

NOMBOR DAN OPERASI NUMBER 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 = $\left(\frac{\text{Peratusan}}{\text{ko insurans}}\right) \times \left(\frac{\text{Nilai boleh}}{\text{insurans harta}}\right)$
 <i>Amount of required insurance</i> = $\left(\frac{\text{Percentage of}}{\text{co - insurance}}\right) \times \left(\frac{\text{Insurable value}}{\text{of property}}\right)$</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>,
 $MV = P \left(1 + \frac{r}{n}\right)^{nt}$</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 = $\frac{\text{Jumlah jarak}}{\text{Jumlah masa}}$
 <i>Average speed</i> = $\frac{\text{Total distance}}{\text{Total time}}$</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 = πr^2
Area of circle = πr^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 = $\frac{1}{2} \times$ hasil darab panjang dua pepenjuru
Area of kite = $\frac{1}{2} \times$ *product of the length of two diagonals*
- 8 Luas trapezium = $\frac{1}{2} \times$ hasil tambah dua sisi selari $\times$ tinggi
Area of trapezium = $\frac{1}{2} \times$ *sum of two parallel sides* $\times$ *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 = *area of cross section* $\times$ *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 $P(A') = 1 - P(A)$

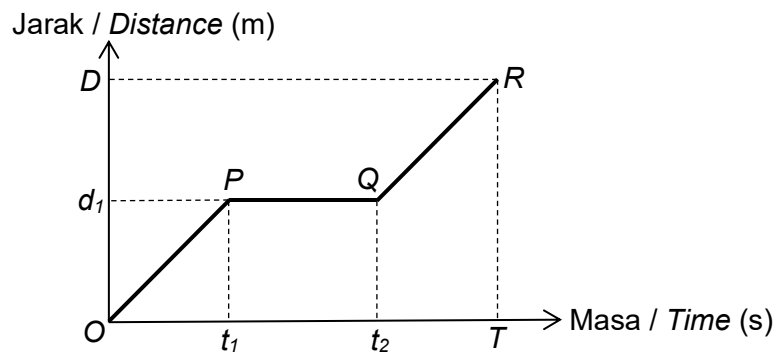
Bahagian A

[40 markah]

Jawab **semua** soalan dalam bahagian ini.

- 1 Rajah 1 menunjukkan gerakan suatu zarah dari O ke R sejauh D meter dalam tempoh T saat.

Diagram 1 shows the motion of a particle from O to R with a distance of D metres in a period of T seconds.



Rajah 1 / Diagram 1

- (a) Nyatakan garisan yang manakah pada graf menunjukkan zarah itu tidak bergerak.
State which line on the graph shows that the particle is not moving.

[1 markah / mark]

- (b) Huraikan gerakan zarah tersebut dari O ke R .
Describe the motion of the particle from O to R .

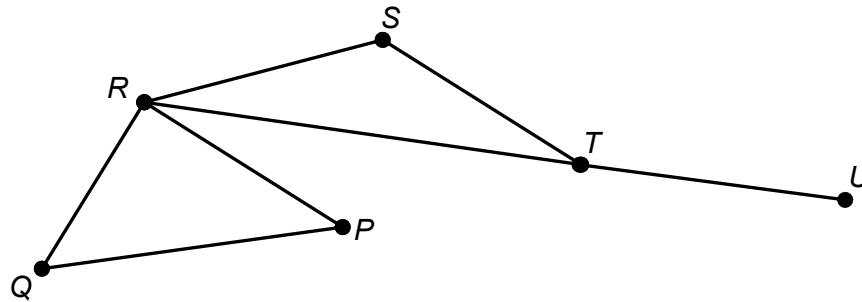
[2 markah / marks]

Jawapan / Answer :

(a)

(b)

- 2 Rajah 2 menunjukkan satu graf tak terarah.
Diagram 2 shows an undirected graph.



Rajah 2 / Diagram 2

- (a) Senaraikan semua bucu dan tepi bagi graf tersebut.
List all the vertices and edges of the graph.

[2 markah / marks]

- (b) Kira bilangan tepi yang bersambung pada bucu R.
Count the number of edges connected to vertex R.

[1 markah / mark]

- (c) Lengkapkan ruang jawapan bagi melukis satu pokok bagi Rajah 2.
Complete the answer space by drawing a tree for Diagram 2.

[1 markah / mark]

Jawapan / Answer :

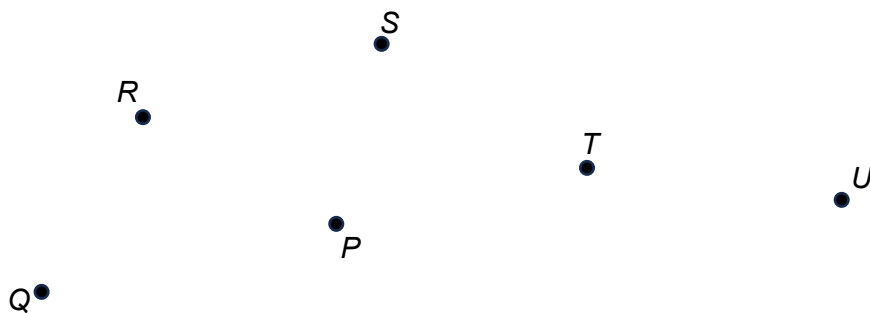
- (a) Bucu / Vertices =

Tepi / Edges =

.....

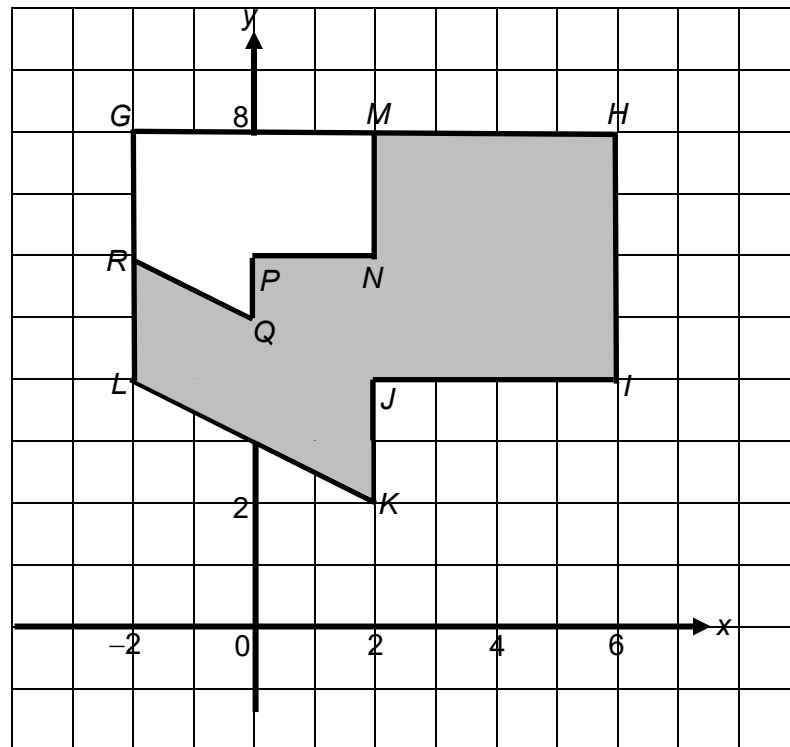
- (b)

- (c)



- 3 Rajah 3 menunjukkan dua buah heksagon, $GHIJKL$ dan $GMNPQR$ dilukis di atas satah Cartes.

