

NO. KAD PENGENALAN

ANGKA GILIRAN

						-			-					

NAMA: TINGKATAN:



**MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SELANGOR**

PENILAIAN INTERVENSI TERBILANG AKADEMIK SELANGOR (PINTAS) 2025

MATEMATIK TINGKATAN 5

1449/2

Kertas 2

2 jam 30 minit

**JANGAN BUKA KERTAS
PEPERIKSAAN INI SEHINGGA
DIBERITAHU**

1. Tulis nombor kad pengenalan, angka giliran, nama dan tingkatan anda pada petak yang disediakan.
2. Kertas peperiksaan ini mengandungi tiga bahagian: *Bahagian A*, *Bahagian B* dan *Bahagian C*.
3. Jawapan hendaklah ditulis pada ruang jawapan yang disediakan di dalam kertas peperiksaan ini.
4. Kertas peperiksaan ini adalah dalam dwibahasa.
5. Jawapan boleh ditulis dalam bahasa Melayu / bahasa Inggeris.
6. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. Kerja mengira anda mesti ditunjukkan.

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

Kertas peperiksaan ini mengandungi 40 halaman bercetak.

NOMBOR DAN OPERASI NUMBERS AND OPERATIONS

- | | |
|--|--|
| <p>1 $a^m \times a^n = a^{m+n}$</p> <p>3 $(a^m)^n = a^{mn}$</p> <p>5 $a^{\frac{m}{n}} = (a^m)^{\frac{1}{n}} = \left(a^{\frac{1}{n}}\right)^m$</p> <p>7 Faedah mudah / <i>Simple interest</i>,
$I = Prt$</p> <p>9 Jumlah bayaran balik / <i>Total repayment</i>, $A = P + Prt$</p> <p>10 $\text{Premium} = \frac{\text{Nilai muka polisi}}{\text{RMx}} \times (\text{Kadar premium per RMx})$
 $\text{Premium} = \frac{\text{Face value of policy}}{\text{RMx}} \times (\text{Premium rate per RMx})$</p> <p>11 Jumlah insurans yang harus dibeli = $\left(\frac{\text{Peratusan}}{\text{ko-insurans}}\right) \times \left(\frac{\text{Nilai boleh}}{\text{insurans harta}}\right)$
 $\text{Amount of required insurance} = \left(\frac{\text{Percentage of}}{\text{co-insurance}}\right) \times \left(\frac{\text{Insurable value}}{\text{of property}}\right)$</p> | <p>2 $a^m \div a^n = a^{m-n}$</p> <p>4 $a^{\frac{1}{n}} = \sqrt[n]{a}$</p> <p>6 $a^{\frac{m}{n}} = \sqrt[n]{a^m} = \left(\sqrt[n]{a}\right)^m$</p> <p>8 Nilai matang / <i>Maturity value</i>,
$MV = P\left(1 + \frac{r}{n}\right)^n$</p> |
|--|--|

PERKAITAN DAN ALGEBRA RELATIONSHIP AND ALGEBRA

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

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 $= \frac{1}{2} \times \text{hasil darab panjang dua pepenjuru}$
Area of kite $= \frac{1}{2} \times \text{product of two diagonals}$
- 8 Luas trapezium $= \frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$
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 $= \text{luas keratan rentas} \times \text{tinggi}$
Volume of prism $= \text{area of cross section} \times \text{height}$
- 13 Isi padu silinder $= \pi r^2 h$
Volume of cylinder $= \pi r^2 h$

- 14 Isi padu kon $= \frac{1}{3} \pi r^2 h$
Volume of cone $= \frac{1}{3} \pi r^2 h$
- 15 Isi padu sfera $= \frac{4}{3} \pi r^3$
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 $= k^2 \times \text{area of object}$

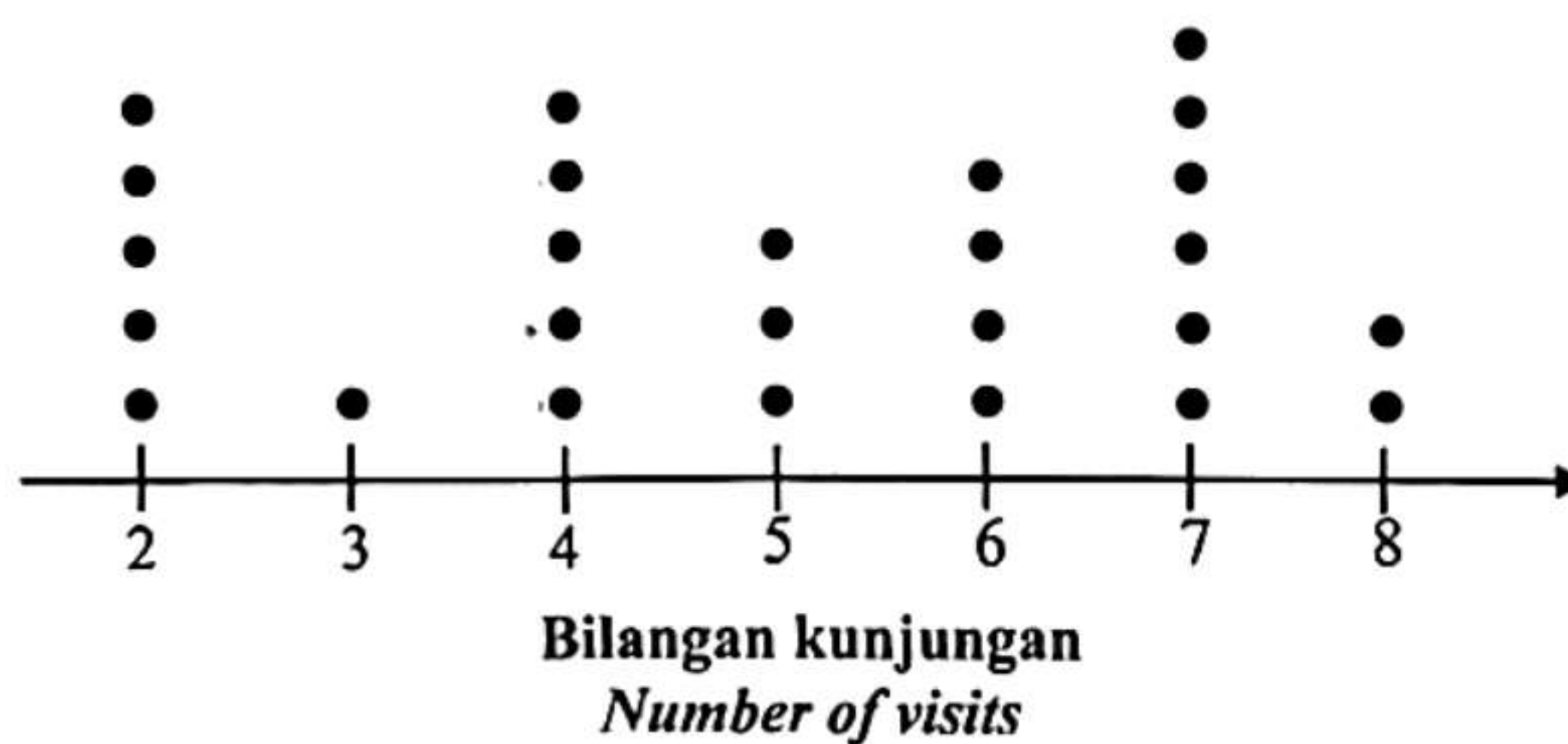
STATISTIK DAN KEBARANGKALIAN
STATISTICS AND PROBABILITY

- 1 Min/ Mean, $\bar{x} = \frac{\sum x}{N}$
- 2 Min / Mean, $\bar{x} = \frac{\sum fx}{\sum f}$
- 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]
Jawab semua soalan.

- 1 Rajah 1 menunjukkan plot titik bagi 26 orang murid yang mengunjungi pusat sumber sekolah dalam masa seminggu.

Diagram 1 shows the dot plot for 26 students visiting the school library in a week.



Rajah 1
 Diagram 1

- (a) Nyatakan mod.
 State the mode.

[1 markah]
 [1 mark]

- (b) Hitung min.
 Calculate the mean.

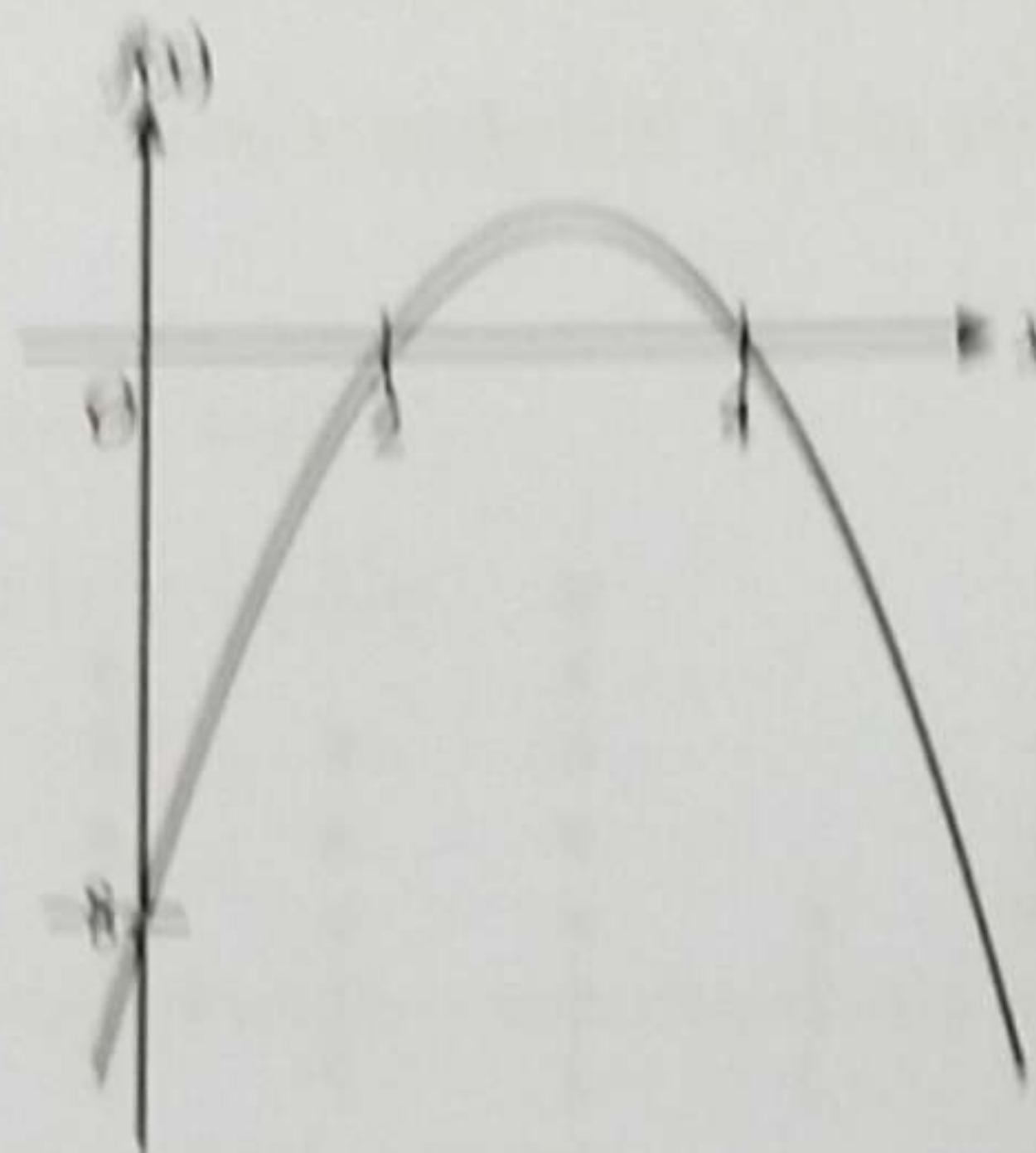
[2 markah]
 [2 marks]

Jawapan / Answer:

(a)

(b)

3. Rajah 2 menunjukkan suatu graf fungsi kuadratik $f(x) = -x^2 + 6x = k$;
 Diagram 2 shows graph of a quadratic function $f(x) = -x^2 + 6x = k$;



Rajah 2
Diagram 2

Berdasarkan Rajah 2,
Based on Diagram 2,

- (a) nyatakan nilai k . [1 markah]
 state the value of k . [1 mark]
- (b) tentukan koordinat titik maksimum bagi fungsi kuadratik tersebut. [2 markah]
 determine the coordinates of the maximum point for the quadratic function. [2 marks]

Jawapan / answer:

