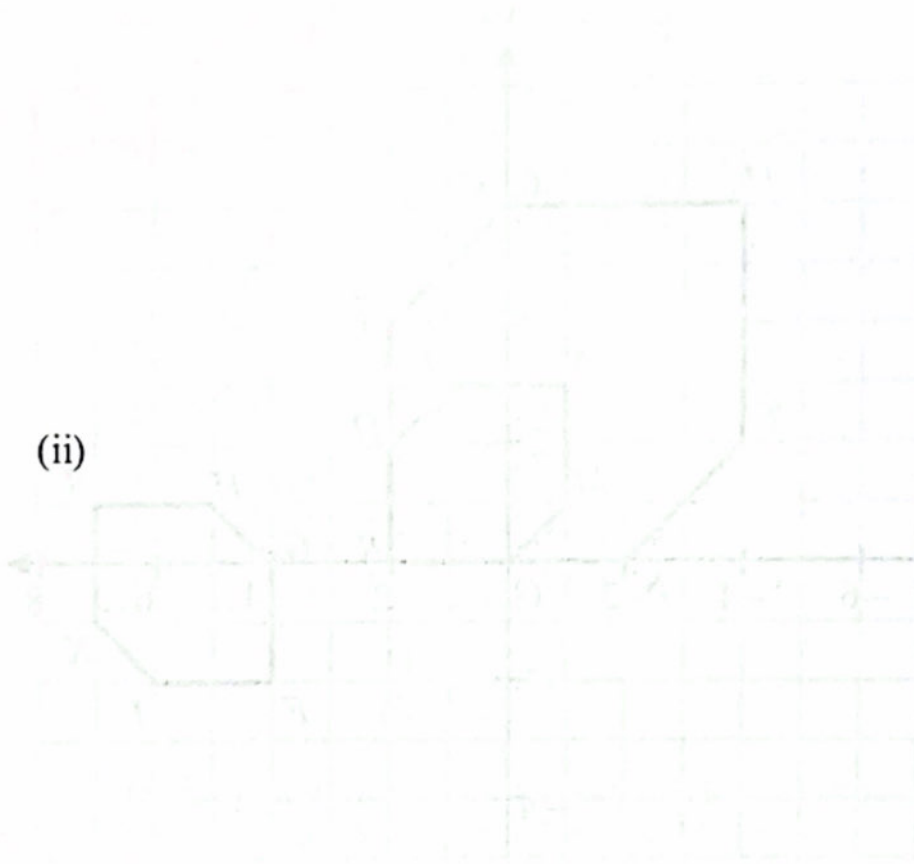
- (i) Z
(ii) Y

[6 markah /marks]

Jawapan / Answer :

(b) (i)

(ii)



- 13 Jadual 3 di ruang jawapan menunjukkan taburan kekerapan masa larian bagi 200 peserta dalam satu ujian kecergasan.

Table 3 in the answer space shows the frequency distribution of running times for 200 participants in a fitness test.

- (a) (i) Lengkapkan Jadual 3 di ruang jawapan.
Complete Table 3 in the answer space.

[2 markah /marks]

- (ii) Untuk ceraian soalan ini, gunakan graf yang disediakan di **halaman 31**.

For this part of the question, use the graph paper provided on page 31.

Seterusnya, menggunakan skala 2 cm kepada 5 minit pada paksi mengufuk dan 2 cm kepada 10 orang peserta pada paksi mencancang, lukis satu histogram bagi data itu.

Hence, using a scale of 2 cm to 5 minutes on the horizontal axis and 2 cm to 10 participants on the vertical axis, draw a histogram for the data.

[4 markah /marks]

- (b) Hitung sisihan piawai bagi data itu.
Calculate the standard deviation of the data.

