

PENYELESAIAN LENGKAP

SET 3

KERTAS 1

- 1 C 0.00092 kilometer = 92×10^{-5} kilometer
0.00092 kilometre = 92×10^{-5} kilometre
- 2 D
- 3 B $MV = 10\,000 \left(1 + \frac{0.08}{3}\right)^{3(6)}$
= RM16 059.44
- 4 A Pendapatan aktif: Gaji, komisen, elaun
Active income: Salaries, commissions, allowances
Pendapatan pasif: Dividen, faedah yang diterima, sewa yang diterima
Passive income: Dividends, interest received, rent received
Aset: Simpanan
Asset: Saving
Liabiliti: Pinjaman
Liability: Loan
- 5 C
- 6 C
- 7 B $0.5(50 + 100) \frac{120 - t}{60} = 100$
 $\frac{120 - t}{60} = \frac{4}{3}$
 $120 - t = 80$
 $t = 40$
- 8 B $x = \frac{-11 + 1}{2}$
 $x = -5$
- 9 C $r \propto m^2$
 $r = km^2$
 $3 = k(6^2)$
 $k = \frac{1}{12}$
 $r = \frac{m^2}{12}$
- 10 C Kecerunan
Gradient
 $= \frac{11 - 5}{9 - 0}$
 $= \frac{2}{3}$
- 11 C Faktor skala
Scale factor
 $= \frac{KN}{PR}$
 $= \frac{5}{10}$
 $= \frac{1}{2}$
- 12 C
- | x | 90° | 135° | 180° |
|------------------|------------|-------------|-------------|
| $3 \cos/\cos 2x$ | -3 | 0 | 3 |
- 13 A

- 14 D Faktor skala/Scale factor

$$= \frac{AB}{PQ}$$

$$= \frac{3}{1}$$

$$= 3$$

$$\text{Luas imej} = k^2 \times \text{Luas objek}$$

$$\text{Area of image} = k^2 \times \text{Area of object}$$

$$= 3^2 \times 98$$

$$= 882 \text{ cm}^2$$

- 15 B $10 + 6 + 8 = 24$
- 16 A $\xi = \{21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}$
 $A = \{22, 24, 26, 28, 30\} \Rightarrow A' = \{21, 23, 25, 27, 29, 31\}$
 $B = \{21, 23, 25, 27, 29, 30\}$
 $A' \cap B = \{21, 23, 25, 27, 29\}$
- 17 C
- 18 C Julat/Range = $65 - 21 = 44$
- 19 C

Markah Marks	Bilangan murid, f Number of students, f	Titik tengah, x Midpoint, x	fx
21 – 40	6	$\frac{21 + 40}{2} = 30.5$	183
41 – 60	15	$\frac{41 + 60}{2} = 50.5$	757.5
61 – 80	24	$\frac{61 + 80}{2} = 70.5$	1692
81 – 100	5	$\frac{81 + 100}{2} = 90.5$	452.5
	$\Sigma f = 50$		$\Sigma fx = 3\,085$

Min/Mean

$$= \frac{3\,085}{50}$$

$$= 61.7$$

- 20 B Kebarangkalian/Probability
 $= 1 - (1 - 0.01)(1 - 0.02)$
 $= 1 - (0.99)(0.98)$
 $= 0.0298$

21 A $\frac{(\sqrt{a^{-2}b^4})^4}{a^2b^{-2}}$
 $= \frac{(a^{-2}b^4)^2}{a^2b^{-2}}$
 $= \frac{a^{-4}b^8}{a^2b^{-2}}$
 $= a^{-4-2}b^{8-(-2)}$
 $= a^{-6}b^{10}$
 $= \frac{b^{10}}{a^6}$

