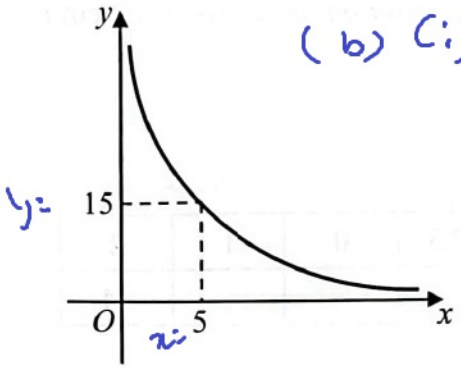
1 Rajah 1 menunjukkan graf salingan yang mewakili suatu ubahan.
F5 C1 *Diagram 1 shows a reciprocal that represents a variation.*



(b) (i) $y \propto \frac{1}{x}$ $x=5,\ y=15$

$y = \frac{k}{x}$ $15 = \frac{k}{5}$

$k = 15 \times 5$

$= 75$

$y = \frac{75}{x}$

(ii) $x = 9$

$y = \frac{75}{9}$ 3

$= \frac{25}{3}$ 4

(*a*) Apakah hubungan antara pemboleh ubah *y* dengan pemboleh ubah *x*?
What is the relation between variable y and variable x?

[1 *markah*]
[1 *mark*]

y berkadar songsang dengan x.

(*b*) (i) Ungkapkan *y* dalam sebutan *x*.
Express y in terms of x.

(ii) Seterusnya, nyatakan nilai *y* apabila $x = 9$.
Hence, state the value of y when $x = 9$.

[3 *markah*]
[3 *marks*]

2 (*a*) Lengkapkan jadual pada ruang jawapan bagi persamaan $y = 2 - 3x$.
Complete the table in the answer space for the equation $y = 2 - 3x$.

F2 C8

[1 *markah*]
[1 *mark*]

(*b*) Menggunakan skala 2 cm kepada 1 unit pada paksi-x dan 2 cm kepada 5 unit pada paksi-y, lukiskan graf bagi $y = 2 - 3x$.
Using a scale 2 cm *to* 1 *unit on the x-axis dan* 2 cm *to* 5 *units on the y-axis, draw a graph for* $y = 2 - 3x$.

$x = -0.5$, $y = 2 - 3(-0.5) = 3.5$
$x = 0$; $y = 2 - 3(0) = 2$
$x = 1$; $y = 2 - 3(1) = -1$

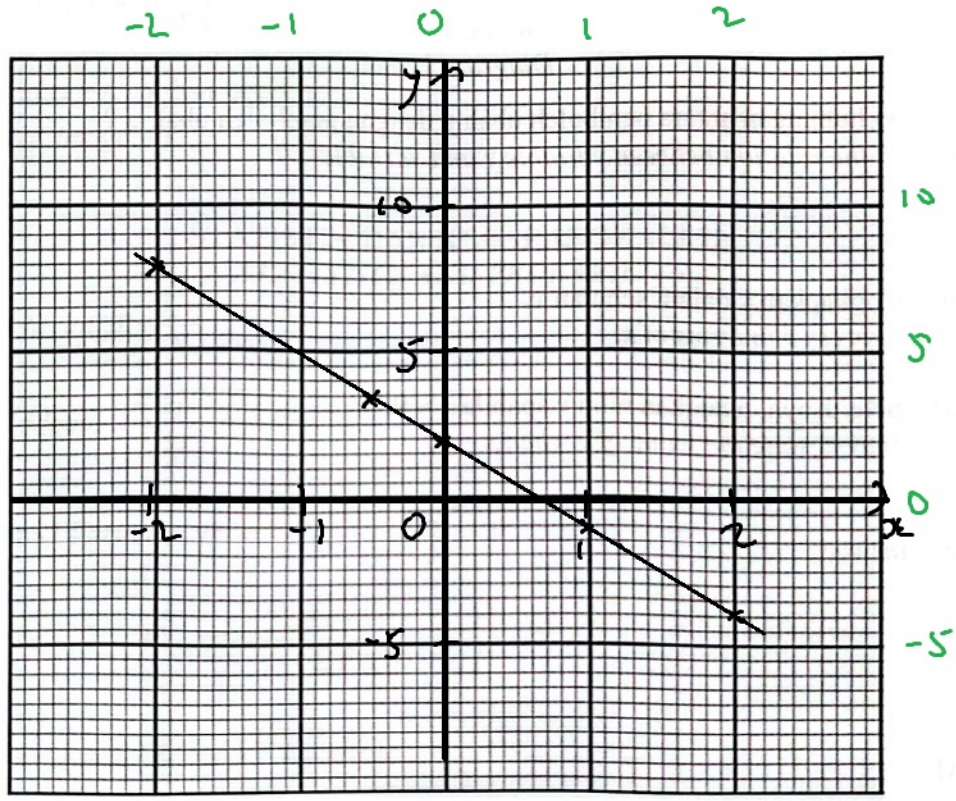
[3 *markah*]
[3 *marks*]

Jawapan / *Answer*:

(*a*)

x	–2	–0.5	0	1	2
y	8	3.5	2	–1	–4

(*b*)



3 Diberi min bagi enam nombor ialah 35.
Given mean of six numbers is 35.

F2 C12

(*a*) Hitung hasil tambah enam nombor tersebut.
Calculate the sum of the six numbers.

[2 *markah*]
[2 *marks*]

(*b*) Jika tiga nombor, x, $x+4$ dan $2x$, ditambah dalam set data nombor tersebut, min baharunya ialah 30.
Hitung nilai x.

If three numbers, x, $x+4$ *and* $2x$, *are added to the set of data, the new mean is* 30.
Calculate the value of x.

[2 *markah*]
[2 *marks*]

4 (a) Diberi $\tan\theta = -1.4826$ dan $180° \le \theta \le 360°$, hitung sudut θ. [2 markah]
Given that $\tan\theta = -1.4826$ *and* $180° \le \theta \le 360°$, *calculate angle* θ. [2 marks]

F5 C6

basic $\angle$ = $\tan^{-1}$ 1.4826

= 56°

θ = 360° − 56°

= 304°

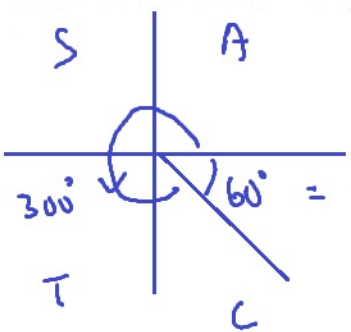
θ

S | A

T | C

360 − θ

(b) Tanpa menggunakan kalkulator saintifik, tentukan nilai bagi sin 300°. [2 markah]
Without using scientific calculator, determine the value for sin 300°. [2 marks]



sin 300° = − sin 60°

= $-\frac{\sqrt{3}}{2}$

sin(300)

$-\frac{\sqrt{3}}{2}$

5 Panjang bagi suatu segi empat tepat ialah $(x+3)$ cm dan lebarnya ialah 7 cm kurang daripada panjangnya.

F4 C1 *The length of a rectangle is* $(x+3)$ cm *and its width is* 7 cm *less than its length.*

(*a*) Ungkapkan luas segi empat, L cm^2, dalam bentuk ax^2+bx+c.
Express the area of the rectangle, L cm^2, *in the form of* ax^2+bx+c.