[3 markah / marks]

Jawapan / Answer :

(a)(i)

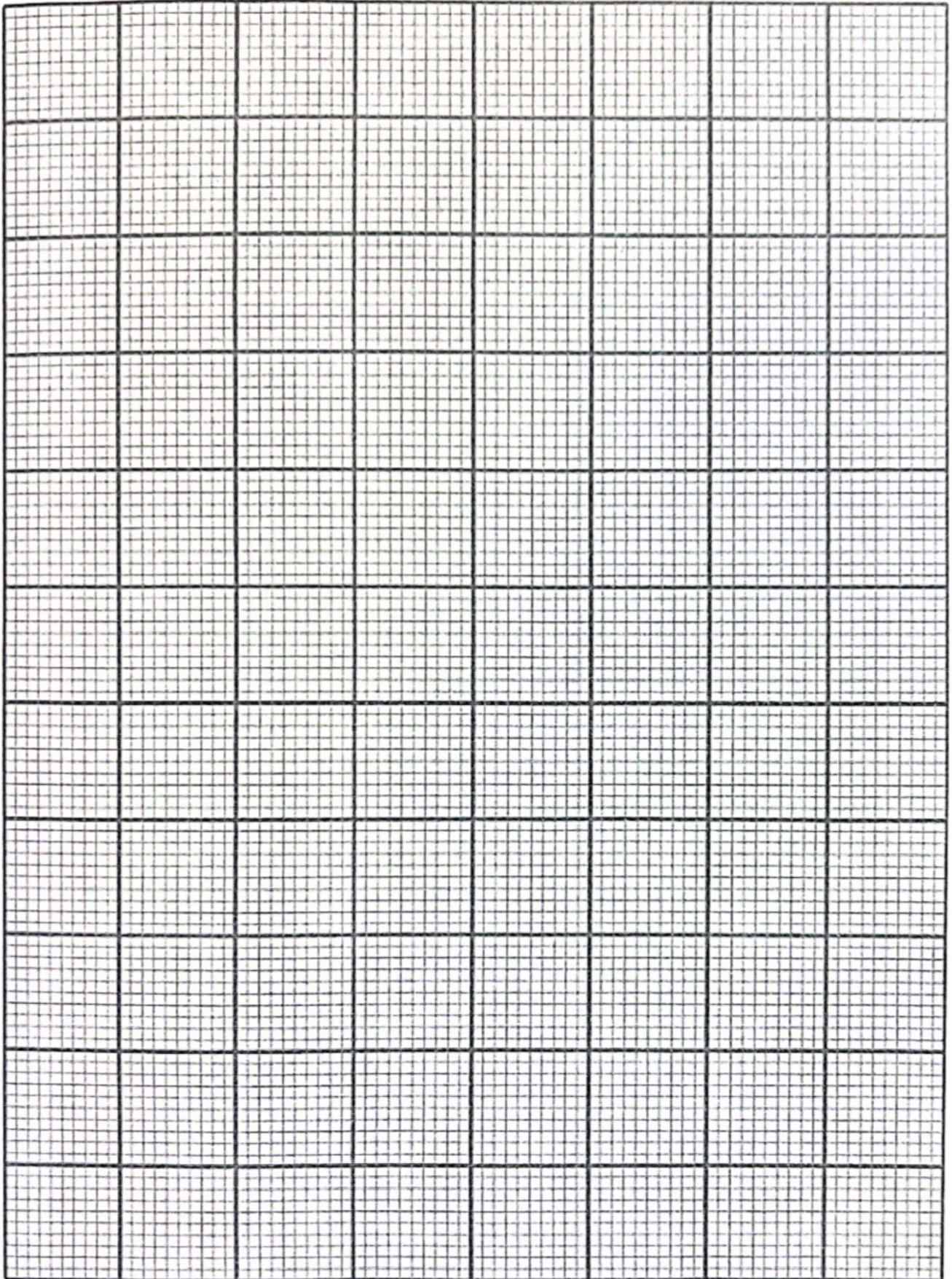
Masa larian (minit) <i>Running time (minutes)</i>	Kekerapan <i>Frequency</i>	Titik tengah <i>Midpoint</i>
11 – 15	5	
	36	
	48	
	79	
	20	
	12	

Jadual 3
Table 3

(ii) Rujuk graf di halaman 31.
Refer graph on page 31.

(b)

Graf untuk Soalan 13 (a)(ii)
Graph for Question 13 (a)(ii)



- 14 (a) Alice bekerja sebagai pereka hiasan dalaman di sebuah syarikat dengan gaji RM8 500. Dia juga menerima RM1 200 setiap bulan hasil sewa rumahnya. Perbelanjaan tetap dan perbelanjaan tidak tetap bulanannya masing-masing RM4 350 dan RM3 610. Jika Alice menetapkan 12% daripada gajinya sebagai simpanan tetap bulanan, hitung aliran tunai bulanannya.

