Penyelesaian Lengkap

SET 2

KERTAS 1

1 C 0.00092 kilometer $= 92 \times 10^{-5}$ kilometer
0.00092 *kilometre* $= 92 \times 10^{-5}$ *kilometre*

2 D

3 B
$$MV = P\left(1 + \frac{r}{n}\right)^{nt}$$
$$= 10\,000\left(1 + \frac{0.08}{3}\right)^{3(6)}$$
$$= 16\,059.44$$

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 $(t, 50)$ $(120, 100)$
$$0.5(50 + 100)\frac{120 - t}{60} = 100$$
$$\frac{120 - t}{60} = \frac{4}{3}$$
$$120 - t = 80$$
$$t = 40$$

8 B
$$x = \frac{-11 + 1}{2}$$
$$x = -5$$

9 C
$$r \propto m^2$$
$$r = km^2$$
$$3 = k(6^2)$$
$$k = \frac{3}{36}$$
$$= \frac{1}{12}$$
$$r = \frac{m^2}{12}$$

10 C
$$y = mx + 5$$
Di/*At* $(9, 11)$,
$$11 = -9m + 5$$
$$m = -\frac{2}{3}$$

11 C

12 C

13 A

14 D
$$AP : PQ : QB = 1 : 1 : 1$$
Faktor skala/*Scale factor*
$$= \frac{AB}{PQ}$$
$$= \frac{3}{1}$$
$$= 3$$
$$\text{Area of image} = k^2 \times \text{Area of object}$$
$$= 3^2 \times 98\ \text{cm}^2$$
$$= 882\ \text{cm}^2$$

15 B $10 + 15 = 25$

16 A
$$\xi = \{21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}$$
$$A = \{22, 24, 26, 28, 30\}$$
$$B = \{21, 23, 25, 27, 29, 30\}$$
$$A' = \{21, 23, 25, 27, 29, 31\}$$
$$(A \cap B) = \{21, 23, 25, 27, 29\}$$

17 C

18 C $65 - 21 = 44$

19 C

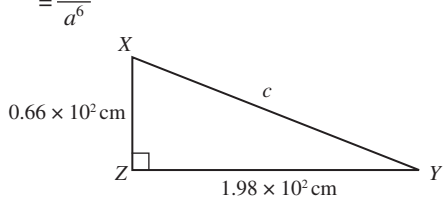
Markah *Marks*	**Bilangan murid,** f *Number of students,* f	x	fx
21 – 40	6	$\frac{21 + 40}{2} = 30.5$	183
41 – 60	15	$\frac{41 + 60}{2} = 50.5$	757.5
61 – 80	24	$\frac{61 + 80}{2} = 70.5$	1692
81 – 100	5	$\frac{81 + 100}{2} = 90.5$	452.5
	$\sum f = 50$		$\sum fx =$ 3 085

Min/*Mean*
$$= \frac{\sum fx}{\sum f}$$
$$= \frac{3\,085}{50}$$
$$= 61.7$$

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

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

22 C



$c = \sqrt{(0.66\times10^2)^2 + (1.98\times10^2)^2}$
$= 2.087\times10^2$ cm
Perimeter
$= 2.087\times10^2$ cm $+ 0.66\times10^2$ cm $+ 1.98\times10^2$ cm
$= 4.727\times10^2$ cm

23 A $\frac{RO}{RQ} = 0.25$

$\frac{RO}{RQ} = \frac{1}{4}$

$RO : OQ = 1 : 3$
Panjang OQ ialah 9 unit.
Length OQ is 9 units.
Kecerunan / *Gradient*
$= -\frac{7}{9}$
Persamaan / *Equation*
$y = -\frac{7}{9}x + 7$

24 C $\frac{(2x+8)(x-5)+x}{30} = 1 + x$

$(2x+8)(x-5)+x = 30(1+x)$
$(2x^2 - 2x - 40) + x = 30 + 30x$
$2x^2 - 2x - 40 + x - 30 - 30x = 0$
$2x^2 - 31x - 70 = 0$
Paksi simetri/*Axis of symmetry*
$x = -\frac{b}{2a}$
$x = -\frac{-31}{2(2)}$
$= 7.75$