Diagram 3 shows two hexagons, $GHIJKL$ and $GMNPQR$, drawn on a Cartesian plane.



Rajah 3 / Diagram 3

$GHIJKL$ ialah imej bagi $GMNPQR$ di bawah suatu pembesaran pada pusat G . Jika luas poligon $GMNPQR$ ialah 130 cm^2 , hitungkan luas kawasan berlorek.

$GHIJKL$ is the image of $GMNPQR$ under an enlargement at center G . If the area of polygon $GMNPQR$ is 130 cm^2 , calculate the area of the shaded region.

[3 markah / marks]

Jawapan / Answer :

- 4 Aniq bekerja sebagai seorang eksekutif dan menerima gaji bersih sebanyak RM2 400 sebulan. Jadual 1 menunjukkan perbelanjaan bulananannya.
Aniq works as an executive and receives a net salary of RM2 400 per month. Table 1 shows his monthly expenses.

Perkara Items	Amaun (RM) Amount (RM)
Sewa rumah / <i>House rent</i>	700
Insurans / <i>Insurance</i>	150
Makanan / <i>Food</i>	450
Pengangkutan / <i>Transportation</i>	300
Bil Utiliti / <i>Utility bills</i>	230

Jadual 1 / *Table 1*

- (a) Berdasarkan Jadual 1, nyatakan satu perbelanjaan tetap Aniq.
Based on Table 1, state one of Aniq's fixed expenses. [1 markah / *mark*]
- (b) Hitung aliran tunai Aniq dan nyatakan jenis aliran tunai tersebut.
Calculate Aniq's cash flow and state the type of the cash flow. [3 markah / *marks*]

Jawapan / *Answer* :

(a)

(b)

- 5 Puan Syuhada bercadang untuk pergi bercuti ke London dan Paris bersama keluarganya. Jadual 2.1 menunjukkan kadar premium insurans perjalanan bagi melancong ke negara-negara tersebut. Manakala Jadual 2.2 menunjukkan butiran ahli keluarga yang akan pergi melancong.

Puan Syuhada plans to go on holiday to London and Paris with her family. Table 2.1 shows the travel insurance premium rates for travelling to those countries. Meanwhile, Table 2.2 shows the details of her family members who will be going on the holiday.

Bilangan hari <i>Number of days</i>	Kadar / Rate (RM)		
	Dewasa <i>Adult</i>	Kanak-kanak (Bawah 12 tahun) <i>Child</i> (Under 12 years)	Keluarga <i>Family</i>
1 – 5	49	37	138
6 – 10	69	55	201
11 – 15	89	72	295
16 – 22	101	89	406
Setiap tambahan minggu <i>Each additional week</i>	34	29	115

Jadual 2.1 / Table 2.1

Tarikh melancong : 17 Julai 2025 hingga 13 Ogos 2025 <i>Tour date : 17 July 2025 to 13 August 2025</i>	
Ahli keluarga Puan Syuhada <i>Member of Puan Syuhada's family</i>	Umur (Tahun) <i>Age (Years)</i>
Suami / <i>Husband</i>	45
Puan Syuhada	41
Anak sulung / <i>Eldest daughter</i>	17
Anak kedua / <i>Second daughter</i>	14
Anak ketiga / <i>Third son</i>	10

Jadual 2.2 / Table 2.2

Diberi bahawa pelan keluarga adalah bagi ibu, bapa dan dua orang anak yang berumur 15 tahun ke bawah. Pelan keluarga adalah terhad kepada empat orang sahaja.

Given that the family plan is for the mother, father and two children below 15 years old. The family plan is limited to four persons only.

- (a) Nyatakan bilangan hari Puan Syuhada akan pergi melancong.
State the number of days Puan Syuhada will be going on holiday. [1 markah / mark]
- (b) Hitung jumlah minimum premium insurans perjalanan yang perlu dibayar oleh Puan Syuhada dan keluarganya.
Calculate the total minimum amount of travel insurance premium that Puan Syuhada and her family need to pay. [3 markah / marks]

Jawapan / Answer :

(a)

(b)

- 6 (a) Lengkapi Jadual 3 pada ruang jawapan bagi fungsi $y = -3x^2 - 2x + 23$.
Complete the Table 3 in the answer space for function $y = -3x^2 - 2x + 23$.
 [1 markah / mark]
- (b) Pada graf di ruang jawapan, lukis graf bagi fungsi $y = -3x^2 - 2x + 23$.
On the graph in the answer space, draw a graph for function $y = -3x^2 - 2x + 23$.
 [3 markah / marks]

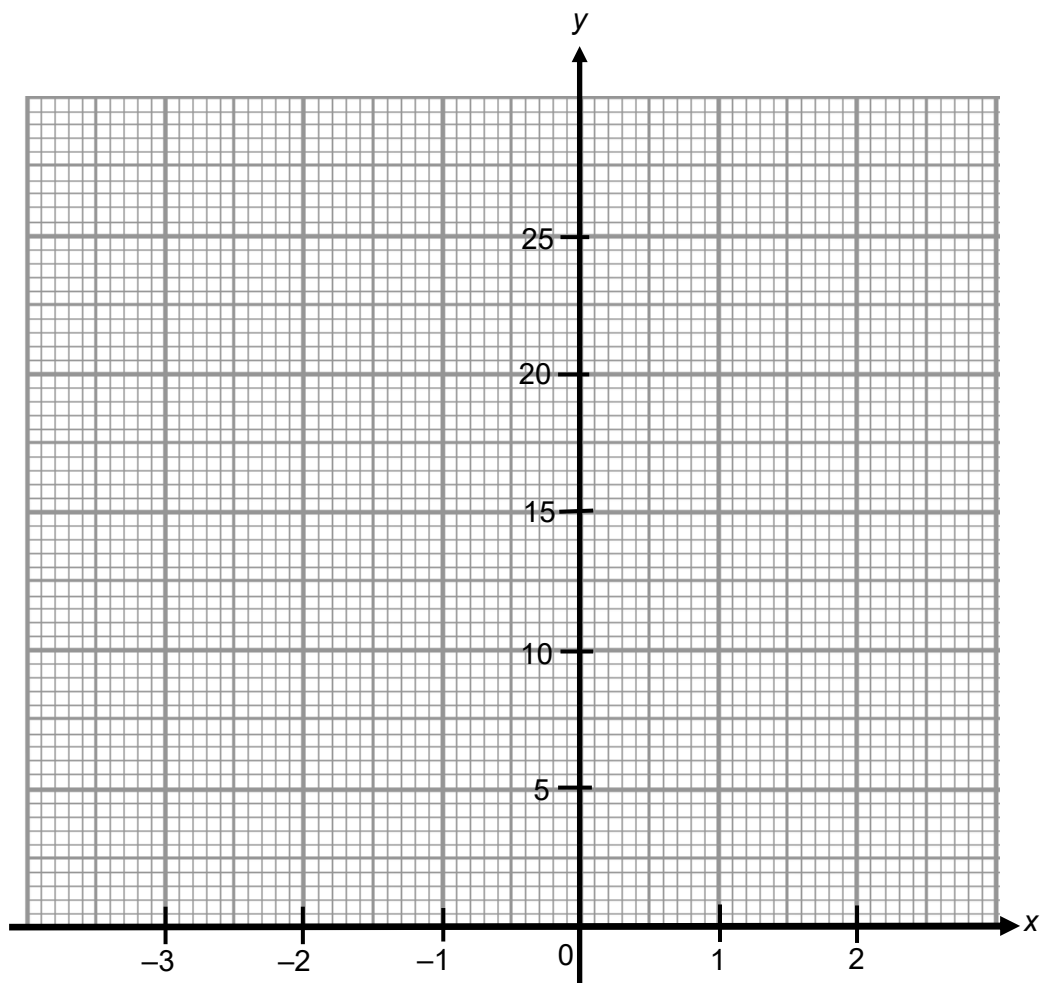
Jawapan / Answer :