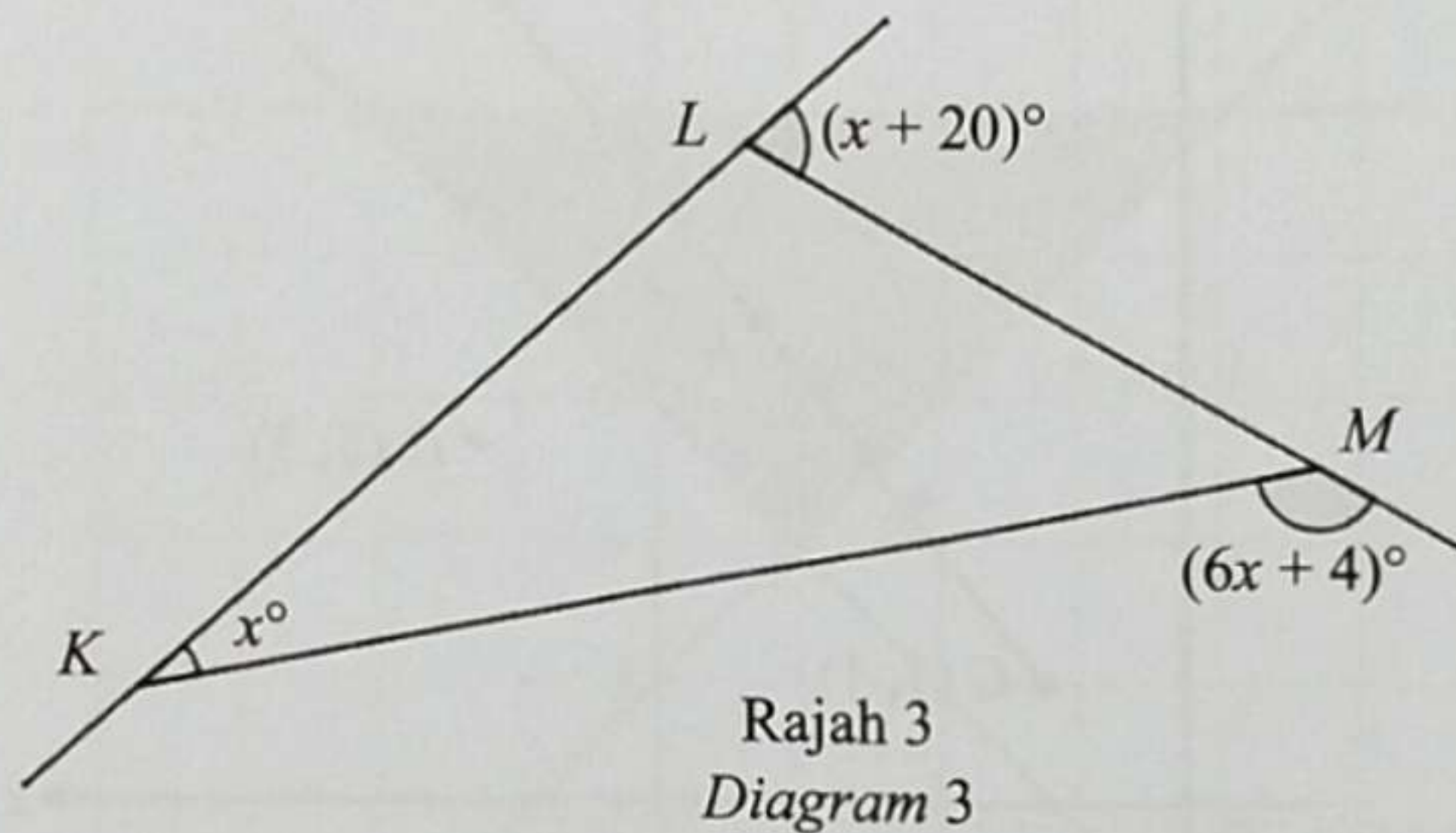
(a)

(b)

- 3 (a) Hitung bilangan segi tiga yang terbentuk bagi poligon 12 sisi.
Calculate the number of triangles formed for 12-sided polygon.

[1 markah]
[1 mark]

- (b) Rajah 3 menunjukkan sebuah segi tiga KLM .
Diagram 3 shows a triangle KLM .



Cari nilai x .
Find the value of x .

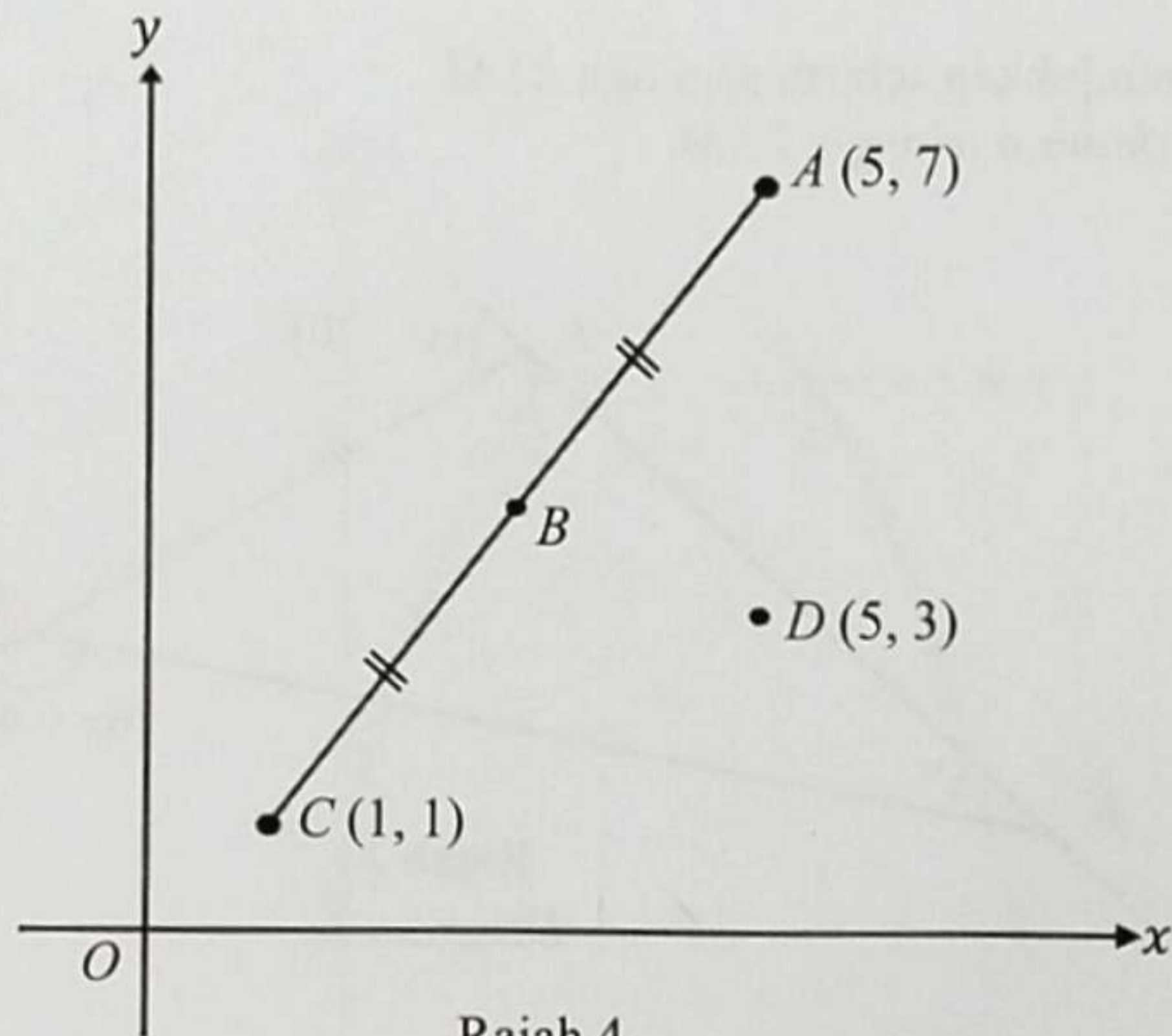
[2 markah]
[2 marks]

Jawapan / Answer:

(a)

(b)

- 4 Rajah 4 menunjukkan garis lurus AC yang berada pada suatu satah Cartes.
Diagram 4 shows the straight line AC lies on the Cartesian plane.



Rajah 4
Diagram 4

Cari
Find

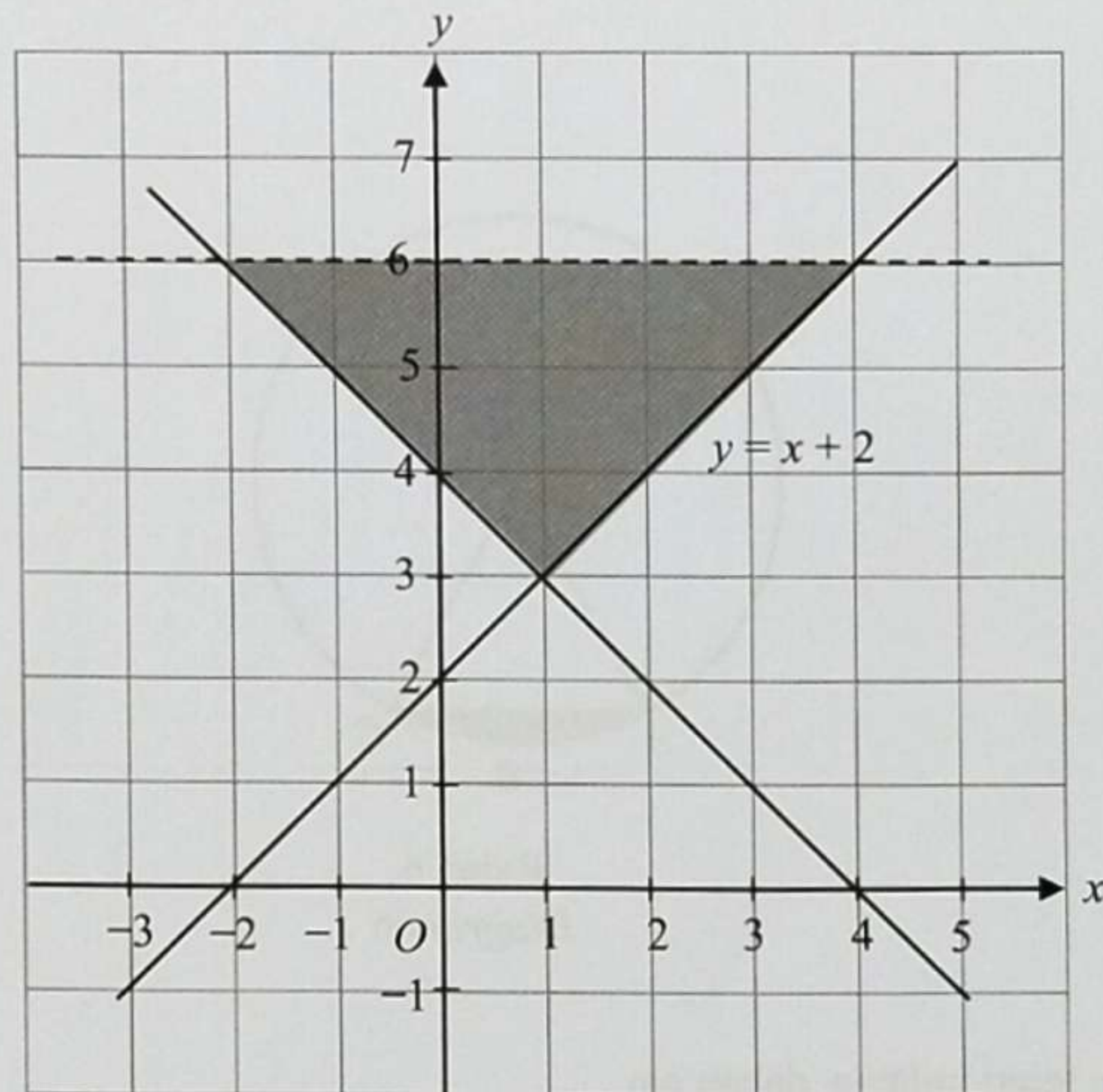
- (a) koordinat titik B . [2 markah]
the coordinates of point B . [2 marks]
- (b) persamaan garis lurus yang selari dengan garis AC dan melalui titik D . [3 markah]
the equation of straight line that is parallel to line AC and passes through point D . [3 marks]

Jawapan / *Answer:*

(a)

(b)

- 5 Rajah 5 menunjukkan satu sistem ketaksamaan linear pada satah Cartes.
Diagram 5 shows a system of linear inequalities on a Cartesian plane.



