



KEMENTERIAN PENDIDIKAN MALAYSIA

Jabatan Pendidikan Negeri Melaka

#jpnmelakajenamakerajaan01

PROJEK KM²

@ KEMENJADIAN MURID MELAKA

**MODUL DLP
KSSM**

FASA 2

MATEMATIK
TINGKATAN 4

NAMA MURID :

NAMA KELAS :

NAMA GURU :



“PENDIDIKAN BERKUALITI, INSAN TERDIDIK, NEGARA SEJAHTERA”



KEMENTERIAN PENDIDIKAN MALAYSIA
Jabatan Pendidikan Negeri Melaka
*jpnmelakajenamakerajaan*no1

**SENARAI NAMA AHLI PANEL PEMBINA MODUL KSSM @ KM²
MATA PELAJARAN MATEMATIK KSSM TINGKATAN 4**

NAMA GURU PANEL	NAMA SEKOLAH
SALMAH BINTI ABU BAKAR (Guru Sumber)	SMK AYER KEROH
NOOR AZIZAH BINTI MD. SOM (Guru Sumber)	SMK DATO HJ. TALIB KARIM
HASLINDA BINTI OMAR (Ketua Panel)	SMK DATO ABDUL RAHMAN YA'KUB
ROJITA BINTI SABIKAN	SMK MUNSHI ABDULLAH
MASHITA BINTI RASIF	SMK AGAMA SULTAN MUHAMMAD
WAN NOOR AZIRA BINTI WAN ISHAK	SMK SELANDAR
BAHARIZAH BINTI BAHARAM	SMK DATUK BENDAHARA
NURUL ASHIKIN BINTI SHAFIE	SMK SERI KOTA
MASTURA BINTI BUJAL	SBPI SELANDAR
ROZILAH BINTI NAWAWI	SMK TUN SYED ZAHIRUDDIN
NURUL IZZAH BINTI JUMAT	SMK DATUK BENDAHARA
MOHD RAHIMI BIN ABD. GHANI	SMK DATO ABDUL RAHMAN YA'KUB
ALIAH HAFEZAH BINTI ABDUL RAZAK	SM ARAB JAIM AL ASYRAF

EDISI PERTAMA 2021

CETAKAN JABATAN PENDIDIKAN MELAKA

“PENDIDIKAN BERKUALITI, INSAN TERDIDIK, NEGARA SEJAHTERA”

BAB 4 : OPERASI SET
CHAPTER 4 : OPERATIONS ON SETS

SOALAN OBJEKTIF
OBJECTIVE QUESTIONS

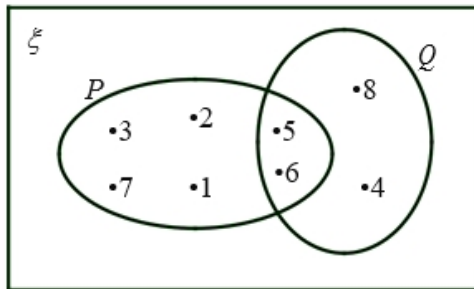
1. Senaraikan semua subset bagi set $P = \{m, n\}$.

List all the subsets of set $P = \{m, n\}$.

- A. $\{m\}, \{n\}$
 B. $\{m\}, \{n\}, \{\}$
 C. $\{m\}, \{n\}, \{m, n\}$
 D. $\{m\}, \{n\}, \{m, n\}, \{\}$

2. Rajah 2 ialah gambarajah Venn yang menunjukkan set semesta ξ , set P dan set Q .

Diagram 2 is a Venn diagram showing the universal set ξ , set P and set Q .



Rajah 2
Diagram 2

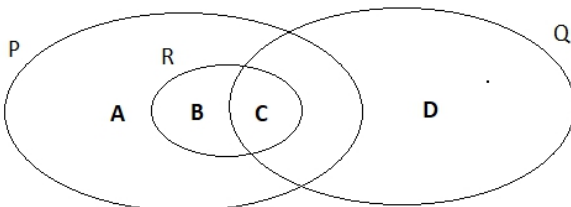
Cari $n(P \cup Q')$.

Find $n(P \cup Q')$.

- A. 3 C. 5
 B. 4 D. 6

3. Rajah 3 menunjukkan satu gambarajah Venn dengan set semesta $\xi = P \cup Q \cup R$.

Diagram 3 is a Venn diagram with the universal set $\xi = P \cup Q \cup R$.



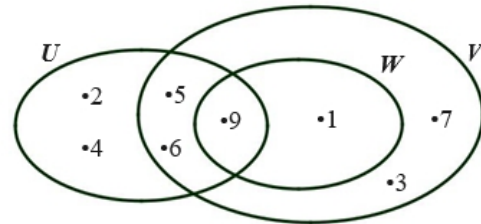
Rajah 3
Diagram 3

Antara Kawasan **A**, **B**, **C** atau **D**, manakah mewakili set $P \cap Q' \cap R$

Which of the region **A**, **B**, **C** atau **D**, represents the set $P \cap Q' \cap R$?

4. Rajah 4 ialah gambarajah Venn yang menunjukkan set U , set V dan set W . Diberi bahawa set semesta, $\xi = U \cup V \cup W$.

Diagram 4 is a Venn diagram showing set U , set V and set W . Given that universal set, $\xi = U \cup V \cup W$.



Rajah 4
Diagram 4

Senaraikan semua elemen bagi set $U \cap W \cup V'$.

List all the elements of the set $U \cap W \cup V'$.

- A. $\{2, 4, 9\}$
 B. $\{2, 3, 4, 7\}$
 C. $\{1, 5, 6, 9\}$
 D. $\{1, 2, 3, 4, 5, 6, 7\}$

5. Diberi $P = \{\text{nombor ganjil yang kurang daripada 15}\}$ dan $Q = \{\text{faktor bagi 36}\}$, unsur-unsur bagi $P \cap Q$ ialah

Given $P = \{\text{odd numbers which are less than 15}\}$ and $Q = \{\text{factors of 36}\}$, the elements of $P \cap Q$ are

- A. $\{3, 9\}$
 B. $\{1, 3, 9\}$
 C. $\{3, 6, 9\}$
 D. $\{1, 3, 6, 9\}$

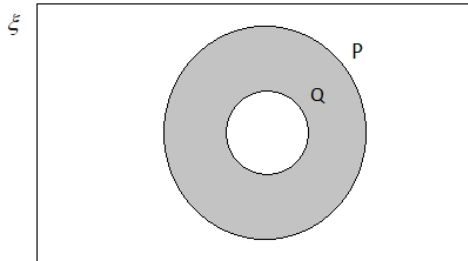
6. Diberi $Q = \{1, 2, 3, 4\}$, set $R = \{3, 4, 6\}$ dan set $S = \{6, 8\}$, cari $n(Q \cap R \cup S)$.

Given $Q = \{1, 2, 3, 4\}$, set $R = \{3, 4, 6\}$ and set $S = \{6, 8\}$, find $n(Q \cap R \cup S)$.

- A. 2 C. 4
 B. 3 D. 6

7. Gambar rajah Venn dalam Rajah 7 menunjukkan hubungan antara set semesta ξ , set P dan set Q.

The Venn diagram in Diagram 7 shows the relationship between the universal set ξ , set P and set Q.



Rajah 7
Diagram 7

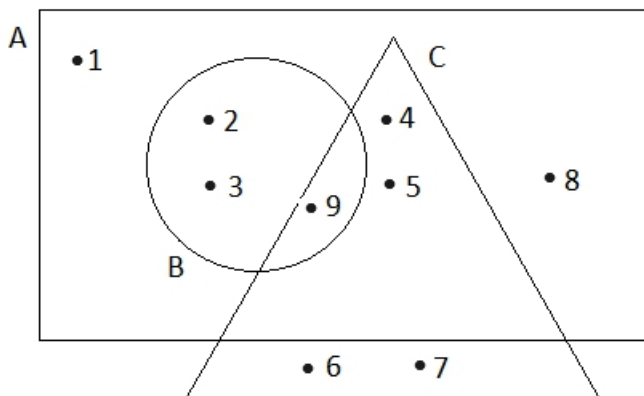
Kawasan berlorek mewakili set

The shaded region represents the set

- A. $P' \cap Q$ C. $P \cap Q'$
B. $P' \cup Q$ D. $P' \cup Q'$

8. Gambar rajah Venn dalam Rajah 8 menunjukkan $\xi = A \cup B \cup C$.

The Venn diagram in Diagram 8 show $\xi = A \cup B \cup C$.



Rajah 8
Diagram 8

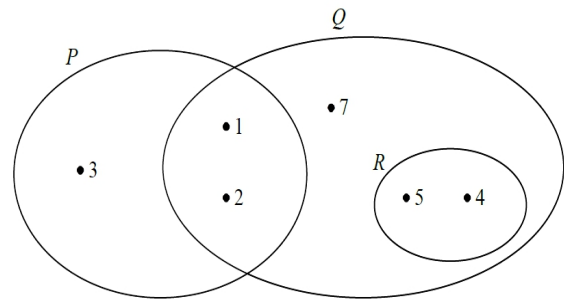
Cari unsur- unsur bagi $(A \cap C)'$

Find the elements of $(A \cap C)'$

- A. $\{2, 3\}$
B. $\{1, 2, 3\}$
C. $\{1, 6, 7\}$
D. $\{1, 2, 3, 6, 7, 8\}$

9. Rajah 9 ialah gambar rajah Venn yang menunjukkan unsur-unsur bagi set P, set Q dan set R.

Diagram 9 is a Venn diagram which shows the elements of set P, set Q and set R.



Rajah 9
Diagram 9

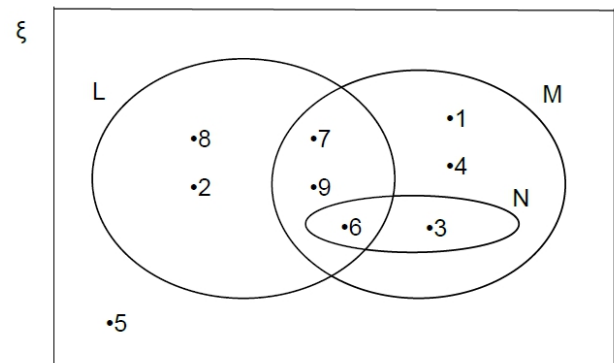
Jika set semesta $\xi = P \cup Q \cup R$, maka set $(P \cap Q)' \cap R$ ialah

If the universal set $\xi = P \cup Q \cup R$, then set $(P \cap Q)' \cap R$ is

- A. $\{4, 5\}$
B. $\{4, 5, 7\}$
C. $\{3, 4, 5, 7\}$
D. $\{1, 2, 3, 4, 5\}$

10. Rajah 10 menunjukkan gambar rajah Venn dengan set semesta $\xi = L \cup M \cup N$.

Diagram 10 shows a Venn diagram with the universal set $\xi = L \cup M \cup N$.



Rajah 10
Diagram 10

Senaraikan semua unsur set N' .

List all the elements of set N' .

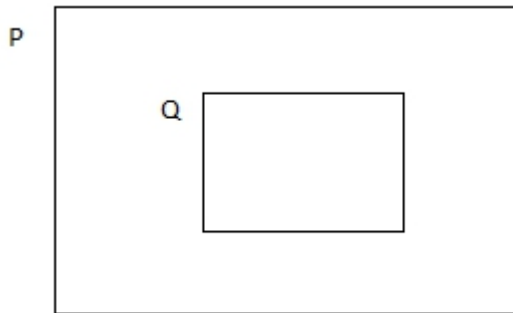
- A. $\{3, 6\}$
B. $\{1, 4, 7, 9\}$
C. $\{1, 2, 4, 7, 8, 9\}$
D. $\{1, 2, 4, 5, 7, 8, 9\}$

BAHAGIAN A SECTION A

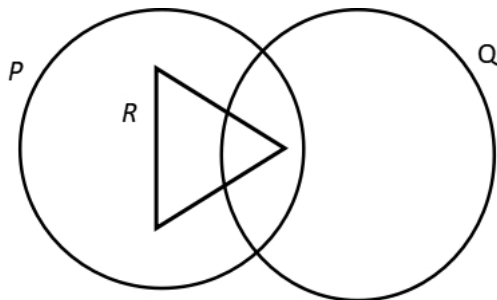
1. (a) Lorekkan kawasan $P \cap Q'$ dimana $P \cap Q \neq \emptyset$ dalam gambar rajah Venn di ruang jawapan.
Shade the region of $P \cap Q'$ where $P \cap Q \neq \emptyset$ in the Venn diagram in the answer space.
- (b) Gambar rajah Venn di ruang jawapan menunjukkan set P , set Q dan set R . Diberi set semesta $\xi = P \cup Q \cup R$. Pada rajah di ruang jawapan, lorek set $P' \cup (Q \cap R)$.
The Venn diagram in the answer space shows set P , set Q and set R . Given the universal set $\xi = P \cup Q \cup R$. On the diagram in answer space, shade the set $P' \cup (Q \cap R)$.

Jawapan / Answer :

(a)



(b)

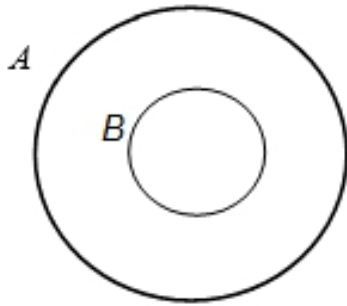


2. Diberi set semesta, $\xi = P \cup Q \cup R$ dengan keadaan $\xi = \{x : 10 \leq x \leq 20, x \text{ ialah satu integer}\}$, set $P = \{x : x \text{ ialah satu gandaan } 3\}$, set $Q = \{x : x \text{ ialah satu nombor genap}\}$, dan set $R = \{x : x \text{ ialah satu nombor perdana}\}$.
Given the universal set, $\xi = P \cup Q \cup R$ such that $\xi = \{x : 10 \leq x \leq 20, x \text{ is an integer}\}$, set $P = \{x : x \text{ is a multiple of } 3\}$, set $Q = \{x : x \text{ is an even number}\}$, dan set $R = \{x : x \text{ is a prime number}\}$.
- (a) Senaraikan unsur-unsur bagi set
List the elements of set
- (i) $P \cap Q$
 - (ii) $Q' \cup R$
- (b) Cari $n(P' \cap R')$.
Find $n(P' \cap R')$.

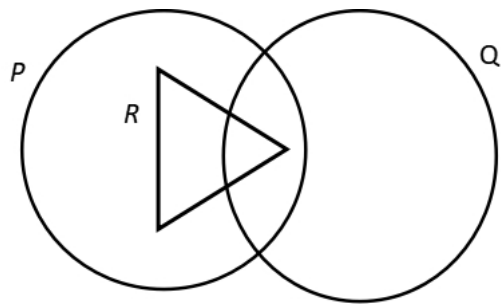
3. (a) Lorekkan kawasan $A \cap B'$.
Shade the region of $A \cap B'$.
- (b) Gambar rajah Venn di ruang jawapan menunjukkan set P , set Q dan set R . Diberi set semesta $\xi = P \cup Q \cup R$. Pada rajah di ruang jawapan, lorek set $P' \cup (Q' \cap R)$.
The Venn diagram in the answer space shows set P , set Q and set R . Given the universal set $\xi = P \cup Q \cup R$. On the diagram in answer space, shade the set $P' \cup (Q' \cap R)$.