- 22 C $XY = \sqrt{(0.66 \times 10^2)^2 + (1.98 \times 10^2)^2}$
 $= 2.087 \times 10^2 \text{ cm}$
 Perimeter
 $= 2.087 \times 10^2 + 0.66 \times 10^2 + 1.98 \times 10^2$
 $= 4.727 \times 10^2 \text{ cm}$
- 23 A $\frac{RO}{RQ} = 0.25$
 $\frac{3}{RQ} = 0.25$
 $RQ = \frac{3}{0.25} = 12 \text{ unit/units}$
 Kecerunan
 Gradient
 $m = -\frac{OP}{OQ} = -\frac{7}{9}$
 Persamaan garis PQ:
 Equation of line PQ:
 $y = -\frac{7}{9}x + 7$
- 24 C $y = \frac{(2x+8)(x-5)+x}{30} - x - 1$
 $= \frac{(2x^2 - 10x + 8x - 40) + x - 30x - 30}{30}$
 $= \frac{2x^2 - 31x - 70}{30}$
 Paksi simetri:
 Axis of symmetry:
 $x = -\frac{-31}{2\left(\frac{2}{30}\right)}$
 $x = 7.75$
- 25 B Persamaan garis MN:
 Equation of line MN:
 $y = \frac{5-(-1)}{2-(-4)}x + c$
 $y = x + c$
 Di titik (2, 5),
 At point (2, 5),
 $5 = 2 + c$
 $c = 3$
 $y \leq x + 3$
- 26 D $\frac{mk+m}{m^2} = k^2m - m$
 $\frac{k+1}{m} = m(k^2 - 1)$
 $m^2 = \frac{k+1}{(k+1)(k-1)}$
 $m^2 = \frac{1}{k-1}$
 $m = \pm \sqrt{\frac{1}{k-1}}$
- 27 B $v \propto \frac{1}{t}$
 $v = \frac{k}{t}$
 Apabila/When $v = 120$, $t = \frac{160}{60}$.
 $120 = \frac{k}{\frac{160}{60}}$
 $k = 320$
 $v = \frac{320}{t}$

Apabila/When $v = 125$,

$$125 = \frac{320}{t}$$

$$t = 2.56 \text{ jam/hours}$$

28 A

$$\begin{bmatrix} 4 & 1 \\ -2 & 5 \end{bmatrix} \begin{bmatrix} -y^2 \\ y \end{bmatrix} = \begin{bmatrix} -14 \\ 18 \end{bmatrix}$$

$$\begin{bmatrix} -y^2 \\ y \end{bmatrix} = \begin{bmatrix} 4 & 1 \\ -2 & 5 \end{bmatrix}^{-1} \begin{bmatrix} -14 \\ 18 \end{bmatrix}$$

$$= \frac{1}{4(5) - 1(-2)} \begin{bmatrix} 5 & -1 \\ 2 & 4 \end{bmatrix} \begin{bmatrix} -14 \\ 18 \end{bmatrix}$$

$$= \frac{1}{22} \begin{bmatrix} -88 \\ 44 \end{bmatrix}$$

$$= \begin{bmatrix} -4 \\ 2 \end{bmatrix}$$

$$-y^2 = -4 \text{ dan/and } y = 2$$

$$\therefore y = 2$$

29 D

$$a = \frac{180^\circ - 120^\circ}{2} = 30^\circ$$

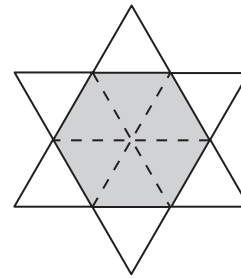
$$w = \frac{120^\circ}{2} = 60^\circ$$

$$y = 180^\circ - 60^\circ = 120^\circ$$

$$x = 180^\circ - 60^\circ - 72^\circ = 48^\circ$$

$$y - x = 120^\circ - 48^\circ = 72^\circ$$

30 D



Sambungkan setiap pasangan bucu bertentangan bagi heksagon sekata. Maka,

Connect each pair of opposite vertices of the regular hexagon. Then,

Luas segi tiga yang berlorek = Luas segi tiga yang tidak berlorek

Area of shaded equilateral triangle = Area of unshaded equilateral triangle

Luas kawasan berlorek = Luas kawasan tidak berlorek

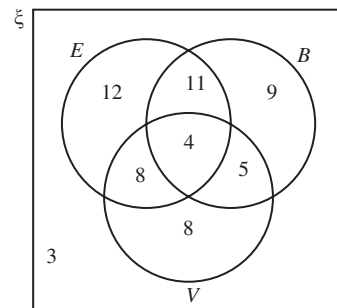
Area of shaded region = Area of unshaded region

Oleh itu, nisbahnya ialah 1 : 1.

Hence, the ratio is 1: 1.