Rajah 5
Diagram 5

- (a) Tuliskan tiga ketaksamaan linear yang memuaskan rantau berlorek.
Write three linear inequalities that satisfy the shaded region. [3 markah]
[3 marks]
- (b) Daripada graf, nyatakan julat bagi x jika $y = 4$.
From the graph, state the range of x if $y = 4$. [1 markah]
[1 mark]

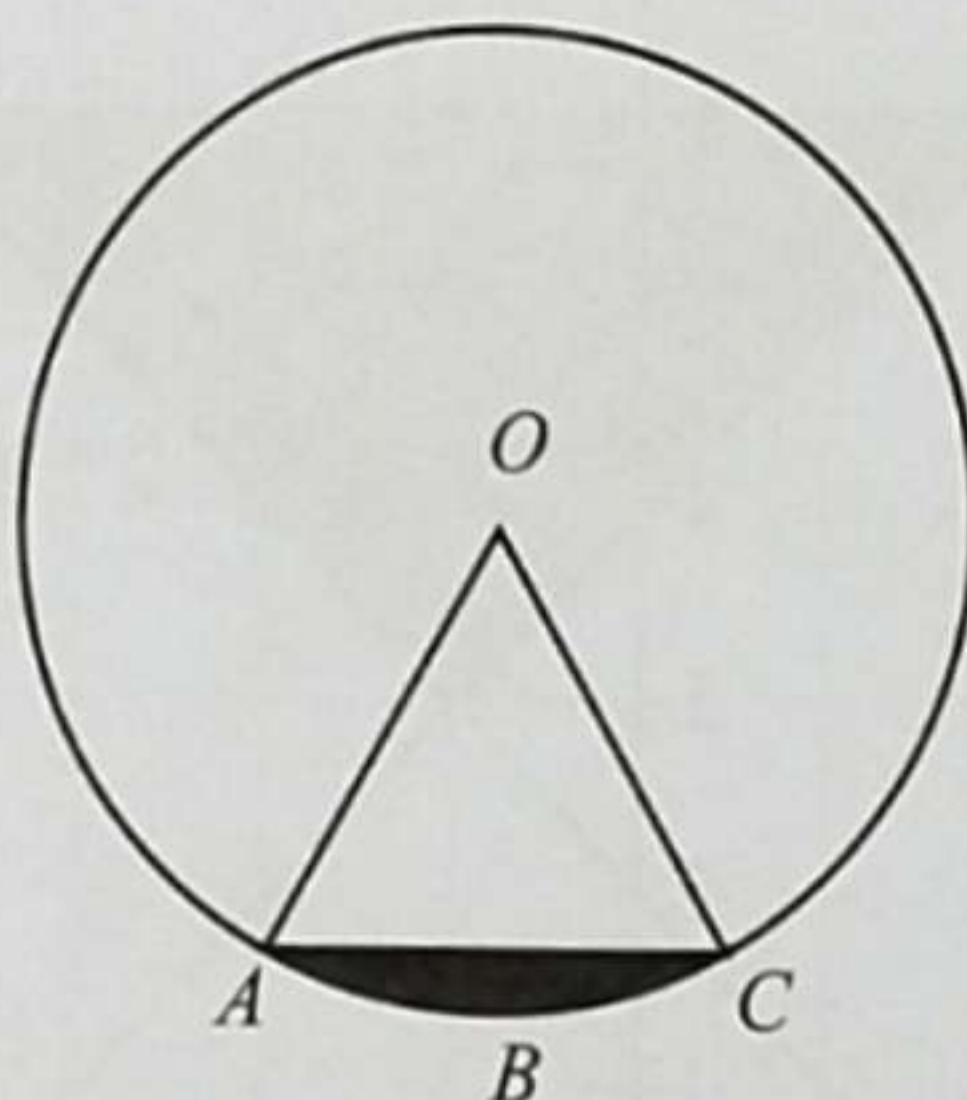
Jawapan / Answer:

(a)

(b)

- 6 Rajah 6 menunjukkan sebuah bulatan yang berpusat di O . OAC ialah segi tiga sama sisi dengan perimeter 48 cm.

Diagram 6 shows a circle with a centre O . OAC is an equilateral triangle with a perimeter 48 cm.



Rajah 6
Diagram 6

- (a) Nyatakan jejari bulatan, dalam cm.
State the radius of the circle, in cm.

[1 markah]
[1 mark]

- (b) Menggunakan $\pi = \frac{22}{7}$, cari

Menggunakan $\pi = \frac{22}{7}$, find

- (i) luas sektor OAC , dalam cm^2 .
area of sector OAC , in cm^2 .
- (ii) luas kawasan berlorek, dalam cm^2 .
area of the shaded region, in cm^2 .

[2 markah]
[2 marks]

[2 markah]
[2 marks]

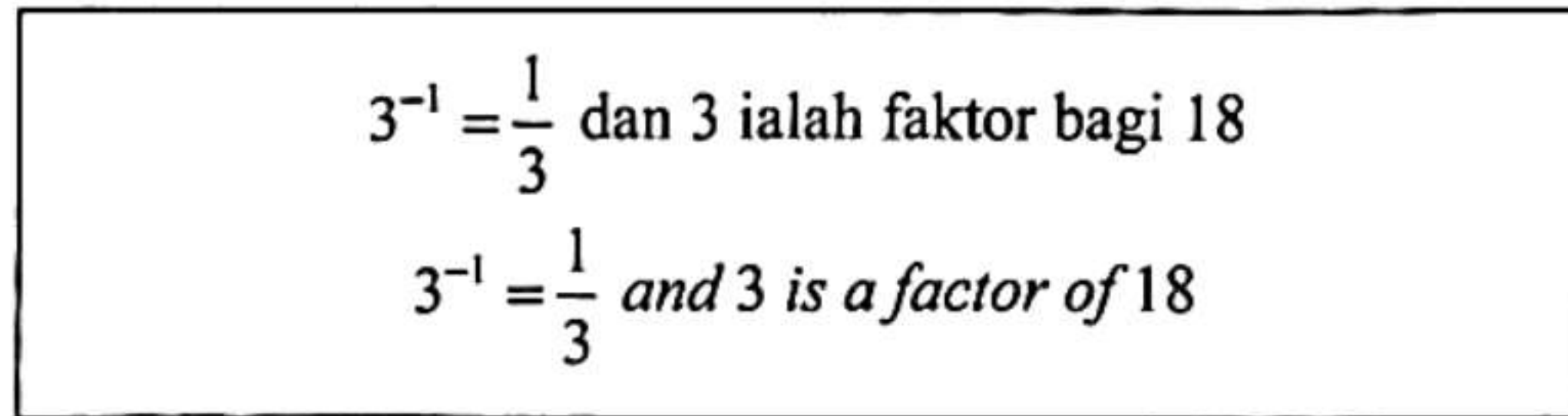
Jawapan / Answer:

(a)

(b) (i)

(ii)

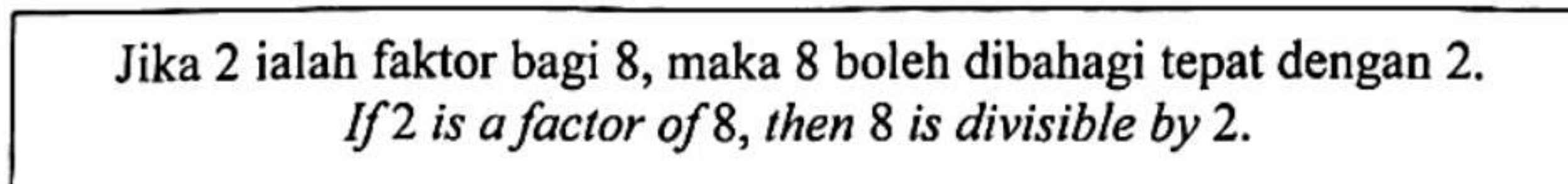
- 7 (a) Nyatakan sama ada pernyataan majmuk dalam Rajah 7 adalah benar atau palsu.
State whether the compound statement in Diagram 7 is true or false.



Rajah 7
Diagram 7

[1 markah]
[1 mark]

- (b) Tuliskan satu kontrapositif bagi implikasi dalam Rajah 8.
Write a contrapositive for the implication in Diagram 8.



Rajah 8
Diagram 8

[1 markah]
[1 mark]

- (c) Buat satu kesimpulan umum secara induktif bagi urutan nombor 6, 22, 48, 84, ... yang mengikut pola berikut:
Make a general conclusion by induction for the sequence of numbers 6, 22, 48, 84, ... which follows the following pattern:

$$\begin{aligned}6 &= 5(1)^2 + 1 \\22 &= 5(2)^2 + 2 \\48 &= 5(3)^2 + 3 \\84 &= 5(4)^2 + 4 \\&\text{M}\end{aligned}$$

[2 markah]
[2 marks]

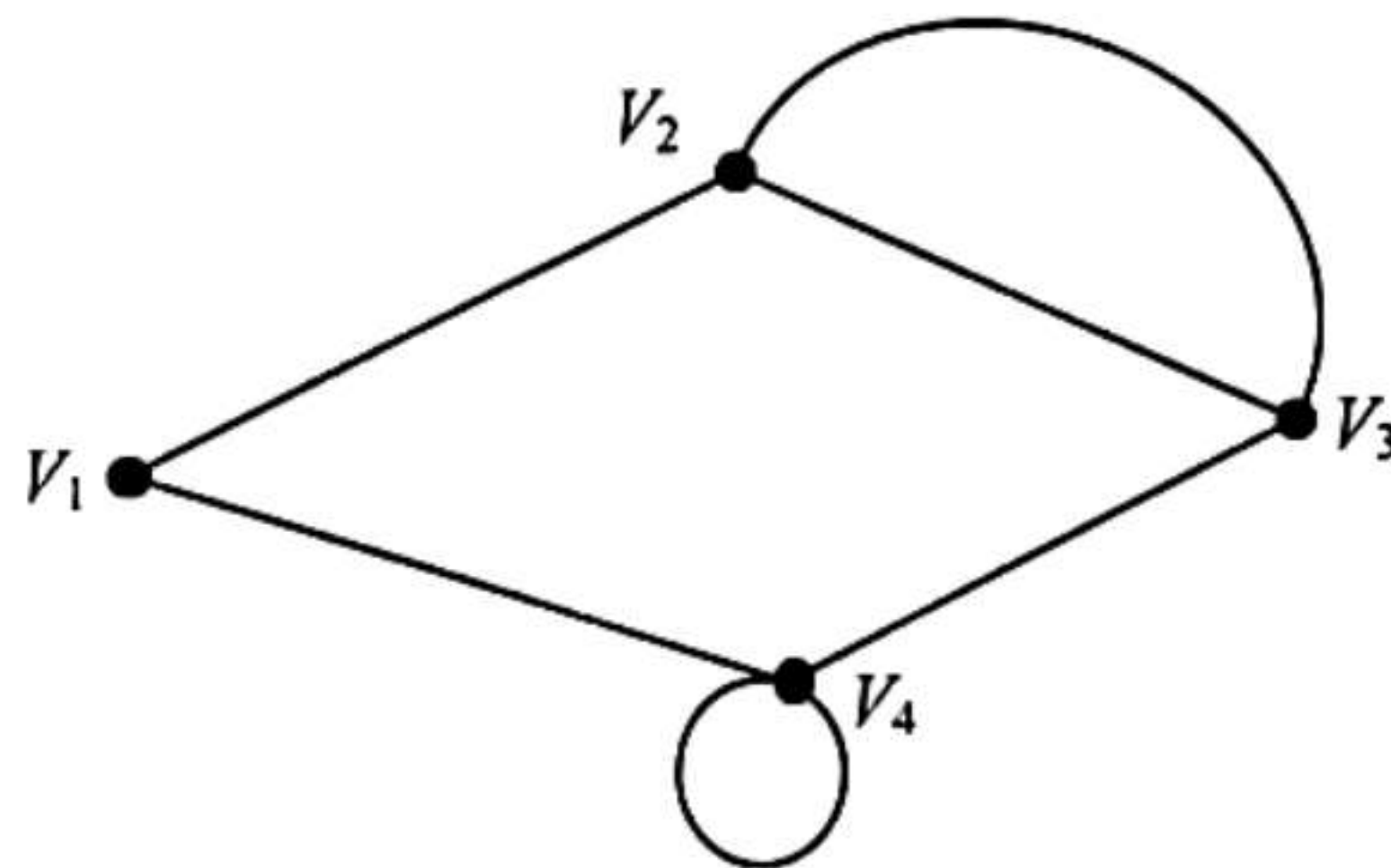
Jawapan / *Answer*:

(a)

(b) Kontrapositif / *Contrapositive*:

(c) Kesimpulan / *Conclusion*:

- 8 (a) Rajah 9 menunjukkan suatu graf yang mempunyai gelung dan berbilang tepi.
Diagram 9 shows a graph with a loop and multiple edges.



Rajah 9
Diagram 9

Nyatakan
State

(i) V .

[1 markah]
[1 mark]

(ii) bilangan darjah bagi graf tersebut.
sum of degrees for the graph.