25 B (2, 5), (–4, –1)
$y = \frac{5-(-1)}{2-(-4)}x + c$
$y = x + c$
Di/*At*(2, 5),
$5 = 2 + c$
$c = 3$
$y \leqslant x + 3$

26 D $\frac{mk+m}{m^2} = k^2m - m$

$\frac{k+1}{m} = m(k^2-1)$
$m^2 = \frac{k+1}{(k+1)(k-1)}$
$m^2 = \frac{1}{k-1}$
$m = \sqrt{\frac{1}{k-1}}$

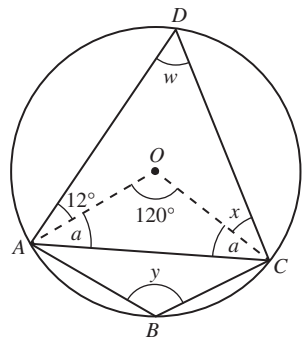
27 B $v \propto \frac{1}{t}$

$v = \frac{k}{t}$
$120 = \frac{k}{\frac{160}{60}}$
$k = 320$
$v = \frac{320}{t}$
$125 = \frac{320}{t}$
$t = 2.56$ jam/*hours*

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

$\begin{pmatrix} -4y^2 + y \\ 2y^2 + 5y \end{pmatrix} = \begin{pmatrix} -14 \\ 18 \end{pmatrix}$
$2y^2 + 5y = 18$
$2y^2 + 5y - 18 = 0$
$(2y+9)(y-2) = 0$
$y = \frac{-9}{2}$ (ditolak/*rejected*) atau/*or* $y = 2$
Semak/*Check*:
Jika/*If* $y = \frac{-9}{2}$,
$-4y^2 + y$
$= -4\left(\frac{81}{4}\right) - \frac{9}{2}$
$= -85.5$
$\neq -14$
Jawapan/*Answer*: $y = 2$

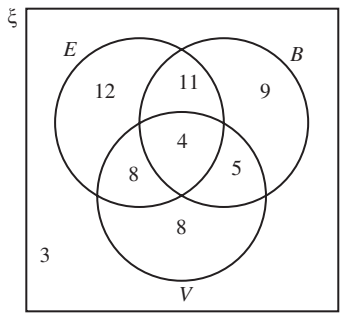
29 D $a = \frac{180-120}{2}$
$= 30$
$w = \frac{120}{2}$
$= 60$
$y = 180 - 60$
$= 120$
$x = 180 - 60 - 72$
$= 48$
$y - x = 120 - 48$
$= 72$



30 C Jumlah luas 5 segi tiga / *Sum of area of* 5 *triangles*
$= 0.5(2)(3)(5)$
$= 15$
Luas pentagon / *Area of pentagon*
$= 0.5(2)(2)5$
$= 10$
$15 : 10 = 3 : 2$

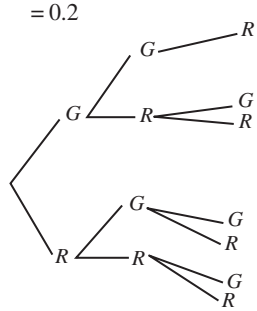
31 A

32 C



33 B Basikal : Kereta = 1 : 3
Bicycle : *Car* = 1 : 3
Sudut sektor bagi kereta $= 45\times3 = 135$
Degree of sector for car $= 45\times3 = 135$
Sudut sektor bagi bas
$= 360 - 45 - 135 - 90 - 18$
$= 72$
Degree of sector for bus
$= 360 - 45 - 135 - 90 - 18$
$= 72$
Kebarangkalian / *Probability*
$= \frac{72}{360}$
$= 0.2$

34 A



35 D $\text{RM9 000} - \text{RM4 000} - \text{RM1 800} - \frac{0.5x}{24} = \text{RM 700}$

$$\frac{0.5x}{24} = \text{RM2 500}$$

$$x = \text{RM120 000}$$

36 A 1 : 15

Ukuran luaran kerusi tersebut ialah 3 × 15 cm = 45 cm, 7 × 15 cm = 105 cm and 5 × 15 cm = 75 cm. Ukuran dalaman kerusi tersebut ialah 45 cm – 10 cm = 35 cm, 105 cm – 10 cm – 10 cm = 85 cm, and 75 cm.