Jawapan / Answer :

(a)

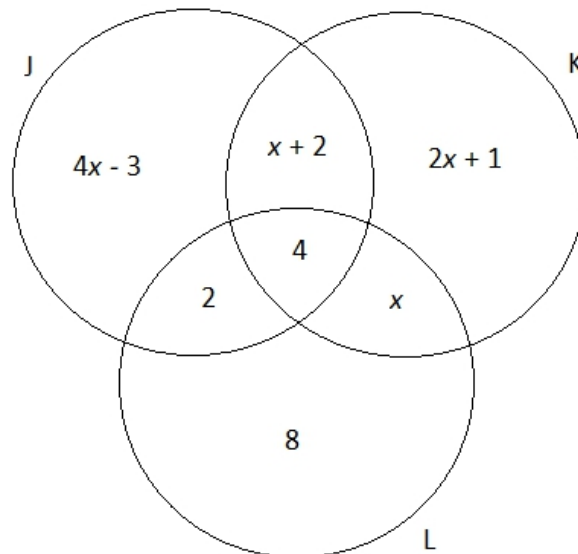


(b)



BAHAGIAN B
SECTION B

1. Gambar rajah Venn dalam Rajah 1 menunjukkan bilangan unsur-unsur dalam set J , K dan L .
Venn diagram in Diagram 1 shows the number of elements in set J , K and L .



Rajah 1
Diagram 1

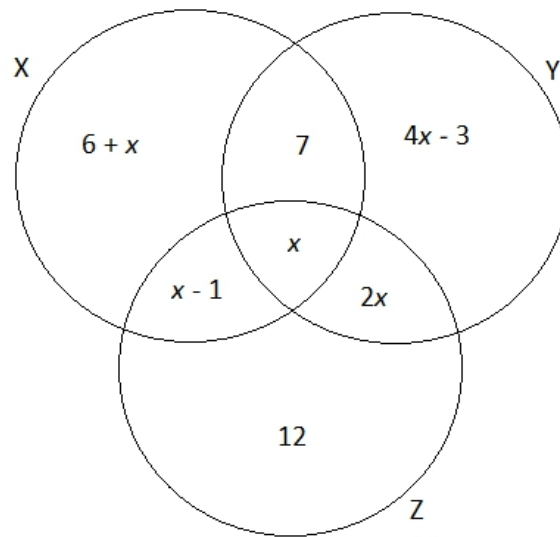
Diberi $\xi = J \cup K \cup L$ dan $n(\xi) = 38$, cari

Given that $\xi = J \cup K \cup L$ and $n(\xi) = 38$, find

- (a) Nilai bagi x . / Value of x .
- (b) $n[(J \cap K) \cup L']$
- (c) $n(K' \cup L)$
- (d) $n[(J \cap K)' \cup L]$

2. Gambar rajah Venn dalam Rajah 2 menunjukkan bilangan unsur-unsur dalam set X , Y dan Z dengan $\xi = X \cup Y \cup Z$ dan $n(\xi) = 50$.

Venn diagram in Diagram 2 shows the number of elements in set X , Y and Z where $\xi = X \cup Y \cup Z$ and $n(\xi) = 50$.



Rajah 2
Diagram 2

Cari / Find

- (a) Nilai bagi x . / *Value of x .*
- (b) $n[X' \cap (Y \cap Z)]$
- (c) $n(X \cap Z')$

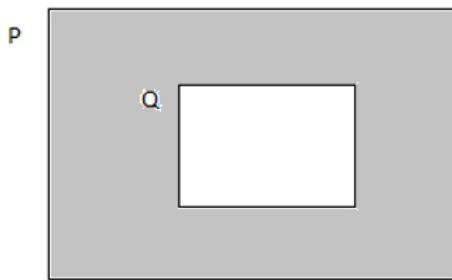
JAWAPAN ANSWER

OBJEKTIF / OBJECTIVE

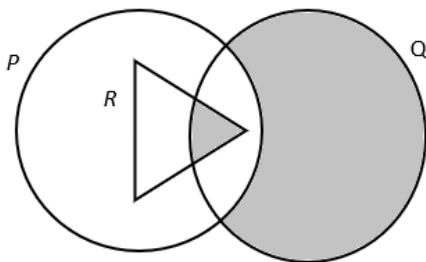
- | | | | | |
|------|------|------|------|-------|
| 1. D | 2. D | 3. B | 4. A | 5. B |
| 6. C | 7. C | 8. D | 9. A | 10. D |

BAHAGIAN / SECTION A

1. (a)



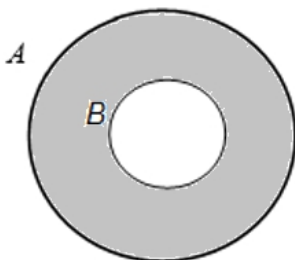
(b)



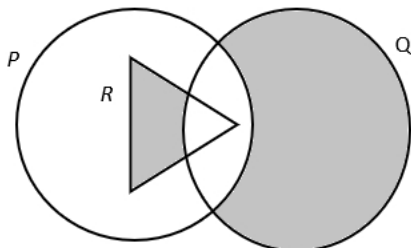
2. (a) (i) {12, 18}
(ii) {11, 13, 15, 17, 19}

(b) 4

3. (a)



(b)



BAHAGIAN / SECTION B

1. (a) $x = 3$
(b) 21
(c) 19
(d) 8
2. (a) $x = 3$
(b) 6
(c) 16

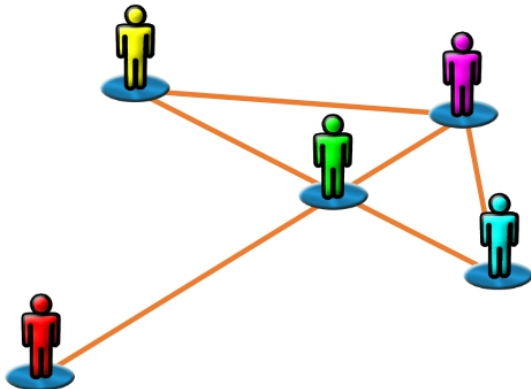
BAB 5 : RANGKAIAN DALAM TEORI GRAF
CHAPTER 5 : NETWORK IN GRAPH THEORY

SOALAN OBJEKTIF
OBJECTIVE QUESTIONS

1. Nyatakan antara berikut yang manakah **BUKAN** item yang terdapat dalam rangkaian teori graf.
*State which of the following are **NOT** an item found in the network in graph theory.*

- | | |
|--------------|---------------|
| A. Sisi (s) | C. Tepi (e) |
| Side (s) | Edge (e) |
| B. Bucu (v) | D. Darjah (d) |
| Vertices (v) | Degree (d) |

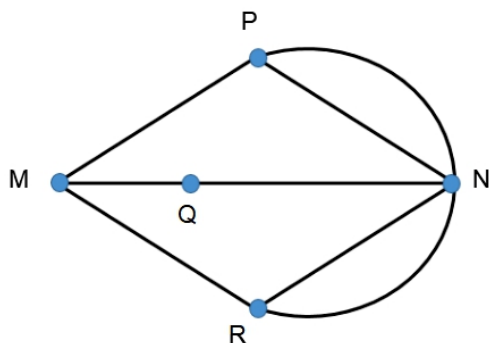
2. Tentukan berapakah jumlah tepi yang terdapat dalam rangkaian pada Rajah 1.
Determine how many edges there are in the network in Diagram 1.



Rajah 1
Diagram 1

- | | |
|------|------|
| A. 4 | C. 6 |
| B. 5 | D. 7 |

3. Rajah 2 menunjukkan sebuah graf ganda tak terarah.
Diagram 2 shows a non-directional double graph.



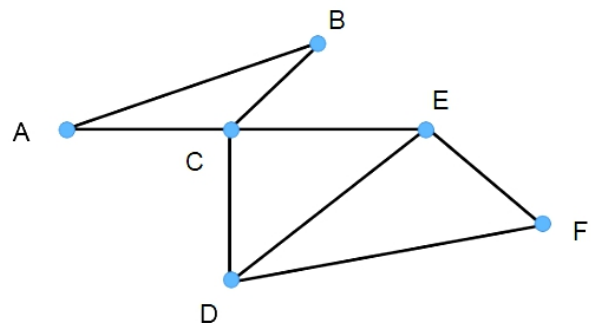
Rajah 2
Diagram 2

Hitung nilai darjah, d bagi bucu N.

Calculate the value of degree, d for the vertices of N.

- | | |
|------|-------|
| A. 4 | C. 10 |
| B. 5 | D. 14 |

4. Rajah 3 di sebelah menunjukkan graf perjalanan Hasrol melalui beberapa titik A, B, C, D, E, dan F.
Diagram 3 on the side shows the graph of Hasrol's journey through several points A, B, C, D, E, and F.



Rajah 3
Diagram 3

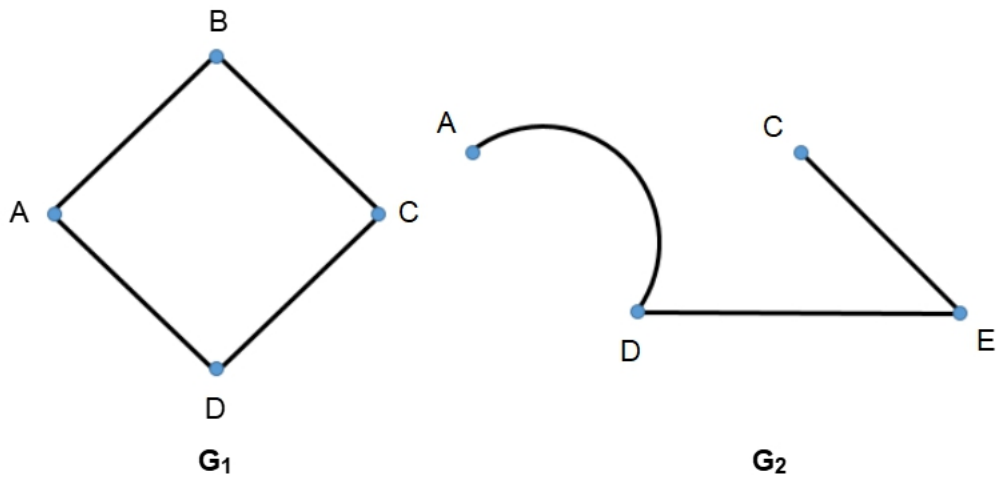
Di antara yang berikut, yang manakah **BUKAN** kemungkinan laluan yang boleh dilalui oleh Hasrol dari titik A ke titik F.

*Which of the following is **NOT** a possible route that Hasrol can travel from point A to point F.*

- | |
|--|
| A. $A \rightarrow C \rightarrow D \rightarrow E \rightarrow F$ |
| B. $A \rightarrow C \rightarrow D \rightarrow F$ |
| C. $A \rightarrow B \rightarrow C \rightarrow E \rightarrow F$ |
| D. $A \rightarrow B \rightarrow E \rightarrow F$ |

5. Rajah 4 menunjukkan dua buah subgraf G_1 dan G_2 .

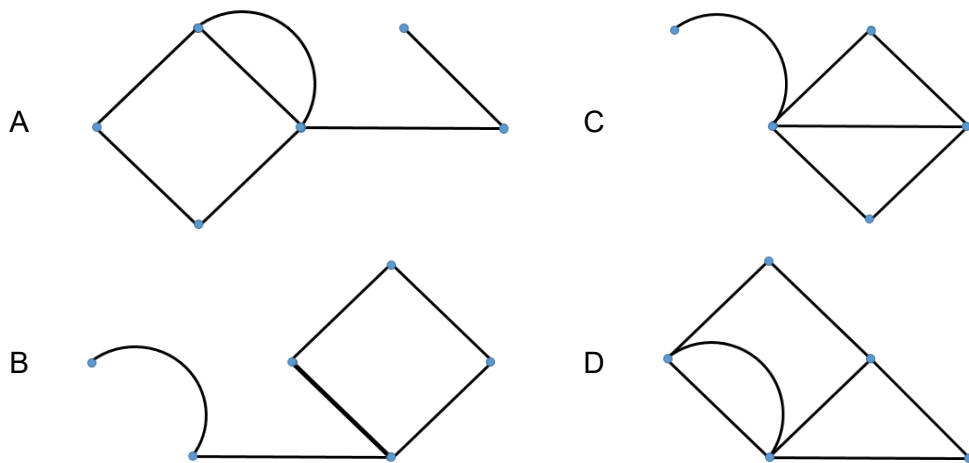
Diagram 4 shows that two subgraph of G_1 and G_2 .



Rajah 4
Diagram 4

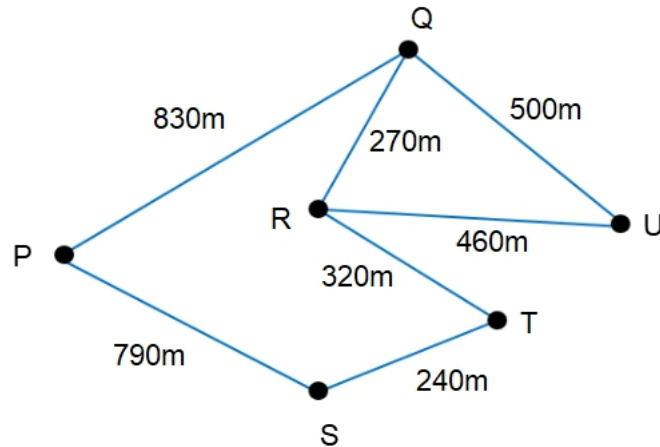
Antara rangkaian graf berikut, yang manakah merupakan hasil gabungan subgraf G_1 dan subgraf G_2 .

Which of the following graph network are the result of a combination of subgraph G_1 and subgraph G_2 .



6. Graf tak terarah Rajah 5 di bawah menunjukkan kedudukan enam buah rumah di sebuah kawasan penempatan. Seorang pembanci bergerak dari rumah ke rumah untuk mendapat data setiap ahli isi rumah.

The indirect graph of Diagram 5 below shows the position of six houses in a settlement area. An enumerator moves to each house to obtain data from each household members.



Rajah
Diagram 5

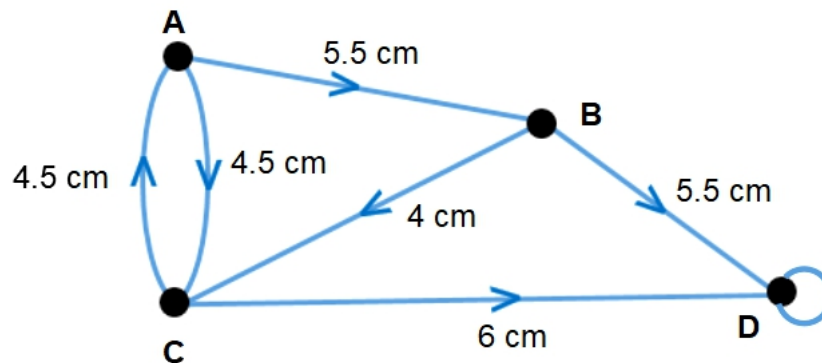
Jika pembanci itu bermula dengan Rumah P, kirakan jarak terdekat di mana pembanci tersebut dapat bergerak ke semua rumah.

If the enumerator starts from House of P, calculate the nearest distance where the enumerator can move to every houses.

- | | |
|------------|------------|
| A. 2.35 km | C. 2.15 km |
| B. 2.31 km | D. 2.12 km |

BAHAGIAN A
SECTION A

1. Rajah 1 menunjukkan suatu graf terarah yang mempunyai gelung dan berbilang tepi.
The Diagram 1 shows a directed graph with loop and multiple edges.



Rajah 1
Diagram 1

- (a) Senaraikan set tepi, E dan bilangan tepi, $n(E)$.
List set of edges, E and sum of edges, $n(E)$.
- (b) Nyatakan jarak terdekat dari A ke D.
State the shortest distance from A to D.
2. Merlimau (M), Alor Gajah (A), dan Banda Hilir (B) adalah tiga buah bandar dan setiap bandar dihubungkan oleh jalanraya yang jaraknya tidak sama. Jadual 2 menunjukkan tempoh masa jarak perjalanan suatu bandar ke bandar yang lain.
Merlimau (M), Alor Gajah (A), and Banda Hilir (B) are three towns and every two towns are connected by roads that have different distances. Table 2 shows duration of the trip from one town to another.