(a)

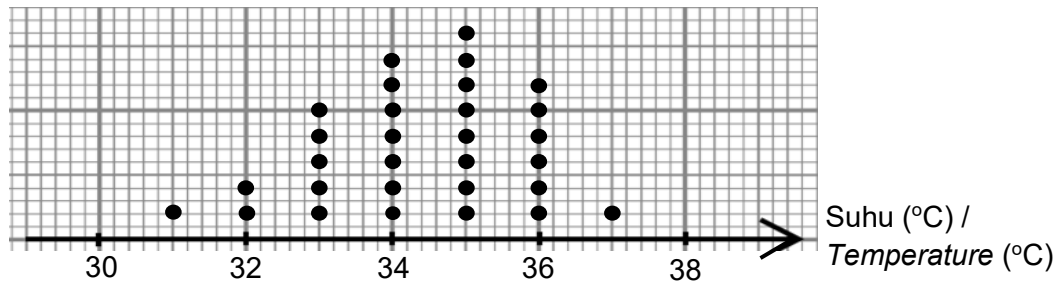
x	-2.5	-2	-1	0	1	1.5	2
y	9.25		22	23	18		7

Jadual 3 / Table 3

(b)



- 7 Rajah 4 menunjukkan ramalan suhu, dalam $^{\circ}\text{C}$, di Malaysia pada bulan April 2025.
Diagram 4 shows the temperature forecast, in $^{\circ}\text{C}$ in Malaysia for April 2025.



Rajah 4 / Diagram 4

- (a) Namakan jenis perwakilan data di atas.
Name the type of data representation above. [1 markah / mark]
- (b) Cari min data tersebut.
Find the mean of the data. [2 markah / marks]
- (c) Jika setiap hari suhu bertambah sebanyak 1°C , apakah yang berlaku pada julat suhu pada bulan tersebut?
If the temperature increases by 1°C every day, what happens to the temperature range during that month? [1 markah / mark]

Jawapan / Answer :

(a)

(b)

(c)

- 8 (a) Pada ruang jawapan, lengkapkan Jadual 4 bagi fungsi $y = \cos 2x + 1$.
In the answer space, complete Table 4 for the function $y = \cos 2x + 1$.
 [2 markah / marks]
- (b) Berdasarkan Jadual 4, lukis graf $y = \cos 2x + 1$ untuk $0^\circ \leq x \leq 360^\circ$.
Based on Table 4, draw the graph $y = \cos 2x + 1$ for $0^\circ \leq x \leq 360^\circ$.
 [2 markah / marks]
- (c) Nyatakan nilai minimum bagi graf itu.
State the minimum value of the graph.
 [1 markah / mark]

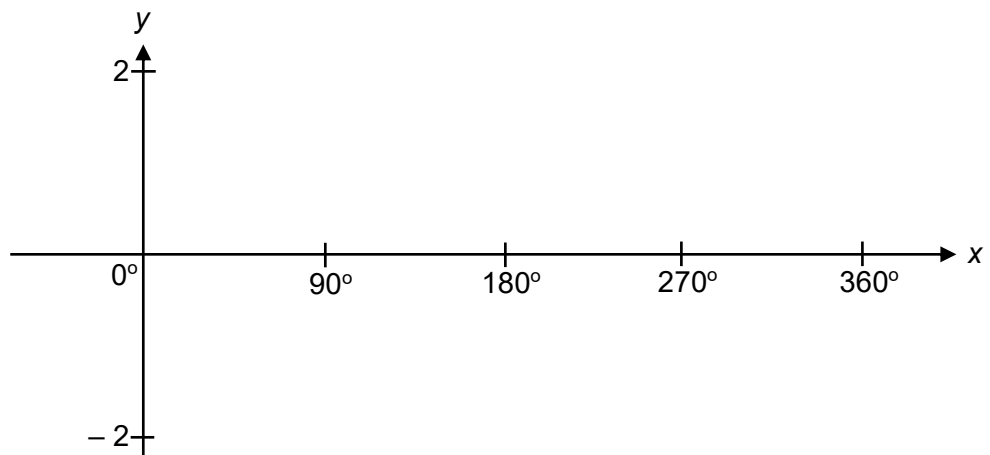
Jawapan / Answer :

(a)