[2 *markah*]
[2 *marks*]

(*b*) Seterusnya, lengkapkan Rajah 2 pada ruang jawapan dengan melakar graf fungsi bagi luas segi empat itu.
Hence, complete Diagram 2 *in the answer space by sketching the graph of function of the area of the rectangle.*

[3 *markah*]
[3 *marks*]

$x+3$

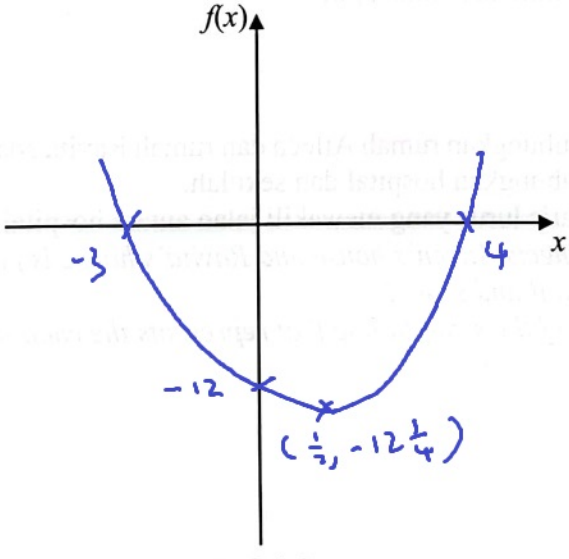
$x+3-7$
$= x-4$

$L = (x+3)(x-4)$
$= x^2 - 4x + 3x - 12$
$= x^2 - x - 12$

$x=0,\ L = 0-0-12$
$= -12$

$L=0,$
$x+3=0 \quad x-4=0$
$x=-3 \quad x=4$

(*b*)



$x = \frac{-3+4}{2}$
$= \frac{1}{2}$
$L = (\frac{1}{2})^2 - \frac{1}{2} - 12$
$= -12\frac{1}{4}$

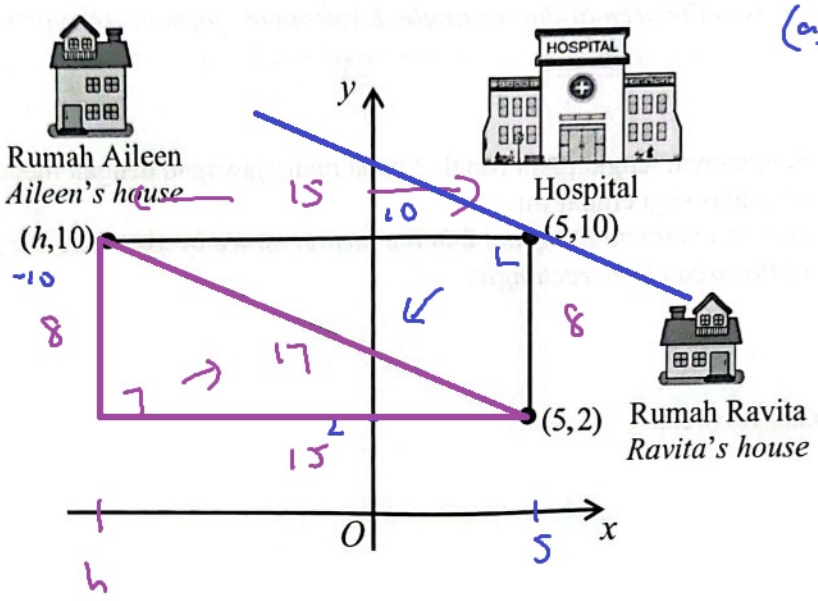
Rajah 2
Diagram 2

6 Rajah 3 menunjukkan kedudukan rumah Aileen, rumah Ravita dan hospital yang dilukis pada suatu satah Cartes.

F2 C7

F3 C9

Diagram 3 shows the location of Aileen's house, Ravita's house and the hospital drawn on a Cartesian plane.



(a) $10-2=8$

$\sqrt{17^2-8^2}=15$

$\sqrt{17^2-8^2}$ = 15

$h=5-15$

$=-10$

(a) Ravita menunggang motosikal dari rumahnya ke rumah Aileen yang sejauh 17 km. Jika 1 unit mewakili 1 km, nyatakan nilai h.

Ravita rides a motorcycle from her house to Aileen's house which is 17 km. *If* 1 unit *represents* 1 km, *state the value of* h.

[2 *markah*]
[2 *mark*]

(b) Jalan yang menghubungkan rumah Aileen dan rumah Ravita adalah selari dengan jalan raya yang menghubungkan hospital dan sekolah.
Cari persamaan garis lurus yang mewakili jalan antara hospital dan sekolah itu.
The road that connects Aileen's house and Ravita's house is parallel to the road that connects the hospital and school.
Find the equation of the straight line that represents the road from the hospital to the school.

[3 *markah*]
[3 *marks*]

(b) $m_{A,R}=\frac{2-10}{5-(-10)}$

$=\frac{-8}{15}$

$m_1=m_2=-\frac{8}{15}$

$y=-\frac{8}{15}x+c$, $(5,10)$ $x=5,\ y=10$

$10=-\frac{8}{15}(5)+c$

$c=10+\frac{8}{3}$

$=\frac{38}{3}$

$\therefore\ y=-\frac{8}{15}x+\frac{38}{3}$

7 Gambar rajah Venn di ruang jawapan menunjukkan set P, set Q dan set R dengan keadaan set semesta, $\xi = P \cup Q \cup R$. Pada rajah di ruang jawapan, lorek set

F4 C4 *The Venn diagram in the answer shows set P, set Q and set R such that the universal set,* $\xi = P \cup Q \cup R$.

On the diagram in the answer space, shade the set

(*a*) $P \cap Q$

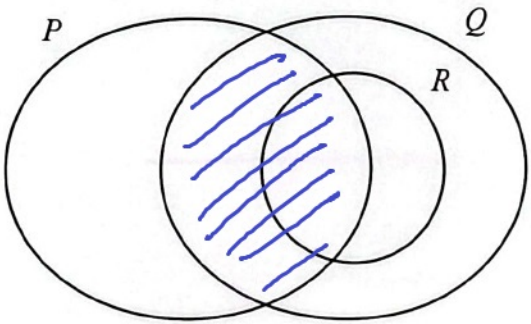
[1 *markah*]
[1 *mark*]

(*b*) $P \cup (Q \cap R)'$

[2 *markah*]
[2 *marks*]

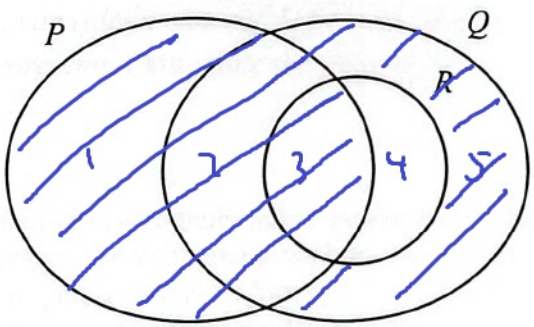
Jawapan/ *Answer*:

(*a*)



(*a*) $P \cap Q$

(*b*)



1, 2, 3 ∪ 1, 2, 5

(*b*) $P \cup (Q \cap R)'$ = 1, 2, 3, 5

$Q \cap R$ = 3, 4

F4 C3

8 (*a*) Tulis songsangan bagi pernyataan berikut.
Write the inverse of the following statement.

Jika 5.3×10^n satu bentuk piawai, maka n ialah integer. *If* 5.3×10^n *is a standard form, then n is an integer.*

[1 *markah*]
[1 *mark*]

(*b*) Tulis Premis 2 untuk melengkapkan hujah berikut. Seterusnya, nyatakan sama ada hujah itu munasabah atau tidak munasabah.
Write down Premise 2 to complete the following argument. Hence, state whether the argument is sound or not sound.

