

Penyelesaian Lengkap

SET 1

KERTAS 1

1 D $3(8-9) + \frac{1}{2} \div 2.5$
 $= 3(-1) + 0.2$
 $= -2.8$

2 C

3 B $\frac{4^0 \times 1^4}{2^2}$
 $= \frac{1}{2^2}$
 $= 2^{-2}$

4 A

5 C

6 D 4301_5
 $= 4(5^3) + 3(5^2) + 1(5^0)$
 $= 576$
 $576 \times 1.5 = 864$

Profit
 $= 864 - 576$
 $= 288$

Baki/Remainder

$$\begin{array}{r} 4 \overline{) 288} \\ \underline{4 72} \\ 4 \underline{18} \\ 4 \underline{4} \\ 4 \underline{1} \\ \underline{0} \end{array}$$

10200₄

7 B $0.1 \times \text{RM}480\,000 = \text{RM}48\,000$
 $\text{RM}48\,000 - \text{RM}5\,000 = \text{RM}43\,000$
 $\text{RM}43\,000 \div 12 = \text{RM}3\,583.33$

8 D Katakan kadar cukai pintu bagi bandar R ialah x .
 Let the property assessment tax rate for town R be x .
 $1 : 1.2 = 6 : x$

$$\frac{1}{1.2} = \frac{6}{x}$$

$$x = 7.2\%$$

Cukai pintu
 $= \text{Nilai tahunan} \times \text{Kadar cukai pintu}$
 $= \text{RM}800 \times 12 \times 7.2\%$
 $= \text{RM}691.20$

Property assessment tax
 $= \text{Annual value} \times \text{Property assessment tax rate}$
 $= \text{RM}800 \times 12 \times 7.2\%$
 $= \text{RM}691.20$

9 A $\text{RM}220 \times 0.45$
 $= \text{RM}99$

10 A $(2x - y)(3y - 2x)$
 $= 6xy - 4x^2 - 3y^2 + 2xy$
 $= -4x^2 - 3y^2 + 8xy$

11 C $V = \frac{4}{3}\pi r^3$

$$r^3 = \frac{3V}{4\pi}$$

$$r = \sqrt[3]{\frac{3V}{4\pi}}$$

12 A $OB = 2OA$
 Kecerunan/Gradient $= -\frac{OA}{OB}$

$$= -\frac{1}{2}$$

$$y = -\frac{x}{2} + c$$

Di/At (1, 2) $2 = -\frac{1}{2} + c$

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

$$y = -\frac{x}{2} + \frac{5}{2}$$

$$2y = -x + 5$$

13 A $y = 2x^2 - 6x - 8$
 $2x^2 - 6x - 8 = 0$
 $(2x + 2)(x - 4) = 0$
 $2x + 2 = 0$ atau/ or $x - 4 = 0$
 $x = -1$ atau/ or $x = 4$

14 A

15 C $y < \frac{3}{2}x + 18$
 Apabila/When $y = 0$,
 $\frac{3}{2}x + 18 = 0$
 $x = -12$
 Apabila/When $x = -8$,
 $y = \frac{3}{2}(-8) + 18$
 $x = 6$

16 D $(0, 90)(t, 35)$
 $0.5(90 + 35)t = 80$
 $125t = 160$
 $t = 1.28$

17 A $p \propto \frac{1}{\sqrt{q}}$
 $p = \frac{k}{\sqrt{q}}$
 $2 = \frac{k}{\sqrt{4}}$
 $k = 4$
 $p = \frac{4}{\sqrt{q}}$