Outer measurement of the chair is 3 × 15 cm = 45 cm, 7 × 15 cm = 105 cm *and* 5 × 15 cm = 75 cm. *Inner measurement of the chair is* 45 cm – 10 cm = 35 cm, 105 cm – 10 cm – 10 cm = 85 cm, *and* 75 cm.

Isi padu/*Volume*

$= (45 \times 105 \times 75) - (35 \times 85 \times 75)$

$= 131\,250 \text{ cm}^3$

37 C $AA^{-1} = 1$

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

$$\begin{bmatrix} p & r \\ q & s \end{bmatrix} = \begin{bmatrix} 1 & -2 \\ 3 & 4 \end{bmatrix}$$

$p + q + r + s$

$= 1 + (-2) + 3 + 4$

$= 6$

38 A

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/*Total*

$= (6 + 4 + 10)1.06$

$= 21.2$

40 D

KERTAS 2

Bahagian A

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

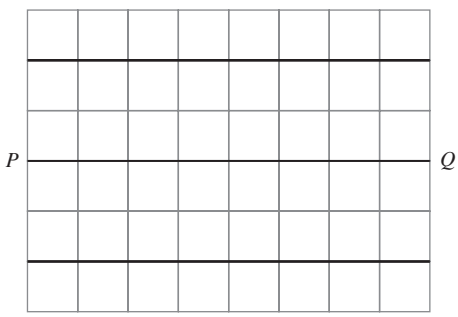
(b)

2	20, 40, 50
5	10, 20, 25
	2, 4, 5

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 from PQ.*

3 $x + y = 35$ ...(1)

$y = 2x + 5$ ...(2)

(2) → (1)

$x + 2x + 5 = 35$

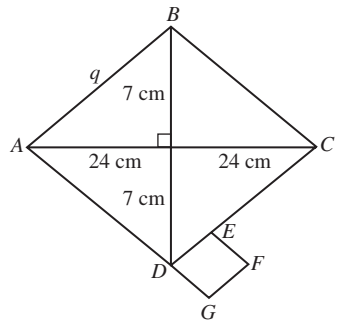
$3x = 30$

$x = 10$

$y = 2(10) + 5$

$= 25$

4



$q = \sqrt{24^2 + 7^2}$

$= 25$

Perimeter

$= 25 + 25 + 25 + 0.75(25) + 0.25(25)3$

$= 112.5 \text{ cm}$

(b) Luas/*Area*

$= 48(14)(0.5) + 0.25^2(48)(14)(0.5)$

$= 357 \text{ cm}^2$

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) $\left(\frac{2.5}{60}, 3\right)\left(\frac{5}{60}, 7\right)$

Kadar perubahan jarak

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

$= 96 \text{ km}$

Rate of change of distance

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

(b) Laju purata

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

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

Average speed

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

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

Motosikal bergerak dengan laju purata 84 km j^{-1} sejauh 7 km dalam tempoh 5 minit.

The motorcycle moves with an average speed of 84 km h^{-1} *for a distance of* 7 km *in* 5 *minutes.*

7 (a) RM3 000 – RM 280

= RM 2 720

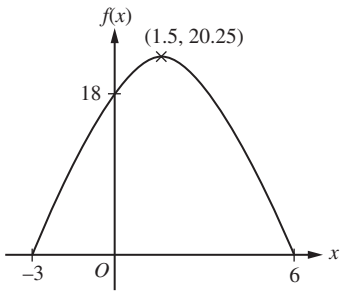
(b) (i) Jumlah insurans yang harus dibeli/*Amount of required insurance*

$= 0.7 \times \text{RM}480\,000$
$= \text{RM}336\,000$
Bayaran pampasan/*Amount of compensation*
$= \frac{\text{RM}220\,000}{\text{RM}336\,000} \times \text{RM}29\,000 - \text{RM}2\,500$
$= \text{RM}16\,488.10$

(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 $f(x) = -x^2 + 3x + 18$
$-x^2 + 3x + 18 = 0$
$x^2 - 3x - 18 = 0$
$(x + 3)(x - 6) = 0$
$x = -3$ atau/*or* $x = 6$
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).