Integer
Assume $x \in \mathbb{Z}$

Premis 1 : Jika ~~x~~ ialah ~~nombor ganjil~~, maka $4x$ ialah nombor genap. (bukan)
Premise 1 : If x is an odd number, then 4x is an even number.

Premis 2 : $4x$ bukan nombor genap
Premise 2 : $4x$ is not an even number.

Kesimpulan : ~~x~~ bukan ~~nombor ganjil~~.
Conclusion : x is not an odd number.

Premis 2 palsu kerana $4x$ ialah genap.
$4x = 3$
$x = \frac{3}{4}$ (not odd #)

∴ Hujah ini tidak munasabah.

[2 *markah*]
[2 *marks*]

Jawapan / *Answer*:

(*a*) Songsangan : Jika 5.3×10^n bukan satu bentuk piawai, maka n bukan integer.

Inverse : *If* 5.3×10^n *is not a standard form, then n is not an integer.*

(*b*) Premis 2 : $4x$ bukan nombor genap

Premise 2 : $4x$ is not an even number.

munasabah

(i)	Statement	: If p, then q.
(ii)	Converse	: If q, then p.
(iii)	Inverse	: If $\sim p$, then $\sim q$.
(iv)	Contrapositive	: If $\sim q$, then $\sim p$.

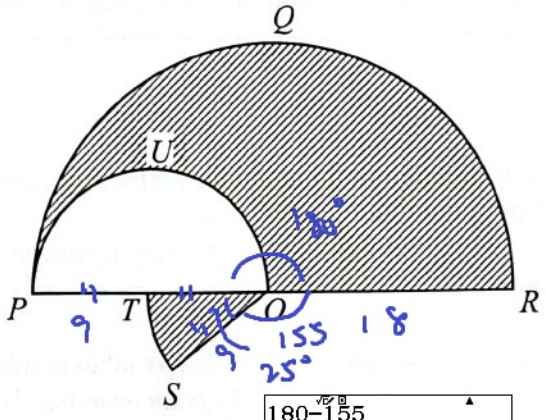
S: if 前, then 后
C: if 后, then 前
I: if ~前, then ~后
CP: if ~后, then ~前

A valid deductive argument can be categorised into three forms.

	Form I	Form II	Form III
Premise 1:	All A are B	If p, then q	If p, then q
Premise 2:	C is A	p is true p	Not q is true $\sim q$
Conclusion:	C is B	q is true q	Not p is true $\sim p$

Sah 符合格式的
Munasabah 合理

9 Rajah 4 menunjukkan dua semi bulatan, *PQR* dan *PUO* berpusat masing-masing di *O* dan *T*. *SOT* ialah satu sektor bulatan berpusat di *O*. *PTOR* ialah suatu garis lurus.
F2 C5 *Diagram 4 shows two semicircles, PQR and PUO with centre O and T respectively. SOT is a sector of a circle with centre O. PTOR is a straight line.*



180−155 = 25

Diberi OR = 18 cm dan $\angle SOR = 155°$. Menggunakan $\pi = \frac{22}{7}$, hitung

Given OR = 18 cm *and* $\angle SOR = 155°$. *Using* $\pi = \frac{22}{7}$, *calculate*

(*a*) panjang lengkok minor *ST*, dalam cm,
the length of minor arc ST, in cm,

(*b*) luas, dalam cm^2, kawasan yang berlorek.
area, in cm^2, *of the shaded region.*

[5 *markah*]
[5 *marks*]

a) $\angle SOT = 180° - 155° = 25°$

$Arc = \frac{\theta}{360} \times 2\pi r$

$\overset{\frown}{ST} = \frac{25}{360} \times 2 \times \frac{22}{7} \times 9$

$= \frac{55}{14} = 3\frac{13}{14}$ cm

$\frac{25}{360} \times 2 \times \frac{22}{7} \times 9 = \frac{55}{14}$

$\frac{25}{360} \times 2 \times \frac{22}{7} \times 9 = 3.928571429$

$\frac{25}{360} \times 2 \times \frac{22}{7} \times 9 = 3\frac{13}{14}$

b) $A_S = \frac{\theta}{360} \times \pi r^2$

$A_{OPAR} = \frac{180}{360} \times \frac{22}{7} \times 18^2$

$= \frac{3564}{7}$

$\frac{1}{2} \times \frac{22}{7} \times 18^2 = \frac{3564}{7}$

$A_{OST} = \frac{25}{360} \times \frac{22}{7} \times 9^2$

$= \frac{495}{28}$

$\frac{25}{360} \times \frac{22}{7} \times 9^2 = \frac{495}{28}$

$\frac{3564}{7} - \frac{891}{7} + \frac{495}{28} = 399\frac{15}{28}$

$\frac{3564}{7} - \frac{891}{7} + \frac{495}{28} = 399.5357143$

$A_{TPUO} = \frac{180}{360} \times \frac{22}{7} \times 9^2$

$= \frac{891}{7}$

$\frac{1}{2} \times \frac{22}{7} \times 9^2 = \frac{891}{7}$

$A_{SR} = \frac{3564}{7} - \frac{891}{7} + \frac{495}{28}$

$= 399\frac{15}{28}$ cm^2

$\frac{3564}{7} - \frac{891}{7} + \frac{495}{28} = \frac{11187}{28}$

10 Lim merancang untuk melangsaikan pinjaman pendidikannya berjumlah RM30 400. Setiap
F4 C10 bulan, beliau menerima gaji sebanyak RM4 300 dan menyimpan 12% daripada gajinya untuk tujuan tersebut.
Hitung tempoh masa minimum, dalam bulan, yang diperlukan oleh Lim untuk melangsaikan pinjaman pendidikannya sekiranya wang simpanan beliau ketika ini berjumlah RM11 680.

Lim plans to pay off his education loan amounting to RM30 400. *Every month, he receives a salary of* RM4 300 *and saves* 12% *of his salary for this purpose.*
Calculate the minimum time, in months, required by Lim to pay off his education loan if his current savings amount is RM11 680.

[3 *markah*]
[3 *marks*]

baki simpan = 30400−11680 = 18720

simpanan bulanan = $4300 \times \frac{12}{100}$ = 516

bulan = 18720÷516 = 36.27906977

∴ 37 bulan.

11680+516×37 = 30772

11680+516×36 = 30256

(ans)

$11\,680 + 516x \geq 30\,400$

$516x \geq 18\,720$

$x \geq 36.28$

$\therefore x = 37$ ✱

11 Pendapatan tahunan Encik Akbar ialah RM250 400 pada tahun 2023.
F5 C4 Jadual 1.1 menunjukkan pelepasan cukai yang dituntut oleh Encik Akbar. Beliau telah membayar zakat sebanyak RM13 000 pada tahun tersebut.
The annual income of Encik Akbar is RM250 400 *in year* 2023.
Table 1.1 *shows tax reliefs claimed by Encik Akbar. He had paid zakat amounting to* RM13 000 *in that year.*

Pelepasan Cukai *Tax Relief*	**Jumlah (RM)** *Amount* (RM)
Cukai Individu *Individual tax relief*	– 9 000
Insurans hayat dan KWSP (Had RM7 000) – *Life insurance and KWSP* (*Limit* RM7 000)	7 500
Gaya hidup (Had RM3 000) *Lifestyle* (*Limit* RM3 000)	– 2 500
Insurans perubatan (Had RM10 000) *Medical insurance* (*Limit* RM10 000)	– 3 500
Perbelanjaan rawatan untuk ibu bapa *Medical treatment expenses for her parents*	– 2 000

Jadual 1.1
Table 1.1

(*a*) Hitung pendapatan bercukai bagi Encik Akbar.
Calculate the chargeable income for Encik Akbar.