31 A

32 C



33 B

Sudut sektor bagi kereta

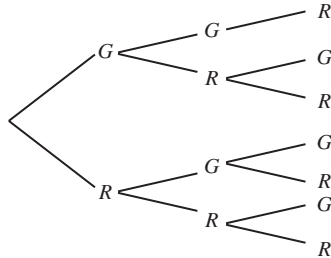
Angle of sector for car

$$= 45^\circ \times 3$$

$$= 135^\circ$$

Sudut sektor bagi bas
Angle of sector for bus
 Sudut sektor bagi bas
 $= 360^\circ - 45^\circ - 135^\circ - 90^\circ - 18^\circ$
 $= 72^\circ$
 Kebarangkalian
Probability
 $= \frac{72^\circ}{360^\circ} = 0.2$

34 A



35 D $RM9\,000 - RM4\,000 - RM1\,800 - \frac{0.5x}{24} = RM\,700$
 $\frac{0.5x}{24} = RM2\,500$
 $x = RM120\,000$

36 A Ukuran luaran kerusi tersebut ialah $3 \times 15\text{ cm} = 45\text{ cm}$, $7 \times 15\text{ cm} = 105\text{ cm}$ and $5 \times 15\text{ cm} = 75\text{ cm}$. Ukuran dalaman kerusi tersebut ialah $45\text{ cm} - 10\text{ cm} = 35\text{ cm}$, $105\text{ cm} - 10\text{ cm} - 10\text{ cm} = 85\text{ cm}$, and 75 cm .
Outer measurement of the chair is $3 \times 15\text{ cm} = 45\text{ cm}$, $7 \times 15\text{ cm} = 105\text{ cm}$ and $5 \times 15\text{ cm} = 75\text{ cm}$. Inner measurement of the chair is $45\text{ cm} - 10\text{ cm} = 35\text{ cm}$, $105\text{ cm} - 10\text{ cm} - 10\text{ cm} = 85\text{ cm}$, and 75 cm .

Isi padu/Volume
 $= (45 \times 105 \times 75) - (35 \times 85 \times 75)$
 $= 131\,250\text{ cm}^3$

37 C $\begin{bmatrix} p & r \\ q & s \end{bmatrix} \times \frac{1}{10} \begin{bmatrix} 4 & 2 \\ -3 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
 $\begin{bmatrix} p & r \\ q & s \end{bmatrix} = \begin{bmatrix} 1 & -2 \\ 3 & 4 \end{bmatrix}$

$p + q + r + s$
 $= 1 + (-2) + 3 + 4$
 $= 6$

38 A Data adalah pencong ke kiri.
Data is skewed to the left.

39 C $110_2 = 1(2^2) + 1(2^1)$
 $= 6$
 $11_3 = 1(3^1) + 1(3^0)$
 $= 4$
 $20_5 = 2(5^1)$
 $= 10$

Jumlah bayaran
Amount to be paid
 $= RM(6 + 4 + 10) \times 1.06$
 $= 21.20$

40 D

KERTAS 2

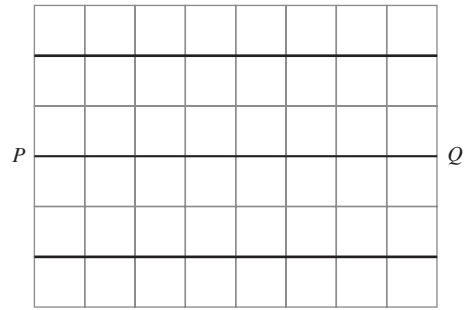
Bahagian A

1 (a) 1, 2, 3, 6, 9, 18

(b)
$$\begin{array}{r|l} 2 & 20, 40, 50 \\ 5 & 10, 20, 25 \\ \hline & 2, 4, 5 \end{array}$$

FSTB bagi 20, 40 dan 50 ialah $2 \times 5 = 10$.
 HCF of 20, 40 and 50 is $2 \times 5 = 10$.

2 (a)

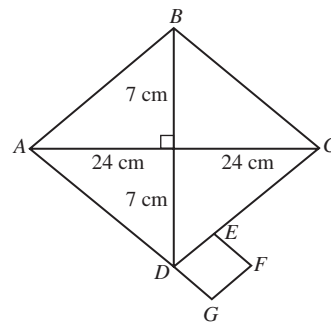


(b) Lokus bagi titik M ialah sepasang garis lurus yang selari dengan PQ dan berjarak 4 unit dari garis PQ.
The locus of point M is a pair of lines parallel to PQ and 4 units away from line PQ.