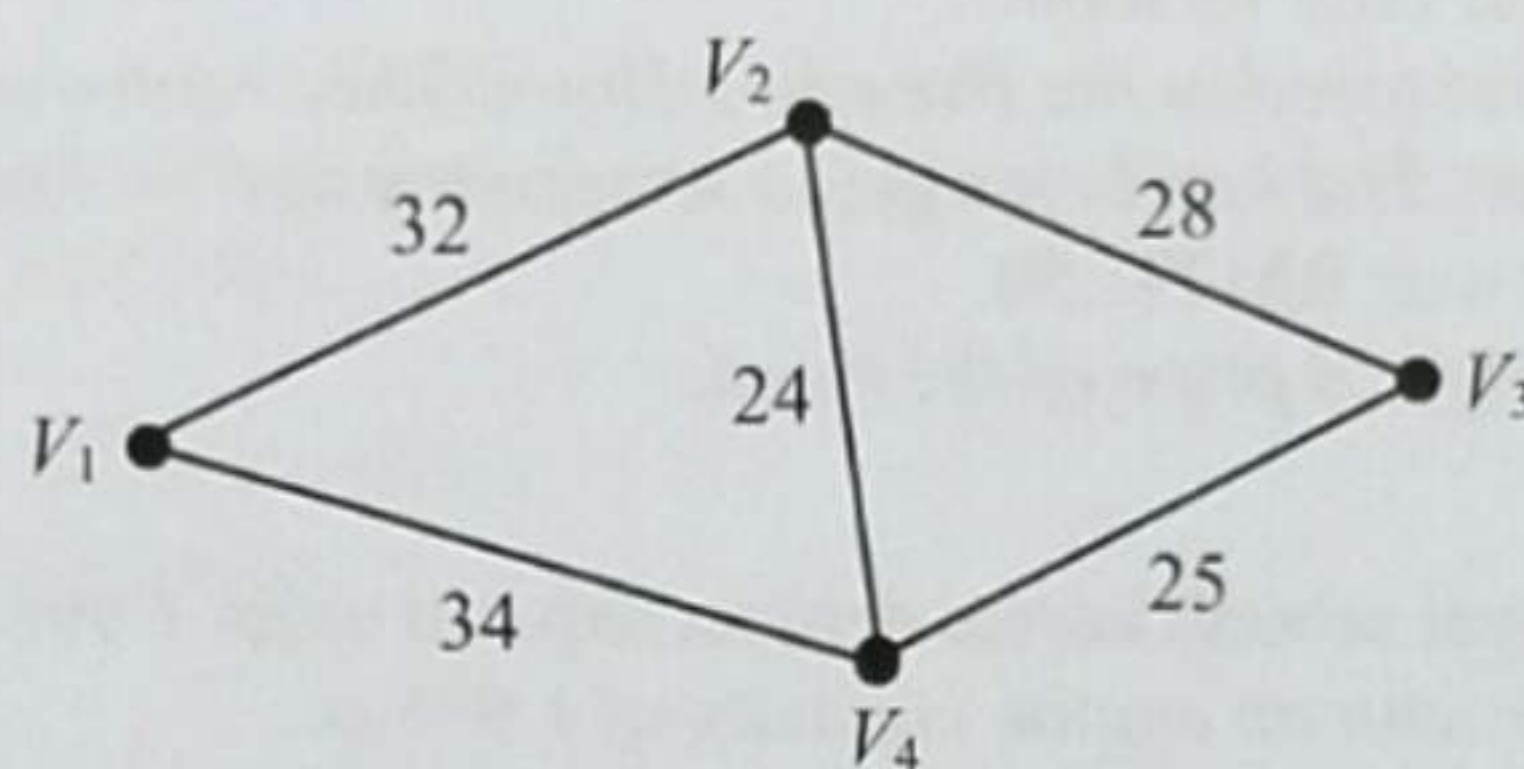
[1 markah]
[1 mark]

Jawapan / *Answer:*

(a) (i)

(ii)

- (b) Rajah 10 menunjukkan suatu graf tak terarah dan berpemberat.
Diagram 10 shows an undirected weighted graph.



Rajah 10
Diagram 10

- (i) Lukis satu pokok dengan jumlah pemberat yang minimum. [2 markah]
Draw a tree with the minimum total weight. [2 marks]
- (ii) Seterusnya, nyatakan jumlah pemberat minimum. [1 markah]
Hence, state the minimum total weight. [1 mark]

Jawapan / Answer:

(b) (i)

(ii)

- 9 (a) Alysa dan Shanti telah menginap di Hotel Premiera. Mereka telah menyewa sebuah bilik untuk dua hari satu malam. Hotel tersebut mengenakan cukai perkhidmatan sebanyak 6%. Jumlah harga bilik termasuk cukai yang dikenakan ialah RM291.50.

Hitung harga asal bilik tersebut.

[2 markah]

Alysa and Shanti stayed at the Premiera Hotel. They rented a room for two days and one night at the hotel. The hotel charged a service tax of 6%. The total room price including the tax imposed was RM291.50.

Calculate the original price of the room.

[2 marks]

- (b) Shanti mempunyai sebuah kereta dengan kapasiti enjin 1 993 cc.

Shanti has a car with an engine capacity of 1 993 cc.

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>
1 401 cc – 1 600 cc	RM90.00	-
1 601 cc – 1 800 cc	RM200.00	+RM0.40 setiap cc melebihi 1 600 cc +RM0.40 per cc above 1 600 cc
1 801 cc – 2 000 cc	RM280.00	+RM0.50 setiap cc melebihi 1 800 cc +RM0.50 per cc above 1 800 cc
2 001 cc – 2 500 cc	RM380.00	+RM1.00 setiap cc melebihi 2 000 cc +RM1.00 per cc above 2 000 cc

Jadual 1

Table 1

Berdasarkan Jadual 1, hitung cukai jalan yang perlu dibayar oleh Shanti.

[2 markah]

Based on Table 1, calculate the road tax that Shanti needs to pay.

[2 marks]

Jawapan / Answer:

(a)

(b)

- 10 Pendapatan seorang peniaga durian, RMx , berubah secara langsung dengan bilangan durian yang dijual, y biji, dan berkadar songsang dengan bilangan hari hujan, z hari. Apabila hujan selama dua hari, peniaga tersebut berjaya menjual 100 biji durian dan memperoleh pendapatan sebanyak RM2 500.

The income of the durian seller, RMx , varies directly as the number of durians sold, y , and varies inversely as the number of rainy days, z . On two rainy days, the seller successfully sold 100 durians and earned RM2 500.

- (a) Ungkapkan x dalam sebutan y dan z . [2 markah]
Express x in terms of y and z . [2 marks]

- (b) Hitung bilangan durian yang dijual sekiranya peniaga itu memperoleh pendapatan RM500 apabila hujan selama tiga hari. [2 markah]
Calculate the number of durians sold if the seller obtained income of RM500 in three rainy days. [2 marks]

Jawapan / Answer:

(a)

(b)

Bahagian B

[45 markah]

Jawab **semua** soalan.

- 11 (a) Encik Arsyad telah membeli sebuah rumah yang diinsuranskan dengan insurans kebakaran yang mempunyai peruntukan ko-insurans 85% daripada nilai boleh insurans rumahnya. Syarikat insurans menetapkan bahawa nilai boleh insurans rumah tersebut ialah RM550 000 dan deduktibel sebanyak RM8 000.

Encik Arsyad has purchased a house which is insured with fire insurance which has a co-insurance provision of 85% of the insurable value of his house. The insurance company has determined that the insurable value of the house is RM550 000 and the deductible is RM8 000.

- (i) Hitung jumlah insurans yang harus dibeli oleh Encik Arsyad bagi rumah tersebut.

[1 markah]

Calculate the amount of required insurance that Encik Arsyad should purchase for the house.

[1 mark]

- (ii) Jika Encik Arsyad menginsuranskan rumahnya dengan jumlah sebanyak RM400 000, hitung bayaran pampasan yang akan diterima jika rumahnya mengalami kebakaran dan kerugian sebanyak RM45 500.

[2 markah]

If Encik Arsyad insured his house for an amount of RM400 000, calculate the compensation that he will receive if his house caught on fire and his amount of losses was RM45 500.

[2 marks]

- (iii) Setahun kemudian, keseluruhan rumah Encik Arsyad hangus terbakar. Hitung jumlah pampasan yang akan diterima sekiranya dia menginsuranskan rumahnya dengan jumlah seperti di (a)(ii).

[2 markah]

A year later, Encik Arsyad's house was completely burnt down.

Calculate the amount of compensation he will receive if he insured his house with the amount in (a)(ii).

[2 marks]

- (b) Puan Sofea bekerja sebagai seorang pegawai pemasaran di Kuala Lumpur dengan gaji bersih sebanyak RM7 200. Perbelanjaan tetap bulannya adalah sebanyak RM3 550 dan perbelanjaan tidak tetap bulannya pula sebanyak RM2 750.

Puan Sofea telah menetapkan 10% daripada gajinya sebagai simpanan tetap bulanan.

Hitung aliran tunai Puan Sofea.

[3 markah]

Puan Sofea works as a marketing officer in Kuala Lumpur with a net salary of RM7 200.

Her monthly fixed expenses are RM3 550 and her monthly variable expenses are

RM2 750. Puan Sofea has set aside 10% of her salary as a monthly fixed savings.

Calculate Puan Sofea's cash flow.

[3 marks]

Jawapan / Answer:

(a) (i)

(ii)

(iii)

(b)

- 12 Jadual 2 menunjukkan sebahagian maklumat perjalanan bas bagi lawatan yang melibatkan sekumpulan murid dari SMK Batu Terapi.

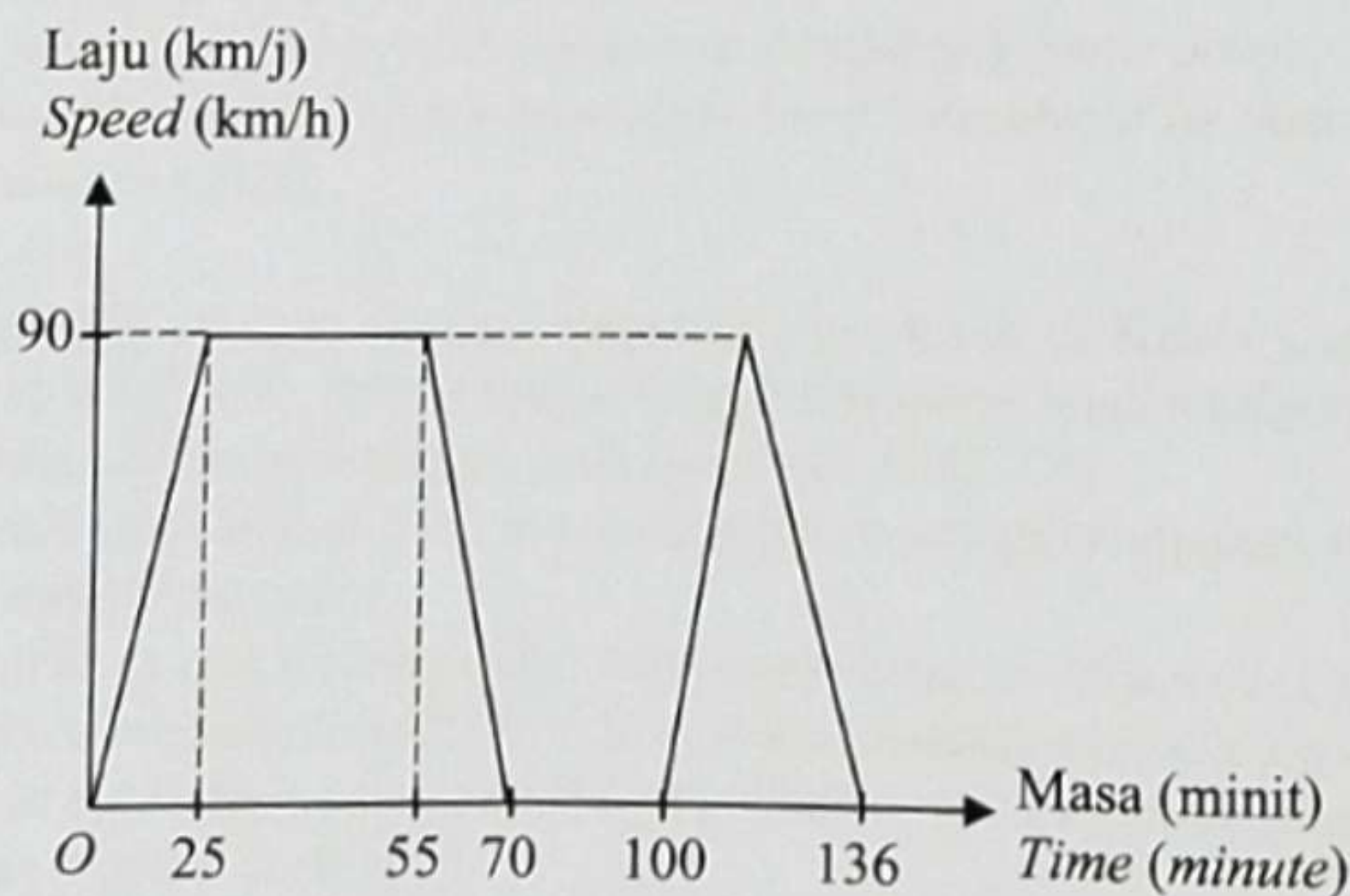
Table 2 shows part of travel information of the bus for a trip involving a group of pupils from SMK Batu Terapi.

Masa Time	Huraian Description
11:00 a.m.	Bertolak dari SMK Batu Terapi <i>Depart from SMK Batu Terapi</i>
12:10 p.m.	Berhenti rehat di hentian rehat Dengkil untuk makan tengah hari <i>Stop at the Dengkil rest area for lunch</i>
12:40 p.m.	Bertolak ke Taman Botani, Putrajaya <i>Depart to Taman Botani, Putrajaya</i>
1:16 p.m.	Tiba di Taman Botani, Putrajaya <i>Arrive at Taman Botani, Putrajaya</i>

Jadual 2
Table 2

Berdasarkan maklumat dalam Jadual 2, graf laju-masa bagi pergerakan bas itu dilukis seperti yang ditunjukkan dalam Rajah 11.

Based on the information in Table 2, the speed-time graph of the motion of the bus is drawn as shown in Diagram 11.