BANDAR /TOWN	TEMPOH MASA /TIME PERIOD
Merlimau ke Alor Gajah	57 minit / minutes
Merlimau ke Banda Hilir	$\frac{1}{2}$ jam / hours
Alor Gajah ke Banda Hilir	43 minit / minutes

Jadual 2
Table 2

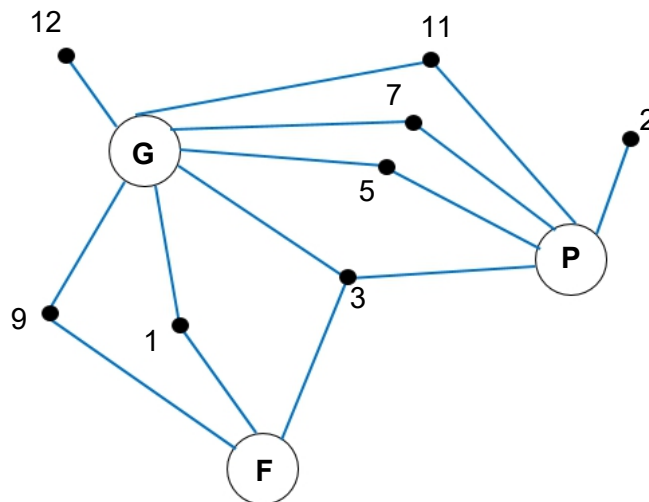
Nyatakan
State

- (a) Situasi di atas dalam bentuk graf.
The situation above in the form of graph.
- (b) Tempoh masa perjalanan dari Merlimau ke Alor Gajah, kemudian ke Banda Hilir dan seterusnya kembali ke Merlimau semula. Nyatakan jawapan dalam jam dan minit.
Travel time period from Merlimau to Alor Gajah, then Banda Hilir and after that return back to Merlimau. State answer in form of hours and minutes.

BAHAGIAN B
SECTION B

1. Graf 3 menunjukkan kaitan antara unsur-unsur yang terdapat dalam set nombor ganjil (G), set nombor perdana (P), dan set faktor bagi 9 (F). Diberi set semesta, $\xi = X \cup Y \cup Z$.

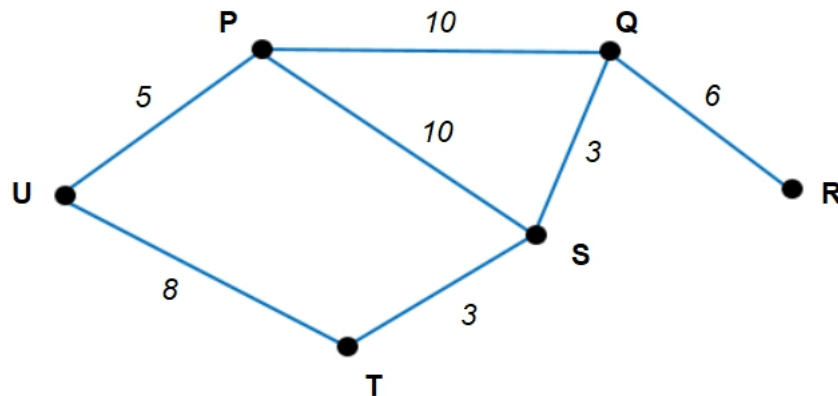
The Graph 3 shows the relationship between the elements found in the set of odd numbers (G), the set of prime numbers (P) and the set of factors of 9 (F). Given that universe set $\xi = X \cup Y \cup Z$.



Graf 3
Graph 3

- (a) Wakilkan graf di atas dalam bentuk gambar rajah Venn.
Represent graph above in the form of a Venn Diagram.
- (b) Tentukan unsur bagi set berikut
Determine the elements of the following set
- (i) $(F \cup P)'$
 - (ii) $(F \cap G \cap P)$
 - (iii) $(G \cap P)' \cup F$

2. Graf 4 di bawah menunjukkan suatu graf pemberat tidak terarah.
The Graph 4 below shows indirect weighted graph.



Graf 4
 Graph 4

- (a) Lengkapkan Jadual 4 di bawah.
Complete Table 4 below.

Pasangan Bucu	Pemberat
(P,Q)	10
(P,S)	
(P,U)	
(Q,R)	
(Q,S)	
(U,T)	
(S,T)	

- (b) (i) Senaraikan **EMPAT** pilihan laluan dari titik U ke titik R.
*List **FOUR** routes option from point U to R.*
- (ii) Nyatakan jarak terdekat antara laluan dari titik U ke titik R.
State the shortest distance route from point U to R.
- (c) Jika suatu garisan laluan di buat antara titik P ke titik T, dan PUT membentuk suatu segitiga bersudut tegak dengan sudut PUT ialah 90° . Cari panjang titik P ke titik T.
If a line is drawn between point P to point T, and PUT forms a right-angled triangle with an angle of PUT is 90° . Find the length of point P to point T.

BAHAGIAN C SECTION C

1. Rajah 5 menunjukkan peta perjalanan Encik Mohsin, Encik Chong dan Encik Selvam dari SMK Dato' Abdul Rahman Ya'kub ke SMK Paya Rumpit.

Diagram 5 shows the travel map of Encik Mohsin, Encik Chong and Encik Selvam from SMK Dato' Abdul Rahman Ya'kub to SMK Paya Rumpit.



Rajah 5
Diagram 5

Mereka menggunakan aplikasi google maps untuk mendapatkan jarak dan masa memandu. Jadual 6 dan Jadual 7 di bawah menunjukkan nama tempat dan pilihan laluan yang boleh dilalui oleh mereka.

They use the google maps application to get the distance and driving time. Tables 6 and Table 7 below show the name of places and route options they can take.

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

Jadual 6
Table 6

	Pilihan laluan/Choice of route	Masa/ times (minit/minutes)	Jarak/Distances (km)
Encik Mohsin	(RY → U → PR)	23	35.9
Encik Chong	(RY → K → H → PR)	25	40.7
Encik Selvam	(RY → T → H → PR)	32	47.0

Jadual 7
Table 7

- (a) Diberi jarak per masa untuk setiap laluan adalah pada kadar kelajuan yang berbeza-beza. Siapakah yang menggunakan laluan yang paling optimum berdasarkan masa dan jarak yang paling minimum.
Given the distance per time for each route are at different speeds. Who uses the most optimal route based on the minimum time and distance.
- (b) (i) Jika had laju memandu di jalan raya ialah 90 km/j, siapakah di antara mereka yang mematuhi dan memandu di bawah had kelajuan yang ditetapkan. Berikan sebab.
If the speed limit of driving on the road is 90 km/h, who among them obeys and drives below the set of speed limit. Give a reason.
- (ii) Jika Encik Chong memandu dengan kelajuan 90 km/j. Nyatakan masa baru yang di ambil olehnya untuk perjalanan dari SMK Dato' Abdul Rahman Yakub ke SMK Paya Rumpit. [Nyatakan jawapan dalam minit dan saat]
If Encik Chong drives at a speed of 90 km/h. State the new time taken by him to travel from SMK Dato' Abdul Rahman Ya'kub to SMK Paya Rumpit. [State the answer in minutes and seconds]
- (c) Satu acara berbasikal akan dianjurkan dan menggunakan ketiga-tiga laluan. Jabatan Kerja Raya (JKR) mengarahkan penutupan laluan dibuat dan hanyalah perjalanan sehala sahaja dibenarkan. Berikut merupakan kondisi arahan tersebut.
A cycling event will be organized and using all three routes. The Public Works Department (JKR) has ordered the closure of the route and only one-way travel is allowed. Here are the conditions of the referral.

Laluan RY ke U dibuka / <i>Route RY to U is open</i>
Laluan K ke U ditutup / <i>Route K to U is closed</i>
Laluan K ke H dibuka / <i>Route K to H is open</i>
Laluan K ke T ditutup / <i>Route K to T is closed</i>
Laluan H ke T dibuka / <i>Route H to T is open</i>
Laluan K ke RY dibuka / <i>Route K to RY is open</i>
Kedua-dua belah laluan H ke PR dibuka / <i>Both sides Route H to PR are open</i>
Kedua-dua belah laluan U ke PR dan T ke RY ditutup / <i>Both sides Route U to PR and T to RY are open</i>

Berdasarkan kenyataan di atas lukiskan rangkaian graf terarah yang menunjukkan keadaan situasi itu.

Based on the above statement draw a network of directed graphs showing the situation.

JAWAPAN ANSWER

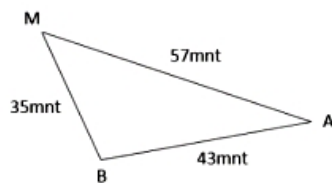
OBJEKTIF / OBJECTIVE

1. A 2. C 3. B 4. D 5. D 6. D

BAHAGIAN / SECTION A

1. (a) $E = \{(A,B), (A,C), (C,A), (B,C), (B,D), (C,D), (D,D)\}$; $n(E) = 7$
 (b) 10.5 cm

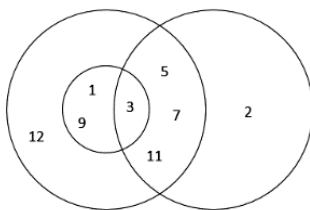
2. (a)



- (b) 2 jam 10 minit

BAHAGIAN / SECTION B

1. (a)



- (b) (i) {12}
 (ii) {3}
 (iii) {1,2,3,9,12}

2. (a)

(P,S)	10
(P,U)	5
(Q,R)	6
(Q,S)	3
(U,T)	8
(S,T)	3

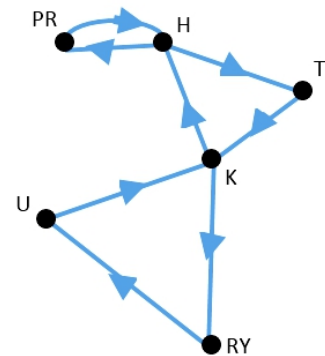
- (b) (i) $U \rightarrow P \rightarrow Q \rightarrow R$
 $U \rightarrow P \rightarrow S \rightarrow Q \rightarrow R$
 $U \rightarrow T \rightarrow S \rightarrow Q \rightarrow R$
 $U \rightarrow T \rightarrow S \rightarrow P \rightarrow Q \rightarrow R$

- (ii) 20

- (c) 9.4

BAHAGIAN / SECTION C

1. (a) Cikgu Mohsin
 (b) (i) Cikgu Selvam
 $88.13 \text{ km/j} < 90 \text{ km/j}$
 (ii) 27 minit 8 saat
 (c)



BAB 6 : KETAKSAMAAN LINEAR DALAM DUA PEMBOLEH UBAH
CHAPTER 6 : LINEAR INEQUALITIES IN TWO VARIABLES

SOALAN OBJEKTIF
OBJECTIVE QUESTIONS

1. Titik manakah tidak memuaskan ketaksamaan linear $2x + 3y \leq 5$?
Which point does not satisfy the linear inequality $2x + 3y \leq 5$?

A. $(4, -2)$ C. $(0, -1)$
 B. $(2, 1)$ D. $(-2, 1)$

2. Diberi bahawa / Given that

y sekurang-kurangnya 6 kali x.
y is at least 6 times of x.

Antara ketaksamaan linear berikut, yang manakah mewakili pernyataan di atas?

Which linear inequality represents the statement above?

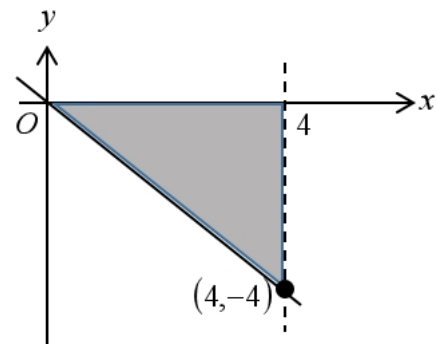
A. $6y < x$ C. $y > 6x$
 B. $y \leq 6x$ D. $y \geq 6x$

3. Sebuah kilang mengilang p buah televisyen dan q buah ketuhar setiap hari. Syarat pengilangan adalah bahawa hasil tambah televisyen dan ketuhar melebihi 10 000 buah dan bilangan televisyen mesti sekurang-kurangnya sama dengan bilangan ketuhar. Antara berikut, ketaksamaan linear yang manakah selain daripada $x > 0$ dan $y > 0$ memuaskan pengilangan kilang tersebut?

A factory manufactures p televisions and q ovens every day. The manufacturing conditions are that the sum of televisions and ovens must exceed 10 000 and the number of televisions must be at least the same as the numbers of ovens. Which of the following linear inequalities other than $x > 0$ and $y > 0$ satisfy the production of the factory?

A. $p + q > 10000$ dan / and $p \geq q$
 B. $p - q > 10000$ dan / and $p \geq q$
 C. $p + q < 10000$ dan / and $p \geq q$
 D. $p - q < 10000$ dan / and $p \geq q$

4. Rajah 1 menunjukkan satu rantau sepunya bagi suatu sistem ketaksamaan linear.
Diagram 1 shows a common region of a system of linear inequalities.



Rajah 1 / Diagram 1

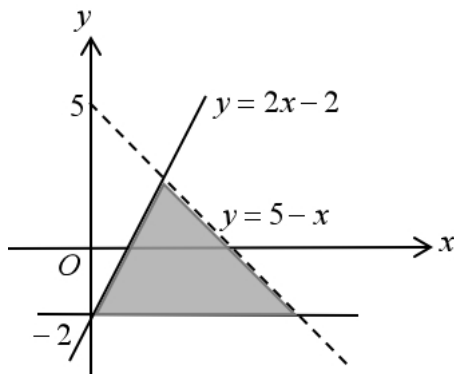
Diberi bahawa rantau sepunya dipantulkan pada paksi-x. Antara berikut, ketaksamaan linear yang manakah selain daripada $y \geq 0$ dan $x < 4$ memuaskan rantau sepunya itu?
Given that the common region is reflected in the x-axis. Which of the following linear inequalities other than $y \geq 0$ and $x < 4$ satisfies the common region?

A. $y > -x$ C. $y < x$
 B. $y \geq -x$ D. $y \leq x$

5. Titik $S(5, 4)$ berada di rantau yang memuaskan $x > 0$, $y > 0$ dan satu ketaksamaan linear. Antara berikut, yang manakah mungkin ketaksamaan linear itu?
Point $S(5, 4)$ lies within the region which satisfies $x > 0$, $y > 0$ and a linear inequality. Which of the following is possibly the linear inequality?

A. $x + y < 5$ C. $2x + y > 12$
 B. $3x + 2y < 15$ D. $x - y > 10$

6. Nyatakan sistem ketaksamaan linear yang mentakrifkan rantau berlorek dalam rajah 2.
State the system of linear inequalities which defines the shaded region in the diagram 2.



Rajah 2
 Diagram 2

- A. $y \leq 2x - 2, y > 5 - x, y \geq -2$
 B. $y \leq 2x - 2, y \geq 5 - x, y \leq -2$
 C. $y \leq 2x - 2, y < 5 - x, y \geq -2$
 D. $y \geq 2x - 2, y < 5 - x, y \geq -2$

7. Seorang wanita membeli x biji epal dan y biji oren. Jumlah epal dan oren yang dibeli tidak melebihi 18 biji. Antara yang berikut, manakah yang merupakan ketaksamaan yang memenuhi syarat tersebut?

A woman buys x apples and y oranges. The total of apples and oranges bought is not more than 18. Which of the following, is the inequalities that fulfill the condition?