3 $x + y = 35 \dots \textcircled{1}$
 $y = 2x + 5 \dots \textcircled{2}$
 $\textcircled{2} - \textcircled{1}:$

$x + 2x + 5 = 35$
 $3x = 30$
 $x = 10$
 $y = 2(10) + 5$
 $= 25$
 $\therefore x = 10, y = 25$

4



(a) $AB = \sqrt{\left(\frac{48}{2}\right)^2 + \left(\frac{14}{2}\right)^2}$
 $= 25\text{ cm}$

$DE = \frac{1}{4}DC$
 $= 6.25\text{ cm}$

Perimeter $= AB + BC + CE + EF + FG + GD + AD$
 $= 25 \times 3 + (25 - 6.25) + 6.25 \times 3$
 $= 112.5\text{ cm}$

(b) Luas bagi keseluruhan rajah

Area for whole diagram

$= \text{Luas rombus } ABCD + \text{Luas rombus } DEFG$

Area of rhombus ABCD + Area of rhombus DEFG

$= \frac{1}{2} \times 14 \times 48 + \frac{1}{2} \times \frac{14}{4} \times \frac{48}{4}$
 $= 357\text{ cm}^2$

5 (a) Jika kecerunan suatu garis lurus ialah sifar, maka garis lurus tersebut adalah selari dengan paksi-x.

If the gradient of a straight line is zero, then the straight line is parallel to the x-axis.

Benar

True

(b) Kesimpulan : AB bukan poligon.

Conclusion : AB is not a polygon.

Hujah yang diberi adalah munasabah tetapi tidak sah sebab ia tidak memuaskan mana-mana bentuk.

The argument given is sound but not valid because it does not fulfill any form.

- 6 (a) Kadar perubahan jarak
Rate of change of distance

$$= \frac{7-3}{\frac{5}{60} - \frac{2.5}{60}}$$

$$= 96 \text{ km j}^{-1}/\text{km h}^{-1}$$

- (b) Laju purata
Average speed

$$= \frac{7 \text{ km}}{\frac{5}{60} \text{ j/h}}$$

$$= 84 \text{ km j}^{-1}/\text{km h}^{-1}$$

- 7 (a) Bayaran pampasan

Amount of compensation
= RM3 000 – RM 280 = RM 2 720

- (b) (i) Jumlah insurans yang harus dibeli

Amount of required insurance
= $0.7 \times \text{RM}480\,000$
= RM336 000
Bayaran pampasan/Amount of compensation
= $\frac{\text{RM}220\,000}{\text{RM}336\,000} \times \text{RM}29\,000 - \text{RM}2\,500$
= RM16 488.10

- (ii) Penalti ko-insurans/Co-insurance penalty

$$= \text{RM}29\,000 - \frac{\text{RM}220\,000}{\text{RM}336\,000} \times \text{RM}29\,000$$

$$= \text{RM}10\,011.90$$

- 8 Isi padu seluruh kuih/Volume of whole dumpling

$$= \frac{1}{3} \times 12 \times 12 \times 15$$

$$= 720 \text{ cm}^3$$

Isi padu kuih dimakan oleh adik perempuan

Volume of dumpling eaten by his sister

$$= \frac{1}{3} \times 6 \times 6 \times 5$$

$$= 60 \text{ cm}^3$$

Isi padu kuih dimakan oleh Steven

Volume of dumpling eaten by Steven

$$= 720 \text{ cm}^3 - 60 \text{ cm}^3$$

$$= 660 \text{ cm}^3$$

Nisbah / Ratio

$$= 60 : 660$$

$$= 1 : 11$$

- 9 $f(x) = -x^2 + 3x + 18$

Apabila/When $f(x) = 0$,

$$-x^2 + 3x + 18 = 0$$

$$x^2 - 3x - 18 = 0$$

$$(x+3)(x-6) = 0$$

$$x = -3 \text{ atau/or } x = 6$$

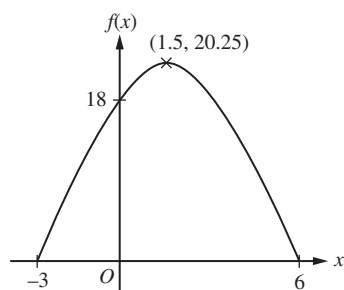
$$\text{Di/At } x = \frac{3}{2},$$

$$f(x) = -\left(\frac{3}{2}\right)^2 + 3\left(\frac{3}{2}\right) + 18$$

$$= 20.25$$

Titik maksimum ialah (1.5, 20.25).