250400−9000−7000-▷ 226400

[2 *markah*]
[2 *marks*]

pendapatan bercukai

= 250 400 − 9000 − 7000 − 2500 − 3500 − 2000
= RM 226 400

100 001 – 250 000	100 000 pertama *On the first* 100 000		10 900
	150 000 berikutnya *Next* 150 000	24	36 000

(b) cukai pendapatan yang perlu dibayar

126400×0.24 30336

= 10 900 + 126 400 × $\frac{24}{100}$ − 13000

= 10900 + 30336 − 13000

= RM 28 236

10900+30336−13000 28236

(c) PCB = 3100 × 12
= RM 37 200 > 28 236

3100×12 37200

Encik Akbar tidak perlu membuat bayaran baki cukai pendapatan

Kerana PCB yang telah bayar lebih daripada cukai pendapatan yang perlu dibayar.

(*b*) Seterusnya, dengan menggunakan Jadual 1.2: Kadar Cukai Pendapatan Individu untuk Tahun Taksiran 2023, hitung cukai pendapatan yang perlu dibayar oleh Encik Akbar pada tahun tersebut.

Hence, by using Table 1.2: *Individual Income Tax Rates for Assessment Year of* 2023, *calculate the income tax payable by Encik Akbar for that year.*

Banjaran Pendapatan Bercukai ***Chargeable Income*** **(RM)**	**Pengiraan** ***Calculation*** **(RM)**	**Kadar** ***Rate*** **(%)**	**Cukai** ***Tax*** **(RM)**
100 001 – 250 000	100 000 pertama *On the first* 100 000		10 900
	150 000 berikutnya *Next* 150 000	24	36 000
250 001 – 400 000	250 000 pertama *On the first* 250 000		46 900
	150 000 berikutnya *Next* 150 000	24.5	36 750

Jadual 1.2

Table 1.2

[4 *markah*]

[4 *marks*]

(*c*) Sekiranya setiap bulan gajinya dipotong sebanyak RM3 100 untuk Potongan Cukai Bulanan (PCB), adakah Encik Akbar perlu membuat bayaran baki cukai pendapatan? Berikan justifikasi anda.

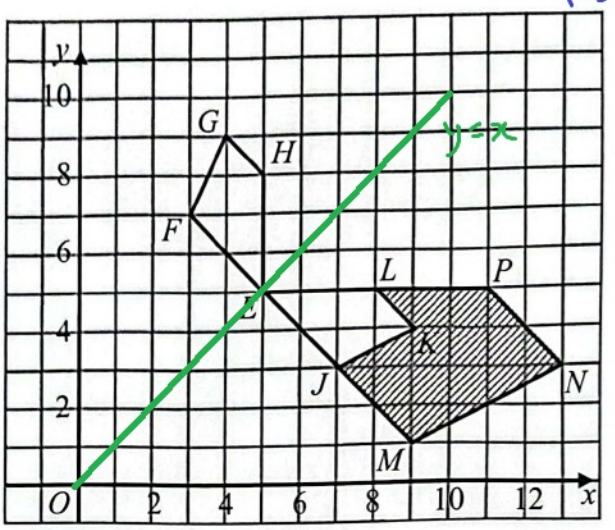
If his salary was deducted monthly by RM3 100 *for Monthly Tax Deduction* (PCB), *does Encik Akbar need to pay any more income tax? Justify your answer.*

[3 *markah*]

[3 *marks*]

12 Rajah 5 menunjukkan sisi empat *EFGH*, *EJKL* dan *EMNP*, dilukis pada suatu satah Cartes.

F5 C5 *Diagram 5 shows quadrilateral EFGH, EJKL and EMNP, drawn on a Cartesian plane.*



(a) ∵ $\frac{EP}{EL} = \frac{PN}{LK} = \frac{MN}{JK} = \frac{EM}{EJ} = \frac{2}{1} = 2$

$\angle LEJ = \angle PEM$

$\angle ELK = \angle EPN$

$\angle LKJ = \angle PNM$

$\angle EJK = \angle EMN$

∴ $\triangle JKJ$ serupa dengan $\triangle PNM$

(b) S: Pantulan pada garis y=x.

R: Pembesaran dengan faktor skala 2, pusat di E(5,5)

(*a*) Nyatakan sama ada sisi empat *EJKL* dan *EMNP* adalah serupa.
Berikan justifikasi anda.
State whether quadrilateral EJKL and EMNP are similar.
Justify your answer.

[1 *markah*]
[1 *mark*]

(*b*) *EMNP* ialah imej bagi *EFGH* di bawah gabungan transformasi **RS**.
Huraikan selengkapnya, transformasi:
EMNP is the image of EFGH under the combined transformation **RS**.
Describe in full, the transformation:
(i) **S**
(ii) **R**

[5 *markah*]
[5 *marks*]

(*c*) Diberi bahawa *EFGH* mewakili kawasan dengan luas 25 unit^2. $= A_0$
Hitung luas dalam unit^2, kawasan berlorek.
It is given that EFGH represents a region with an area of 25 unit^2.
Calculate the area in unit^2, *of shaded region.*

[3 *markah*]
[3 *marks*]

$A_1 = k^2 \times A_0$

$= 2^2 \times 25$

$= 100 \text{ unit}^2$

$A_{SR} = 100 - 25$

$= 75 \text{ unit}^2$

13 (*a*) Pada tahun 2022, Encik Felix mempunyai sebuah kereta untuk digunakan di Sandakan. Jadual 2 menunjukkan perkadaran premium bawah Tarif Motor bagi polisi motor yang dikeluarkan di Semenanjung Malaysia, Sabah dan Sarawak.

F5 C3

In the year of 2022, *Encik Felix has a car to be used in Sandakan.*
Table 2 shows the premium rates under the Motor Tariff for motor policies issued in Peninsular Malaysia, Sabah and Sarawak.

Kapasiti enjin tidak melebihi ***Engine capacity not exceeding*** **(cc)**	**Semenanjung Malaysia** ***Peninsular Malaysia***		**Sabah dan Sarawak** ***Sabah and Sarawak***	
	Polisi komprehensif ***Comprehensive policy*** **(RM)**	**Polisi pihak ketiga** ***Third party policy*** **(RM)**	**Polisi komprehensif** ***Comprehensive policy*** **(RM)**	**Polisi pihak ketiga** ***Third party policy*** **(RM)**
1 650	305.50	135.00	220.00	75.60
2 200	339.10	151.20	243.90	85.20
3 050	372.60	167.40	266.50	93.60

Jadual 2
Table 2

Diberi kadar bagi setiap RM1 000 atau sebahagian daripada itu bagi nilai yang melebihi RM1 000 untuk Semenanjung Malaysia dan Sabah dan Sarawak masing-masing ialah RM26 dan RM20.30.
Given that the rate for each RM1 000 *or part thereof on the value exceeding the first* RM1 000 *for Peninsular Malaysia and Sabah and Sarawak are* RM26 *and* RM20.30 *respectively.*

Encik Felix ingin memperbaharui insurans keretanya dengan nilai muka RM90 000. Kapasiti enjin kereta ialah 2 000 cc dan nilai Diskaun Tanpa Tuntutan (NCD) pada tahun itu ialah 55%.
Encik Felix wants to renew his car insurance with a face value of RM90 000. *The engine capacity of the car is* 2 000 cc *and the Non-Claimable Discount* (NCD) *value for that year is* 55%.