18 B $I \propto rt$
 $I = krt$
 $500 = k(0.05)2$
 $k = 5\,000$

$$I = 5000rt$$

$$2800 = 5000r(5)$$

$$r = 0.112$$

19 B

$$t \propto \frac{V}{j^2}$$

$$t = \frac{kV}{j^2}$$

$$12 = \frac{300k}{15}$$

$$k = \frac{3}{5}$$

$$t = \frac{3V}{5j^2}$$

$$18 = \frac{3(2500)}{5j^2}$$

$$j^2 = 83.33$$

$$j = 9.13$$

20 C

$$A - [3 - 621] = [117126]$$

$$A = [117126] + [3 - 621]$$

$$A = [141147]$$

21 B

$$2p = 6$$

$$p = 3$$

$$5p - q = 7$$

$$q = 8$$

$$p + qr = pr - 2$$

$$3 + 8r = 3r - 2$$

$$5r = -5$$

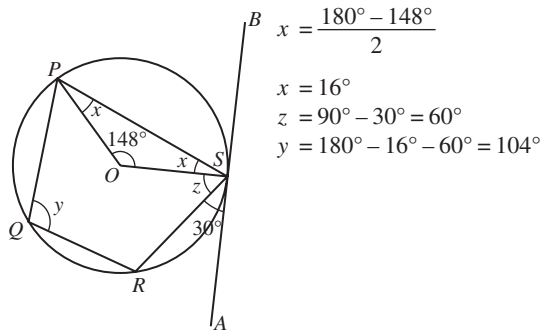
$$r = -1$$

22 A

23 B

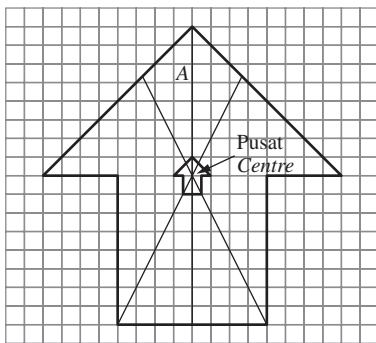
$$(7 \text{ cm} \times 2 \text{ cm} \times 9 \text{ cm}) + \frac{7 \text{ cm}(2 \text{ cm})(6 \text{ cm})}{3} = 154 \text{ cm}^3$$

24 B

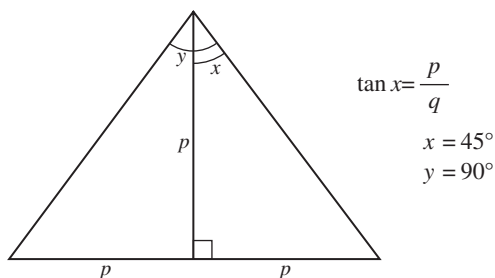


25 A

26 B



27 D



28 A

29 A

$$(a + b)^2 = a^2 + 2ab + b^2$$

30 B

31 C

32 D

$$n(X) + n(Y) - n(X + Y) + 3 = n(\xi)$$

$$28 + 66 - n(X \cap Y) + 3 = 90$$

$$n(X \cap Y) = 7$$

33 C

PQR

Masa/Time

$$= 5.4 + 4.7$$

$$= 10.1 \text{ jam/hours}$$

$$= 10 \text{ jam dan } 6 \text{ minit/10 hours and 6 minutes}$$

34 D

$$\frac{8.25}{2.38 + 8.25 + 6.79} \times 360^\circ = 170.49^\circ$$

35 A

Skor Score	6	7	8	9	10
Kekerapan Frequency	5	9	8	6	2
Kekerapan longgokan Cumulative frequency	5	14	22	28	30