x	0°	90°	180°	270°	360°
y					

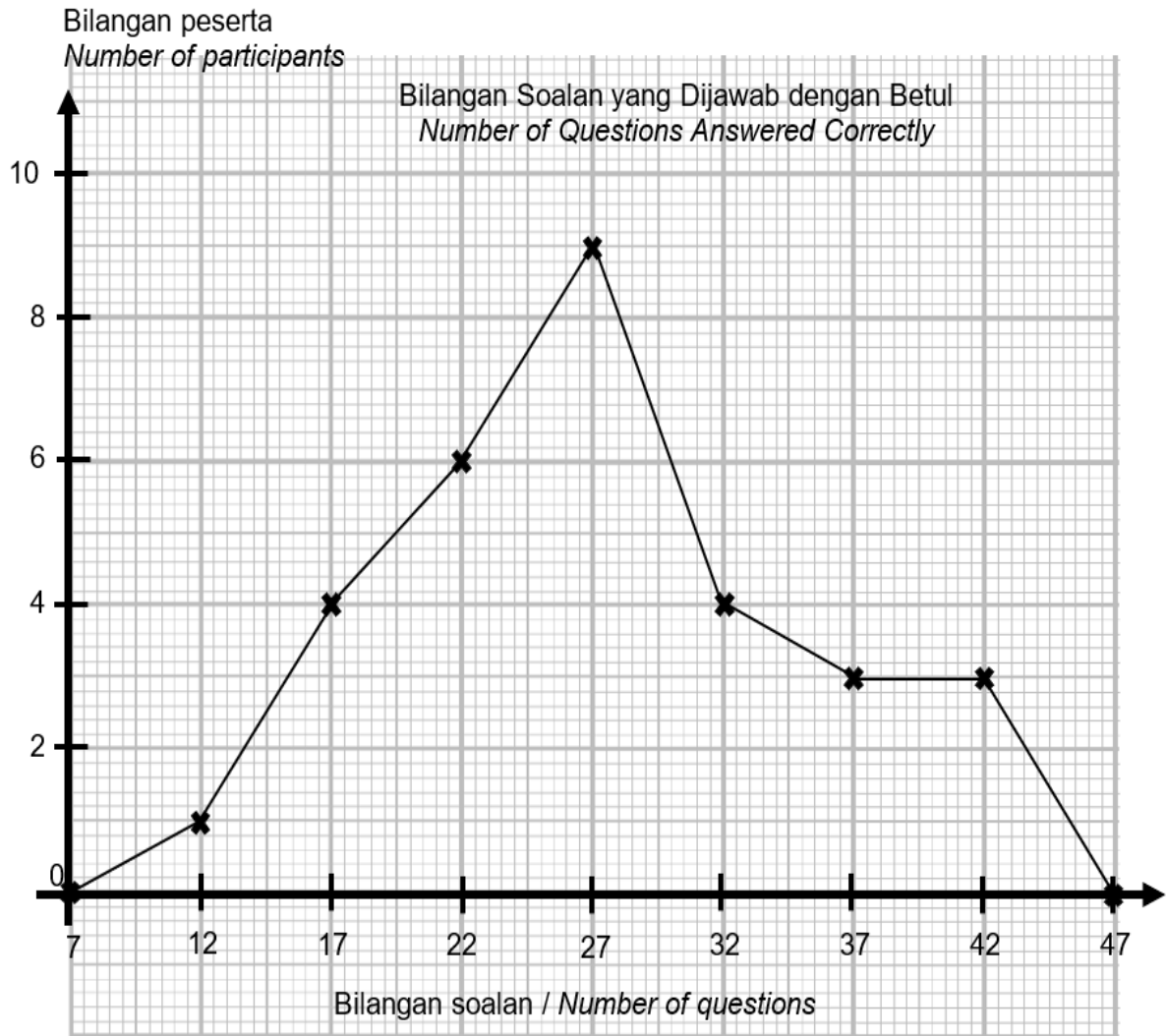
Jadual 4 / Table 4

(b)



(c) Nilai minimum / Minimum value =

- 9 Rajah 5 menunjukkan sebuah poligon kekerapan tentang bilangan soalan yang telah dijawab dengan betul oleh sekumpulan peserta dalam suatu kuiz Sains.
Diagram 5 shows a frequency polygon of the number of questions that have been answered correctly by a group of participants in a Science quiz.



Rajah 5 / Diagram 5

- (a) Tentukan saiz selang kelas.
Determine the size of class interval.

[1 markah / mark]

- (b) Selepas semakan dibuat terhadap Rajah 5, didapati bahawa terdapat data seorang peserta yang tidak direkodkan pada poligon kekerapan tersebut. Peserta itu telah menjawab dengan betul sebanyak 28 soalan. Menggunakan skala 2 cm kepada 5 soalan pada paksi-x dan 2 cm kepada 1 orang peserta pada paksi-y, lukis sebuah histogram bagi mewakili data baharu.

After reviewing Diagram 5, it is found that the data for one participant was not recorded in the frequency polygon. This participant correctly answered 28 questions. Using a scale of 2 cm to 5 questions on the x-axis and 2 cm to 1 participant on the y-axis, draw a histogram to represent the new data.

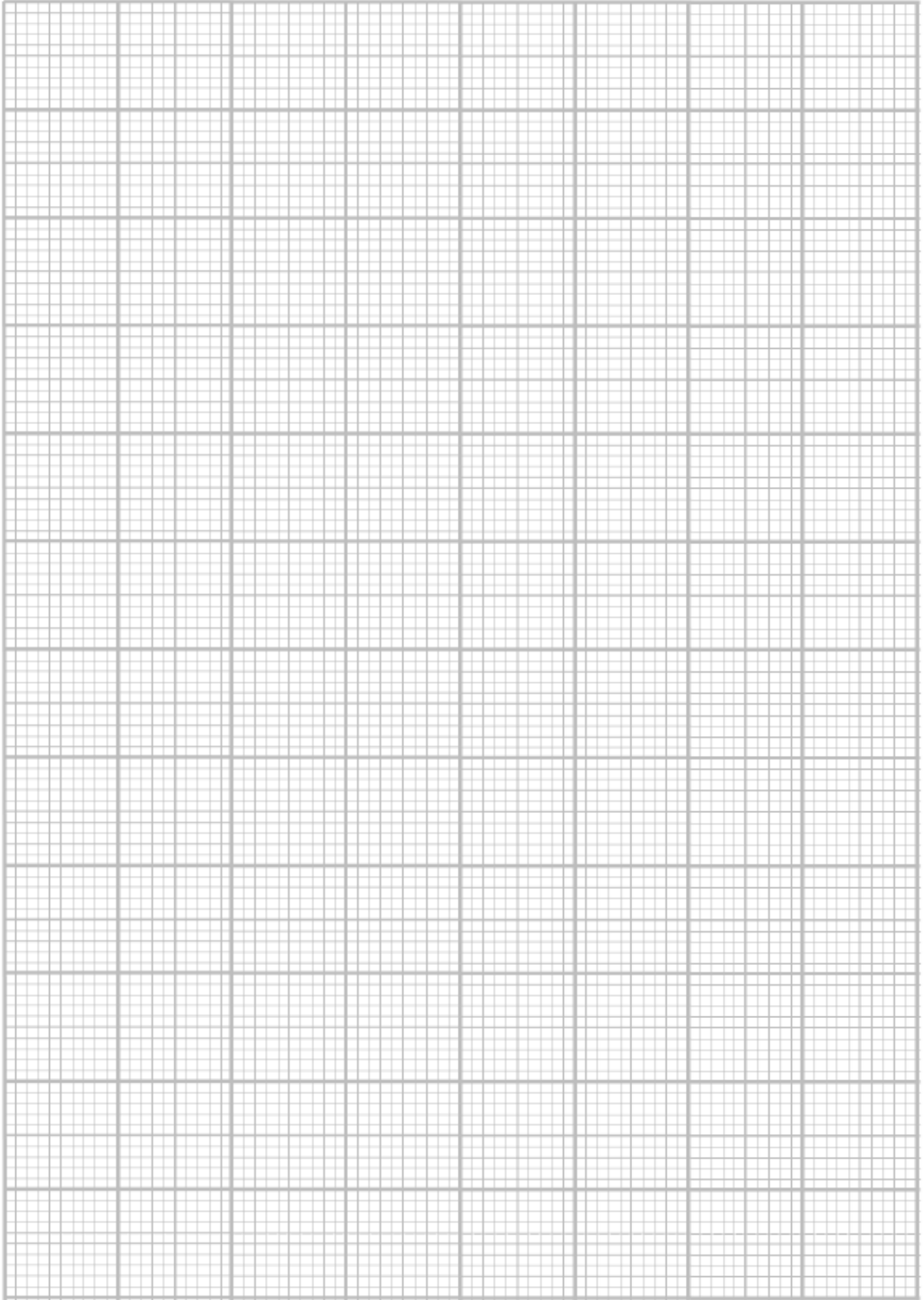
[4 markah / marks]