(i) Hitung premium kasar bagi kereta Encik Felix pada tahun tersebut untuk polisi komprehensif.
Calculate the gross premium for Encik Felix's car, for that year, *under the comprehensive policy.*

(ii) Setahun kemudian, pada 2023, Encik Felix berpindah ke Johor Bahru.
Hitung premium kasar bagi kereta beliau pada tahun 2023 untuk polisi pihak ketiga.
A year after, in 2023, *Encik Felix moves to Johor Bahru.*
Calculate gross premium for his car for the year 2023, *under third party policy.*

[6 *markah*]
[6 *marks*]

(i) 151.20

Premium asas RM 151.20
NCD RM 151.70 × $\frac{55}{100}$ = RM 83.16
Permium Kasar = RM 68.04

20.3×89 = 1806.7

RM 1000 yang pertama: RM243.90
RM 20.30 * 89
= 1806.70
Premium asas =
20.3×89+243.9 = 2050.6
NCD 55%
= 2050.6×$\frac{55}{100}$ = 1127.83
Premium Kasar
= 2050.6−1127.83 = 922.77

151.2×$\frac{55}{100}$ = 83.16

151.2−83.16 = 68.04

13 (*b*) Puan Kaseh mempunyai polisi insurans perubatan utama dengan peruntukan deduktibel sebanyak RM800 dan fasal penyertaan peratusan ko-insurans 70/30 dalam polisinya.
Hitung bayaran kos yang ditanggung oleh Puan Kaseh jika kos perubatan berjumlah RM30 000.

Puan Kaseh has a major medical insurance policy with a deductible provision of RM800 *and a* 70/30 *co-insurance percentage participation clause in her policy. Calculate the cost borne by Puan Kaseh if the medical cost is* RM30 000.

[3 *markah*]
[3 *marks*]

TSB3

(M1)

Insuran

$= (30\,000 - 800) \times \frac{70}{100}$

$= 29200 \times \frac{70}{100} = 20440$

Puan Kaseh $= 30000 - 20440$

$= \text{RM } 9560$ ✓

(M2) Puan Kaseh

$= 800 + (30\,000 - 800) \times \frac{30}{100}$

$= 800 + 8760$

$= \text{RM } 9560$ ✓

$29200 \times \frac{30}{100} = 8760$

$\text{Ans} + 800 = 9560$

14 Jadual 3.1 menunjukkan enam lokasi tarikan pelancong di Semenanjung Malaysia. Jadual 3.2 menunjukkan jarak antara lokasi tersebut.
F4 C5
Table 3.1 *shows six locations of tourist attraction in Peninsular Malaysia.*
Table 3.2 *shows the distance between the locations.*

Nama tempat *Name of place*	**Bucu** *Vertex*
Putrajaya	P
Batu Caves	B
Kuala Selangor	K
Pantai Morib	M
Shah Alam	S
Genting Highlands	G

Jadual 3.1
Table 3.1

Pasangan bucu *Vertex pair*	**Jarak (km)** *Distance* (km)
(P, S)	42
(B, S)	41
(S, G)	77
(P, M)	58
(G, B)	48
(P, B)	50
(S, K)	60
(M, K)	84
(S, M)	51
(G, P)	90

Jadual 3.2
Table 3.2

(*a*) Lengkapkan graf tak terarah dan berpemberat pada ruang jawapan.
Complete the undirected weighted graph in the answer space.

[3 *markah*]
[3 *marks*]

(*b*) Seorang pelancong dari Australia bercadang untuk melawat semua enam destinasi di atas bermula dari Kuala Selangor.
A tourist from Australia plans to visit all six destinations above starting from Kuala Selangor.

(i) Lukis satu pokok berpemberat maksimum dengan keadaan setiap tempat hanya dilawati sekali sahaja.
Draw a tree with a maximum total weight which shows every place being visited once only.

(ii) Seterusnya, hitung jarak maksimum tersebut.
Hence, calculate the maximum distance.

[4 *markah*]
[4 *marks*]

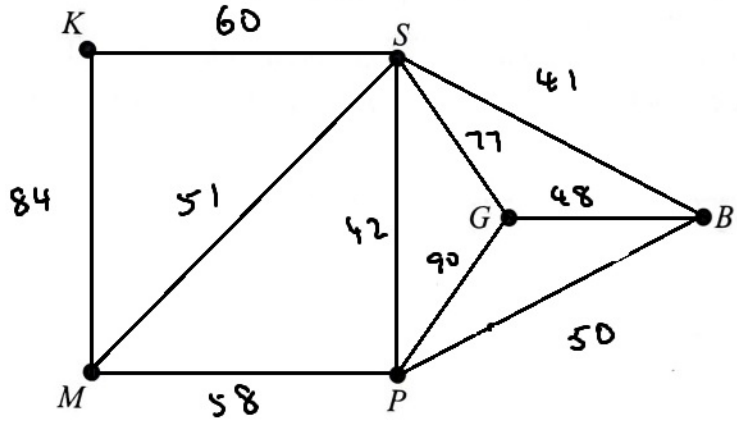
(*c*) Encik Ramli menetap di Shah Alam dan merancang untuk membawa keluarganya bercuti di Putrajaya pada musim cuti sekolah nanti. Kadar petrol adalah RM2.30 bagi setiap km perjalanan dan kadar tol sebanyak RM4.30 sehala dikenakan sekiranya ingin ke Putrajaya.
Hitung kos perjalanan pergi dan balik Encik Ramli.

Encik Ramli lives in Shah Alam and plans to take his family for a vacation in Putrajaya during the school holidays. The petrol rate is RM2.30 *per km of travel and a toll rate of* RM4.30 *for one-way is charged to go to Putrajaya.*
Calculate the cost of Encik Ramli's round trip.

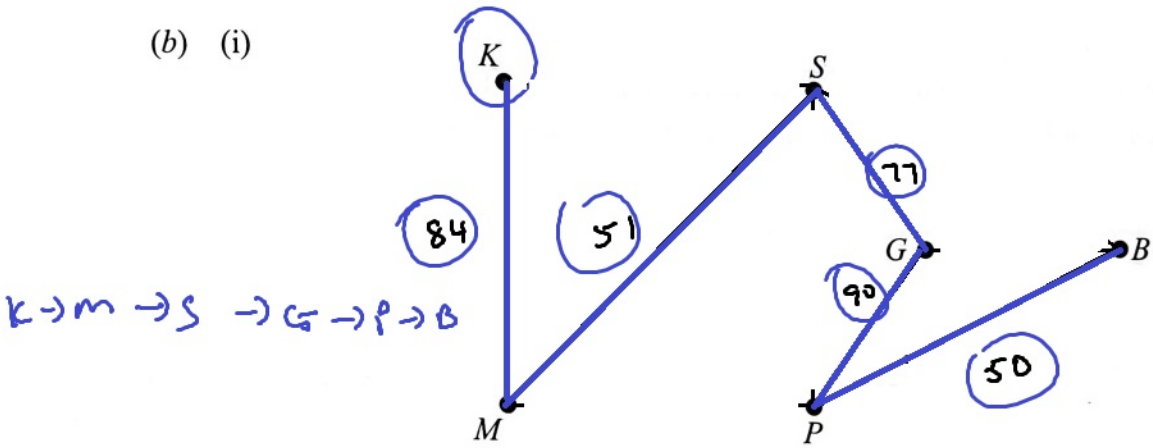
[2 *markah*]
[2 *marks*]