Maximum point is (1.5, 20.25).



- 10 (a) $\sin 235.6^\circ$
= $-\sin (235.6^\circ - 180^\circ)$
= $-\sin 55.6^\circ$
= -0.8251

- (b) (i) $\frac{360^\circ}{12} = 30^\circ$
 $\theta = 360^\circ - 30^\circ$
= 330°

- (ii) $\tan 330^\circ$
= $-\tan 30^\circ$
= -0.5774

Bahagian B

- 11 (a) $y = 2x^3 + 6x - 3$

Apabila/When $x = -3$,

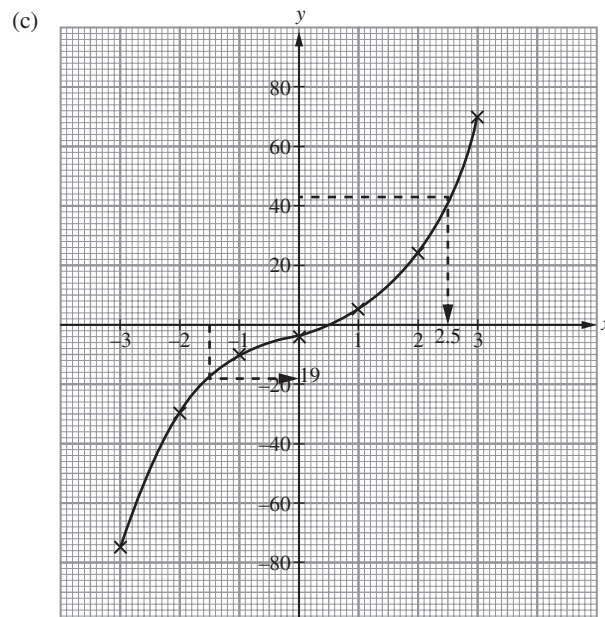
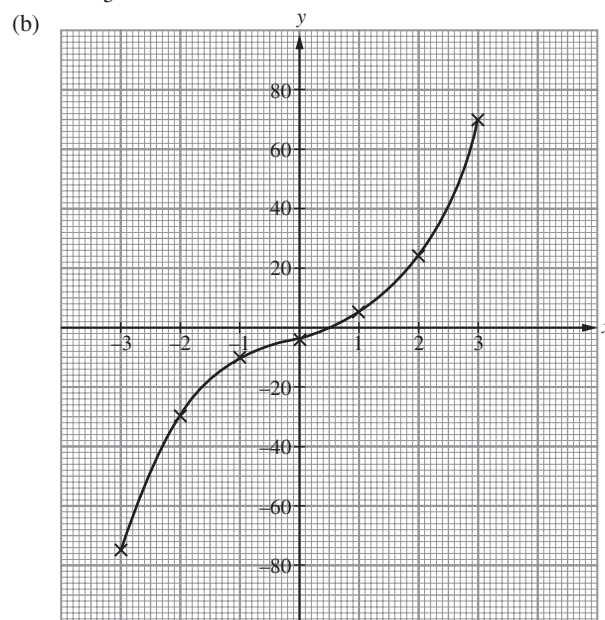
$$y = 2(-3)^3 + 6(-3) - 3$$

$$= -75$$

Apabila/When $x = -1$,

$$y = 2(-1)^3 + 6(-1) - 3$$

$$= -5$$



- (i) 2.5

- (ii) -19

- 12 (a) $5x - (-1)(-2) = 0$

$$5x = 2$$

$$x = \frac{2}{5}$$

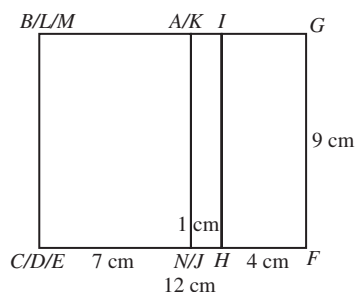
(b) (i) $x + y = 360$
 $x = 0.8y$
 $x - 0.8y = 0$

(ii) $\begin{bmatrix} 1 & 1 \\ 1 & -0.8 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 360 \\ 0 \end{bmatrix}$
 $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{1(0.8) - 1(1)} \begin{bmatrix} -0.8 & -1 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} 360 \\ 0 \end{bmatrix}$
 $= -\frac{1}{1.8} \begin{bmatrix} -288 \\ -360 \end{bmatrix}$
 $= \begin{bmatrix} 160 \\ 200 \end{bmatrix}$

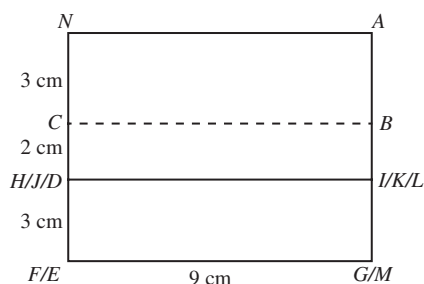
Terdapat 160 peserta lelaki dan 200 peserta perempuan.
There are 160 male participants and 200 female participants.