Alice works as an interior designer in a company with a salary of RM8 500. She also receives RM1 200 every month from house rental income. The monthly fixed expenses and monthly non-fixed expenses are RM4 350 and RM3 610 respectively. If Alice sets 12% of her salary as monthly fixed savings, calculate her monthly cash flow.

[3 markah /marks]

Jawapan / Answer :

- (b) Jadual 4.1 menunjukkan pelan kewangan Aidil.
Table 4.1 shows Aidil's financial plan.

Pendapatan Income	Amaun Amount (RM)	
Pendapatan aktif <i>Active income</i>	5 500	
Pendapatan pasif <i>Passive income</i>	0	
Jumlah pendapatan bulanan <i>Total monthly income</i>	5 500	
Tolak simpanan tetap bulanan (10% daripada pendapatan bulanan) <i>Minus fixed monthly saving (10% of monthly income)</i>	550	
Tolak simpanan untuk dana kecemasan <i>Minus savings for emergency fund</i>	100	
Baki pendapatan / <i>Income balance</i>		4 850
Tolak perbelanjaan tetap bulanan Minus monthly fixed expenses		
Ansuran kereta / <i>Car instalment</i>	760	
Premiun insurans / <i>Insurance premiums</i>	280	
Jumlah perbelanjaan tetap bulanan <i>Total monthly fixed expenses</i>		1040
Tolak perbelanjaan tidak tetap bulanan Minus monthly variable expenses		
Makanan dan minuman / <i>Food and drinks</i>	750	
Belanja petrol / <i>Petrol expenses</i>	300	
Bayaran tol / <i>Tol payment</i>	120	
Bil telefon / <i>Telephone bill</i>	40	
Melancong / <i>Travel</i>	600	
Gimnasium / <i>Gym</i>	150	
Pemberian kepada ibu bapa <i>Allowance for parents</i>	500	
Jumlah perbelanjaan tidak tetap bulanan <i>Total monthly variable expenses</i>		2 460
Pendapatan lebihan / Kurangan <i>Surplus of income / Deficit</i>		

Jadual 4.1
Table 4.1

Aidil ingin membeli sebuah basikal baharu yang berharga RM6 600. Dia menyimpan sebanyak RM550 sebulan dalam tempoh setahun.
Aidil wants to buy a new bicycle that costs RM6 600. He saves RM550 per month for one year.

Menggunakan konsep SMART, lengkapkan Jadual 4.2 di ruangan jawapan. Seterusnya, tentukan adakah matlamat kewangan dapat dicapai.
Using the SMART concept, complete Table 4.2 in the answer space. Hence, determine whether the financial goal can be achieved.

[5 markah / marks]

Jawapan / Answer :

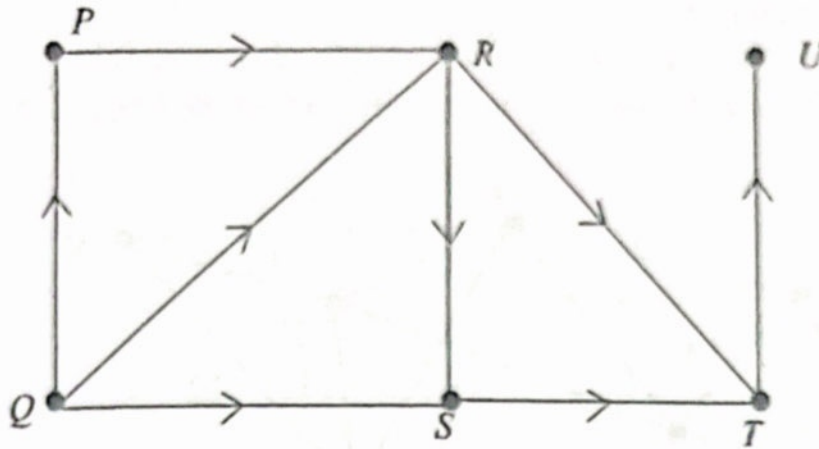
(b)

Khusus <i>Specific</i>	Membeli sebuah basikal <i>Buy a bicycle</i>
Boleh diukur <i>Measurable</i>	
Boleh dicapai <i>Attainable</i>	
Bersifat realistik <i>Realistic</i>	
Tempoh masa <i>Time-bound</i>	Setahun <i>One year</i>

Jadual 4.2
Table 4.2

.....
.....