Jawapan / *Answer*:

(*a*)



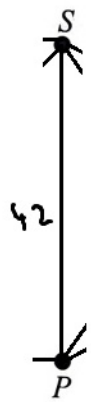
(*b*) (i)



K → M → S → G → P → B

(ii) 84 + 51 + 77 + 90 + 50 = 352 km

(*c*)

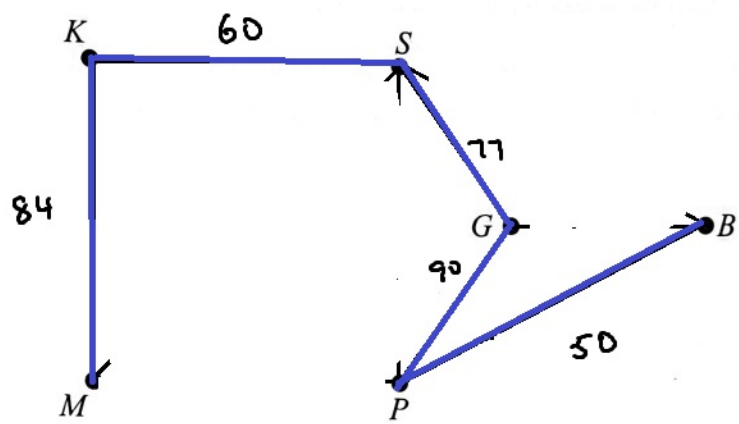


Encik Ramli menetap di Shah Alam dan merancang untuk membawa keluarganya bercuti di Putrajaya pada musim cuti sekolah nanti. Kadar petrol adalah RM2.30 bagi setiap km perjalanan dan kadar tol sebanyak RM4.30 sehala dikenakan sekiranya ingin ke Putrajaya.

kos perjalanan pergi dan balik = [42 × 2.30 + 4.30] × 2

= 100.9 × 2

= RM 201.80 4



pokok berpemberat maksimum

84+60+77+90+50

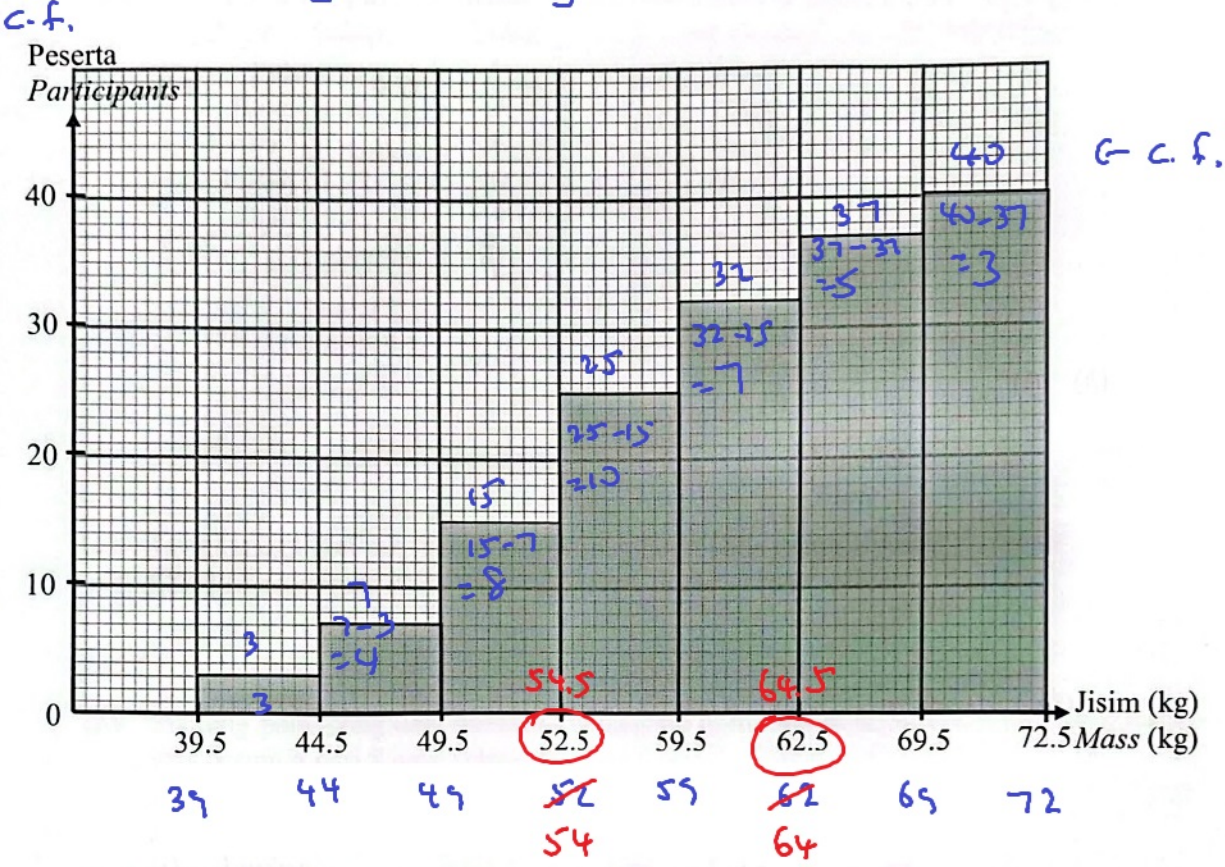
361

X

15 Pada bulan September, Klinik Ramal telah melancarkan kempen "Indeks Jisim Tubuh (BMI) Ideal". Rajah 6 menunjukkan histogram longgokan yang mewakili jisim, dalam kg, bagi 40 orang peserta.

F5 C7

In September, Klinik Ramal had launched "Ideal Body Mass Index (BMI)" *campaign. Diagram* 6 *shows a cumulative histogram that represents the mass, in* kg, *of* 40 *participants.*



Berdasarkan Rajah 6,
Based on Diagram 6,

(*a*) Lengkapkan Jadual 4 di ruang jawapan.
Complete the Table 4 *in the answer space.*

[4 *markah*]
[4 *marks*]

(*b*) Hitung min, jisim seorang peserta.
Calculate the mean, mass of a participant.

[3 *markah*]
[3 *marks*]

(*c*) Setelah semakan data dibuat, didapati terdapat ralat pada alat penimbang yang menyebabkan setiap data yang direkodkan melebihi 2 kg daripada jisim sebenar. Hitung min baharu, jisim seorang peserta, betul kepada empat angka bererti.
After a data review was made, it was found that there was an error in the weighing scale that caused each recorded data to exceed 2 kg *from the actual mass.*
Calculate the new mean mass, of a participant, correct to four significant figures.