$$Q_1 = \left(\frac{1}{4} \times 30\right)^{\text{th observation}}$$

$$= 7.5^{\text{th observation}}$$

$$= 7$$

$$Q_3 = \left(\frac{3}{4} \times 30\right)^{\text{th observation}}$$

$$= 22.5^{\text{th observation}}$$

$$= \frac{8+9}{4}$$

$$= 8.5$$

Julat antara kuartil/Interquartile range

$$= 8.5 - 7$$

$$= 1.5$$

Julat antara kuartil/Interquartile range

$$= 8.5 - 7$$

$$= 1.5$$

36 A

$$\frac{2+3}{2+3+5}$$

$$= \frac{5}{10}$$

$$= \frac{1}{2}$$

37 D

38 A

$$3y + y - 1 + y + 6 = 50$$

$$5y + 5 = 50$$

$$5y = 45$$

$$y = 9$$

Bilangan peserta yang mengambil bahagian dalam kedua-dua kuiz = 8

Number of participants who took part in both quizzes = 8

Kebarangkalian/Probability

$$= \frac{8}{50}$$

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

39 A

68 72 78 80 82 99

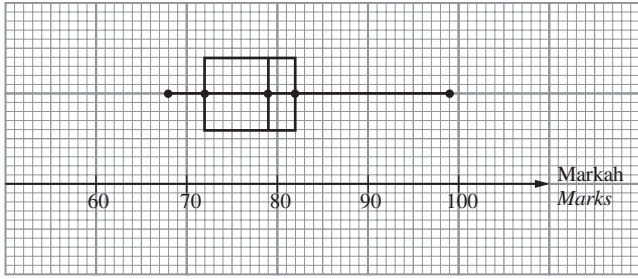
Median

$$= \frac{78 + 80}{2}$$

$$= 79$$

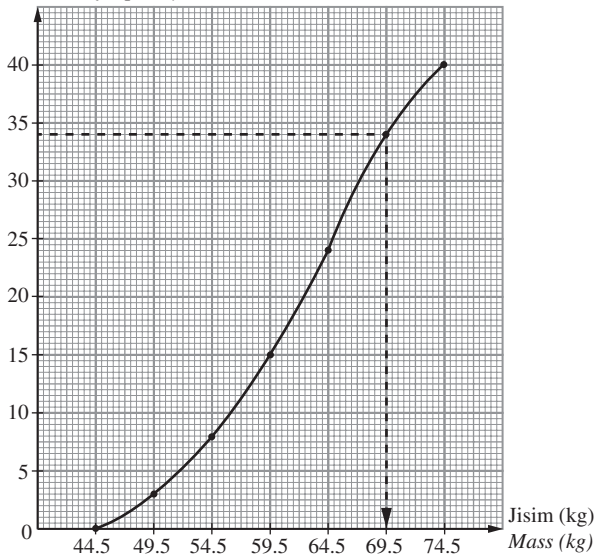
$$Q_1 = 72$$

$$Q_3 = 82$$



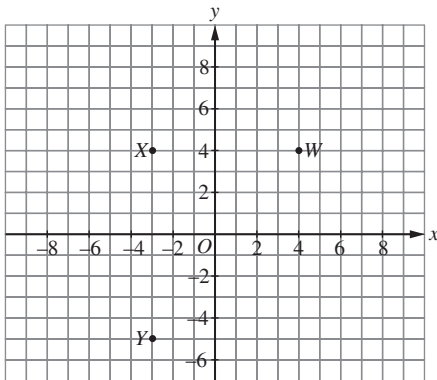
- 40 C 40% daripada jumlah kekerapan
 40% from the total frequencies
 $= 0.85 \times 40$
 $= 34$
 Daripada ogif/From the ogive, $P_{85} = 69.5$

Kekerapan longgokan
 Cumulative frequency

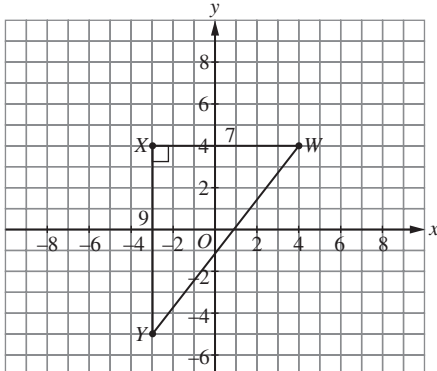


KERTAS 2
Bahagian A

1 (a)



(b)



Jarak/Distance

$$= \sqrt{9^2 + 7^2}$$

$$= 11.40 \text{ unit}$$

- 2 (a) Julat/Range
 $= 18 - 6$
 $= 12$
 (b) 6, 7, 7, 9, 10, 12, 12, 13, 15, 17, 18.
 Median = 12

$$Q_1 = 7$$

$$Q_3 = 15$$

Julat antara kuartil/Interquartile range
 $= 15 - 7$
 $= 8$

- 3 (a) Jika $12^0 \neq 1$, maka $12^0 x \neq x$
 If $12^0 \neq 1$, then $12^0 x \neq x$
 Benar/True

- (b) $3n^3 - 7$, di mana $n = 0, 1, 2, 3, \dots$
 $3n^3 - 7$, where $n = 0, 1, 2, 3, \dots$

- 4 (a) Boleh dicapai/Attainable

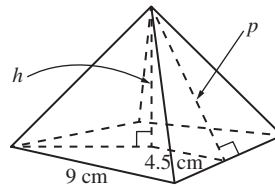
- (b) Aliran tunai = Jumlah pendapatan - Jumlah perbelanjaan - Simpanan
 Cash flow = Total income - Total expenses - Savings
 $= \text{RM } 7\,800 + \text{RM } 1\,600 - (\text{RM } 1\,500 + \text{RM } 600 + \text{RM } 900 + \text{RM } 200 + \text{RM } 300 + \text{RM } 250) - 0.2 \times \text{RM } 7\,800$
 $= \text{RM } 4\,090$

- 5 Kuasa dua sempuran antara 80 dan 100 ialah 81.
 Perfect square between 80 and 100 is 81.