Jawapan / Answer :

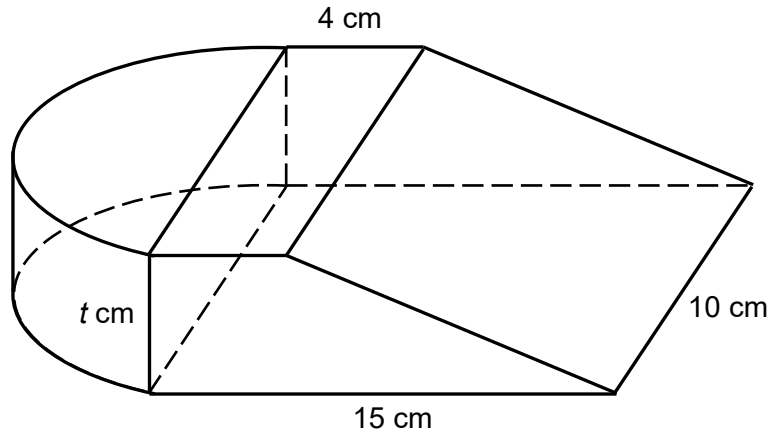
- (a)

- (b) Rujuk graf.
Refer graph.

Graf untuk Soalan 9(b) / *Graph for Question 9(b)*



- 10 (a) Rajah 6 menunjukkan gabungan pepejal yang terdiri daripada separuh silinder dan sebuah prisma tegak. Diberi isipadu separuh silinder itu ialah 275 cm^3 .
Diagram 6 shows a combination of solids consisting of a half cylinder and a right prism. Given that the volume of the half cylinder is 275 cm^3 .



Rajah 6 / Diagram 6

- (i) Hitung nilai t , dalam cm.
Calculate the value of t , in cm. [2 markah / marks]
- (ii) Hitung isi padu, dalam cm^3 , gabungan pepejal tersebut
Calculate the volume, in cm^3 , of the combined solid. [2 markah / marks]

Jawapan / Answer :

(a)

(b)

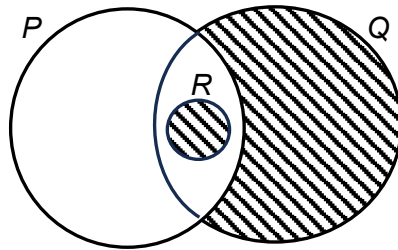
Bahagian B

[45 markah]

Jawab **semua** soalan dalam bahagian ini.

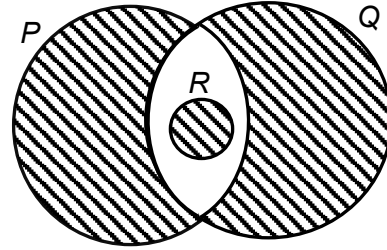
- 11 (a) Rajah 7.1 dan 7.2 menunjukkan set P , set Q dan set R , dengan keadaan set semesta, $\xi = P \cup Q \cup R$.
Diagrams 7.1 and 7.2 show set P , set Q , and set R , with the universal set condition, $\xi = P \cup Q \cup R$.

(i)



Rajah 7.1 / Diagram 7.1

(ii)



Rajah 7.2 / Diagram 7.2

Wakilkan kawasan berlorek dengan menggunakan simbol-simbol operasi set.
Represent the shaded region using set operation symbols.

[4 markah / marks]

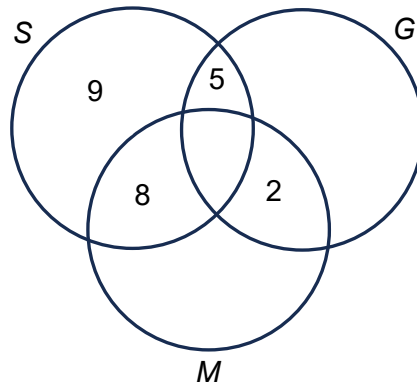
Jawapan / Answer :

(i)

(ii)

- (b) Rajah 7.3 menunjukkan gambar rajah Venn yang tidak lengkap mewakili 40 orang murid dalam sebuah kelas. Diberi bahawa set $S = \{\text{murid yang meminati mata pelajaran Sejarah}\}$, set $G = \{\text{murid yang meminati mata pelajaran Geografi}\}$ dan set $M = \{\text{murid yang meminati mata pelajaran Matematik}\}$ dan $\xi = S \cup G \cup M$.
Diagram 7.3 shows an incomplete Venn diagram representing 40 students in a class. Given that set $S = \{\text{students interested in History}\}$, set $G = \{\text{students interested in Geography}\}$ and set $M = \{\text{students interested in Mathematics}\}$ and $\xi = S \cup G \cup M$.





Rajah 7.3 / Diagram 7.3

Diberi bahawa bilangan murid yang meminati mata pelajaran Geografi sahaja adalah sama dengan bilangan murid yang meminati mata pelajaran Matematik sahaja. Manakala bilangan murid yang meminati mata pelajaran Sejarah dan Matematik adalah dua kali ganda murid yang meminati mata pelajaran Geografi dan Matematik.

Given that the number of students who are interested in Geography only is the same as the number of students who are interested in Mathematics only. Meanwhile, the number of students interested in History and Mathematics is twice the number of students interested in Geography and Mathematics.

Nyatakan bilangan murid yang
State the number of students who

- (i) meminati ketiga-tiga mata pelajaran,
interested in all three subjects,

[2 markah / marks]

- (ii) meminati mata pelajaran Matematik.
interested in Mathematics.

[2 markah / marks]

Jawapan / Answer :

(i)

(ii)

- 12** Encik Syadiq dan keluarganya bercuti ke Melaka selama 3 hari 2 malam. Mereka menginap di sebuah hotel dengan kadar RM250 untuk satu malam. Hotel tersebut mengenakan cukai perkhidmatan sebanyak 6%. Sebelum pulang, Encik Syadiq singgah di sebuah pasar raya dan membeli barang-barang seperti di Jadual 5.