[2 *markah*]
[2 *marks*]

(a)

Jisim (kg) *Mass* (kg)	Titik tengah *Midpoint*	Kekerapan *Frequency*
35 – 39	37	0
40 - 44	42	3
45 - 49	47	4
50 - 54	52	8
55 - 59	57	10
60 - 64	62	7
65 - 69	67	5
70 - 74	72	3

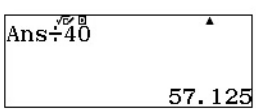
$\bar{x} = \frac{\Sigma fx}{\Sigma f}$

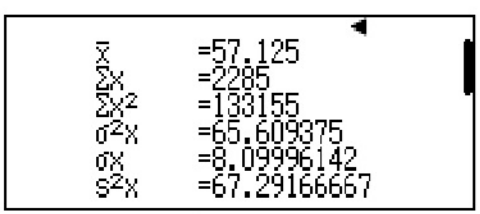
$$\bar{x} = \frac{3(42) + 4(47) + 8(52) + 10(57) + 7(62) + 5(67) + 3(72)}{3 + 4 + 8 + 10 + 7 + 5 + 3}$$

(b)

$$= \frac{2285}{40}$$

$$= 57.125 \text{ kg}$$





(c) new ban = 57.125 − 2

= 55.125

= 55.13 kg

16 (*a*) Restoran Suduku di Rompin mempunyai peruntukan RM504 setiap hari untuk membeli x kg udang dan y kg sotong. Jisim minimum udang ialah 7 kg. Jisim udang tidak melebihi tiga kali jisim sotong. Harga sekilogram udang dan sotong masing-masing ialah RM28 dan RM42.

F4 C6

Tulis tiga ketaksamaan linear selain daripada $x \geq 0$ dan $y \geq 0$, yang mewakili syarat pembelian bahan mentah makanan itu.

Restoran Suduku at Rompin has an allocation of RM504 *per day to buy* x kg *of prawn and* y kg *of squid. The minimum mass of prawn is* 7 kg. *The mass of the prawn cannot exceed three times the mass of the squid. The price of a kilogram of prawn and squid is* RM28 *and* RM42 *respectively.*

Write three linear inequalities other than $x \geq 0$ *and* $y \geq 0$, *which represent the purchase conditions of the raw material of the food.*

[3 *markah*]
[3 *marks*]

i) $x \geq 7$

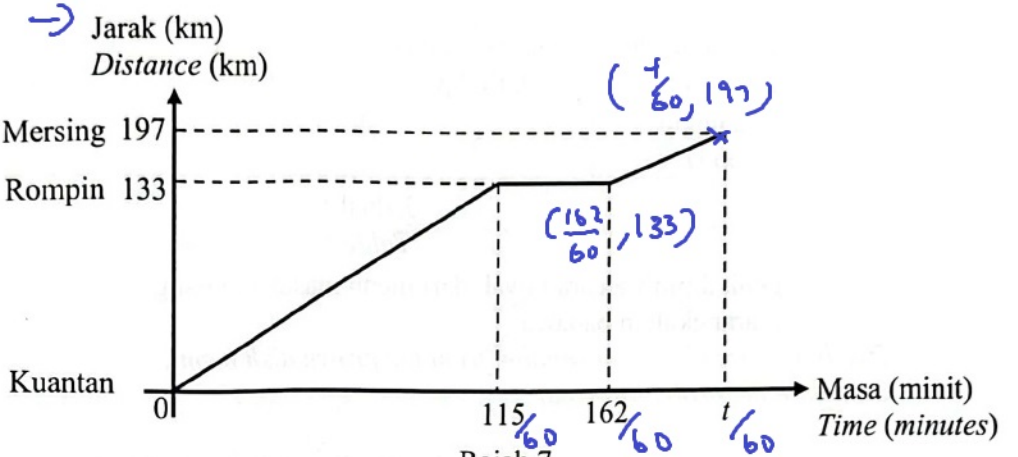
ii) $x \leq 3y$

iii) $28x + 42y \leq 504$

$2x + 3y \leq 36$

16 (*b*) Rajah 7 menunjukkan graf jarak-masa bagi perjalanan Hakiem ketika memandu kereta dari Kuantan ke Mersing.

F4 C7 *Diagram 7 shows the distance-time graph for Hakiem's journey while driving a car from Kuantan to Mersing.*



Rajah 7
Diagram 7

(i) Dalam perjalanan Hakiem ke Mersing, dia telah berhenti di Restoran Suduku di Rompin untuk makan tengah hari.
Nyatakan tempoh masa, dalam minit, Hakiem berada di restoran itu.
During Hakiem's journey to Mersing, he stopped at Restoran Suduku in Rompin for lunch.
State the duration, in minutes, Hakiem at the restaurant.

(ii) Diberi bahawa laju kereta Hakiem dari Rompin ke Mersing ialah 80 kmj^{-1}, hitung nilai *t*.
Given that the speed of Hakiem's car from Rompin to Mersing is 80 kmh^{-1}, *calculate the value of t.*

[4 *markah*]
[4 *marks*]

(i) 162 − 115
= 47 mins

(ii) $m = 80$

$\frac{197 - 133}{\left(\frac{t}{60} - \frac{162}{60}\right)} = 80$

$\frac{64}{80} = \frac{t - 162}{60}$

$t - 162 = \frac{64}{80} \times 60$

$t - 162 = 48$

$t = 48 + 162$

$t = 210$ mins

16 (c) Jadual 5 menunjukkan bilangan mangkuk masakan udang yang disediakan oleh Restoran Suduku pada setiap hari Rabu.

F4 C9 *Table 5 shows the number of bowls of prawn dishes prepared by Restoran Suduku on every Wednesday.*

A

Menu masakan udang *Prawn dish menu*	Masak Lemak Cili Api	Kari *Curry*	Tom Yam *Tom Yam*
Bilangan mangkuk *Number of bowl*	5	8	3

Jadual 5
Table 5

Dua mangkuk dipilih secara rawak dari menu masakan udang.
Hitung kebarangkalian bahawa
Two bowls are chosen at random from the prawn dish menu.
Calculate the probability that

(i) mangkuk pertama ialah masak lemak cili api dan mangkuk kedua bukan masak lemak cili api.
the first bowl is 'masak lemak cili api' and the second bowl is not 'masak lemak cili api'.

$\frac{5}{16} \times \frac{11}{15} = \frac{11}{48}$

[2 *markah*]
[2 *marks*]

S C
8 K
3 T

(ii) dua mangkuk masakan yang sama dipilih dari menu masakan udang.
two bowls of dishes are selected from the same prawn dish menu.

[2 *markah*]
[2 *marks*]

$P(\text{same}) = P(CC) + P(KK) + P(TT)$

$= \frac{5}{16} \cdot \frac{4}{15} + \frac{8}{16} \cdot \frac{7}{15} + \frac{3}{16} \cdot \frac{2}{15}$

$= \frac{20 + 56 + 6}{16(15)}$

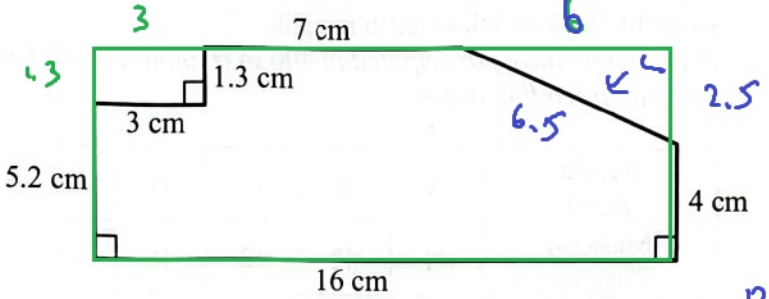
$= \frac{41}{120}$

$\frac{20+56+6}{16\times15} = \frac{41}{120}$

16 (*d*) Rajah 8 menunjukkan pelan Restoran Suduku yang dilukis menggunakan skala 1 : 300.

F3 C4

Diagram 8 *shows a plan of Restoran Suduku drawn using of scale* 1 : 300.