$$AB = BC = 9 \text{ cm}$$

$$\text{Diberi isi padu geometri} = 270 \text{ cm}^3$$

$$\text{Given volume of geometry} = 270 \text{ cm}^3$$



$$\frac{1}{3} \times 81 \text{ cm}^2 \times h = 270$$

$$h = 10 \text{ cm}$$

$$p = \sqrt{4.5^2 + 10^2}$$

- 6 (a) Bayaran ditanggung oleh Encik Halim / Amount borne by Encik Halim

$$= (\text{RM } 48\,000 - \text{RM } 3\,500) \times 0.2 + \text{RM } 3\,500$$

$$= \text{RM } 12\,400$$

Bayaran pampasan diterima/Amount of compensation
 $= (\text{RM } 48\,000 - \text{RM } 3\,500) \times 0.8$
 $= \text{RM } 35\,600$

- (b) RM 0

- 7 Luas bagi heksagon sekata/Area of regular hexagon

$$= 0.5 \times (x + 3) \times (x + 2) \times 6$$

$$= 3(x^2 + 5x + 6)$$

$$2 \frac{6}{7} + 33 \frac{1}{7}$$

$$= 36$$

$$3(x^2 + 5x + 6) = 36$$

$$x^2 + 5x + 6 = 12$$

$$x^2 + 5x - 6 = 0$$

$$(x - 1)(x + 6) = 0$$

$$x = 1 \text{ atau/or } x = -6 \text{ (ditolak/rejected)}$$

$$\text{Maka /Thus, } x = 1$$

- 8 Katakan x dan y masing-masing mewakili harga sehelai tuala dan kain.

Let x and y represents the price of a piece of towel and a cloth respectively.

$$2(2x + 3y) = 213$$

$$4x + 6y = 213 \quad \dots(1)$$

$$3(3x + 2y) = 460.50$$

$$9x + 6y = 460.50 \quad \dots(2)$$

$$\begin{pmatrix} 4 & 6 \\ 9 & 6 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 213 \\ 460.5 \end{pmatrix}$$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{4(6) - 6(9)} \begin{pmatrix} 6 & -6 \\ -9 & 4 \end{pmatrix} \begin{pmatrix} 213 \\ 460.5 \end{pmatrix}$$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{-30} \begin{pmatrix} -1485 \\ -75 \end{pmatrix}$$

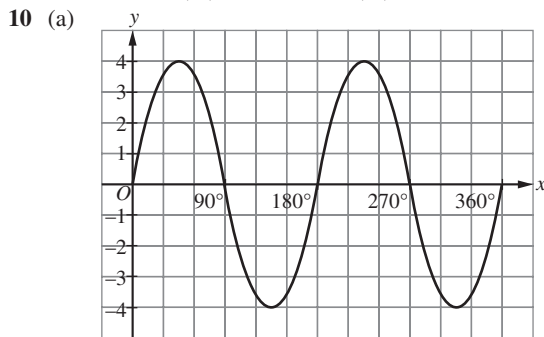
$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 49.5 \\ 2.5 \end{pmatrix}$$

Maka, harga sehelai tuala dan sehelai kain masing-masing ialah RM 49.50 dan RM 2.50.

Thus, the price of a piece of towel and a piece of cloth is RM 49.50 and RM 2.50 respectively.

- 9 (a) (i) (2, 5)
(ii) Q ialah putaran 90° lawan jam pada pusat (4, 3).
Q is a 90° anticlockwise rotation at centre (4, 3).
Atau/or
 Q ialah putaran 90° ikut jam pada pusat (0, 3).
Q is a 90° clockwise rotation at centre (0, 3).

(b) Translasi $\begin{pmatrix} 7 \\ 3 \end{pmatrix}$ / Translation $\begin{pmatrix} 7 \\ 3 \end{pmatrix}$



- (b) (i) Diberi/Given $QR = 18$ cm dan/and $TP : TS : PM : MS = 2 : 2 : 1 : 1$.

Maka/Thus, $MP = \frac{QR}{2} = \frac{18}{2} = 9$ cm

dan/and $\frac{TP}{PM} = \frac{2}{1}$

$TP = 2PM = 2(9) = 18$ cm

$TM = \sqrt{18^2 - 9^2}$
 $= 15.59$ cm

- (ii) $\tan x^\circ = -\tan(180^\circ - x^\circ)$

$= -\frac{TM}{MP}$

$= -\frac{15.59}{9}$

$= -1.732$

Bahagian B

- 11 (a) (i) $8y - 5x = 40$
 $8y = 5x + 40$
 $y = \frac{5}{8}x + 5$

Kecerunan/Gradient = $\frac{5}{8}$

- (ii) $y = \frac{5}{8}x + 5$

Di paksi- x /At x -axis, $y = 0$.