- 15(a) Rajah 8 menunjukkan satu graf terarah.
Diagram 8 shows a directed graph.



Rajah 8
 Diagram 8

- (i) Kenal pasti sama ada Rajah 8 merupakan graf mudah atau bukan. Berikan justifikasi.
Identify whether Diagram 8 is a simple graph or not. Give justification.

[1 markah /marks]

- (ii) Nyatakan
 State

- a) V ,
 b) E , dan/ and
 c) $n(E)$

[3 markah /marks]

Jawapan / Answer :

(i)

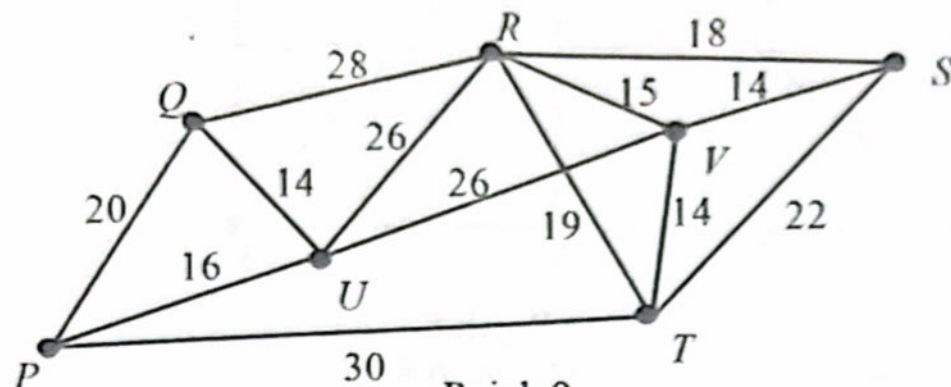
(ii) a) V :

b) E :

c) $n(E)$:

- 15(b) Rajah 9 menunjukkan graf tidak terarah dan berpemberat bagi tujuh lokasi di Bandar K dengan keadaan pemberat mewakili masa yang diambil, dalam minit.

Diagram 9 shows an undirected and weighted graph of the seven locations in Bandar K where the weights represent the time taken, in minutes.



Rajah 9
Diagram 9

Lokasi Q dan V ditutup sebagai langkah keselamatan akibat banjir.
Location Q and V are blocked as security measures due to flood.

- (i) Lukis satu subgraf jika Rafi perlu bergerak dari P ke S.
Draw a subgraph if Rafi has to move from P to S.
[2 markah /marks]
- (ii) Hitung jarak, dalam km, laluan terpendek yang diambil oleh Rafi, jika purata lajunya ialah 35 kmj^{-1} .
Calculate the distance, in km, of the shortest route taken by Rafi, if his average speed is 35 kmh^{-1} .
[4 markah /marks]

Jawapan / Answer :

(i)

(ii)

Bahagian C

[15 markah / marks]

Jawab mana-mana **satu** soalan daripada bahagian ini.*Answer any **one** questions from this section.*

- 16 Umi merupakan seorang pengusaha kantin. Dia menjual pelbagai jenis makanan dan minuman.

Umi is a canteen operator. She sells various types of food and drink.

- (a) Diberi harga sebiji donat ialah 2 kali ganda harga sekeping sandwic. Qaseh membeli 3 biji donat dan sekeping sandwic. Dia membayar RM20.00 dan menerima baki sebanyak RM6.00. Hitungkan harga, dalam RM, sebiji donat.

Given that the price of a doughnut is 2 times the price of a sandwich. Qaseh bought 3 doughnuts and a sandwich. She paid RM20.00 and received a balance of RM6.00.

Calculate the price, in RM, of a doughnut.