Rajah 8
Diagram 8

Hitung perimeter sebenar, dalam m, Restoran Suduku.
Calculate the actual perimeter, in m, *of the Restoran Suduku.*

[4 *markah*]
[4 *marks*]

17 Sebuah Sekolah Berasrama Penuh (SBP) telah menganjurkan satu kejohanan olahraga bagi peringkat negeri.

F4 C8 *A Fully Residential School* (SBP) *has organized an athletics tournament for the state level.*

(*a*) Lapan orang murid telah menyertai acara larian 400 m. Jadual 6 menunjukkan masa yang direkodkan dalam tertib menaik.

n=8 *Eight pupils have participated in* 400 m *running event. Table* 6 *shows the recorded times in ascending order.*

Q1 ↓ m ↓ Q3 ↓

Murid *Pupil*	A	B	C	D	E	F	G	H
Masa (s) *Time* (s)	41	42	42	46	49	50	51	55

julat antara kuartil $= Q_3 - Q_1 = \frac{51+50}{2} - \frac{42+42}{2}$

$= 50.5 - 42 = 8.5$

Hitung julat antara kuartil bagi masa yang telah direkodkan. [3 *markah*]

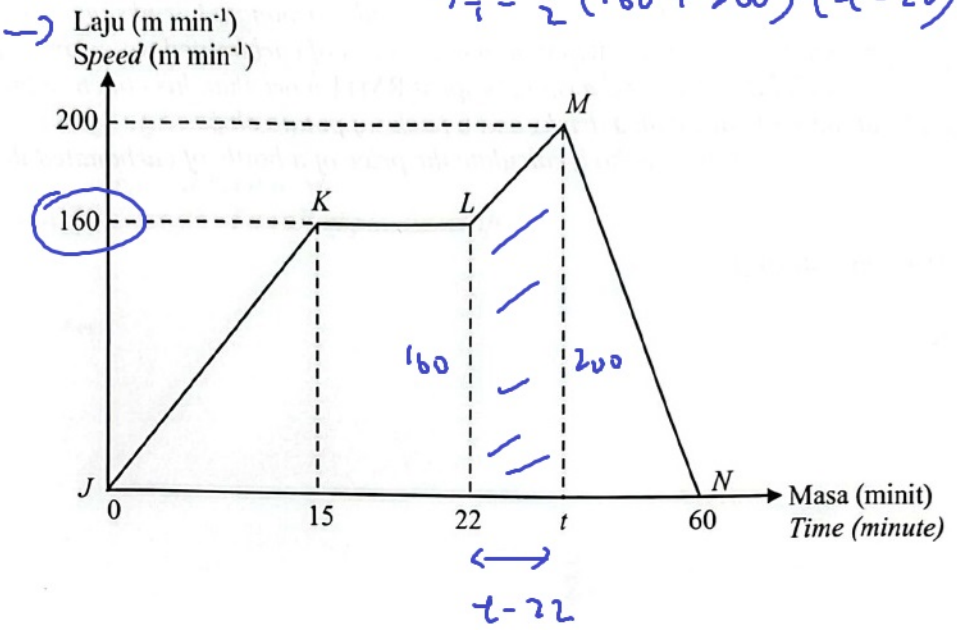
Calculate the interquartile range for the times recorded. [3 *marks*]

17 (*b*) Azman membuat latihan larian sebagai persediaan untuk kejohanan olahraga pada setiap pagi. Rajah 9 menunjukkan graf laju-masa bagi latihan larian Azman untuk tempoh satu jam pada setiap hari.

F4 C7

Azman practices running every morning to prepare for the athletics tournament. Diagram 9 shows the speed-time graph of Azman's training for a duration of one hour every day.

$A_1 = \frac{1}{2}(160 + 200)(t - 22)$



(i) Nyatakan laju seragam dalam m min^{-1}, larian Azman itu.
State the uniform speed in m min^{-1}, *of Azman's run.*

(i) 160 m min^{-1}

[1 *markah*]
[1 *mark*]

(ii) Hitung nilai *t* jika jarak larian Azman dari *L* ke *M* ialah 2 880 m.
Calculate the value of t if Azman's running distance from L to M is 2 880 m.

[3 *markah*]
[3 *marks*]

$A = 2880$

$\frac{1}{2}(160 + 200)(t - 22) = 2880$ (360)

$t - 22 = \frac{2880 \times 2}{360}$

$t - 22 = 16$

$t = 16 + 22$

$t = 38$ mins

17 (c) Semasa kejohanan olahraga, sebuah gerai menjual air berkarbonat dan kerepek kentang. Seorang jurulatih larian membelanjakan RM36 untuk membeli 5 botol air berkarbonat dan 8 pek kerepek kentang. Seorang daripada peserta larian pula membelanjakan lebih RM11 berbanding jurulatih itu untuk membeli dua kali ganda bilangan botol air berkarbonat dan 6 pek kerepek kentang. Menggunakan kaedah matriks, hitung harga bagi sebotol air berkarbonat.

During the athletics tournament, a stall sells carbonated drinks and potato chips. A running coach spends RM36 *to buy* 5 *bottles of carbonated water and* 8 *packs of potato chips. One of the runners spent* RM11 *more than his coach to buy double the amount of carbonated drinks and* 6 *packs of potato chips.*
Using the matrix method, calculate the price of a bottle of carbonated drink.

[4 *markah*]
[4 *marks*]

$5x + 8y = 36$

$10x + 6y = 47$

$\begin{bmatrix} 5 & 8 \\ 10 & 6 \end{bmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{bmatrix} 36 \\ 47 \end{bmatrix}$

$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{bmatrix} 5 & 8 \\ 10 & 6 \end{bmatrix}^{-1}\begin{bmatrix} 36 \\ 47 \end{bmatrix}$

$\therefore x = 3.2, \quad y = 2.5$

$\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{5(6)-10(8)}\begin{bmatrix} 6 & -8 \\ -10 & 5 \end{bmatrix}\begin{bmatrix} 36 \\ 47 \end{bmatrix}$

$= \frac{1}{30-80}\begin{bmatrix} 6(36)-8(47) \\ -10(36)+5(47) \end{bmatrix}$

$= \frac{1}{-50}\begin{bmatrix} -160 \\ -125 \end{bmatrix}$

$= \begin{bmatrix} 3.2 \\ 2.5 \end{bmatrix}$

harga bagi sebotol air berkarbonat. = RM 3.20

x m

17 (*d*) Sebanyak empat gulung pembalut plastik digunakan untuk membungkus 20 hamper yang akan diberikan kepada pemenang kejohanan olahraga. Panjang pembalut plastik bagi setiap hamper adalah 1.24 m. Setelah hamper tersebut dibungkus, didapati hanya $\frac{2}{5}$ daripada keseluruhan panjang pembalut plastik tersebut digunakan.

F1 C6

Hitung panjang segulung pembalut plastik.

check: $4(15.5) = 62$

$20(1.24) = 24.8$

$\frac{2}{5}(4x) = 20(1.24)$

$x = \frac{20(1.24)}{8} \times 5$

$= 15.5\text{ m}$ ✱

$\frac{24.8}{62} = \frac{2}{5}$ ✓ ✱

A total of four rolls of plastic wrap are used to wrap 20 hampers that will be given to the winners of the athletics tournament. Each hamper requires a 1.24 meter long of plastic wrap. After the hamper wrapped, it was found that only $\frac{2}{5}$ from the total length of plastic wrap had been used.
Calculate the length of a roll of plastic wrap.

[4 *markah*]
[4 *marks*]