Encik Syadiq and his family went on vacation to Melaka for 3 days and 2 nights. They stayed at a hotel that charged RM250 per night. The hotel imposed a 6% service tax. Before returning home, Encik Syadiq stopped at a supermarket and bought the items listed in Table 5.

Barangan Items	Kuantiti Quantity	Harga seunit (RM) Unit price (RM)	Amaun (RM) Amount (RM)
Baju berjenama import <i>Imported branded shirt</i>	1	179.00	179.00
Coklat dari Dubai <i>Chocolate from Dubai</i>	1	32.90	32.90
Baju sekolah <i>School uniform</i>	1	25.90	25.90
Susu formula bayi <i>Infant formula milk</i>	1	45.50	45.50

Jadual 5 / Table 5

- (a) Daripada barangan yang dibeli oleh Encik Syadiq di pasar raya tersebut, nyatakan satu barangan yang dikenakan cukai jualan.
From the items purchased by Encik Syadiq at the supermarket, state one item that is subject to sales tax.
[1 markah / mark]
- (b) Hitung jumlah yang perlu dibayar oleh Encik Syadiq untuk penginapan di hotel tersebut.
Calculate the total amount paid by Encik Syadiq for the hotel accommodation.
[3 markah / marks]
- (c) Jika harga baju berjenama import meningkat sebanyak 10%, hitung harga baharu baju tersebut.
If the price of the imported branded shirt increases by 10%, calculate the new price of the shirt.
[2 markah / marks]

- (d) Encik Syadiq memperuntukkan RM900 untuk perbelanjaan penginapan dan pembelian barangan dalam Jadual 5. Hitung jumlah perbelanjaan tersebut dan tentukan sama ada wang yang diperuntukkan mencukupi atau tidak.

Encik Syadiq has allocated RM900 for accommodation expenses and the purchase of items in Table 5. Calculate his total expenses and determine whether the allocated money is sufficient or not.

[3 markah / marks]

Jawapan / Answer :

(a)

(b)

(c)

(d)

- 13 (a) Tulis dua implikasi berdasarkan pernyataan berikut.
Write two implications based on the following statement.

“ p ialah nombor perdana jika dan hanya jika p boleh dibahagi tepat dengan 1 dan dirinya sendiri.”
 “ p is a prime number if and only if p can be divided exactly by 1 and itself.”

[2 markah / marks]

- (b) Tentukan nilai kebenaran bagi setiap pernyataan berikut. Sekiranya palsu, berikan satu contoh penyangkal untuk menyokong jawapan anda.
Determine the truth value each of the following statements. If it is false, give one counter-example to support your answer.

- (i) Semua nombor perdana ialah nombor ganjil.
All prime numbers are odd numbers.
- (ii) 4 dan 49 ialah kuasa dua sempurna.
4 and 49 are perfect squares.

[3 markah / marks]

- (c) Diberi suatu pola nombor 6, 9, 14, 21, ...
Given a number sequence 6, 9, 14, 21, ...

$$\begin{aligned} 6 &= 1^2 + 5 \\ 9 &= 2^2 + 5 \\ 14 &= 3^2 + 5 \\ 21 &= 4^2 + 5 \\ &\vdots \end{aligned}$$

- (i) Bina satu kesimpulan induktif yang kuat bagi pola nombor di atas.
Form a strong inductive conclusion for the above number sequence.
- (ii) Tentukan sebutan mana dalam urutan nombor ialah 41. Tunjukkan pengiraan anda.
Determine which term in the number sequence is 41. Show your calculation.

[2 markah / marks]

Jawapan / Answer :

(a) Implikasi 1/ *Implication 1* :

.....

.....

Implikasi 2/ *Implication 2* :

.....

.....

(b) (i)

(ii)

(c) (i)

(ii)

- 14** Cikgu Adam ingin mengadakan kelas tuisyen bagi murid yang akan mengambil SPM pada tahun 2025. Selebih-lebihnya 20 orang murid akan didaftarkan untuk kelas tersebut. Beliau menetapkan bahawa bilangan murid lelaki yang boleh mendaftar kelas tersebut sekurang-kurangnya dua kali bilangan murid perempuan.

Cikgu Adam wants to hold tuition classes for students who will be taking the SPM in 2025. A maximum of 20 students will be enrolled for the class. He decided that the number of male students who can register is at least twice the number of female students.

- (a) Menggunakan x untuk mewakili bilangan murid lelaki dan y untuk mewakili bilangan murid perempuan, tulis dua ketaksamaan linear selain $x \geq 0$ dan $y \geq 0$ bagi mewakili situasi yang diberi.

Using x to represent the number of male students and y to represent the number of female students, write two linear inequalities other than $x \geq 0$ and $y \geq 0$ to represent the given situation.

[2 markah / marks]

- (b) Menggunakan skala 2 cm kepada 5 murid pada kedua-dua paksi, lukis dan lorek rantau yang memuaskan sistem ketaksamaan linear di 14(a).

Using the scale of 2 cm to 5 students on both axes, draw and shade the region that satisfies the system of linear inequalities in 14(a).

[4 markah / marks]

- (c) Berdasarkan graf di 14(b),
Based on the graph in 14(b),

- (i) tentukan bilangan minimum dan bilangan maksimum murid lelaki apabila bilangan murid perempuan ialah 5 orang.

determine the minimum and maximum number of male students when the number of female students is 5.

[2 markah / marks]

- (ii) tentukan sama ada syarat yang ditetapkan dipatuhi atau tidak jika 8 orang murid perempuan ingin menyertai kelas itu. Berikan justifikasi anda.

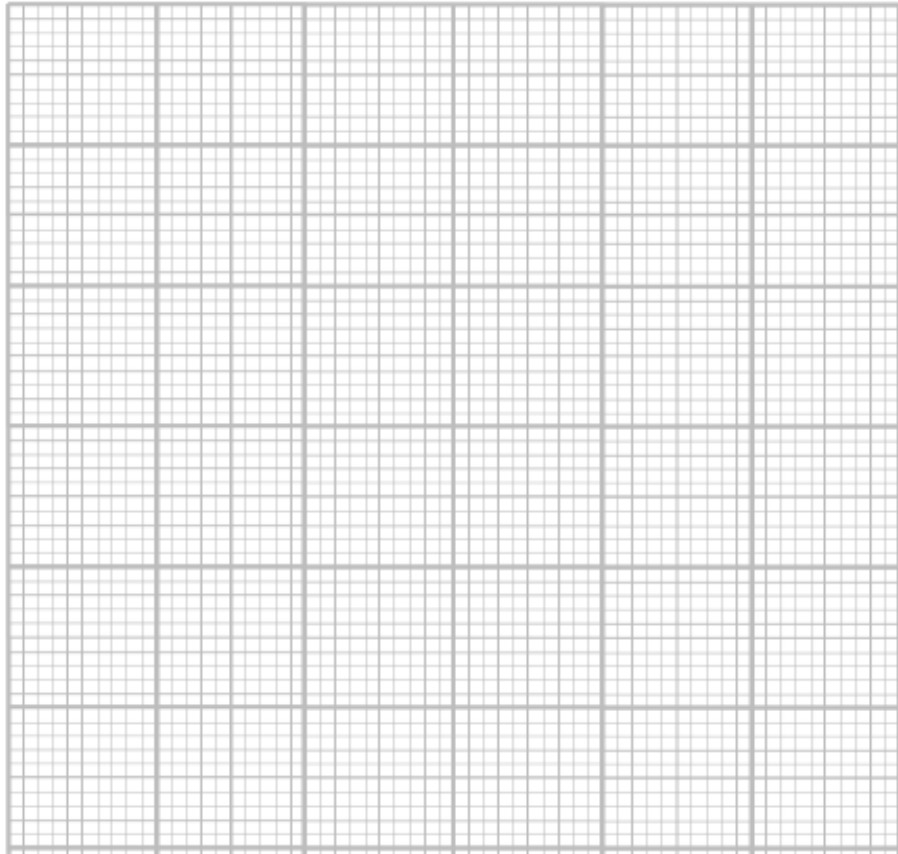
determine whether the conditions are fulfilled or not if 8 female students want to join the class. Give your justification.