Rajah 11
Diagram 11

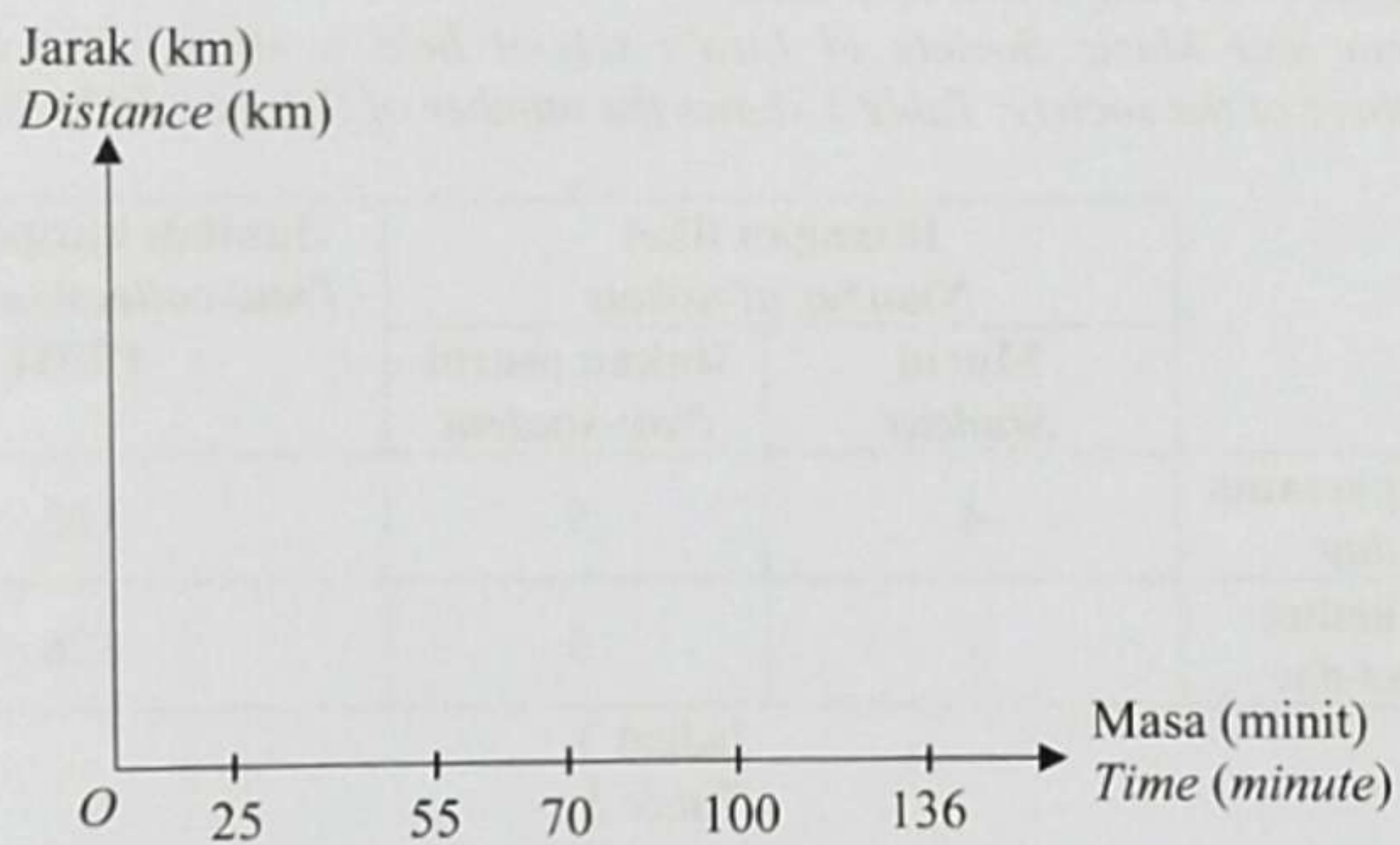
- (a) (i) Hitung jarak, dalam km, bas itu bagi 36 minit yang terakhir.
Calculate the distance, in km, of the bus for the last 36 minutes.
- (ii) Seterusnya, huraikan pergerakan bas itu bagi 36 minit yang terakhir.
Hence, describe the motion of the bus for the last 36 minutes.
- [3 markah]
[3 marks]
- (b) Rajah 12 pada ruang jawapan menunjukkan graf jarak-masa yang tidak lengkap. Dengan merujuk pada Rajah 11, lengkapkan graf jarak-masa itu. [2 markah]
Diagram 12 in the answer space shows an incomplete distance-time graph. By referring to Diagram 11, complete the distance-time graph. [2 marks]
- (c) Berdasarkan Rajah 12 yang dilukis di 12(b), hitung laju purata, dalam km/j, bas tersebut. [2 markah]
Based on Diagram 12 drawn in 12(b), calculate the average speed, in km/h, of the bus. [2 marks]
- (d) Kos petrol untuk perjalanan pergi dan balik ke Taman Botani, Putrajaya ditanggung oleh PIBG SMK Batu Terapi. Kadar peruntukan kos petrol ialah RM1.20 bagi setiap kilometer, dengan jumlah keseluruhan yang diluluskan sebanyak RM300 untuk perjalanan tersebut. Adakah RM300 mencukupi untuk perjalanan tersebut? Justifikasi jawapan anda dengan pengiraan. [2 markah]
The fuel cost for the round trip to Taman Botani, Putrajaya is sponsored by the PIBG of SMK Batu Terapi. The allocated rate is RM1.20 per kilometre, with a total approved amount of RM300 for the journey.
Is RM300 sufficient for the journey? Justify your answer by calculation. [2 marks]

Jawapan / Answer:

(a) (i)

(ii)

(b)



Rajah 12
Diagram 12

(c)

(d)

13 (a) Diberi $\begin{pmatrix} 1 & 2 \\ m & \frac{3}{2} \end{pmatrix} \begin{pmatrix} 3 & -4 \\ -1 & 2 \end{pmatrix} = I$.

Hitung nilai m .

[2 markah]

Given $\begin{pmatrix} 1 & 2 \\ m & \frac{3}{2} \end{pmatrix} \begin{pmatrix} 3 & -4 \\ -1 & 2 \end{pmatrix} = I$.

Calculate the value of m .

[2 marks]

- (b) (i) Persatuan Drama dan Muzik sekolah Lisa mengadakan satu pertunjukan. Lisa merupakan salah seorang ahli persatuan tersebut. Jadual 3 menunjukkan bilangan tiket yang dijual oleh Lisa.

Drama and Music Society of Lisa's school held a show. Lisa is one of the members of the society. Table 3 shows the number of tickets sold by Lisa.

	Bilangan tiket <i>Number of tickets</i>		Jumlah kutipan tiket <i>Total collection of ticket (RM)</i>
	Murid <i>Student</i>	Bukan murid <i>Non-student</i>	
Hari pertama <i>First day</i>	4	5	102
Hari kedua <i>Second day</i>	7	5	126

Jadual 3
Table 3

Tulis dua persamaan linear untuk mewakili situasi di atas. Seterusnya, dengan menggunakan kaedah matriks, hitung harga sekeping tiket murid dan sekeping tiket bukan murid.

[5 markah]

Write two linear equations to represent the situation above. Hence, by using matrix method, calculate the price of one student ticket and non-student ticket.

[5 marks]

- (ii) Mira mempunyai RM100. Dia ingin membeli 5 keping tiket murid dan 7 keping tiket bukan murid.

Adakah dia mempunyai wang yang cukup untuk membeli tiket tersebut? Justifikasikan jawapan anda dengan menggunakan pendaraban matriks.

[3 markah]

Mira has RM100. She wants to buy 5 student tickets and 7 non-student tickets.

Does she have enough money to buy the tickets? Justify your answer by using matrix multiplication.

[3 marks]

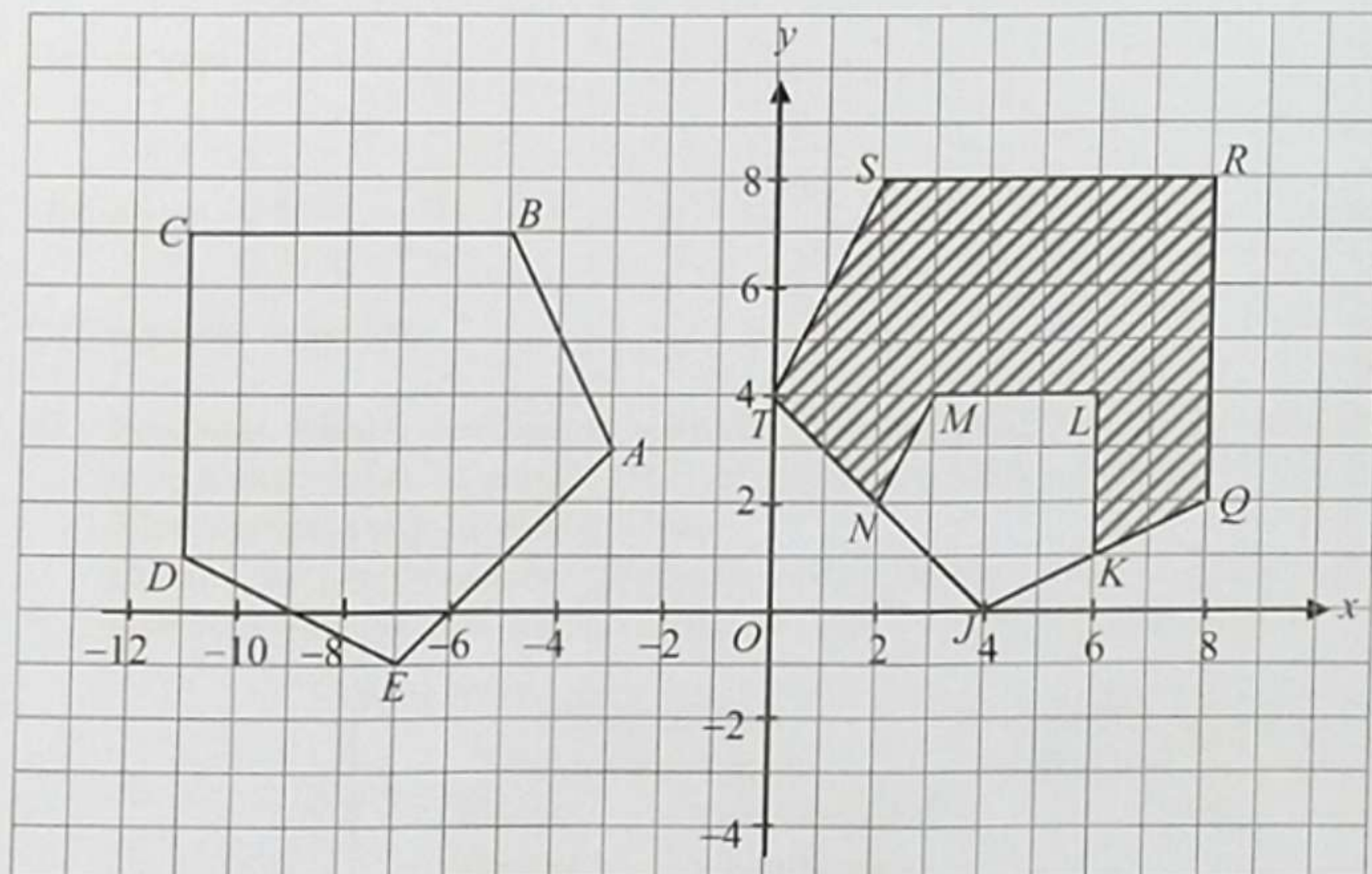
Jawapan / Answer:

(a)

(b) (i)

(ii)

- 14 Rajah 13 menunjukkan pentagon $JKLMN$, $JQRST$ dan $ABCDE$ dilukis pada suatu satah Cartes. *Diagram 13 shows the pentagons $JKLMN$, $JQRST$ and $ABCDE$ drawn on a Cartesian plane.*



Rajah 13
Diagram 13

- (a) Pentagon $ABCDE$ ialah imej bagi pentagon $JKLMN$ di bawah gabungan transformasi UV . Perihalkan selengkapnya transformasi:
Pentagon $ABCDE$ is the image of pentagon $JKLMN$ under the combined transformation UV .

Describe in full the transformation:

- (i) V
(ii) U

[6 markah]
[6 marks]

- (b) Diberi pentagon $ABCDE$ mewakili suatu kawasan yang mempunyai luas 192 cm^2 . Hitung luas, dalam cm^2 , kawasan berlorek.
Given that pentagon $ABCDE$ represents a region with area 192 cm^2 . Calculate the area, in cm^2 , of the shaded region.