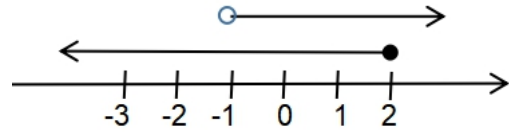
- A. $x + y < 18$ C. $x + y > 18$
 B. $x + y \leq 18$ D. $x + y \geq 18$

8. Selesaikan / Solve

$$m - 5 < 1 - 2m < 3$$

- A. $-1 < m < 2$ C. $-1 < m < 6$
 B. $-1 > m > 2$ D. $-1 > m > 6$

9. Rajah 3 menunjukkan garis nombor yang mewakili dua garis lurus ketaksamaan.
Diagram 3 shows a number line representing two straight line inequalities.



Rajah 3
 Diagram 3

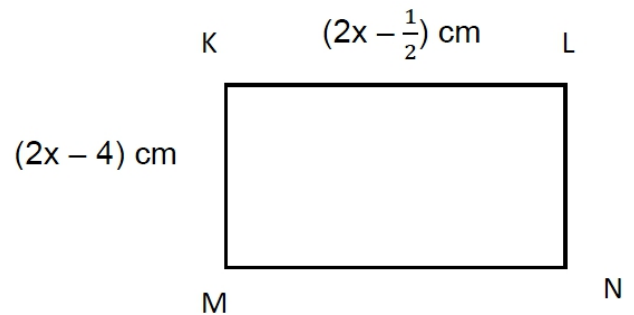
Antara yang berikut, manakah merupakan ketaksamaan yang diwakili oleh garis nombor tersebut?

Which of the following is the inequalities represented by the number line?

- A. $-1 < x < 2$ C. $-1 \leq x < 2$
 B. $-1 < x \leq 2$ D. $-1 \leq x \leq 2$

10. Rajah 4 menunjukkan sebuah segi empat tepat KLMN.

Diagram 4 shows a rectangle KLMN.



Rajah 4
 Diagram 4

Diberi bahawa perimeter KLMN adalah lebih daripada 17 cm, maka penyelesaian bagi x ialah

Given that the perimeter of KLMN is more than 17 cm, then the solution for x is

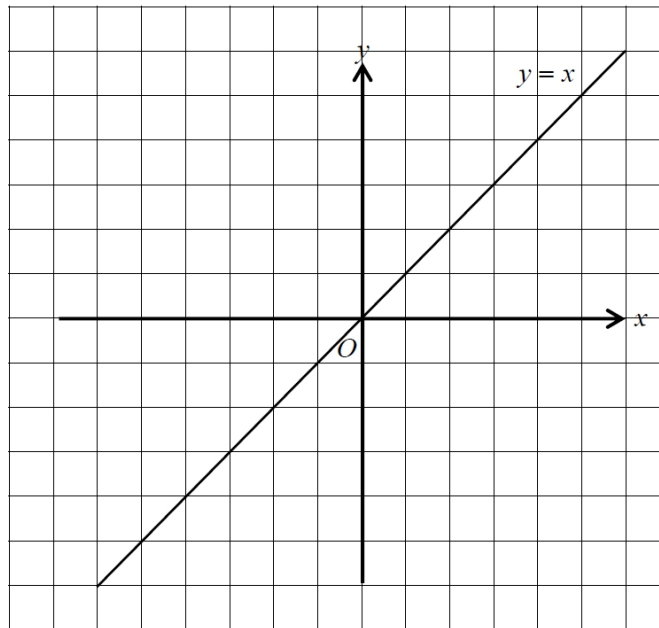
- A. $x > 2$ C. $x > 4$
 B. $x \geq 2$ D. $x \geq 4$

BAHAGIAN A SECTION A

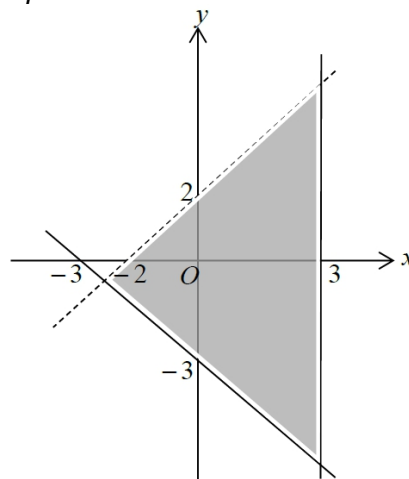
1. Pada graf di ruang jawapan, lorek rantau yang memuaskan ketiga-tiga ketaksamaan linear, $y \geq x$, $x > -5$ dan $y \leq 3$.

On the graph in the answer space, shade the region which satisfies all three linear inequalities, $y \geq x$, $x > -5$ and $y \leq 3$.

Jawapan / Answer :



2. Rajah 1 menunjukkan satu sistem ketaksamaan linear pada satah Cartes. *Diagram 1 shows a system of linear inequalities on a Cartesian plane.*



Rajah 1 / Diagram 1

Berdasarkan Rajah 1, tulis **tiga** ketaksamaan linear.
Based on Diagram 1, write **three** linear inequalities.

BAHAGIAN B
SECTION B

1. Kolej Swasta menawarkan dua kursus memasak iaitu jangka masa pendek dan jangka masa panjang. Pendaftaran x peserta kursus memasak jangka masa pendek dan y peserta kursus memasak jangka masa panjang adalah berdasarkan kekangan berikut:

Private College offers two short-term and long-term cooking courses. The enrollment of x short-term cooking course participants and y long-term cooking course participants are based on the following constraints :

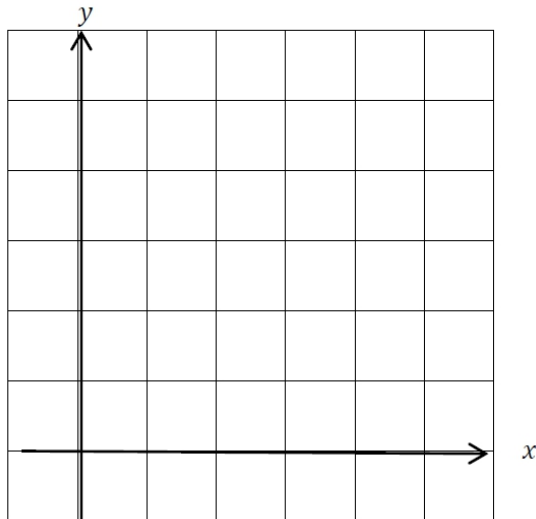
I	Bilangan maksimum peserta ialah 70. <i>The maximum number of participants is 70.</i>
II	Bilangan peserta kursus memasak jangka masa pendek ialah sekurang-kurangnya 20 orang. <i>The number of short-term cooking course participants is at least 20.</i>
III	Bilangan peserta kursus memasak jangka masa pendek ialah tidak melebihi dua kali peserta kursus memasak jangka masa panjang. <i>The number of short-term cooking course participants is not more than two times the number of long-term cooking course participants.</i>

- (a) Tuliskan **tiga** ketaksamaan, selain daripada $x \geq 0$ dan $y \geq 0$, bagi kekangan di atas.
*Write **three** inequalities, other than $x \geq 0$ and $y \geq 0$, for the above constraints.*
- (b) Dengan menggunakan skala 2 cm kepada 10 orang peserta pada kedua-dua paksi, bina dan lorek rantau R yang memuaskan semua kekangan diberi.
Using a scale of 2 cm to 10 participants on both axes, construct and shade the region R that satisfies all the given constraints.
- (c) Seramai 55 orang peserta ingin mengikuti kursus memasak jangka masa panjang. Adakah bilangan peserta ingin memenuhi sistem ketaksamaan linear yang dibina di (b)? justifikasikan jawapan anda.
There are 55 participants who want to join the long-term cooking course. Does the numbers of the participants satisfy the system of linear inequalities constructed in (b)? justify your answer.

2. (a) (i) Pada satah Cartes di ruang jawapan, lukis dan lorek rantau yang memuaskan sistem ketaksamaan linear $x + y \geq 4$, $y \geq x$ dan $y \geq 4$.
On the Cartesian plane in the answer space, draw and shade the region that satisfies the system of linear inequalities $x + y \geq 4$, $y \geq x$ and $y \geq 4$.
- (ii) Daripada graf yang dilukis di (a)(i), cari nilai minimum y apabila $x = 1$.
From the graph drawn in (a)(i), find the minimum value of y when $x = 1$.

Jawapan / Answer :

(i)

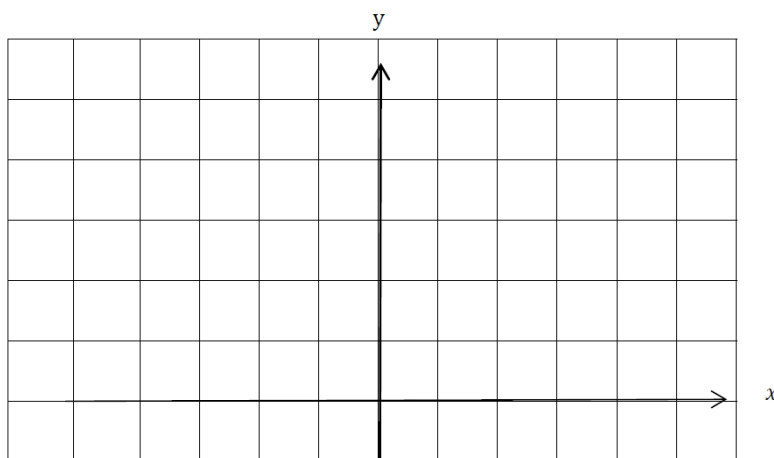


(ii)

- (b) (i) Pada satah Cartes di ruang jawapan, lukis dan lorek rantau yang memuaskan sistem ketaksamaan linear $y \leq x$, $3y \geq x$ dan $x < 5$.
On the Cartesian plane in the answer space, draw and shade the region that satisfies the system of linear inequalities $y \leq x$, $3y \geq x$ and $x < 5$.
- (ii) Seterusnya, tulis sistem ketaksamaan linear yang memuaskan imej bagi rantau berlorek di bawa satu pantulan pada paksi- y .
Hence, write the system of linear inequalities that satisfy the image of the shaded region under a reflection in y -axis.

Jawapan / Answer :

(i)



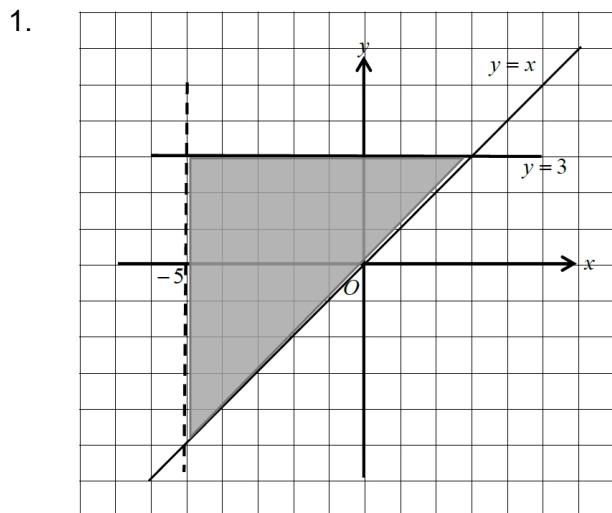
(ii)

JAWAPAN ANSWER

OBJEKTIF / OBJECTIVE

- | | | | | |
|------|------|------|------|-------|
| 1. B | 2. D | 3. A | 4. B | 5. C |
| 6. C | 7. B | 8. A | 9. B | 10. C |

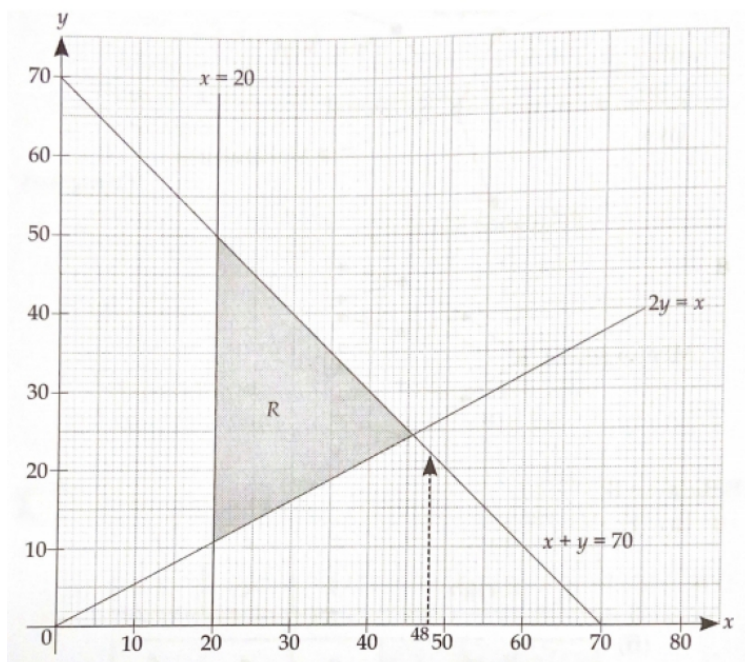
BAHAGIAN / SECTION A



2. $x \leq 3$, $y < x + 2$, $x + y \geq -3$

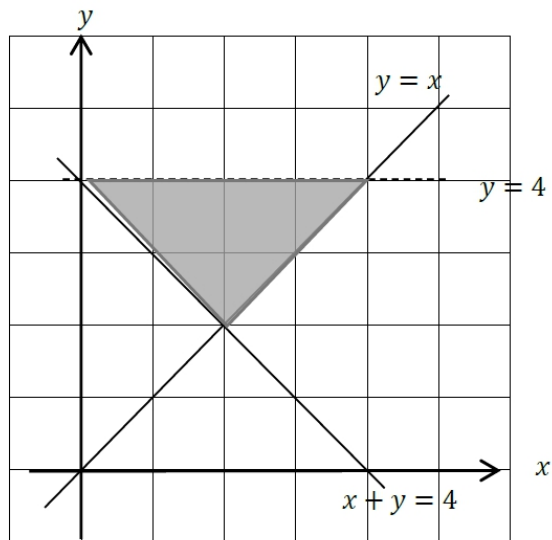
BAHAGIAN / SECTION B

1. (a) $x + y \leq 70$, $x \geq 20$, $x \leq 2y$
(b)



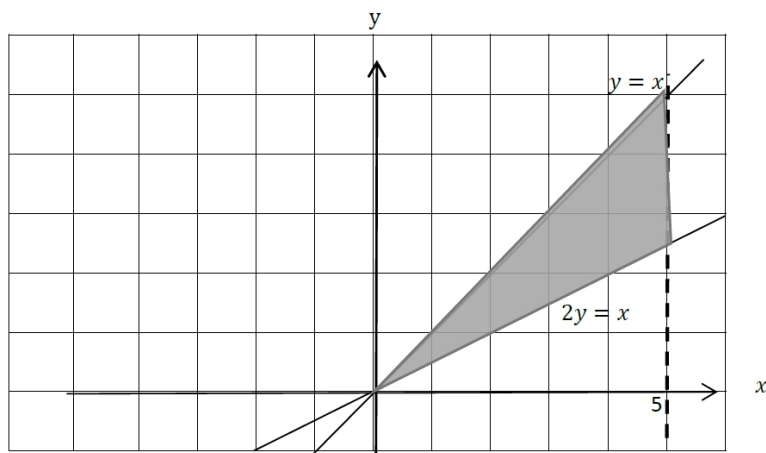
- (c) Tidak, $y = 55$ berada di luar kawasan berlorek.

2. (a) (i)



(ii) y minimum = 3

(b) (i)

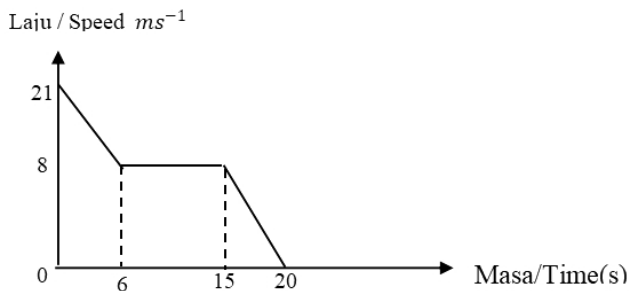


(ii) $y \leq -x$, $2y \geq -x$ dan / and $x > -5$.