[2 markah / marks]

Jawapan / Answer :

(a)

(b)



(c) (i)

Minimum =

Maksimum / *Maximum* =

(c) (ii)

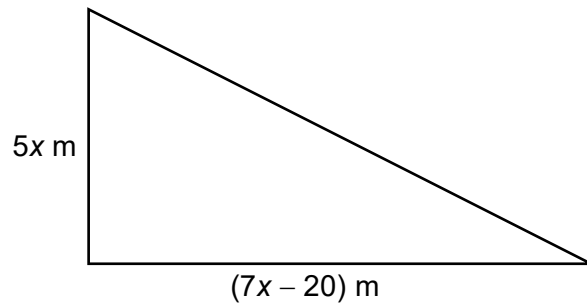
- 15** (a) Diberi fungsi kuadratik $f(x) = 4x^2 - 4x + 1$.
Given the quadratic function $f(x) = 4x^2 - 4x + 1$.
- (i) Nyatakan persamaan paksi simetri.
State the axis of symmetry.
- [1 markah / mark]
- (ii) Tentukan koordinat titik minimum atau maksimum bagi fungsi kuadratik tersebut.
Determine the minimum or maximum coordinate for the quadratic function.
- [3 markah / marks]

Jawapan / Answer :

(a)(i)

(a)(ii)

- 15 (b) Rajah 8 menunjukkan sebidang tanah berbentuk segi tiga bersudut tegak. Diberi luas tanah itu ialah $60\,000\text{ m}^2$.
Diagram 8 shows a triangular land. Given the area of the land is $60\,000\text{ m}^2$.



Rajah 8 / Diagram 8

Keseluruhan tanah itu akan dipagar dengan kos RM15.50 semeter. Hitung jumlah kos, dalam RM, pagar yang digunakan.

The entire land will be fenced at the cost of RM15.50 per metre. Calculate the total cost, in RM, of the fence used.

[5 markah / marks]

Jawapan / Answer :

Bahagian C

[15 markah]

Bahagian ini mengandungi dua soalan. Jawab **satu** soalan sahaja.

- 16** Negeri Melaka telah dipilih sebagai tuan rumah bagi Hari Pelancongan Sedunia dan Persidangan Pelancongan Sedunia. Pelbagai acara dirancang bagi menarik pelancong antarabangsa, di samping pelaksanaan strategi promosi berskala besar yang melibatkan kain rentang dan iklan media sosial.

The state of Melaka has been selected as the host for World Tourism Day and the World Tourism Conference. Various events are planned to attract international tourists, alongside a large-scale promotional strategy involving banners and social media advertisements.

- (a) Bilangan pelancong antarabangsa, T yang melawat Melaka adalah berubah secara langsung dengan bilangan acara pelancongan, E dan secara songsang dengan purata kos setiap acara, C . Pada tahun 2025, terdapat 64 acara pelancongan, dan purata kos setiap acara ialah RM50 000. Hasilnya, Melaka menerima sebanyak 320 000 pelancong antarabangsa.

The number of international tourists, T visiting Melaka is varies directly to the number of tourism events, E and inversely to the average cost per event, C . In the year 2025, there are 64 tourism events, and the average cost per event is RM50 000. As a result, Melaka receives 320 000 international tourists.

- (i) Tuliskan hubungan antara T , E dan C .
Write the relation between T , E and C .

[1 markah / mark]

- (ii) Nyatakan bilangan pelancong antarabangsa jika bilangan acara ditingkatkan kepada 80 dan purata kos setiap acara dikurangkan kepada RM40 000.

State the number of international tourists if the number of events is increased to 80 and the average cost per event is reduced to RM40 000.

[2 markah / marks]

Jawapan / Answer :

(i)

(ii)

- (b) Bagi menyokong kempen pelancongan yang dirancang di 16(a), pihak berkuasa pelancongan ingin melaksanakan dua jenis pakej promosi seperti dalam Jadual 6.
As a supporting effort for the tourism campaign planned in 16(a), the tourism authority intends to implement two types of promotional packages as in Table 6.

Pakej Package	Kain rentang Banners	Iklan media sosial Social media ads
A	3	2
B	2	4

Jadual 6 / Table 6

Kerajaan negeri bercadang menghasilkan 77 kain rentang dan 86 iklan media sosial. Menggunakan kaedah matriks, tentukan bilangan setiap pakej yang dipilih.

The state government plans to produce 77 banners and 86 social media ads. Using matrix method, determine the number of each promotional package chosen.

[4 markah / marks]

Jawapan / Answer :

- (c) Rajah 9 menunjukkan plot batang-dan-daun bagi bilangan pelancong yang melawat Muzium Samudera Melaka selama 15 hari berturut-turut.
Diagram 9 shows the stem-and-leaf plot of the number of tourists who visited Muzium Samudera Melaka, over 15 consecutive days.

Batang Stem	Daun Leaf
12	0 4 6 9
13	0 3 5 5 8
14	1 2 4
15	0 3
16	1

Kekunci : 16 | 1 bermaksud 161 pelancong
Key : 16 | 1 means 161 tourists

Rajah 9 / *Diagram 9*

- (i) Nyatakan bilangan hari yang mencatatkan lebih daripada 140 pelancong.
State the number of days with more than 140 tourists. [1 markah / mark]
- (ii) Hitung purata bilangan pelancong harian sepanjang 15 hari.
Calculate the average number of tourists per day over 15 days. [2 markah / marks]
- (iii) Jika purata pelancong kurang daripada 140, promosi akan dijalankan. Adakah promosi perlu dilakukan? Jelaskan.
If the average is less than 140, a promotion will be launched. Should it be done? Explain. [2 markah / marks]

Jawapan / *Answer* :

- (i)
- (ii)
- (iii)

- (d) Kerajaan negeri Melaka menyalurkan bantuan kewangan sebanyak RM12 000 kepada pihak pengurusan pelancongan. Syarikat Pelancongan Ain menyimpan wang tersebut di sebuah bank selama 3 tahun sebelum digunakan untuk naik taraf. Bank tersebut memberikan kadar faedah 4% setahun dan dikompaun setiap suku tahun.