[3 markah]
[3 marks]

Jawapan / Answer:

(a) (i)

(ii)

(b)

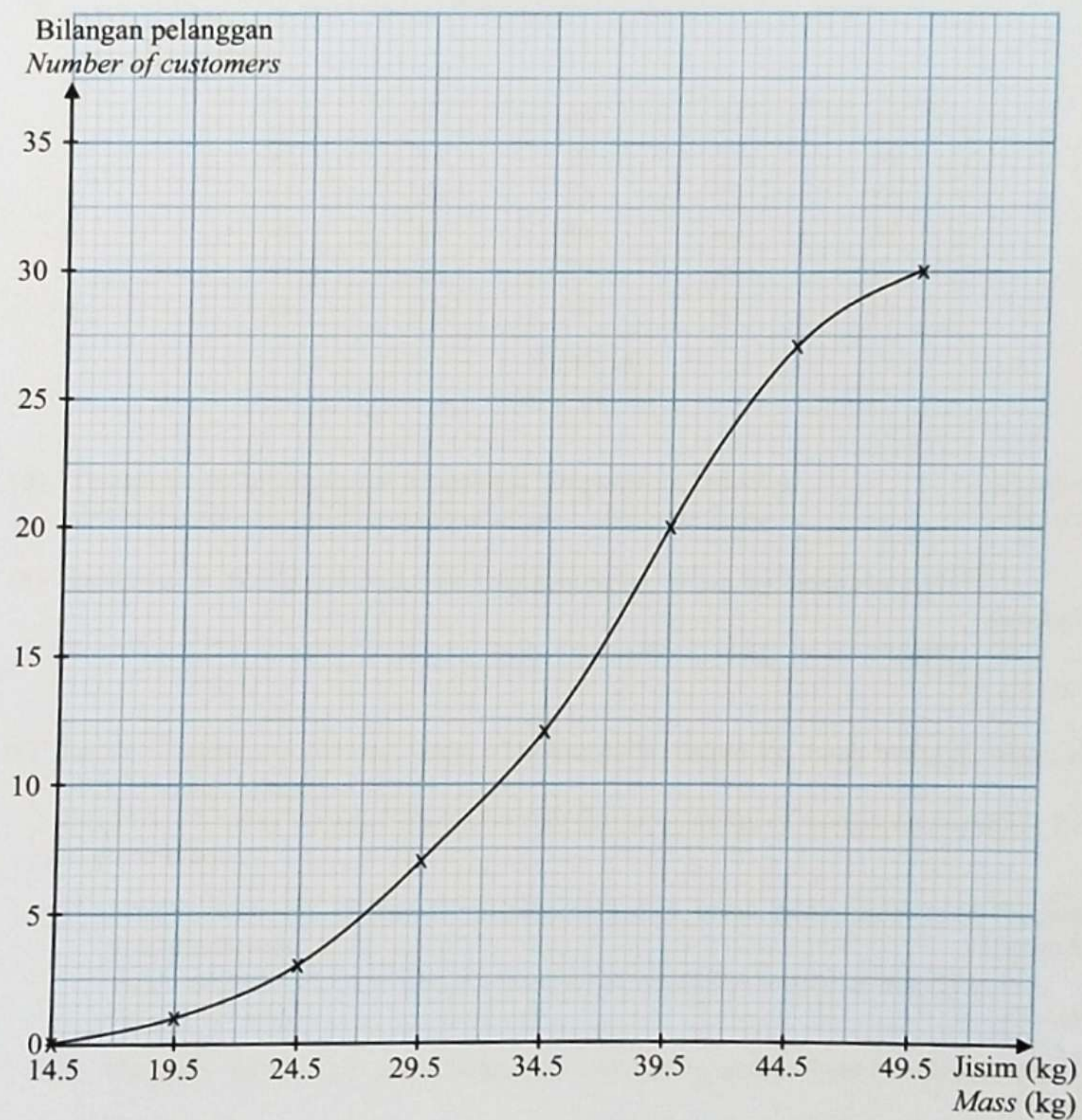
- 15 Rajah 14 menunjukkan jisim, dalam kg, buah manggis yang dibeli oleh 30 orang peniaga buah.
Diagram 14 shows the mass, in kg, of mangosteens purchased by 30 fruit sellers.

33	43	43	35	39
42	34	15	27	36
21	38	35	27	32
48	44	31	44	24
35	26	49	31	47
38	43	38	43	26

Rajah 14
 Diagram 14

- (a) Tentukan saiz selang kelas. Seterusnya, lengkapkan Jadual 4. [2 markah]
Determine the size of class interval. Hence, complete Table 4. [2 marks]
- (b) Berdasarkan Jadual 4, hitung min anggaran jisim, dalam kg, buah manggis itu. [3 markah]
Based on Table 4, calculate the estimated mean mass, in kg, of the mangosteens. [3 marks]
- (c) Rajah 15 menunjukkan ogif yang mewakili jisim, dalam kg, buah manggis yang dibeli oleh 30 orang peniaga buah.
Diagram 15 shows an ogive that represent the mass, in kg, of mangosteens purchased by 30 fruit sellers.
- (i) Berdasarkan ogif di Rajah 15, bina satu plot kotak pada rajah yang disediakan di ruang jawapan. [3 markah]
Based on ogive in Diagram 15, construct a box plot on the diagram given in the answer space. [3 marks]
- (ii) Daripada plot kotak yang dibina di 15(c)(i), nyatakan bentuk taburan data itu. [1 markah]
From the box plot constructed in 15(c)(i), state the shape of distribution of the data. [1 mark]

Halaman Kosong



Rajah 15
Diagram 15

Jawapan / Answer:

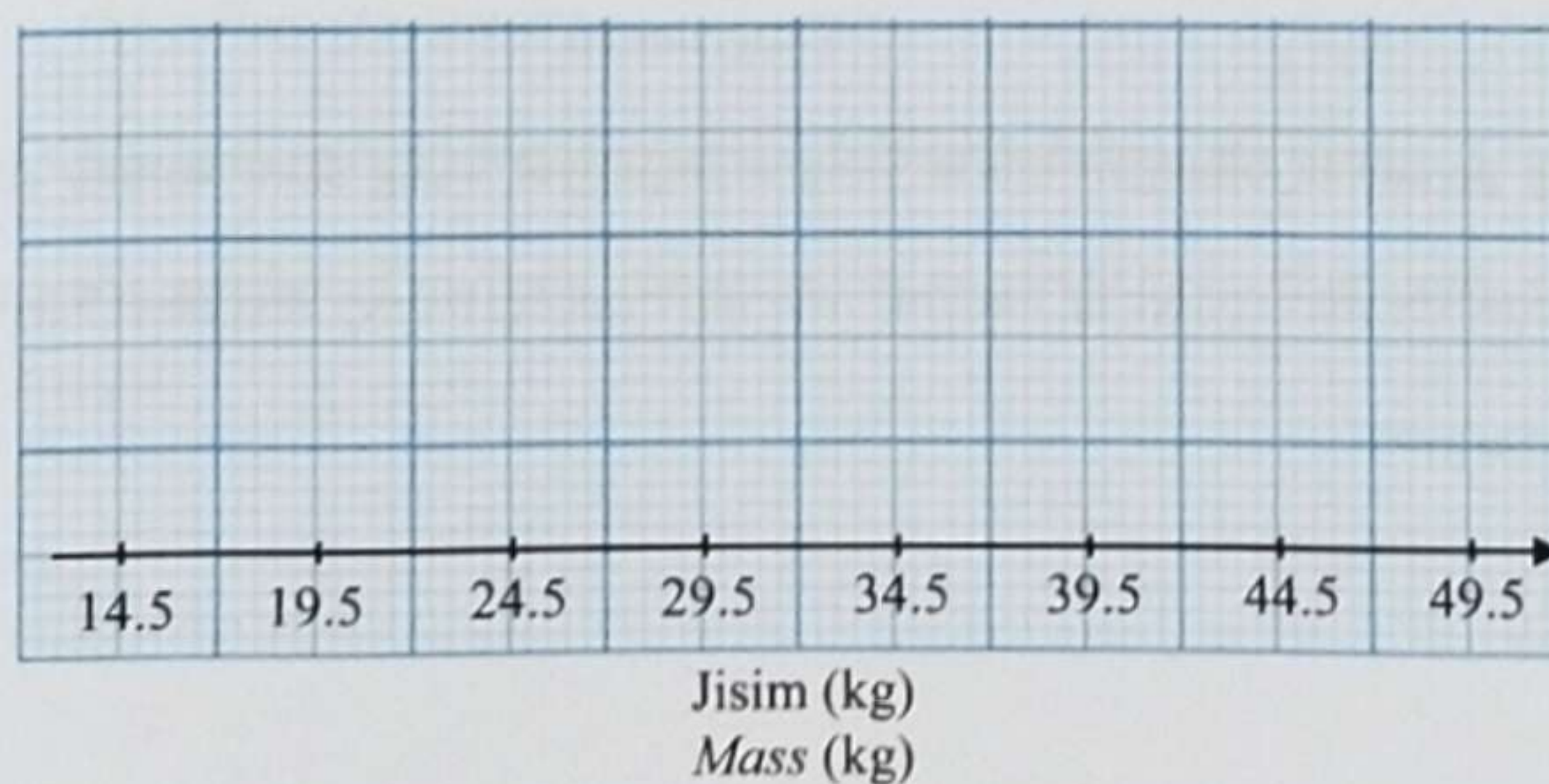
- (a) Saiz selang kelas:
Size of class interval:

Jisim (kg) <i>Mass (kg)</i>	Bilangan peniaga buah <i>Number of fruit sellers</i>
	1
	2
	4
	5
	8
	7
	3

Jadual 4
Table 4

(b)

(c) (i)



(ii)

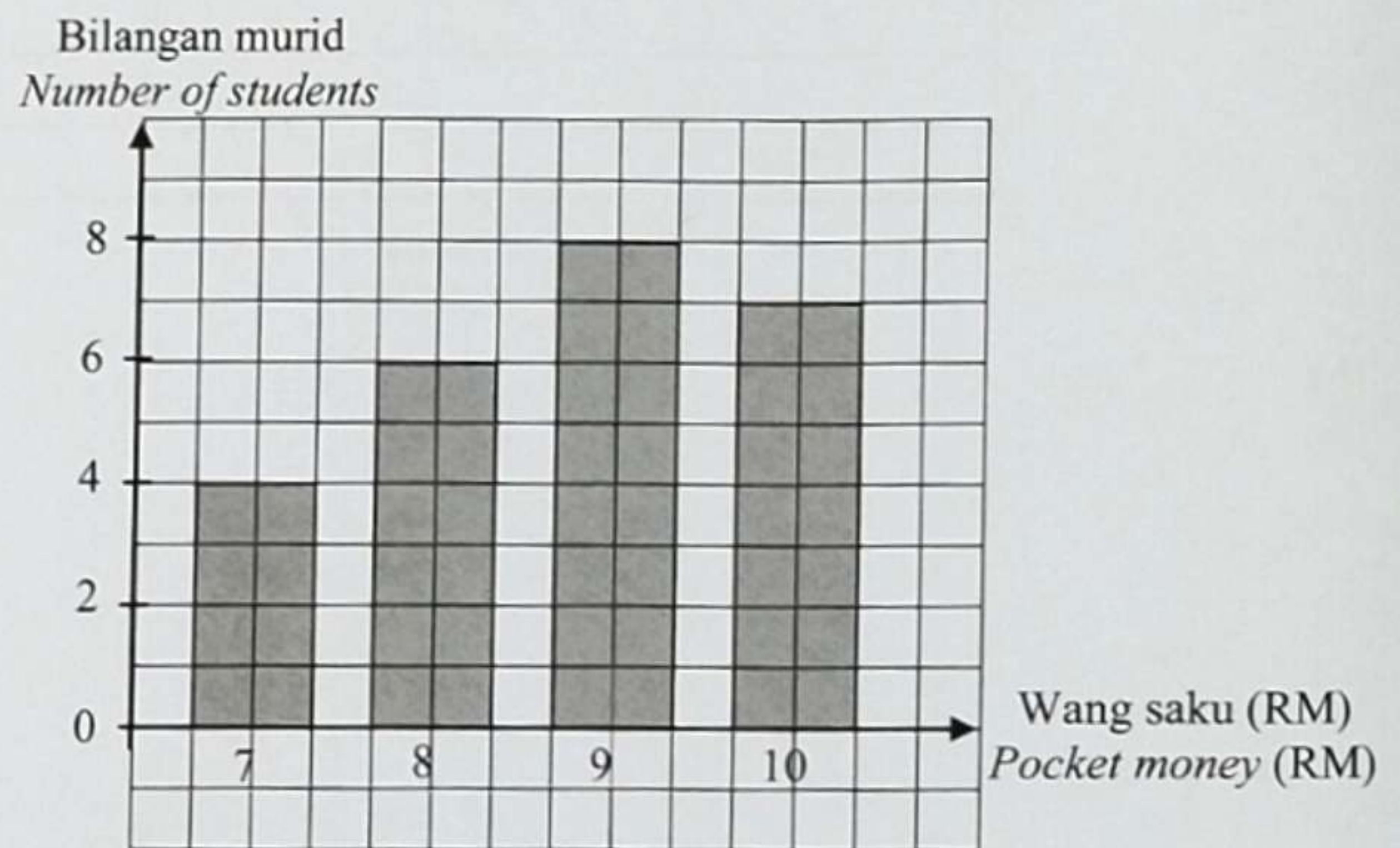
Bahagian C

[15 markah]

Jawab **satu** soalan sahaja.