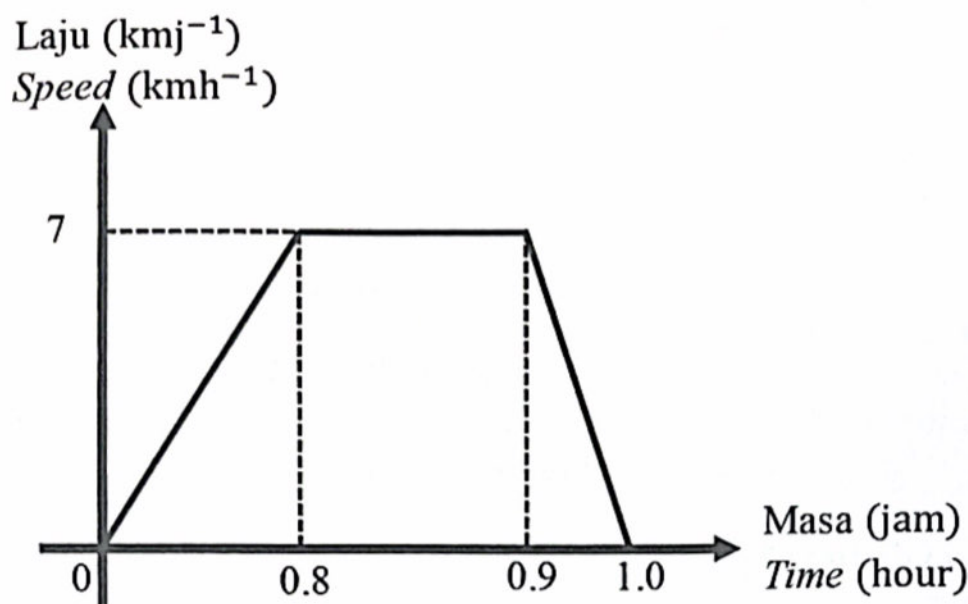
[2 markah / marks]

Jawapan / Answer :



- 16 (b) Setiap pagi, Umi ke pasar dengan menaiki van untuk membeli bahan mentah. Rajah 10 menunjukkan graf laju-masa pergerakan van Umi dalam tempoh 1 jam.

Every morning, Umi goes to the market by van to buy the raw materials. Diagram 10 shows the speed-time graph of Umi's van in 1 hour.



Rajah 10
Diagram 10

- (i) Nyatakan laju seragam, dalam kmj^{-1} , van itu.
State the uniform speed, in kmh^{-1} , of the van.
[1 markah / marks]
- (ii) Hitung kadar perubahan laju, dalam kmj^{-2} , bagi 0.8 jam pertama.
Calculate the rate of change of speed, in kmh^{-2} , for the first 0.8 hours.

[2 markah / marks]

Jawapan / Answer :

(i)

(ii)



- (c) Pada setiap hari Rabu, Umi akan menyediakan dua jenis menu istimewa iaitu nasi ayam dan mi kari. Pada waktu rehat sesi pertama sebanyak 238 pinggan nasi ayam dan 170 mangkuk mi kari telah dijual. Manakala pada waktu rehat sesi kedua sebanyak 189 pinggan nasi ayam dan 210 mangkuk mi kari telah terjual. Jumlah jualan yang diperolehi pada sesi pertama dan sesi kedua masing-masing ialah sebanyak RM1 955 dan RM1 890. Dengan menggunakan kaedah matriks, hitung harga, dalam RM, bagi sepinggan nasi ayam dan semangkuk mi kari.

Every Wednesday, Umi prepares two special menus, which are chicken rice and curry noodles. During the first session recess, 238 plates of chicken rice and 170 bowls of curry noodles were sold. Meanwhile, during the second session recess, 189 plates of chicken rice and 210 bowls of curry noodles were sold.

The total sales obtained in the first and second sessions were RM1 955 and RM1 890, respectively.

Using the matrix method, calculate the prices, in RM, for one plate of chicken rice and one bowl of curry noodles.

[5 markah / marks]

Jawapan / Answer :

- (d) Kantin Umi menjual x gelas jus mangga dan y gelas jus tembikai setiap hari. Maklumat jualan jus mangga dan jus tembikai dinyatakan dalam tiga ketaksamaan linear seperti berikut :
Umi's canteen sells x glasses of mango juice and y glasses of watermelon juice every day. The sales information of mango juice and watermelon juice is expressed in three linear inequalities as follows :

I	$x + y \leq 450$
II	$x - y \leq 0$
III	$x > 50$

- (i) Rajah 11 di ruang jawapan, lukis graf yang mewakili ketaksamaan linear yang diberi. Seterusnya lorek rantau yang memuaskan semua ketaksamaan tersebut.

Diagram 11 in the answer space, draw a graph representing the given linear inequality. Hence, shade the region that satisfies all the inequalities.