The Melaka state government provides financial aid of RM12 000 to the tourism management authority. Syarikat Pelancongan Ain deposits the money in a bank for 3 years before using it for upgrades. The bank offers an interest rate of 4% per annum, compounded quarterly.

- (i) Hitung jumlah wang terkumpul selepas 3 tahun.
Calculate the total amount after 3 years.

[2 markah / marks]

- (ii) Jika bilangan pengkompaunan ditukar 6 kali setahun, nyatakan kesan kepada jumlah pulangan terkumpul ?
If the number of compounding periods is changed to 6 times a year, state the effect on the total accumulated return ?

[1 markah / mark]

Jawapan / Answer :

(i)

(ii)

- 17** (a) Pada 16 Mei yang lalu, Sekolah Menengah Kebangsaan Mahkota mengadakan sambutan Hari Guru peringkat sekolah. Sebelum sambutan Hari Guru, 6 orang pengawas telah ditugaskan untuk menghias pentas. Masa yang diperlukan untuk menyiapkan tugas mereka adalah 1 jam 45 minit. Diberi masa, t , berubah secara songsang dengan bilangan tenaga kerja, y .

On 16 May, Sekolah Menengah Kebangsaan Mahkota held a school-level Teacher's Day celebration. Before the Teacher's Day celebration, 6 prefects were assigned to decorate the stage. The time it takes to complete their assignment is 1 hour and 45 minutes. Given time, t , varies inversely with the number of labors, y .

- (i) Tuliskan hubungan antara t dan y .
State the relation between t and y .

[1 markah / mark]

- (ii) Ungkapkan t dalam sebutan y .
Express t in term of y .

[2 markah / marks]

Jawapan / Answer :

(i)

(ii)

- (b) Biro Pengawas Sekolah bercadang menghadiahkan cenderamata berbentuk jambangan coklat dan bunga kepada semua guru dan Anggota Kumpulan Pelaksana (AKP). Jadual 7 menunjukkan bilangan set cenderamata bagi semua guru dan AKP bagi sekolah tersebut.

The School's Prefect Bureau plans to give a souvenir as a gift in the form of chocolate and flower bouquets to all teachers and School Implementation Group (AKP) members. Table 7 shows the number of souvenir sets for all teachers and AKP members in the school.

Kakitangan sekolah School staff	Jambangan bunga Bouquet of flowers	Jambangan coklat Bouquet of chocolate
Guru Teacher	70	45
Anggota Kumpulan Pelaksana Member of the Implementation Group (AKP)	10	5

Jadual 7 / Table 7

Kos penyediaan jambangan bunga dan coklat adalah RM10 dan RM15 masing-masing. Dengan menggunakan pendaraban matriks, hitung jumlah kos yang perlu ditanggung oleh Biro Pengawas Sekolah bagi menyediakan jambangan tersebut.

The cost of preparing the bouquet of flowers and chocolates is RM10 and RM15 respectively. Using the matrix multiplication, calculate the total cost that the School Prefects Bureau must bear to prepare the bouquet.

[4 markah / marks]

Jawapan / Answer :

- (c) Jambangan bunga yang hendak dihadiahkan kepada semua guru dan AKP terdiri daripada empat jenis warna iaitu merah, biru, kuning dan oren seperti yang ditunjukkan dalam Jadual 8.

The bouquets of flower to be presented to all teachers and AKP members consist of four types of colors, red, blue, yellow and orange as shown in the Table 8.

Warna bunga Colour of flower	Merah <i>Red</i>	Biru <i>Blue</i>	Kuning <i>Yellow</i>	Oren <i>Orange</i>
Bilangan jambangan Number of bouquet	12	24	8	36

Jadual 8 / Table 8

- (i) Hitung sudut sektor bagi setiap jenis warna tersebut.

Calculate the sector angle for each type of color.

[2 markah / marks]

- (ii) Seterusnya, lengkapkan carta pai pada rajah 10 di ruang jawapan untuk mewakili data tersebut dan berikan justifikasi kepada kesesuaian perwakilan data ini.

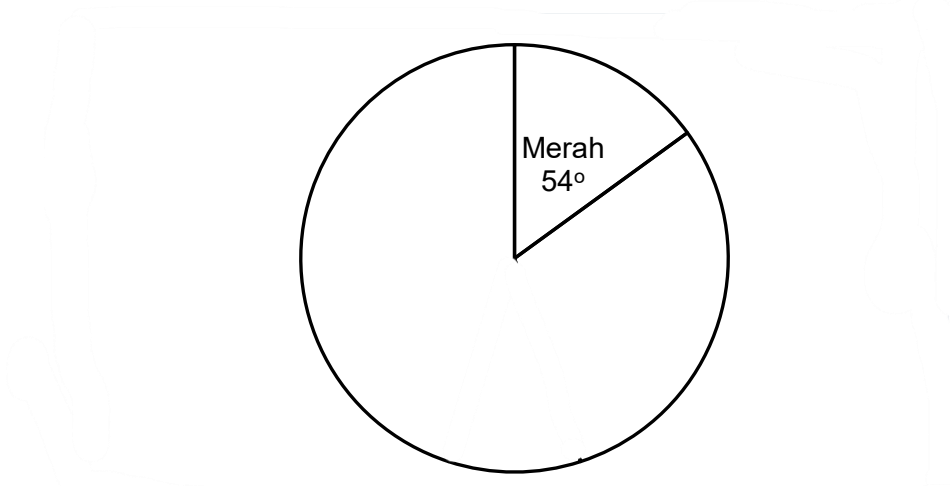
Hence, complete the pie chart on diagram 10 in the answer space to represent the data and provide justification for the appropriateness of this data representation.

[3 markah / marks]

Jawapan / Answer :

- (i)

- (ii)



Rajah 10 / Diagram 10

- (d) Biro Pengawas Sekolah telah membuat pinjaman dari koperasi sekolah sebanyak RM2 000 untuk menampung kos penyediaan cenderamata hari guru tersebut. Kadar faedah bagi pinjaman tersebut ialah 1.5% setahun ke atas baki. Tempoh bayaran balik adalah selama 2 tahun manakala ansuran bulanan adalah sebanyak RM90. Hitung jumlah faedah yang perlu dibayar oleh mereka dalam masa 2 bulan.

The School's Prefects Bureau has taken out a loan from the school cooperative of RM2 000 to cover the cost of preparing the Teacher's Day souvenirs. The interest rate for the loan is 1.5% per annum on the balance. The repayment period is 2 years while the monthly instalment is RM90. Calculate the amount of interest that they need to pay in 2 months.

[3 markah / marks]

Jawapan / Answer :