(iii) $\frac{200}{160} = 1.25$

13 (a)



(b)

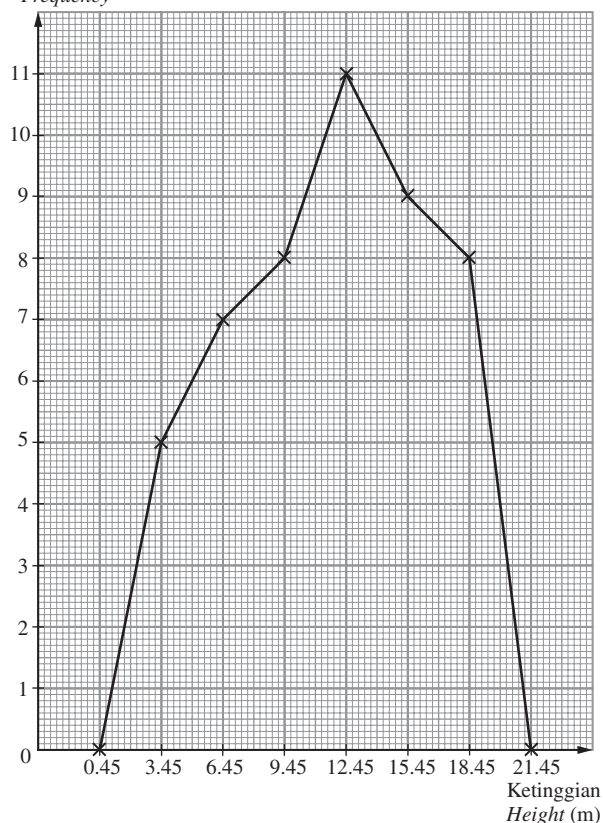


14 (a) Terdapat 41 batang kelapa sawit dengan ketinggian 16.9 m atau kurang.
There are 41 palm oil with the height of 16.9 m or less.

(b)

Ketinggian/Height (m)	Kekerapan/Frequency
2.0 – 4.9	5
5.0 – 7.9	7
8.0 – 10.9	8
11.0 – 13.9	11
14.0 – 16.9	9
17.0 – 19.9	8

(c) Kekerapan
Frequency



(d) Pencong ke kiri
Skewed to the left

15 (a) (i) Y dan/and Z

(ii) X, Y dan/and Z
(Pilih mana-mana dua)
(Choose any two)

(b) P ialah pembesaran pada pusat $(-2, 0)$ dengan faktor skala $-\frac{1}{4}$.

P is an enlargement at centre $(-2, 0)$ with scale factor $-\frac{1}{4}$.

Q ialah putaran 90° ikut jam pada pusat $(-2, -4)$.

Q is a clockwise 90° rotation at centre $(-2, -4)$.

(c) (i) $(8, -2)$

(ii) Translasi $\begin{pmatrix} 12 \\ -8 \end{pmatrix}$

Translation $\begin{pmatrix} 12 \\ -8 \end{pmatrix}$

Bahagian C

16 (a) (i) Pendapatan bercukai

Chargeable income

= Jumlah pendapatan – Pengecualian cukai – Pelepasan cukai

Total annual income – Tax exemption – Tax relief
= RM84 000 – RM2 700 – (RM9 000 + RM7 000 + RM3 000 + RM2 500)
= RM59 800

Cukai pendapatan/*Income tax payable*

= RM1 800 + 0.14(9 800) – 500

= RM 2 672

(ii) Jumlah PCB yang dipotong/*Total PCB deducted*

= RM230 $\times$ 12

= RM2 760

Cukai yang perlu dibayar < PCB. Maka, terdapat lebihan pembayaran cukai.