BAB 7 : GRAF GERAKAN
CHAPTER 7 : GRAPHS OF MOTION

SOALAN OBJEKTIF
OBJECTIVE QUESTIONS

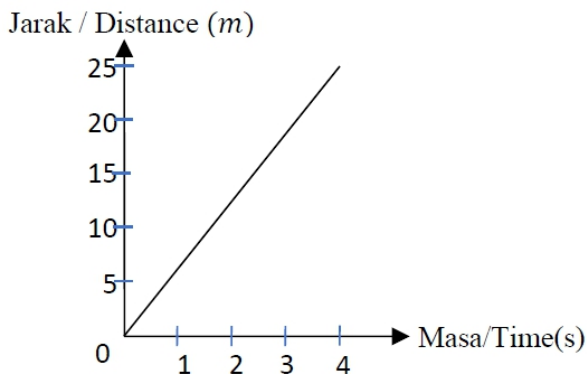
1. Rajah di bawah menunjukkan graf laju-masa bagi suatu zarah.
The diagram shows a speed- time graph for a particle.



Cari tempoh masa, dalam saat zarah itu bergerak dengan laju seragam.
Find the duration, in seconds, for which the particle moves with uniform speed.

- | | |
|------|-------|
| A. 8 | C. 10 |
| B. 9 | D. 11 |

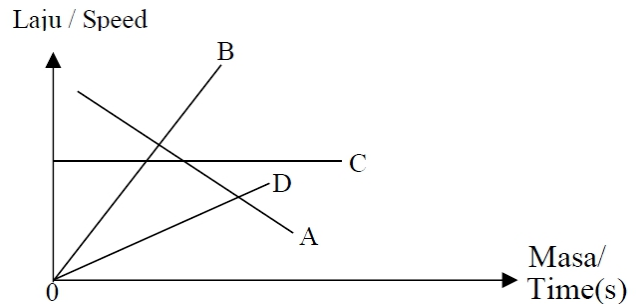
2. Rajah dibawah menunjukkan graf jarak-masa bagi gerakan suatu zarah.
Diagram below shows the distances-time graph for the motion of a particle.



Graf itu menunjukkan zarah itu
The graph shows that particle

- | |
|---|
| A. bergerak semakin laju
<i>is moving faster</i> |
| B. bergerak semakin perlahan
<i>is moving slower</i> |
| C. bergerak dengan laju seragam
<i>is moving with a constant speed</i> |
| D. berada dalam keadaan rehat
<i>is at rest</i> |

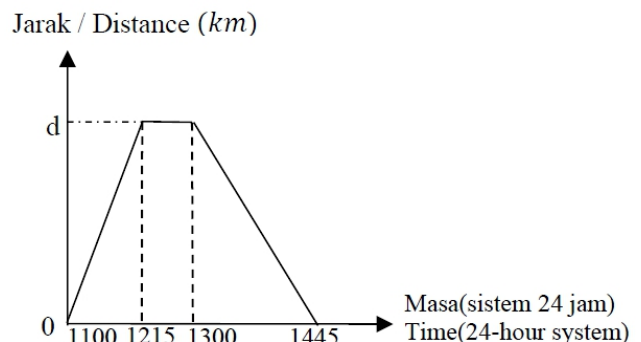
3. Rajah menunjukkan empat graf.
Diagram shows four graphs.



Antara graf A, B C dan D, yang manakah menunjukkan pecutan negative?

Which of the graph A, B, C or D shows the negative acceleration?

4. Rajah di bawah menunjukkan graf jarak-masa bagi sebuah teksi
The diagram shows the distance- time graph of a taxi.

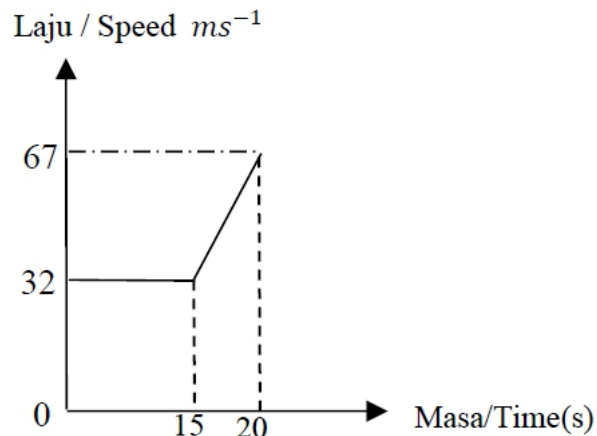


Diberi laju purata teksi itu bagi keseleruhan perjalanan ialah 32 kmj^{-1} . Hitung nilai d.

Given the average speed of the taxi for the whole journey is 32 kmj^{-1} . Calculate the value of d.

- | | |
|-------|--------|
| A. 30 | C. 120 |
| B. 60 | D. 180 |

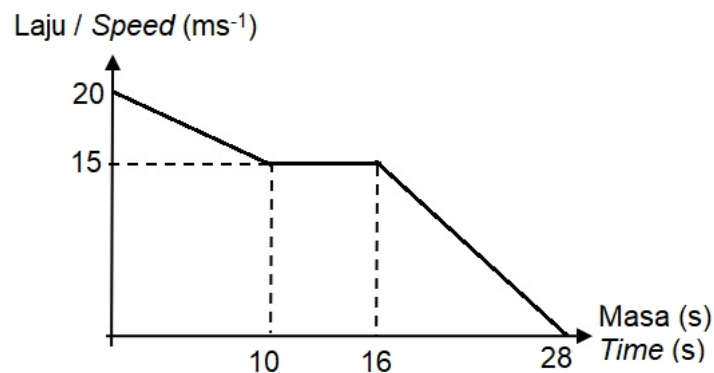
5. Rajah di bawah menunjukkan graf laju- masa bagi suatu zarah
The diagram shows a speed graph for a particle.



Antara pernyataan berikut, yang manakah betul?

Which of the following statements is correct?

- A. Zarah itu bergerak dengan laju seragam dalam tempoh 32 saat.
The particle moves at a uniform speed for a period of 32 seconds.
- B. Zarah itu bergerak dengan laju seragam dalam tempoh 5 saat sahaja
The particle moves at a uniform speed for a period of 5 seconds only
- C. Laju seragam zarah itu ialah 67 ms^{-1}
The uniform speed of the particle is 67 ms^{-1}
- D. Laju Seragam zarah itu ialah 32 ms^{-1}
The uniform speed of the particle is 32 ms^{-1}
6. Rajah di bawah menunjukkan graf laju-masa bagi pergerakan suatu zarah dalam tempoh masa 28 saat.
The diagram shows a speed-time graph for the movement of a particle for a period of 28 seconds.

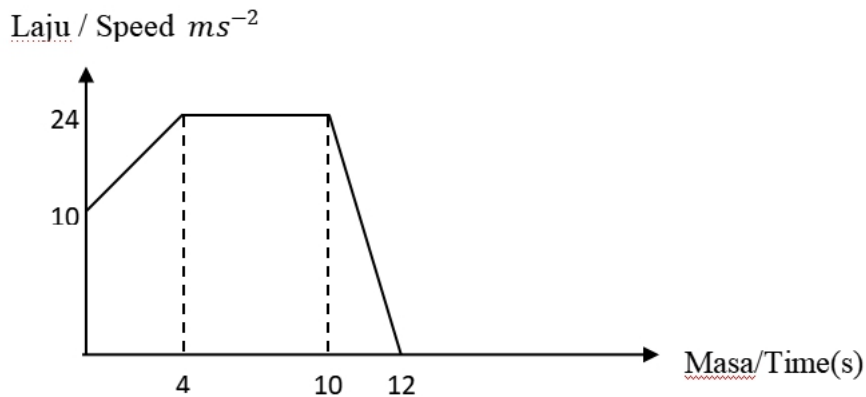


Cari jarak yang dilalui, dalam m, oleh zarah itu dalam tempoh masa 28 saat.
Find the distance travelled, in m, of the particle in the period of 28 seconds.

- A. 265
 B. 330
 C. 355
 D. 505

BAHAGIAN A
SECTION A

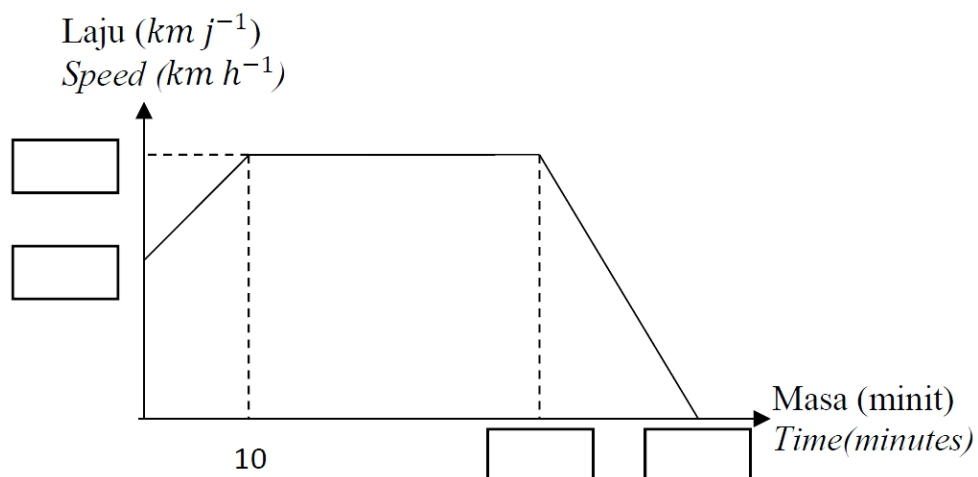
1. Rajah di bawah menunjukkan graf laju-masa bagi gerakan suatu zarah dalam tempoh 12 saat.
The diagram shows the speed-time graph of a particle for a period of 12 seconds.



- (a) Nyatakan tempoh masa, dalam saat, zarah itu bergerak dengan laju seragam.
State the duration, in seconds, of the particle moves with uniform speed.
- (b) Hitung kadar perubahan laju, dalam ms^{-2} , zarah itu dalam 2 saat terakhir.
Calculate the rate of change of speed, in ms^{-2} , of the particle for the last 2 seconds.
2. Graf laju-masa di ruang jawapan menunjukkan Rafiq memandu keretanya dengan laju 60 kmj^{-1} dan memecut dengan seragam sehingga mencapai 90 kmj^{-1} dalam masa 10 minit. Kemudian, dia mengekalkan kelajuannya itu selama 30 minit. Selepas itu, kereta Rafiq mengalami nyahpecutan sehingga berhenti dalam masa 20 minit. Lengkapkan graf laju-masa itu.

The speed-time grph in the answer space shows Rafiq drives his car with a speed of 60 kmh^{-1} and accelerates constantly until its speed reaches 90 kmh^{-1} in 10 minutes. Then, he maintains his speed for 30 minutes. After that, his car decelerates until it stops in 20 minutes. Complete the speed-time graph.

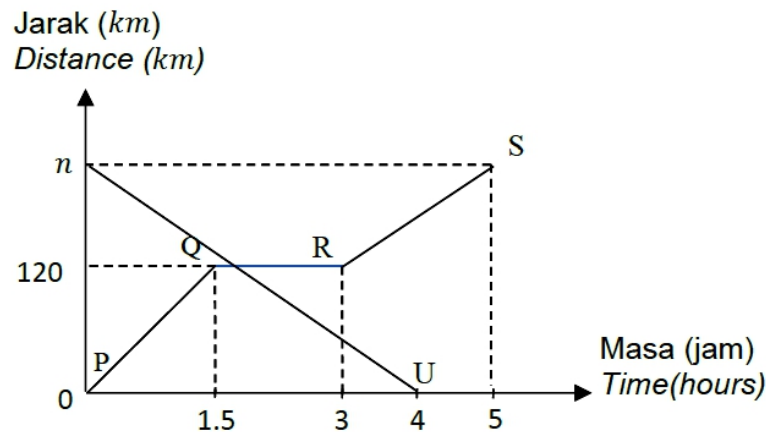
Jawapan / Answer :



BAHAGIAN B
SECTION B

1. Rajah di bawah menunjukkan graf jarak-masa bagi sebuah lori dan sebuah kereta. Graf $PQRS$ mewakili perjalanan kereta manakala graf TU mewakili perjalanan lori. Kereta itu bertolak dari bandar D dan lori itu bertolak dari bandar E pada waktu yang sama, iaitu pada jam 11.30 dan melalui jalan yang sama.

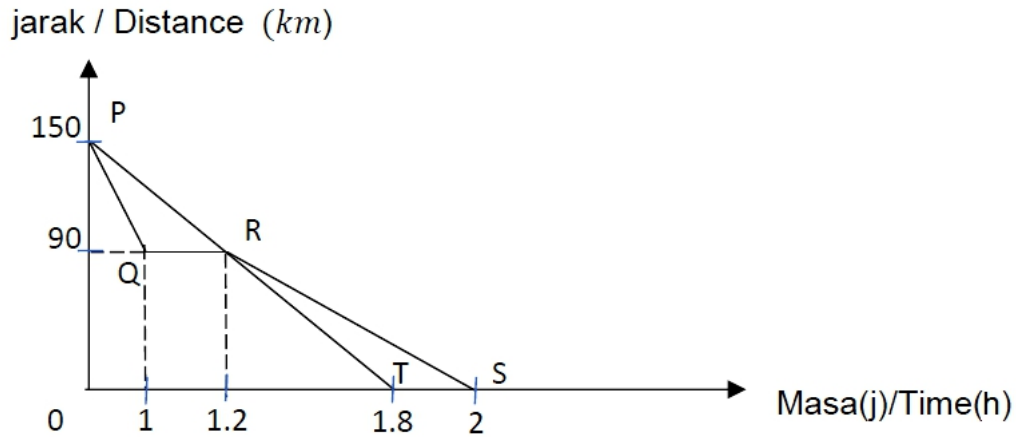
The diagram below shows the distance-time graph of a car and a lorry. The graph $PQRS$ represents the journey of the car while the graph TU represents the journey of the lorry. The car leaves from town D and the lorry leaves from town E at the same time, which is 11.30 hours and travel along the same route.



- (a) (i) Nyatakan tempoh masa, dalam minit, kereta berada dalam keadaan pegun.
State the duration, in minute, when the car is stationary.
- (ii) Diberi kadar perubahan jarak kereta itu bagi 2 jam terakhir ialah 90 kmj^{-1} . Hitung nilai n .
Given the rate of change in distance of the car for the last 2 hours is 90 kmj^{-1} . Calculate the value of n .
- (iii) Hitung jarak, dalam km, dari bandar E ketika kedua-dua kenderaan itu bertemu.
Calculate the distance, in km, from town E when the two vehicles meet.
- (iv) Pada pukul berapakah, dalam system 24 jam, kedua-dua kenderaan itu bertemu?
At what time, in the 24 hours system, the two vehicle meet?
- (b) Van P bergerak dengan laju yang sama dengan laju kereta bagi 1.5 jam yang pertama. Van Q bergerak dengan laju yang sama dengan laju lori.
Van P moves with a speed which is equal to the speed of the car for the first 1.5 hours. Van Q moves with a speed which is equal to the speed of the lorry.
Van manakah yang bergerak dengan lebih cepat? Beri justifikasi anda.
Which van moves faster? Justify your answer.

2. Rajah di bawah menunjukkan graf jarak-masa bagi perjalanan Riana dan Raiyan. Graf $PQRS$ mewakili perjalanan Riana dan graf PRT mewakili perjalanan Raiyan. Kedua-dua mereka bertolak serentak dari bandar A ke Bandar B melalui jalan yang sama.