[3 markah / marks]

- (ii) Umi menetapkan sasaran untuk menjual 200 gelas jus mangga dan 280 gelas jus tembikai setiap sehari. Tentukan sama ada sasaran Umi dapat dicapai atau tidak. Justifikasikan jawapan anda.

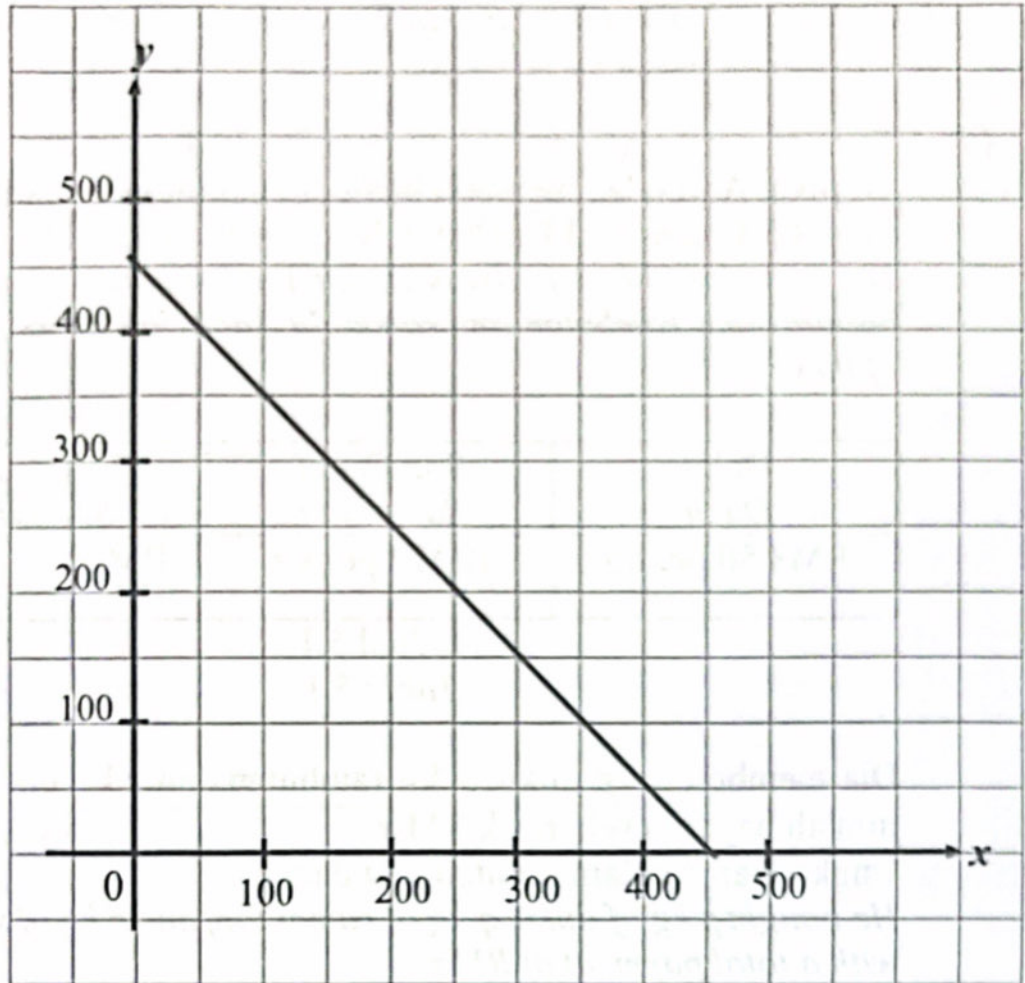
Umi sets a target to sell 200 glasses of mango juice and 280 glasses of watermelon juice per day.

Determine whether Umi's target can be achieved or not. Justify your answer.

[2 markah / marks]

Jawapan / Answer :

(i)



Rajah 11
Diagram 11

(ii)

- 17 Aqil telah menyertai lawatan sekolah ke Taman Botani pada hujung minggu lepas.

Aqil participated in a school trip to Taman Botani last weekend.

- (a) Tempat pertama yang dikunjungi ialah Taman Buah-buahan Tropika. Aqil telah membeli buah duku, rambutan dan ciku. Jadual 5.1 menunjukkan harga buah-buahan tersebut.

The first place he visited was Taman Buah-buahan Tropika. Aqil bought duku, rambutan, and sapodilla. Table 5.1 shows the prices of these fruits.