- 16 (a) Puan Joharah merupakan guru penasihat kelab STEM di SMK Sentosa. Dia telah membuat satu tinjauan tentang wang saku sekumpulan murid semasa perjumpaan kali pertama. Carta palang dalam Rajah 16 menunjukkan wang saku sekumpulan murid kelab STEM.

Puan Joharah is the teacher advisor of the STEM club at SMK Sentosa. She conducted a survey on the pocket money of a group of students during their first meeting. The bar chart in Diagram 16 shows the pocket money of a group of STEM club students.



Rajah 16
Diagram 16

Hitung peratusan bilangan murid yang mempunyai wang saku kurang daripada RM9.
[2 markah]

Calculate the percentage of students who have pocket money less than RM9.

[2 marks]

Jawapan / Answer:

(a)

- 16 (b) Semasa perjumpaan kali pertama, Puan Joharah telah merancang tiga aktiviti STEM untuk ahli-ahli kelab STEM. Rajah 17 menunjukkan gambar rajah Venn dengan set semesta, $\xi = P \cup Q \cup R$. Diberi bahawa

Set $P = \{\text{murid yang mengambil bahagian dalam Paper Tower Challenge}\}$

Set $Q = \{\text{murid yang mengambil bahagian dalam Straw Plane}\}$

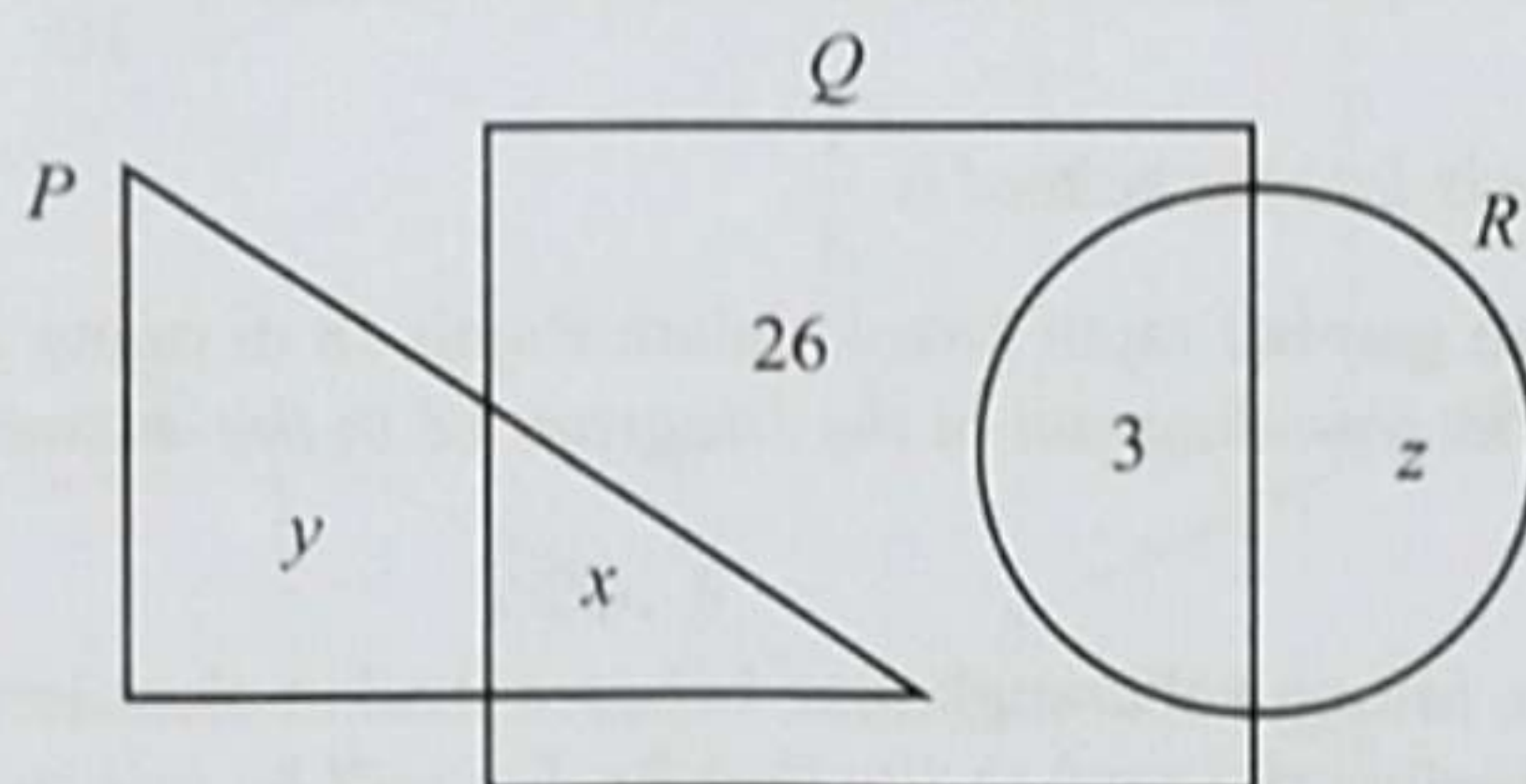
Set $R = \{\text{murid yang mengambil bahagian dalam Building Straw Bridge}\}$

During the first meeting, Puan Joharah had planned three STEM activities for the members of the STEM club. Diagram 17 shows a Venn diagram with the universal set, $\xi = P \cup Q \cup R$. Given that

Set $P = \{\text{students who took part in Paper Tower Challenge}\}$

Set $Q = \{\text{students who took part in Straw Plane}\}$

Set $R = \{\text{students who took part in Building Straw Bridge}\}$



Rajah 17

Diagram 17

Diberi $n(P) = 35$, $n(Q) = 40$ dan $n(R) = 28$.

Given $n(P) = 35$, $n(Q) = 40$ and $n(R) = 28$.

Cari

Find

- (i) nilai x , y dan z . [2 markah]
 the values of x , y and z . [2 marks]

- (ii) bilangan murid yang mengambil bahagian dalam satu aktiviti STEM sahaja. [1 markah]
 the number of students who took part in one STEM activity only. [1 mark]

Jawapan / Answer:

(b) (i)

(ii)

- 16 (c) Roslan ialah ahli Kelab STEM. Semasa perjumpaan kali pertama, Roslan menaiki bas ke sekolah, iaitu sama ada bas A atau bas B. Kebarangkalian Roslan menaiki bas A ialah $\frac{2}{5}$.

Jika dia menaiki bas A, kebarangkalian dia lewat ke sekolah ialah $\frac{7}{10}$. Jika dia menaiki bas B, kebarangkalian dia lewat ke sekolah ialah $\frac{1}{8}$.

Roslan is a member of STEM Club. During the first meeting, Roslan takes the bus to school, either bus A or bus B. The probability that Roslan takes bus A is $\frac{2}{5}$.

If he takes bus A, the probability that he is late for school is $\frac{7}{10}$. If he takes bus B, the probability that he is late for school is $\frac{1}{8}$.

- (i) Lengkapkan gambar rajah pokok dalam Rajah 18 di ruang jawapan.
Complete the tree diagram in the Diagram 18 in the answer space.

[2 markah]

[2 marks]

- (ii) Seterusnya, hitung kebarangkalian bahawa Roslan akan lewat ke sekolah.
Hence, calculate the probability that Roslan will be late to school.

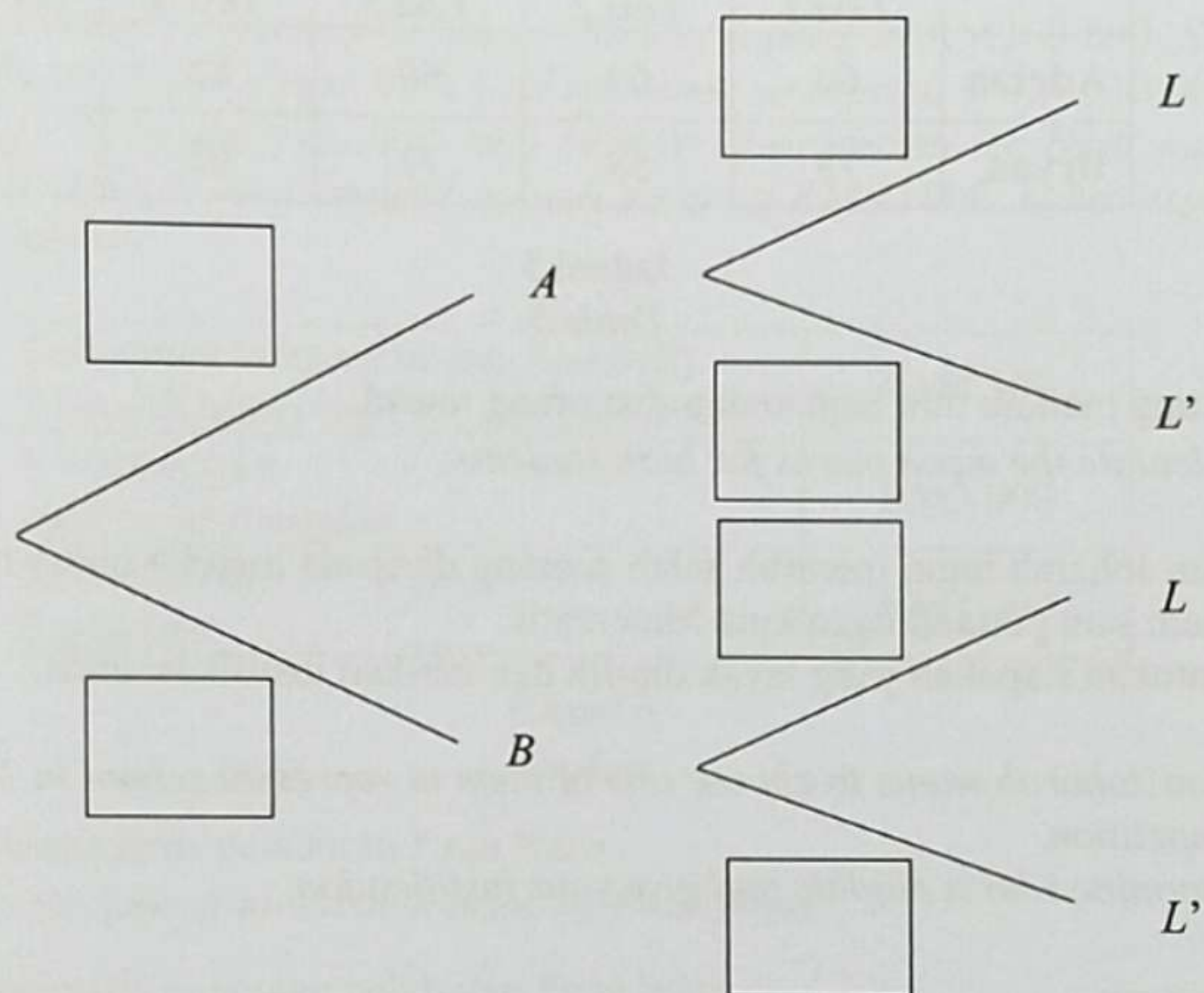
[2 markah]

[2 marks]

Jawapan / Answer:

(c) (i)

Petunjuk/Key:
Lewat / Late – L
Tidak lewat / Not late – L'



Rajah 18
Diagram 18

(ii)

- 16 (d) Jadual 5 menunjukkan pencapaian dua orang murid daripada Kelab STEM dalam lima ujian Matematik.

Table 5 shows the achievement of two students from STEM Club in five Mathematics tests.

	Ujian 1 Test 1	Ujian 2 Test 2	Ujian 3 Test 3	Ujian 4 Test 4	Ujian 5 Test 5
Adrian	60	64	90	85	50
Bryan	73	58	73	65	80

Jadual 5

Table 5

- (i) Hitung markah min bagi kedua-dua orang murid. [2 markah]
Calculate the mean marks for both students. [2 marks]
- (ii) Puan Joharah ingin memilih salah seorang daripada mereka untuk mewakili sekolah dalam satu pertandingan kuiz Matematik.
Tentukan siapakah yang layak dipilih dan berikan justifikasi anda. [4 markah]

Puan Joharah wants to choose one of them to represent school in Mathematics quiz competition.

Determine who is eligible and give your justification. [4 marks]

Jawapan /Answer:

(d) (i)

(ii)

- 17 (a) Puan Naili membeli sebuah rumah pada Januari 2000 dengan harga RM260 000. Dia membayar 10% wang pendahuluan. Kemudian, Puan Naili menjual rumah tersebut dengan harga RM530 000 setelah genap memiliki rumah tersebut selama 25 tahun. Jumlah pinjaman yang telah dilunaskan kepada pihak bank berjumlah RM380 000. Dalam tempoh tersebut, dia memperoleh RM80 000 hasil sewaan. Perbelanjaan-perbelanjaan lain yang terlibat adalah seperti dalam Jadual 6.

Puan Naili bought a house in January 2000 at a price of RM260 000. She paid a 10% down payment. Later, Puan Naili sold the house at a price of RM530 000 after having owned it for 25 years. The total loan amount amortised to the bank was RM380 000. During that period, she managed to earn a rent of RM80 000. Other expenses incurred are as in Table 6.