The diagram shows the distance-time graph of Riana's and Raiyan's journey. The graph $PQRS$ represents riana's journey and the graph PRT represents Raiyan's journey. The two of them travelled simultaneously from town A to town B by the same road.



- Nyatakan tempoh masa, dalam minit, Riana berhenti.
State the duration, in minutes, Riana stopped.
- Pada suatu ketika dalam perjalanan tersebut, Riana dan Raiyan berada di lokasi yang sama.
At one point during the journey, Riana and Raiyan were in the same location.
 - Cari jarak, dalam km, di antara lokasi itu dengan bandar A.
Find the distance, in km, between the location and town A.
 - Cari waktu mereka bertemu jika mereka memulakan perjalanan pada pukul 8.30 pagi.
Find the time they meet if the start the journey at 8.30 a.m.
- Hitung laju purata, dalam kmj^{-1} , bagi perjalanan Riana dalam tempoh 2 jam itu.
Calculate the average speed in kmh^{-1} , for Riana's journey for a period of 2 hours.
- Huraikan perjalanan Riana dalam tempoh 1 jam 12 minit pertama.
Describes the Riana's journey for the first 1 hour and 12 minutes.

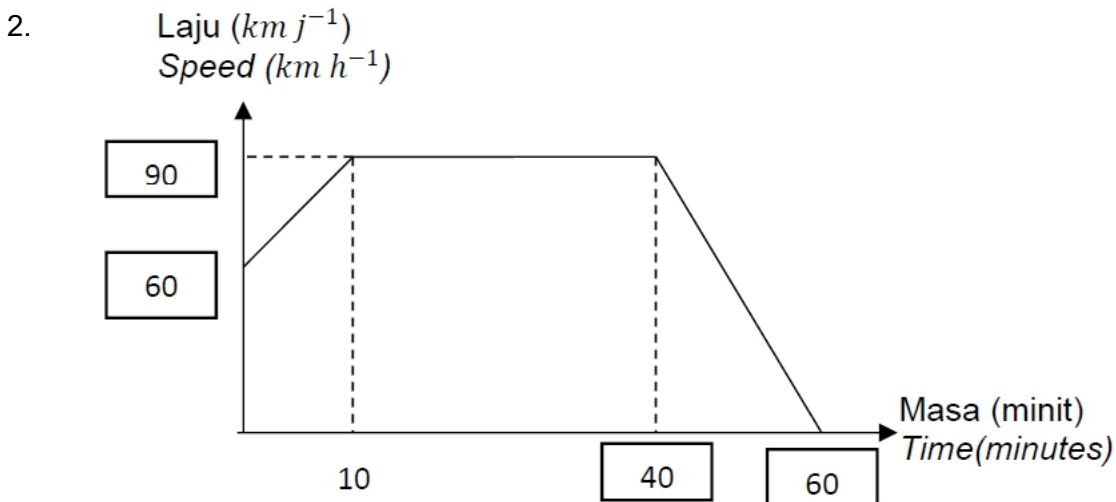
JAWAPAN ANSWER

OBJEKTIF / OBJECTIVE

1. B 2. C 3. A 4. B 5. D 6. C

BAHAGIAN / SECTION A

1. Tempoh masa / Duration = 10-4
= 6 Saat / 6 Seconds



BAHAGIAN / SECTION B

1. (a) (i) 90 minit / *minutes*
(ii) $k = 300$
(iii) 180 km
(iv) Jam 1354 / *1354 hours*

- (b) Laju van $P = 80 \text{ kmj}^{-1}$
Laju van $Q = 75 \text{ kmj}^{-1}$

Van P bergerak dengan lebih cepat
Van P moves faster.

2. (a) 12 minit / *12 minutes*
(b) (i) 60 km (bertemu di R stopped at R)
(ii) 9.42 pg
(c) 75 kmj^{-1} / 75 kmh^{-1}
(d) Laju dalam 1 jam pertama = 60 kmj^{-1}
Riana bergerak dengan kelajuan 60 kmj^{-1} dalam tempoh 1 jam pertama, kemudian berhenti dalam tempoh 12 minit pada jarak 60 km dari bandar A.
Riana travels at a speed of 60 kmh^{-1} for the first 1 hour, then stops for 12 minutes at a distance of 60 km from town A.

BAB 8 : SUKATAN SERAKAN DATA TAK TERKUMPUL
CHAPTER 8 : MEASURES OF DISPERSION FOR UNGROUPED DATA

SOALAN OBJEKTIF
OBJECTIVE QUESTIONS

1. Jadual di bawah menunjukkan bilangan adik-beradik bagi 30 orang murid kelas tingkatan 4 Alim.
The table below shows the number of siblings for 30 students in class 4 Alim.

Number of siblings <i>Bil. adik-beradik</i>	0	1	2	3	4	5	6
Number of students <i>Bilangan murid</i>	2	4	6	3	7	5	3

Tentukan sisihan piawai bagi bilangan adik-beradik murid kelas berkenaan.

Determine the standard deviation for the number of siblings.

- A. 1.759 C. 3.2
 B. 3.093 D. 3.44

2. Rajah di bawah menunjukkan satu set data.
The diagram below shows a set of data.

2x, 4, 6, (4 + x), 3x, 11

Diberi bahawa min bagi data tersebut ialah 7.5. Hitung hasil tambah median dan kuartil pertama.

It is given that the mean of the data is 7.5. Calculate the sum of the median and the first quartile.

- A. 9 C. 11
 B. 10 D. 12

3. Berikut ialah satu set data.
The following is a set of data.

2, 4, 6, 7, 13

Setiap nombor dalam set data didarabkan dengan 2 dan kemudian 3 ditolak daripadanya. Apakah julat antara kuartil yang baharu?

Each number in the set of data is multiplied by 2 and then 3 is subtracted from it. What is the new interquartile range?

- A. 7 C. 14
 B. 10 D. 17

4. Satu set data $x_1, x_2, x_3, x_4, x_5, x_6$ mempunyai min 70 dan varians 25. Cari hasil tambah kuasa dua bagi data tersebut.
A set of data $x_1, x_2, x_3, x_4, x_5, x_6$ has a mean of 70 and variance of 25. Find the sum of squares of the data.

- A. 30 000 C. 29 430
 B. 29 550 D. 29 400

5. Berikut adalah maklumat yang diberi.
Below are the given information.

$$\Sigma x = 45, \Sigma x^2 = 289, N = 8$$

Cari sisihan piawai untuk data di atas.

Find the standard deviation for the data above.

- A. 2.118 C. 5.522
 B. 4.484 D. 6.010

6. Data di bawah menunjukkan taburan skor yang diperoleh 9 orang pelajar dalam satu ujian Matematik.

The data below shows the distribution of scores obtained by 9 students in a Mathematics test.

78, 68, 70, 63, 66, 53, 72, 52, 62

Tentukan kuartil yang ketiga.

Determine the third quartile.

- A. 53 C. 71
 B. 62 D. 72

BAHAGIAN A
SECTION A

1. Set data di bawah telah disusun dalam tertib menaik.
Given that the set of data which is arranged in ascending order.

12, m , 15, 16, 17, n , 24

Diberi bahawa julat antara kuartil dan min bagi set data di atas masing-masing ialah 9 dan 17.
Kirakan

Given that the interquartile range and mean of that data above is 9 and 17. Calculate

- (a) Nilai m dan n .
Values of m and n .
- (b) Hitung sisihan piawai bagi set data tersebut.
Value of standard deviation of the data.

2. Cari julat antara kuartil bagi set data di bawah.
Find the interquartile range of the set data below.

8, 4, 5, 12, 3, 16, 4, 11, 10, 14, 3, 4

3. Tentukan sisihan piawai bagi set data berikut :
Determine the standard deviation of the following data set :

9, 13, 2, 15, 10, 5

BAHAGIAN B
SECTION B

1. Jadual menunjukkan jisim pemain bagi dua pasukan sepak takraw.
The table shows the mass of players for the two sepak takraw teams.

Pasukan Team	Jisim (kg) Mass (kg)
A	48, 53, 65, 69, 70
B	45, 47, 68, 70, 75

- (a) Hitung min, julat, varians dan sisihan piawai bagi jisim pemain kedua-dua pasukan di atas.
Calculate the mean, range, variance and standard deviation for the mass of the players of the two teams above.
- (b) Adakah julat sesuai digunakan sebagai suatu sukatan serakan bagi mewakili data di atas?
Berikan justifikasi anda.
*Is the range suitable for use as a scattering measure to represent the above data?
Give your justification.*
2. Jadual di bawah menunjukkan suatu kajian yang dijalankan berkaitan dengan kesan dua jenis baja ke atas jumlah hasil cili, dalam kg, bagi 10 batang pokok cili.
The table below shows a study conducted related to the effect of two types of fertilizer on the total yield of chili, in kg, for 10 chili trees.

Baja / Fertilizer P	Baja / Fertilizer Q
12, 18, 25, 30, 36, 36, 40, 42, 50, 54	25, 28, 30, 32, 32, 38, 40, 40, 42, 45

- (a) Berdasarkan kajian yang dijalankan, hitung
Based on the study, calculate,
- (i) min baja Q,
the mean of fertilizer Q,
- (ii) varians baja Q
the variance of fertilizer Q
- (b) Dengan menggunakan sukatan serakan yang sesuai, tentukan baja manakah yang lebih sesuai digunakan untuk mendapatkan hasil yang baik.
(Tunjuk langkah kerja anda)
*By using the appropriate dispersion measure, determine which fertilizer is more suitable to use to get good results.
(Show your work steps)*

JAWAPAN ANSWER

OBJEKTIF / OBJECTIVE

1. A 2. C 3. C 4. B 5. A 6. C

BAHAGIAN / SECTION A

1. (a) $m = 13, n = 21$
(b) Sisihan piawai = 3.3166

2. $Q_3 = 11.5$ $Q_1 = 4$

$$\begin{aligned}\text{Julat antara kuartil} &= Q_3 - Q_1 \\ &= 11.5 - 4 \\ &= 7.5\end{aligned}$$

3. $\sigma = 4.43$

BAHAGIAN / SECTION B

1. (a) **Pasukan A :**

$$\begin{aligned}\min(\bar{x}) &= \frac{48 + 53 + 65 + 69 + 70}{5} \\ &= 61\end{aligned}$$

$$\begin{aligned}\text{Julat} &= 70 - 48 \\ &= 22\end{aligned}$$

$$\begin{aligned}\sigma^2 &= \frac{48^2 + 53^2 + 65^2 + 69^2 + 70^2}{5} - 61^2 \\ &= 78.8\end{aligned}$$

$$\begin{aligned}\sigma &= \sqrt{78.8} \\ &= 8.88\end{aligned}$$

Pasukan B :

$$\begin{aligned}\min(\bar{x}) &= \frac{45 + 47 + 68 + 70 + 75}{5} \\ &= 61\end{aligned}$$

$$\begin{aligned}\text{Julat} &= 75 - 45 \\ &= 30\end{aligned}$$

$$\begin{aligned}\sigma^2 &= \frac{45^2 + 47^2 + 68^2 + 70^2 + 75^2}{5} - 61^2 \\ &= 155.6\end{aligned}$$

$$\sigma = \sqrt{155.6}$$

$$= 12.47$$

- (b) Tidak sesuai kerana wujudnya data pencilan.
Not suitable because of the existence of isolation data.

2. (a) (i)
$$\frac{25 + 28 + 30 + 32 + 32 + 38 + 40 + 40 + 42 + 45}{10}$$

$$35.2$$

(ii)
$$\sqrt{\frac{25^2 + 28^2 + 30^2 + 32^2 + 32^2 + 38^2 + 40^2 + 40^2 + 42^2 + 45^2}{10}} - 35.2^2$$

$$6.32$$

(b)
$$\frac{12 + 18 + 25 + 30 + 36 + 36 + 40 + 42 + 50 + 54}{9}$$

$$34.3$$

$$\sqrt{\frac{12^2 + 18^2 + 25^2 + 30^2 + 36^2 + 36^2 + 40^2 + 42^2 + 50^2 + 54^2}{10}} - 34.3^2$$

$$12.65$$

Baja Q lebih sesuai.

BAB 9 : KEBARANGKALIAN PERISTIWA BERGABUNG
CHAPTER 9 : PROBABILITY OF COMBINED EVENTS

1. Sebuah kotak mengandungi 6 biji guli biru dan x biji guli hijau. Kebarangkalian memilih sebiji guli hijau ialah $\frac{4}{7}$. Cari nilai x .

A box contains 6 blue marbles and x green marbles. The probability of selecting a green marble is $\frac{4}{7}$. Find the value of x .

- A. 5 C. 7
B. 6 D. 8

2. Dalam perlawanan bola sepak, kebarangkalian bahawa pasukan JDP menjaringkan 0, 1, 2 dan sekurang-kurangnya 3 gol masing-masing ialah 0.15, 0.48, 0.32 dan 0.05. Cari kebarangkalian bahawa pasukan JDP tidak menjaringkan gol atau menjaringkan sekurang-kurangnya 3 gol.

In a football match, the probabilities that team JDP scores 0, 1, 2 and at least 3 goals are 0.15, 0.48, 0.32 and 0.05 respectively. Find the probability that Team JDP does not score goal or score at least 3 goals.

- A. 0.2 C. 0.85
B. 0.57 D. 0.90

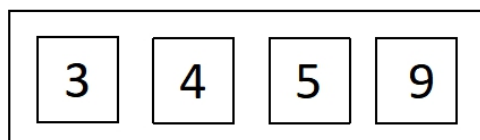
3. Diberi bahawa dua peristiwa, M dan N , dengan keadaan $P(M \cup N) = 0.55$, $P(M \cap N) = 0.4$ dan $P(M) = 0.6$. Cari $P(N)$.

Given that two events, M and N , such that $P(M \cup N) = 0.55$, $P(M \cap N) = 0.4$ and $P(M) = 0.6$. Find $P(N)$.

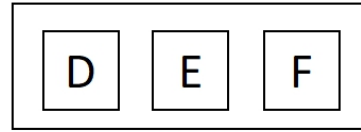
- A. 0.25 C. 0.55
B. 0.35 D. 0.75

4. Rajah di bawah menunjukkan kad-kad di dalam kotak P dan kotak Q.

The diagram shows the cards in box P and box Q.



Kotak P
Box P



Kotak Q
Box Q

Sekeping kad dipilih secara rawak dari setiap kotak itu. Hitung kebarangkalian mendapat satu kuasa dua sempurna dan satu huruf vokal.

A card is chosen at random from each of the boxes. Calculate the probability of getting a perfect square and a vowel.

- A. $\frac{1}{6}$ C. $\frac{3}{4}$
B. $\frac{1}{4}$ D. $\frac{3}{8}$

5. Kebarangkalian seorang pesakit untuk dijangkiti sejenis virus ialah $\frac{1}{10}$. Dua orang

pesakit dipilih secara rawak untuk menjalani saringan pada masa yang sama. Hitung kebarangkalian sekurang-kurangnya seorang pesakit dijangkiti virus itu.

The probability of a patient is infected with a virus is $\frac{1}{10}$. Two patients are selected at

random to perform the screening at the same time. Calculate the probability that at least one of the patients selected is infected with the virus.

- A. $\frac{1}{10}$ C. $\frac{19}{100}$
B. $\frac{9}{50}$ D. $\frac{8}{100}$

BAHAGIAN A
SECTION A

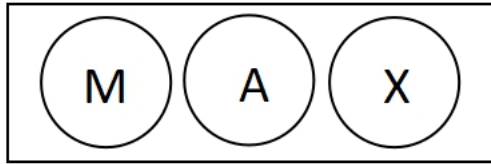
1. Halimah memasukkan sebatang pen hitam (R), sebatang pen hijau (G) dan dua batang pen biru (B) ke dalam sebuah beg. Dia memilih dua batang pen secara rawak satu demi satu dari beg itu tanpa pemulangan.
Halimah puts a black pen (R), a green pen (G), and two blue pens (B) into a bag. She chooses two pens randomly one by one from the bag without replacement.
 - (a) Tulis ruang sampel bagi peristiwa bergabung itu.
Write the sample space of the combined events.
 - (b) Hitung kebarangkalian memilih dua batang pen yang sama warna.
Calculate the probability of choosing two pens of the same colour.