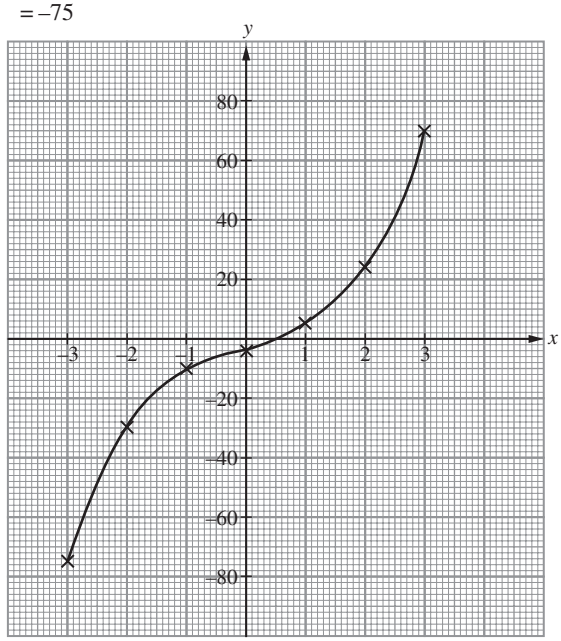
10 (a) $\sin 235.6'$
$= -\sin(235.6' - 180°)$
$= -\sin 55.6°$
$= -0.8251$

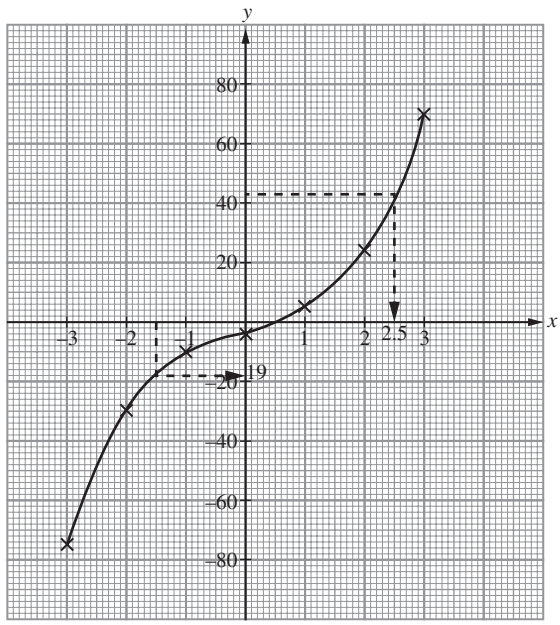
(b) (i) $\frac{360°}{12} = 30°$
$\theta = 360° - 30°$
$= 330°$

(ii) $\tan 330°$
$= -\tan 30°$
$= -0.5774$

Bahagian B

11 (a) $y = 2x^3 + 6x - 3$
Apabila/*When* $x = -3$,
$y = 2(-3)^3 + 6(-3) - 3$
$= -75$
Apabila/*When* $x = -1$,
$y = 2(-1)^3 + 6(-3) - 3$
$= -75$

(b)


(c)


(i) 2.5 (ii) –19

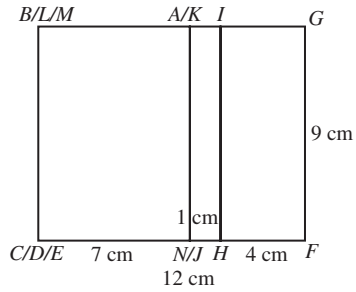
12 (a) $A = \begin{pmatrix} 5 & -2 \\ -1 & x \end{pmatrix}$
$5x - (-1)(-2) = 0$
$5x = 2$
$x = \frac{2}{5}$