Encik Zaid akan menerima bayaran sebanyak

RM2 760 – RM2 672 = RM88 daripada Lembaga Hasil dalam Negeri ke akaun banknya.

Tax payable < PCB. Thus, there is a surplus of tax payment.

Mr. Zaid will receive a refund of RM2 760 – RM2 672 = RM88 from the Inland Revenue Board to his bank account.

(b) $19x + 16y = 60.5$
 $25x + 8y = 53.5$

$$\begin{bmatrix} 19 & 16 \\ 25 & 8 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 60.5 \\ 53.5 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{19(8) - 25(16)} \begin{bmatrix} 8 & -16 \\ -25 & 19 \end{bmatrix} \begin{bmatrix} 60.5 \\ 53.5 \end{bmatrix}$$

$$= -\frac{1}{248} \begin{bmatrix} -372 \\ -496 \end{bmatrix}$$

$$= \begin{bmatrix} 1.5 \\ 2 \end{bmatrix}$$

Harga bagi sebiji oren dan epal ialah RM1.50 dan RM2.00 masing-masing.

The price of an orange and an apple are RM1.50 and RM2.00 respectively.

(c) Bahan-bahan yang tersedia hanya boleh menghasilkan $\frac{5\,280}{240} = 22$ cawan kopi susu.

The available ingredients can only make $\frac{5\,280}{240} = 22$ cups of coffee latte.

$$0.2 \times 97 = 19.4$$

Terdapat 19.4 cawan kopi susu dijual sebelum Encik Zaid pesanan. Maka, beliau masih dapat menikmati secawan kopi susu.

There were 19.4 cup of coffee latte sold before Mr. Zaid's order. Thus, he still manage to enjoy a cup of coffee latte.

(d) Jarak yang dilalui/Distance travelled = 3 km

$$0.5\left(\frac{4}{60}\right)v + 0.5(v + v - 5) - \frac{2}{60} + 0.5(v - 5) - \frac{4}{60} = 3$$

$$\frac{v}{30} + \frac{2v - 5}{60} + \frac{v - 5}{30} = 3$$

$$\frac{2v}{60} + \frac{2v - 5}{60} + \frac{2v - 10}{60} = 3$$

$$6v - 15 = 180$$

$$v = 32.5$$

17 (a) $n(Y) = n(Z) + 11$

$$21 + 27 + 19 + x = x + (x + 1) + 18 + 27 + 11$$

$$67 + x = 2x + 57$$

$$x = 10$$

(b)

Jangka hayat (tahun) Lifespan (years)	2.0 – 2.9	3.0 – 3.9	4.0 – 4.9	5.0 – 5.9	6.0 – 6.9	
Titik tengah/Midpoint x	2.45	3.45	4.45	5.45	6.45	
x^2	6.0025	11.9025	19.8025	29.7025	41.6025	
Kekerapan, f Frequency, f	3	5	12	14	6	$\Sigma f = 40$
fx^2	18.0075	59.5125	237.63	415.835	249.615	$\Sigma fx^2 = 980.6$

Standard deviation/Sisihan piawai

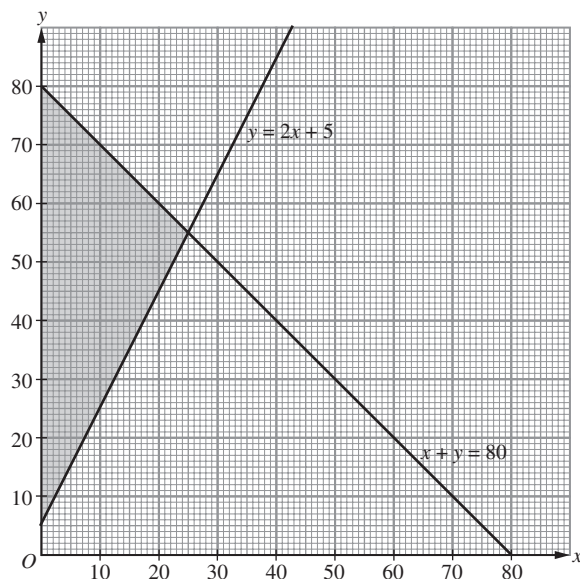
$$= \sqrt{\frac{980.6}{40} - 4.825^2}$$

$$= 1.111$$

(c) (i) $x + y \leq 80$

$$y \geq 2x + 5$$

(ii)



(d) $\tan z = \frac{11}{6}$

$$z = 61.39^\circ$$