2. Satu tinjauan yang dijalankan terhadap 30 orang pelajar di kelas 5 Pertanian menunjukkan bahawa 17 orang pelajar suka makan jambu batu, 7 orang pelajar suka makan jambu batu dan pisang dan 15 orang pelajar suka makan pisang. Sekiranya seorang pelajar dipilih secara rawak, cari kebarangkalian bahawa pelajar suka makan
A survey conducted on 30 students in class 5 Pertanian shows that 17 students like to eat guava, 7 students like both guava and banana and 15 students like banana. If a student is chosen at random, find the probability that the student likes to eat
 - (a) jambu batu dan pisang.
guava and banana.
 - (b) jambu batu atau pisang.
guava or banana.

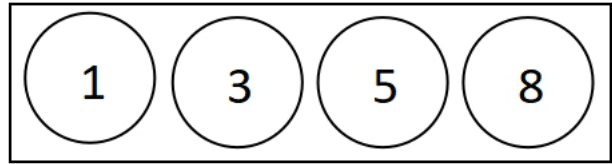
BAHAGIAN B
SECTION B

1. Rajah menunjukkan satu set guli yang dilabelkan dengan huruf di dalam Kotak Y dan satu set guli yang dilabelkan dengan nombor di dalam kotak Z.

Diagram shows a set of marbles labelled with letters in box Y and a set of marbles labelled with numbers in box Z.



Kotak Y / Box Y



Kotak Z / Box Z

Sebiji guli dipilih secara rawak daripada kotak Y dan sebiji guli dipilih secara rawak daripada kotak Z.

A marble is picked at random from box Y and a marble is picked at random from box Z.

- (a) Senaraikan ruang sampel.
List the sample space.
- (b) Senaraikan semua kesudahan peristiwa dan cari kebarangkalian bahawa
List all the outcomes of events and find the probability that
 - (i) sebiji guli yang dipilih dilabelkan dengan huruf vokal,
one marble picked is labelled with a vowel,
 - (ii) sebiji guli yang dipilih dilabelkan dengan huruf M atau dilabelkan dengan nombor ganjil.
a marble picked is labelled with letter M or labelled with an odd number.

2. (a) Sebiji dadu dan sekeping duit syiling dilambung secara serentak. Cari kebarangkalian mendapat
A dice is rolled and a coin is tossed simultaneously. Find the probability of obtaining
- (i) nombor 2 pada dadu atau gambar pada duit syiling.
number 2 on the dice or heads on the coin.
 - (ii) nombor ganjil pada dadu dan angka pada duit syiling.
an odd number on the dice and tails on the coin.
- (b) Jadual di bawah menunjukkan keputusan ujian Matematik bagi dua buah kelas Tingkatan 5.
The table shows the results for Mathematics test in two Form 5 classes.

Kelas Class	Lulus Pass		Gagal Fail	
	Bil. murid lelaki Number of boys	Bil. murid perempuan Number of girls	Bil. murid lelaki Number of boys	Bilangan murid perempuan Number of girls
5 A	12	18	6	4
5 B	8	12	13	y

- (i) Diberi kebarangkalian bahawa seorang murid perempuan dari Kelas 5B lulus dalam ujian Matematik itu ialah $\frac{6}{19}$. Hitung nilai y.
Given the probability that a girl from Class 5B passes the Mathematics test is $\frac{6}{19}$. Calculate the value of y.
- (ii) Jika seorang murid itu dipilih secara rawak daripada setiap kelas, hitung kebarangkalian bahawa kedua-dua orang murid itu lulus dalam ujian Matematik itu.
If a pupil is chosen at random from each class, calculate the probability that both pupils pass the Mathematics test.

BAHAGIAN C
SECTION C

1. (a) Semasa majlis makan malam sebuah syarikat, 10 pakej percutian, 12 barangan elektrik dan y hamper disediakan sebagai cabutan bertuah.
During a company dinner event, 10 holiday packages, 12 electrical appliances and y hampers are prepared as lucky draw.
- (i) Jika seorang staf memilih satu cabutan bertuah secara rawak, kebarangkalian mendapat pakej percutian ialah $\frac{1}{4}$. Hitung nilai y.
If a staff chooses a lucky draw at random, the probability of getting a holiday package is $\frac{1}{4}$. Calculate the value of y.
- (ii) Aina dan Wafiy masing-masing memilih secara rawak cabutan bertuah pertama dan cabutan bertuah kedua. Hitung kebarangkalian bahawa
Aina and Wafiy choose at random the first lucky draw and the second lucky draw respectively. Find the probability that
- (a) kedua-dua mereka mendapat cabutan bertuah yang sama.
both of them get the same lucky draw.
- (b) sekurang-kurangnya seorang daripada mereka mendapat barangan elektrik.
at least one of them gets the electrical appliances.
- (b) Rajah di bawah menunjukkan lima keping kad berlabel dengan huruf.
The diagram shows five cards labelled with letters.



Semua kad itu dimasukkan ke dalam sebuah kotak. Satu kod dua huruf dibentuk menggunakan dua daripada kad-kad itu. Dua keping kad dipilih secara rawak satu demi satu tanpa pemulangan.

All the cards are put into a box. A two-letter code is formed by using any two of the cards. Two cards are picked at random one by one without replacement.

- (i) Senaraikan ruang sampel.
List the sample space.
- (ii) Cari kebarangkalian kod itu bermula dengan huruf G.
Find the probability the code begins with letter G.
- (iii) Cari kebarangkalian kod itu terdiri daripada dua huruf vocal atau dua huruf konsonan.
Find the probability that the code consists of two vowels or two consonants.

JAWAPAN
ANSWER

OBJEKTIF / OBJECTIVE

1. D 2. A 3. B 4. A 5. C

BAHAGIAN / SECTION A

1. (a) $\{(R, G), (R, B1), (R, B2), (G, R), (G, B1), (G, B2), (B1, R), (B1, G), (B1, B2), (B2, R), (B2, G), (B2, B1)\}$
(b) $\frac{1}{6}$
2. (a) P (jambu batu dan pisang)
 $= \frac{7}{30}$
(b) P (jambu batu atau pisang)
 $= \frac{5}{6}$

BAHAGIAN / SECTION B

1. (a) $S = \{(M, 1), (M, 3), (M, 5), (M, 8), (A, 1), (A, 3), (A, 5), (A, 8), (X, 1), (X, 3), (X, 5), (X, 8)\}$
(b) (i) $\{(A, 1), (A, 3), (A, 5), (A, 8)\}$
$$= \frac{4}{12} = \frac{1}{3}$$

(ii) $\{(M, 1), (M, 3), (M, 5), (M, 8), (A, 1), (A, 3), (A, 5), (X, 1), (X, 3), (X, 5)\}$
$$= \frac{10}{12} = \frac{5}{6}$$
2. (a) (i) $\frac{7}{12}$ (ii) $\frac{1}{4}$
(b) (i) $y = 5$ (ii) $\frac{15}{38}$

BAHAGIAN / SECTION C

1. (a) (i) $y = 18$
(ii) (a) $\frac{22}{65}$ (b) $\frac{67}{130}$
(b) (i) $\{(S, U), (S, G), (S, A), (S, R), (U, S), (U, G), (U, A), (U, R), (G, S), (G, U), (G, A), (G, R), (A, S), (A, U), (A, G), (A, R), (R, S), (R, U), (R, G), (R, A)\}$
(ii) $\frac{1}{5}$
(iii) $\frac{2}{5}$

BAB 10 : MATEMATIK PENGGUNA : PENGURUSAN KEWANGAN
CHAPTER 10 : CONSUMER MATHEMATICS : FINANCIAL MANAGEMENT

SOALAN OBJEKTIF
OBJECTIVE QUESTIONS

1. Rajah di bawah menunjukkan pengurusan kewangan.
The diagram below shows the financial management process.

- | |
|--|
| 1. Menetapkan matlamat kewangan
<i>Setting goals</i> |
| 2. Menilai kedudukan kewangan
<i>Evaluating financial status</i> |
| 3. Mewujudkan pelan kewangan
<i>Creating out financial plan</i> |
| 4. Melaksanakan pelan kewangan
<i>Carrying out financial plan</i> |
| 5. X |

Namakan proses X.

Name the process X.

- A. Menamatkan pelan kewangan
Terminating the financial plan
- B. Sediakan pelan bahru
Preparing a new plan
- C. Mengkaji semula dan menyemak kemajuan
Reviewing and revising the progress
- D. Melengkapkan pelan kewangan
Completing financial plan

2. Jadual di bawah menunjukkan pendapatan dan perbelanjaan Encik Wong.
The table below shows Encik Lim's income and expenses.

Gaji / Salary	RM3750
Komisen / Commission	RM1000
Pinjaman rumah / Housing loan	RM1100
Utiliti / Utilities	RM300
Barangan dapur / Groceries	RM900

Encik Wong menyimpan 10% daripada jumlah pendapatan dan sejumlah RM200 untuk dana kecemasan. Hitung pendapatan lebihan Encik Wong.

Encik Wong kept 10% of the total income and a sum of RM200 for the emergency fund. Calculate the surplus of income of Encik Wong.

- A. RM1200
- B. RM1350
- C. RM1400
- D. RM1775

3. Jadual di bawah ialah pendapatan yang diperoleh Puan Izzaty.

The table below is Puan Izzaty's income.

Gaji / Salary	RM4500
Komisen / Commission	RM820
Sewa diterima / Rental received	RM650
Dividen / Dividend	RM700

Hitung pendapatan aktif Puan Izzaty.

Calculate active income of Puan Izzaty.

- A. RM4500
- B. RM5320
- C. RM5970
- D. RM6670

4. Jadual di bawah menunjukkan perbelanjaan keluarga Encik Fauzi.

The table below shows Encik Fauzi's family expenses.

Barangan dapur / Groceries	RM900
Ansuran kereta / Car loan	RM850
Utiliti / Utilities	RM200
Petrol / Petrol	RM300

Hitung perbelanjaan tidak tetap Encik Fauzi.

Calculate Encik Fauzi's variable expenses.

- A. RM1350
- B. RM1400
- C. RM1750
- D. RM1950

5. Encik Daim menerima pendapatan aktif sebanyak RM4600 dan pendapatan pasif sebanyak RM900 dalam sebulan. Encik Daim mempunyai perbelanjaan tetap sebanyak RM2500 dan perbelanjaan tidak tetap sebanyak RM2000 sebulan. Berapakah aliran tunai bulanan Encik Daim?
Encik Daim receives an active income of RM4600 and a passive income of RM900 a month. Encik Daim also has fixed expenses of RM2500 and variable expenses of RM2000 a month. What is Encik Daim's monthly cash flow?

- A. RM1000
- B. RM1100
- C. RM4500
- D. RM5500

BAHAGIAN A
SECTION A

1. Anna menerima pendapatan RM2650 dan elaun RM350 dalam suatu bulan. Dia juga menerima pendapatan pasif RM400 setiap bulan. Jumlah perbelanjaan tetap dan perbelanjaan tidak tetap yang dibelanjakan masing-masing ialah RM2100 dan RM700 sebulan.
Anna receives an income of RM2650 and an allowance of RM350 in a month. She also earns a passive income of RM400 each month. The amount of fixed expenses and variable expenses spent is RM2100 and RM700 respectively.

- (a) Hitung aliran tunai bulanan bagi Anna. Jelaskan jawapan anda.
Calculate Anna's monthly cash flow. Explain your answer.
- (b) Jika pendapatan pasif bagi Anna berkurang sebanyak 30% dan jumlah perbelanjaan meningkat sebanyak RM600, apakah yang akan berlaku kepada aliran tunainya?
If Anna's passive income decreases by 30% and the total of expenses increase by RM600, what will happen to her cash flow.

2. Jadual menunjukkan pendapatan dan perbelanjaan bulanan Encik Subramaniam.
Table shows Mr. Subramaniam's monthly incomes and expenses.

Pendapatan aktif / <i>Active income</i>	RM2500
Pendapatan pasif / <i>Passive income</i>	RM800
Perbelanjaan tetap / <i>Fixed expenses</i>	RM1100
Perbelanjaan tidak tetap / <i>Variable expenses</i>	RM650

- (a) Hitung aliran tunai bulanan Encik Subramaniam.
Calculate Mr. Subramaniam's monthly cash flow.
- (b) Jika Encik Subramaniam tidak mempunyai pendapatan pasif dan juga jumlah perbelanjaannya meningkat sebanyak 50%, apakah yang akan berlaku kepada aliran tunai bulannya? Jelaskan jawapan anda.
If Mr. Subramaniam does not have any passive income and his total expenses increase by 50%, what will happen to his monthly cash flow? Explain your answer.

BAHAGIAN B
SECTION B

1. (a) Maklumat di bawah berkaitan dengan pelan kewangan Encik Zainal.
The information below is related to Encik Zainal's financial planning.

Pendapatan bersih / Net income	RM
Gaji / Salary	4000
Elaun / allowance	500
Jumlah pendapatan / Total income	P
Perbelanjaan / Expenses	
Bayaran insurans keluarga / Family insurance	450
Ansuran rumah / House instalment	1350
Ansuran kereta / Car instalment	650
Barangan dapur / Groceries	1200
Pemberian kepada ibu bapa / Allowances for parents	400
Bil utility / Utility bills	300
Jumlah perbelanjaan / Total Expenses	Q

- (i) Hitung nilai **P** dan **Q**.
Calculate the value of P and Q.
 - (ii) Hitung aliran tunai Encik Zainal.
Calculate of Encik Zainal's cash flow.
- (b) Encik Zainal ingin membeli sebuah komputer riba baharu yang berharga RM 5000 dengan menggunakan kad kredit. Tempoh bayaran balik yang diberikan oleh pihak bank ialah 3 tahun dengan kadar faedah tahunan sebanyak 5%.
Encik Zainal wants to buy a new laptop worth RM 5000 using his credit card. The repayment period provided by the bank is 3 years with an annual interest rate of 5%.
- (i) Hitung bayaran ansuran bulanan yang perlu dibayar oleh Encik Zainal.
Calculate the monthly installment payment to be paid by Encik Zainal.
 - (ii) Adakah Encik Zainal boleh mencapai matlamat kewangannya ini? Berikan cadangan penambahbaikan kepada beliau.
Can Encik Zainal achieve his financial goals? Give him suggestions for improvement.

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

Pendapatan & Perbelanjaan / <i>Income & Expenditure</i>	RM	
Gaji Bulanan / <i>Monthly income</i>	3700	
Pendapatan pasif / <i>Passive income</i>	300	
Jumlah Pendapatan Bulanan / <i>Total monthly income</i>	S	
Simpanan tetap / <i>Fixed deposits</i>	0	
Dana kecemasan / <i>Emergency savings</i>	100	
Baki Pendapatan / <i>Income balance</i>		T
Perbelanjaan Tetap Bulanan / <i>Monthly Fixed Expenses</i>		
Pinjaman perumahan / <i>Housing loan</i>	1300	
Ansuran kereta / <i>Car installments</i>	600	
Jumlah perbelanjaan tetap bulanan / <i>Total monthly Fixed Expenses</i>		1900
Perbelanjaan tidak tetap bulanan / <i>Non-fixed monthly expenses</i>		
Makanan & Minuman / <i>Foods & drinks</i>	1000	
Bil Telefon / <i>Phone bill</i>	400	
Melancong / <i>Travel</i>	600	
Jumlah perbelanjaan tidak tetap bulanan / <i>Total Non-fixed monthly expenses</i>		U
Pendapatan Lebihan / <i>Surplus income</i>		V

- (a) Hitung nilai **S**, **T**, **U** dan **V** dalam jadual di atas.
Calculate the value of S, T, U and V in the table above.
- (b) Adakah Cik Sara menguruskan kewangannya dengan cekap? Berikan Justifikasi anda.
Is Cik Sara managing her finances efficiently? Give your Justification.
- (c) Cik Sara bercadang untuk membeli sebidang tanah lot dengan harga RM36000 dalam tempoh 3 tahun. Berikan cadangan penambahbaikan untuk beliau mencapai matlamat tersebut.
Cik Sara plans to buy a plot of land for RM30000 within 3 years. Provide improvement suggestions for her to achieve that goal.