(b) (i) $x + y = 360$ ...(1)
$x = 0.8y$
$x - 0.8y = 0$ ...(2)

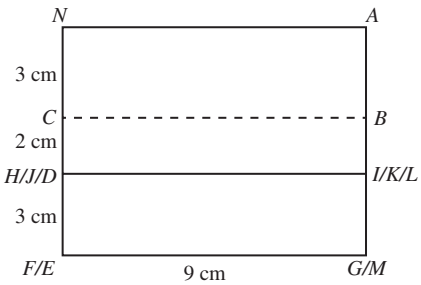
(ii) $\begin{pmatrix} 1 & 1 \\ 1 & -0.8 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 360 \\ 0 \end{pmatrix}$
$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{-0.8 - 1}\begin{pmatrix} -0.8 & -1 \\ -1 & 1 \end{pmatrix}\begin{pmatrix} 360 \\ 0 \end{pmatrix}$
$= \frac{1}{-1.8}\begin{pmatrix} -288 \\ -360 \end{pmatrix}$
$= \begin{pmatrix} 160 \\ 200 \end{pmatrix}$
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) 41 bermaksud terdapat 41 batang kelapa sawit dengan ketinggian 16.9 m atau kurang.
41 *means that 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)

(d) Pencong ke kiri
Skewed to the left

15 (a) (i) *Y* dan/*and* Z
(ii) *Y* dan/*and X* atau/*or Z* dan/*and X*

(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
= Jumlah pendapatan – Pengecualian cukai – Pelepasan cukai
= RM84 000 – RM2 700 – (RM9 000 + RM7 000 + RM3 000 + RM2 500)
= RM59 800
Chargeable income
= 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 × 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) $19x + 16y = 60.5$
$25x + 8y = 53.5$

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

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

$$= \frac{1}{-248}\begin{pmatrix} 8(60.5) - 16(53.5) \\ -25(60.5) + 19(53.5) \end{pmatrix}$$

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

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

Harga bagi sebiji oren dan epal ialah RM1.50 dan RM2.00 masing-masing.
The price of an orange and an apple is 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	
x	2.45	3.45	4.45	5.45	6.45	
x^2	6.0025	11.9025	19.8025	29.7025	41.6025	
Jenama *Y*, *f* ***Brand Y, f***	3	5	12	14	6	$\sum f = 40$
fx^2	18.0075	59.5125	237.63	415.835	249.615	$\sum fx^2 = 980.6$

Standard deviation/*Sisihan piawai*

$$= \sqrt{\frac{\sum fx^2}{\sum f} - x^2}$$

$$= \sqrt{\frac{980.6}{60} - 4.825^2}$$

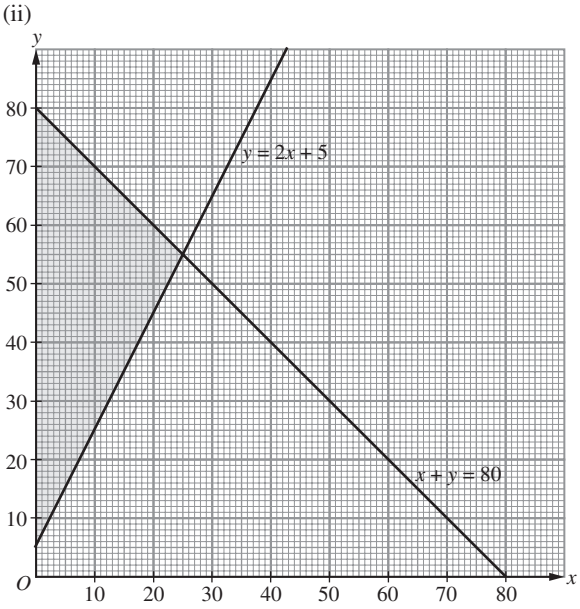
$$= \sqrt{1.234}$$

$$= 1.111$$

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

$y \geq 2x + 5$

(ii)



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

$= 61.39°$