Duti setem (semasa urusan jual beli) <i>Stamp duty (during sale and purchase)</i>	RM4 500
Komisen ejen <i>Agent's commission</i>	RM3 000
Kos guaman <i>Legal cost</i>	RM4 000

Jadual 6

Table 6

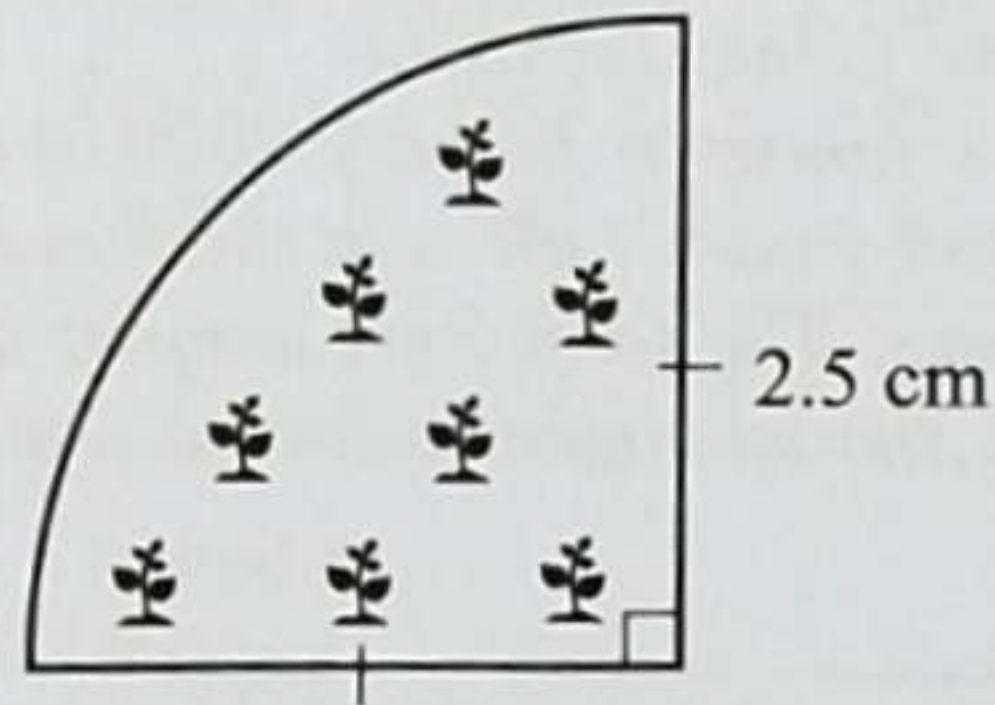
- (i) Nyatakan jenis pelaburan Puan Naili. [1 markah]
State the type of investment made by Puan Naili. [1 mark]
- (ii) Hitung nilai pulangan pelaburan Puan Naili. [3 markah]
Calculate return on investment for Puan Naili. [3 marks]

Jawapan / Answer:

(a) (i)

(ii)

- 17 (b) Rajah 19 menunjukkan lukisan berskala bagi pelan sebuah taman yang terletak di satu penjuru rumah Puan Naili yang dilukis dengan skala 1: 200.
Diagram 19 shows the scale drawing of the plan of a garden located at a corner of Puan Naili's house which is drawn to a scale of 1: 200.



Rajah 19
Diagram 19

Menggunakan $\pi = \frac{22}{7}$, hitung luas sebenar, dalam m^2 , taman itu.

[3 markah]

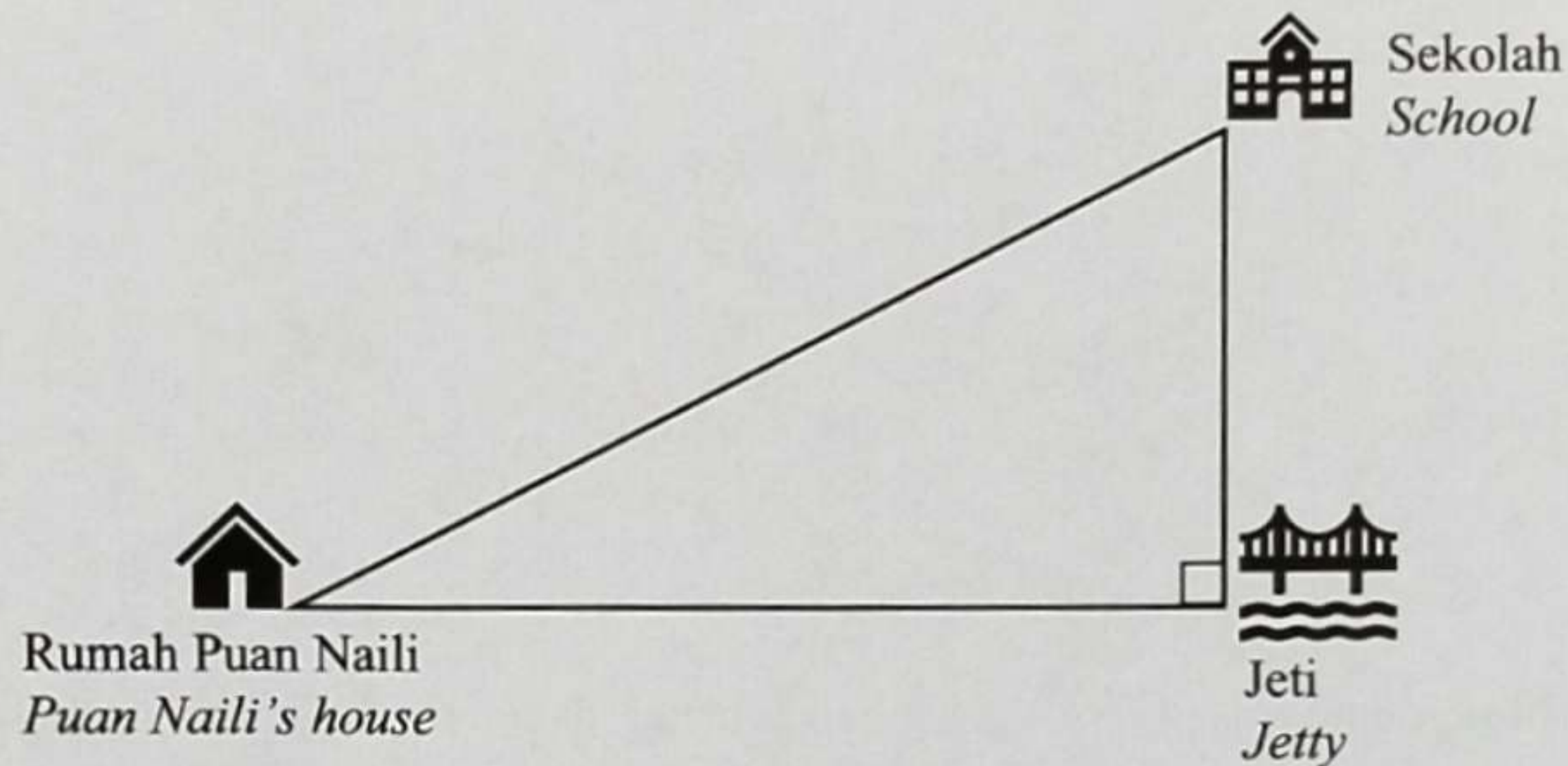
Using $\pi = \frac{22}{7}$, calculate the actual area, in m^2 , of the garden.

[3 marks]

Jawapan / Answer:

(b)

- 17 (c) Berhampiran rumah Puan Naili terdapat sebuah jeti dan sebuah sekolah. Rajah 20 menunjukkan kedudukan rumah Puan Naili, jeti dan sekolah.
Near Puan Naili's house, there is a jetty and a school. Diagram 20 shows the locations of Puan Naili's house, the jetty and the school.



Rajah 20
Diagram 20

Diberi jarak terpendek rumah Puan Naili ke sekolah ialah 195 m dan jarak rumah Puan Naili ke jeti ialah 105 m lebih daripada jarak jeti ke sekolah.

Hitung jarak, dalam m, dari rumah Puan Naili ke jeti. [4 markah]

Given that the shortest distance from Puan Naili's house to the school is 195 m and the distance from Puan Naili's house to the jetty is 105 m more than the distance from the jetty to the school.

Calculate the distance, in m, from Puan Naili's house to the jetty. [4 marks]

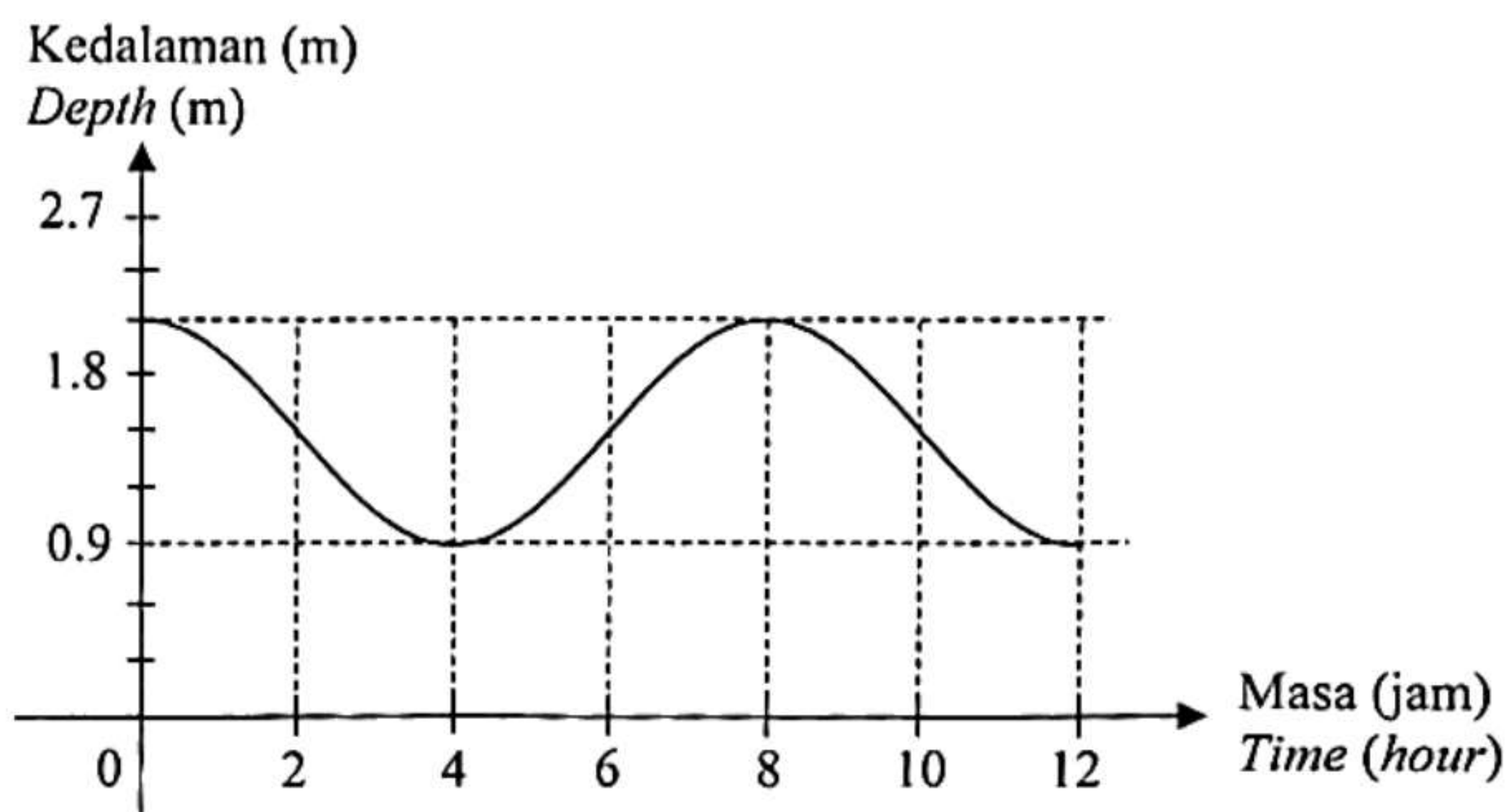
Jawapan / Answer:

(c)

- 17 (d) Rajah 21 menunjukkan kedalaman air yang direkodkan di jeti berhampiran rumah Puan Naili. y mewakili kedalaman air, dalam m, dan x mewakili bilangan jam selepas tengah malam dan graf fungsi diwakili oleh $y = a \cos bx + c$.

Diagram 21 shows the water depth recorded at the jetty near Puan Naili's house.

y represents the depth of water, in m, and x represents the number of hours after midnight and the graph of the function is represented by $y = a \cos bx + c$.



Rajah 21
Diagram 21

- (i) Tulis persamaan bagi graf tersebut dalam bentuk $y = a \cos bx + c$ dengan keadaan a , b dan c adalah pemalar. [2 markah]
Write down the equation of the graph in the form of $y = a \cos bx + c$ where a , b and c are constants. [2 marks]
- (ii) Cari kedalaman air, dalam m, apabila masa ialah 2.5 jam. [2 markah]
Find the depth of water, in m, when the time is 2.5 hours. [2 marks]

Jawapan/Answer:

(d) (i)

(ii)

KERTAS PEPERIKSAAN TAMAT