BAHAGIAN C
SECTION C

1. (a) Jadual di bawah menunjukkan pelan kewangan Encik Rahman.
The table below shows Encik Rahman's financial planning.

Pendapatan Bersih / Net Income	RM
Gaji bersih / Net salary	5600
Bajet Perbelanjaan / Expenses Budget	
Pinjaman rumah / Housing loan	1100
Ansuran kereta / Car loan	850
Premium insurans / Insurance premiums	300
Bill utiliti / Utility bills	400
Perbelanjaan dapur / Groceries	1200
Belanja petrol / Petrol expenses	500
Bil telefon / Telephone bill	200
Simpanan / Savings	500

- (i) Hitung aliran tunai Encik Rahman. Jelaskan jawapan anda.
Calculate Encik Rahman's cash flow. Explain your answer.
- (ii) Encik Rahman bercadang untuk membeli sebuah rumah yang bernilai RM300 000 dalam jangka masa lima tahun dengan bayaran pendahuluan 10% daripada harga rumah. Adakah Encik Rahman boleh mencapai matlamat tersebut?
Encik Rahman's plans to buy a house worth RM300 000 over a five year period with a down payment of 10% of the price of house. Can Encik Rahman's achieve his goal?
- (b) Syifa bekerja sebagai seorang pembantu pensyarah di sebuah universiti swasta. Pendapatan bulannya ialah RM3500. Beliau memperoleh pendapatan tambahan sebanyak RM950 dengan mengadakan kelas tuisyen. Anggaran perbelanjaan bulanan Syifa adalah seperti yang berikut.
Syifa works as an assistant lecturer at a private university. Her monthly income is RM3500. She also earns a passive income of RM950 by conducting tuition class. The monthly spending budget of Syifa is as follow.

Perbelanjaan Bulanan / Monthly Expenses	RM
Pinjaman rumah / Housing loan	1100
Ansuran kereta / Car loan	850
Premium insurans / Insurance premiums	250
Bill utiliti / Utility bills	200
Perbelanjaan dapur / Groceries	1000
Langganan perkhidmatan Internet / Internet service subscription	100
Belanja petrol / Petrol expenses	300
Bil telefon / Telephone bill	100
Pemberian kepada ibu bapa / Allowances for parents	500

Syifa menetapkan 10% daripada jumlah pendapatan sebagai simpanan tetap bulanan untuk mencapai matlamat kewangannya.

Syifa dedicates 10% of her total income as a monthly fixed deposit to achieve her financial goal.

- (i) Anda dikehendaki menyediakan satu pelan kewangan peribadi bulanan untuk Syifa.
You are required to create a monthly personal financial plan for Syifa.
- (ii) Kemukakan komen tentang lebihan atau kurangan yang akan dialami oleh Syifa berdasarkan pelan kewangan ini?
Give comments on the surplus or deficit that will be experienced by Syifa based on this financial plan.

2. Encik Gan bekerja sebagai seorang guru dan menerima gaji bersih sebanyak RM4000 sebulan. Maklumat di bawah menunjukkan pelan kewangan dan aliran tunai sebenar dalam satu penyata milik Encik Gan pada bulan lepas.

Mr. Gan works as a teacher and receives net salary of RM4000 per month. The information below shows a financial plan and actual cash flow in one statement of Mr. Gan for the last month.

Pendapatan dan Perbelanjaan <i>Income and Expenditure</i>	Pelan Kewangan <i>Financial Plan</i>	Aliran Tunai Sebenar <i>Actual Cash Flow</i>
Pendapatan bersih / <i>Net income</i>		
Gaji bersih / <i>Net salary</i>	RM4000	RM4000
Pendapatan pasif / <i>Passive income</i>	0	0
Jumlah pendapatan bulanan / <i>Total monthly income</i>	RM4000	RM4000
Tolak simpanan tetap / <i>Minus fixed deposits savings</i>	RM600	RM600
(15% daripada pendapatan bulanan / <i>15% of the monthly income</i>)		
Tolak simpanan untuk dana kecemasan / <i>Minus savings for emergency fund</i>	RM450	RM450
Baki pendapatan / <i>Income balance</i>	RM2950	RM2950
Tolak perbelanjaan tetap bulanan / <i>Minus monthly fixed expenses</i>		
Sewa rumah / <i>House rent</i>	RM500	RM500
Ansuran kereta / <i>Car installment</i>	RM650	RM650
Insurans peribadi / <i>Personal insurance</i>	RM130	RM130
Jumlah perbelanjaan tetap bulanan / <i>Total monthly fixed expenses</i>	RM1280	RM1280
Tolak perbelanjaan tidak tetap bulanan / <i>Minus monthly variable expenses</i>		
Makanan / <i>Food</i>	RM700	RM620
Gas dan petrol / <i>Gas and petrol</i>	RM200	RM200
Utiliti rumah / <i>House utilities</i>	RM90	RM70
Hiburan / <i>Entertainment</i>	RM300	RM300
Jumlah perbelanjaan tidak tetap bulanan / <i>Total monthly variable expenses</i>	RM1290	RM1190
Lebihan pendapatan atau defisit / <i>Surplus of income or deficit</i>		

Encik Gan merancang untuk membeli sebuah motosikal baru yang berharga RM5500 dalam masa 10 bulan. Dia merancang untuk membayar sekali gus dengan menggunakan simpanannya selama 10 bulan.

Mr. Gan plans to buy a new motorcycle with the price of RM5500 in 10 months. He plans to pay lump-sum with his savings in 10 months.

- (a) Hitung baki pendapatan untuk Encik Gan selepas menolak semua perbelanjaan bagi kedua-dua pelan kewangan dan aliran tunai sebenar.
Calculate the balance of income for Mr. Gan after deducting all the expenses for both financial plan and actual cash flow.
- (b) Adakah dia mengalami pendapatan lebihan atau defisit? Berikan sebab anda.
Is he in surplus or deficit of income? Give your reason.
- (c) Berdasarkan pelan kewangan Encik Gan, adakah dia dapat mencapai matlamat kewangan? Mengapa? (Tunjukkan pengiraan anda)
Based on Mr. Gan's financial plan, can he achieve his financial goal? Why? (Show your calculation)
- (d) Adakah pengurusan kewangan Encik Gan berhemah? Justifikasikan jawapan anda.
Is Mr. Gan's financial management wise? Justify your answer.
- (e) Kenal pasti matlamat kewangan Encik Gan mengikut konsep SMART.
Identify Mr. Gan's financial goal according to SMART concept.

JAWAPAN ANSWER

OBJEKTIF / OBJECTIVE

1. C 2. D 3. B 4. B 5. A

BAHAGIAN / SECTION A

1. (a) Aliran tunai bulanan / *Monthly cash flow*
 $RM2650 + RM350 + RM400 - RM2100 - RM700$
 $RM600$ (Aliran tunai positif / *Positive cash flow*)

Aliran tunai positif adalah baik kerana Anna mempunyai lebihan pendapatan selepas ditolak dengan semua perbelanjaan. Ini membantunya menghadapi situasi kecemasan.

A positive cash flow is good because Anna has a surplus of income after deducting all the expenses. This helped her to deal with an emergency situation.

- (b) Aliran tunai bulanan / *Monthly cash flow*
 $RM2650 + RM350 + (RM400 \times 70\%) - RM2100 - RM700 - RM600$
 $- RM120$ (Aliran tunai negatif / *Negative cash flow*)

Aliran tunai negatif adalah tidak baik kerana Anna mempunyai defisit pendapatan selepas ditolak dengan semua perbelanjaan. Dia terpaksa menggunakan kemudahan kad kredit untuk menghadapi masalah kewangan.

A negative cash flow is not good because Anna has a deficit of income after deducting all the expenses. She has to use the credit card facilities to solve financial problem.

2. (a) Aliran tunai bulanan / *Monthly cash flow*
 $RM2500 + RM800 - RM1100 - RM650$
 $RM1550$ (Aliran tunai positif / *Positive cash flow*)
- (b) Aliran tunai bulanan / *Monthly cash flow*
 $RM2500 - (RM11000 + 650) \times 50\% - RM1100 - RM650$
 $- RM125$ (Aliran tunai negatif / *Negative cash flow*)

Aliran tunai negatif adalah tidak baik kerana Mr. Subramaniam mempunyai defisit pendapatan selepas ditolak dengan semua perbelanjaan. Dia terpaksa menggunakan kemudahan kad kredit untuk menghadapi masalah kewangan.

A negative cash flow is not good because Mr. Subramaniam has a deficit of income after deducting all the expenses. He has to use the credit card facilities to solve financial problem.

BAHAGIAN / SECTION B

1. (a) (i) $P = 4000 + 500 = 4500$
 $Q = 450 + 1350 + 650 + 1200 + 400 + 300 = 4350$
- (ii) Aliran Tunai / *Cash flow* = Pendapatan – Perbelanjaan / *Income – Expenses*
 $= 4500 - 4350$
 $= 150$

Aliran tunai positif sebanyak / *Positive cash flow* = RM150

- (b) (i) Amaun yang perlu dibayar / *Amount due* :
 $= 5000 + (5000 \times 0.05 \times 3)$

Bayaran Bulanan / *Monthly payment* :

$$= \frac{5000 + (5000 \times 0.05 \times 3)}{3 \times 12}$$

$$= \text{RM } 159.72$$

- (ii) Encik Zainal tidak mampu mencapai matlamat kewangannya kerana bayaran bulanan komputer riba itu melebihi aliran tunai bulanannya.
Mr Zainal is unable to achieve his financial goals because the laptop's monthly payment exceeds his monthly cash flow.

Cadangan: Encik Zainal perlu meningkatkan aliran tunai beliau dengan mengurangkan bil utiliti atau mencari sumber pendapatan tambahan.

Recommendation: Mr Zainal should increase his cash flow by reducing utility bills or finding additional sources of income.

2. (a) $S = 4000$

$$T = 3900$$

$$U = 2000$$

$$V = 0$$

- (b) Tidak cekap / *Not efficient*

Kerana aliran tunai Cik Sara adalah sifar. Tiada pendapatan lebihan pada setiap bulan.
Because Ms. Sara's cash flow is zero. No surplus income on a monthly basis.

- (c) Simpanan bulanan yang diperlukan / *Monthly savings required* :

$$= \frac{36000}{3 \times 12}$$

$$= \text{RM}1000$$

Cadangan penambahbaikan :

Kurangkan perbelanjaan untuk melancong dan kurangkan bil telefon serta perlu mencari kerja sampingan untuk mendapat lebih pendapatan.

Suggestions for improvement :

Reduce expenses to travel and reduce phone bills and need to find side jobs to earn more income.

BAHAGIAN / SECTION C

1. (a) (i) Aliran tunai / *Cash flow*
 $= \text{RM}5600 - (\text{RM}1100 + \text{RM}850 + \text{RM}300 + \text{RM}400 + \text{RM}1200 + \text{RM}500 + \text{RM}200)$
 $= \text{RM}5600 - \text{RM}4550$
 $= \text{RM}1050$

Aliran tunai positif sebanyak RM1050 adalah baik kerana Encik Rahman boleh menyimpan wang itu jika menghadapi situasi kecemasan.

A positive cash flow of RM1050 is good because Encik Rahman can save the money and in case of emergency.

- (ii) Simpanan tahunan / *Annual savings* $= \frac{10}{100} \times \text{RM}300000 \div 5$
 $= \text{RM}30000 \div 5$
 $= \text{RM}6000$

Simpanan bulanan / *Monthly savings* $= \text{RM}6000 \div 12$
 $= \text{RM}500$

Encik Rahman mampu membeli rumah itu dengan simpanan bulanan RM500.

Encik Rahman was able to buy the house for RM500 monthly.

(b) (i)	Pendapatan dan perbelanjaan Income and expenditure	RM	
	Gaji bulanan / <i>Monthly income</i>	3500	
	Pendapatan pasif / <i>Passive income</i>	950	
	Jumlah pendapatan bulanan / Total monthly income	4450	
	Tolak simpanan tetap bulanan / <i>Minus fixed monthly saving</i>	445	
	Baki pendapatan / Balance of income		4005
	Ansuran pinjaman rumah / <i>Housing loan installment</i>	1100	
	Ansuran pinjaman kereta / <i>Car loan installment</i>	850	
	Premium insurans / <i>Insurance premiums</i>	250	
	Jumlah perbelanjaan tetap bulanan / Total monthly fixed expenses		2200
	Perbelanjaan makanan / <i>Food expenditure</i>	1000	
	Utiliti rumah / <i>Home utilities</i>	200	
	Belanja petrol / <i>Petrol expenses</i>	300	
	Langganan perkhidmatan internet / <i>Internet service subscription</i>	100	
	Bil telefon / <i>Telephone bills</i>	100	
	Pemberian kepada ibu bapa / <i>Giving to parents</i>	100	
	Jumlah perbelanjaan tidak tetap / Total monthly variable expenses		1800
	Pendapatan lebihan / Surplus of income		5

- (ii) Aliran tunai positif sebanyak RM5 adalah kurang baik kerana Syifa tidak mempunyai dana kecemasan yang lebih.
The positive cash flow of RM5 is not good because Syifa has no more emergency funds.

2. (a) Bagi pendapatan selepas menolak semua perbelanjaan bagi :
The balance of income after deduction all the expenses for :

Pelan kewangan / *Financial plan* :
 = RM2950 – RM1280 – RM1290
 = RM380

Aliran tunai sebenar / *Actual cash flow* :
 = RM2950 – RM1280 – RM1190
 = RM480

- (b) Lebihan pendapatan kerana baki pendapatan adalah positif.
Surplus in income because the balance income is positive.
- (c) Jumlah simpanan dalam 10 bulan / *Total savings in 10 months*
 = RM600 × 10
 = RM6000

Encik Gan dapat mencapai matlamat kewangan kerana dia masih mempunyai lebihan RM500. Dia juga mempunyai lebihan RM480 untuk menghadapi situasi kecemasan ataupun perbelanjaan di luar jangkaan.

Mr. Gan can achieve the financial goal because he has surplus of RM500. He also has surplus of RM480 to face emergency situations or unexpected expenses.

- (d) Pengurusan kewangan Encik Gan adalah berhemah kerana dia berbelanja ke atas keperluan asas. Dia juga mempunyai simpanan bulanan dan perlindungan insurans.
Mr. Gan's financial management is wise because he spends on basic needs. He also has monthly savings and insurance protection.

- (e) S – Membeli sebuah motosikal baru yang berharga RM5500
Buy a new motorcycle with the price of RM5500

M – Menyimpan RM5500 untuk membayar sekali gus.
Save RM5500 to pay lump-sum

A – Matlamat kewangan boleh dicapai dengan menyimpan RM600 setiap bulan daripada pendapatannya iaitu RM6000.
The financial goal can be achieved by saving of RM600 a month from his income which is RM6000.

R – Simpanan bulanan RM600 ialah 15% daripada jumlah pendapatan bulanan RM4000 untuk mencapai matlamat kewangan.
Monthly savings of RM600 is 15% of the total monthly income of RM4000 to achieve the financial goal.

T – Dalam tempoh 10 bulan. / *In 10 months.*