Duku <i>Duku</i>	Rambutan <i>Rambutan</i>	Ciku <i>Sapodilla</i>
RM8.50 per kg	RM12 per kg	RM10.90 per kg

Jadual 5.1

Table 5.1

Dia membeli p kg duku, q kg rambutan dan r kg ciku dengan jumlah bayaran sebanyak RM x .

Ungkapkan x dalam sebutan p , q dan r .

He bought p kg of duku, q kg of rambutan, and r kg of sapodilla with a total payment of RM x .

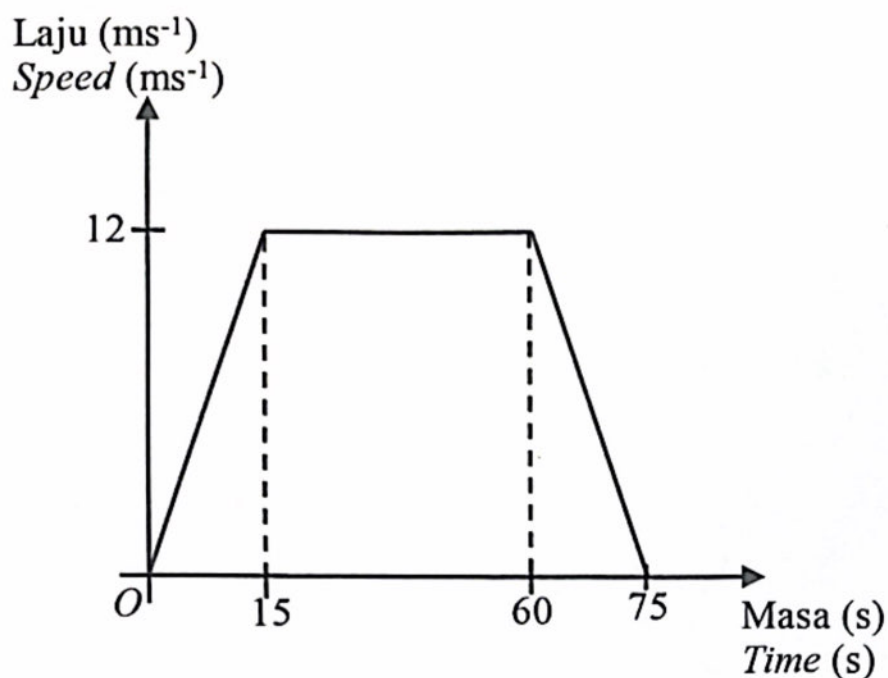
Express x in terms of p , q , and r .

[1 markah /marks]

Jawapan / Answer :

- (b) Aqil menaiki basikal dari Taman Buah-buahan Tropika ke Kampung Idaman. Rajah 11 menunjukkan graf laju-masa pergerakan basikal Aqil.

Aqil rides a bicycle from Taman Buah-buahan Tropika to Kampung Idaman. Diagram 11 shows the speed-time graph of Aqil's bicycle movement.



Rajah 11
Diagram 11

- (i) Huraikan gerakan basikal Aqil dari saat ke-15 hingga saat ke-60.

Describe the motion of Aqil's bicycle from 15th seconds to 60th seconds.

[1 markah /marks]

- (ii) Hitung jumlah jarak, dalam m, yang dilalui oleh Aqil.
Calculate the total distances, in m, traveled by Aqil.

[3 markah /marks]

Jawapan / Answer :

(i)

(ii)



(i) The graph shows that the temperature of the water increases from 0°C to 80°C in 4 seconds.

The water then remains at 80°C for 2 seconds (from t=4 to t=6).

[1 mark each]

(ii) The graph shows that the temperature of the water decreases from 80°C to 0°C in 2 seconds (from t=6 to t=8).

[1 mark each]

- (c) Setelah melawat Kampung Idaman, Aqil dan Rafiq berehat di Putters Cafe. Aqil membeli 2 gelas jus oren dan 3 keping sandwic daging dengan harga RM 64.70. Rafiq membeli segelas jus oren dan 4 keping sandwic daging dengan harga RM 7.40 lebih mahal daripada Aqil.

Dengan menggunakan kaedah matriks, hitung harga, dalam RM, segelas jus oren dan sekeping sandwic daging.

After visiting Kampung Idaman, Aqil and Rafiq rested at Putters Cafe. Aqil bought 2 glasses of orange juice and 3 pieces of meat sandwiches for RM 64.70. Rafiq bought a glass of orange juice and 4 pieces of meat sandwiches with a price of RM 7.40 more than Aqil.

Using the matrix method, calculate the price, in RM, of a glass of orange juice and a piece of meat sandwich.

[5 markah /marks]

Jawapan / Answer :

- (d) Aqil meneruskan lawatannya ke Taman Haiwan.
 Jadual 5.2 menunjukkan maklumat tentang burung unta, x , dan burung merak, y , yang terdapat di situ.
Aqil continued his visit to Taman Haiwan.
Table 5.2 shows the information about the ostriches, x , and the peacocks, y , which are found there.

Syarat <i>Condition</i>	Ketaksamaan linear <i>Linear inequality</i>
(I) Jumlah bilangan burung unta dan burung merak selebih-lebihnya 25 ekor. <i>The total number of ostriches and the peacocks is at most 25.</i>	$x + y \leq 25$
(II) Bilangan burung unta selebih-lebihnya tiga kali ganda bilangan burung merak. <i>The number of ostriches is at least three times the number of peacocks.</i>	

Jadual 5.2
 Table 5.2

- (i) Tulis satu ketaksamaan linear selain $x \geq 0$ dan $y \geq 0$ yang mewakili syarat (II).
Write a linear inequality other than $x \geq 0$ dan $y \geq 0$ that represents condition (II).
 [1 markah /marks]
- (ii) Seterusnya, pada Rajah 12 di ruang jawapan, lukis dan lorek rantau yang memuaskan sistem ketaksamaan linear di Jadual 5.2 dan $x \geq 0$, $y \geq 0$.
Hence, on the Diagram 12 in the answer space, draw and shade the region that satisfies the system of linear inequalities in Table 5.2 and $x \geq 0$, $y \geq 0$.
 [3 markah /marks]

- (iii) Seterusnya, berdasarkan graf di d(ii), adakah terdapat 20 ekor burung unta di Taman Haiwan itu? Justifikasikan jawapan anda.

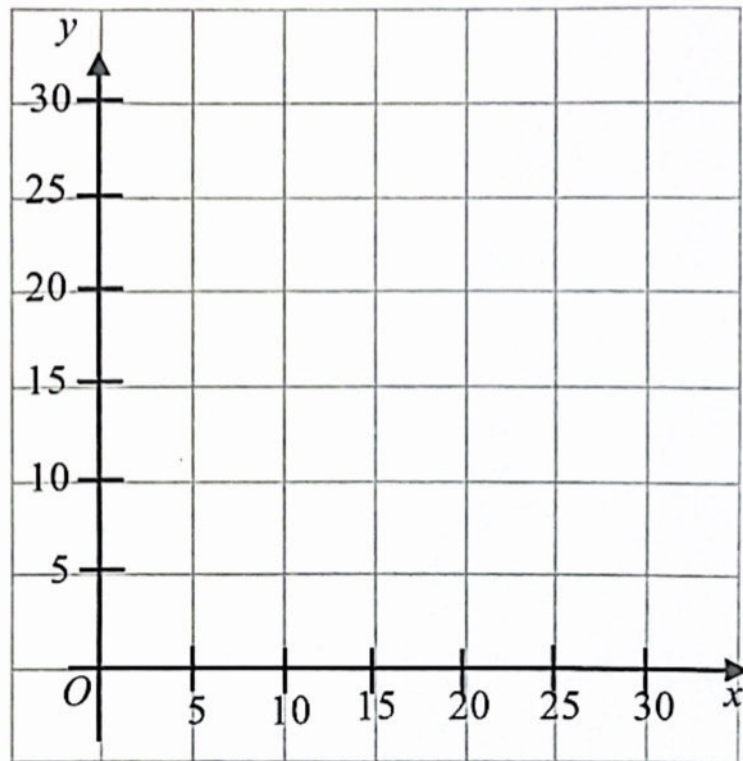
Hence, based on the graph in d(ii), are there 20 ostriches in Taman Haiwan? Justify your answer.

[1 markah /mark]

Jawapan / Answer :

(i)

(ii)



Rajah 12
Diagram 12

(iii)

KERTAS SOALAN TAMAT
END OF QUESTION PAPER