$\frac{5}{8}x + 5 = 0$
 $x = -8$

- (b) (i) Koordinat rumah Farid ialah (11, y) dan koordinat syarikatnya ialah (0, 4).
The coordinates of Farid's house is (11, y) and the coordinates of his company is (0, 4).

$$\sqrt{[0 - (-11)]^2 + (4 - y)^2} = 61$$

$$\sqrt{121 + (4 - y)^2} = 61$$

$$121 + (4 - y)^2 = 61^2$$

$$(4 - y)^2 = 3600$$

$$4 - y = \pm 60$$

$$y = 64$$

Koordinat rumah Farid ialah (-11, 64).

The coordinates of Farid's house is (-11, 64).

- (ii) (11, 64) (0, 4)

$y = \frac{64 - 4}{-11}x + 4$

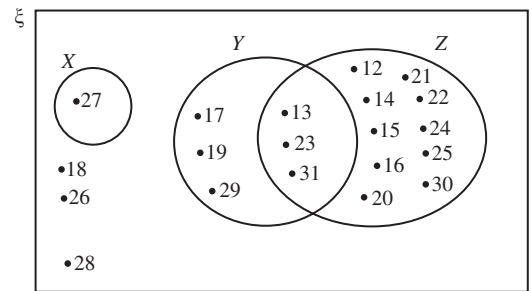
$y = \frac{60}{-11}x + 4$

- 12 (a) (i) $X = \{27\}$

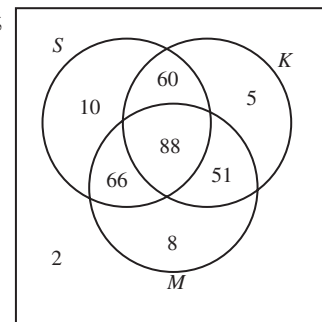
$Y = \{13, 17, 19, 23, 29, 31\}$

- (ii) $\xi = \{12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31\}$

$Z = \{12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 30, 31\}$



- (b) (i) ξ



- (ii) $66 + 60 + 51 + 88 = 265$

- (iii) $2 + 10 + 60 + 5 + 88 = 165$

- 13 (a) (i) $m = 330 - 7 - 30 - 65 - 98$

$m = 130$

Markah Mark	Kekerapan Longgokan Cumulative Frequency
41 - 50	7
51 - 60	37
61 - 70	102
71 - 80	232
81 - 90	330

- (ii)

Markah Mark	Kekerapan, f Frequency, f	x	x^2	fx^2
41 - 50	7	45.5	2070.25	14491.75
51 - 60	30	55.5	3080.25	92407.5
61 - 70	65	65.5	4290.25	278866.25
71 - 80	130	75.5	5700.25	741032.5
81 - 90	98	85.5	7310.25	716404.5
	$\Sigma f = 330$			$\Sigma fx^2 = 1843202.5$

Sishan piawai/Standard Deviation

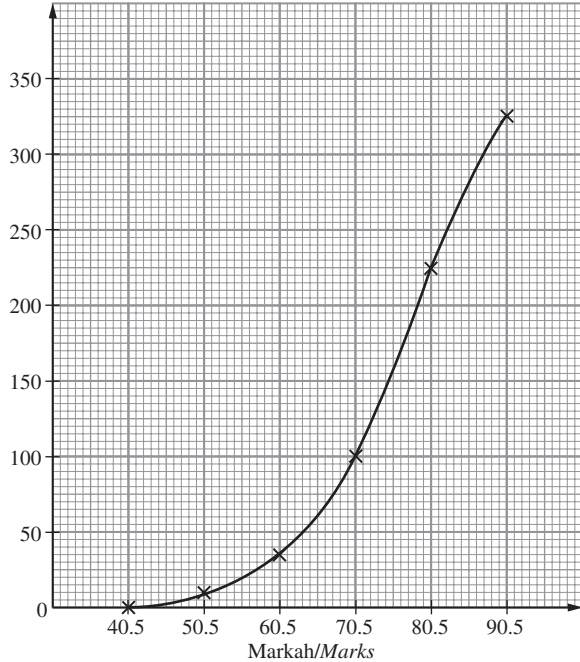
$$= \sqrt{\frac{\sum fx^2}{\sum f} - 74.05^2}$$

$$= \sqrt{\frac{1843202.5}{330} - 74.05^2}$$

$$= 10.10$$

(b) (i)

Kekerapan longgokan
Cumulative frequency

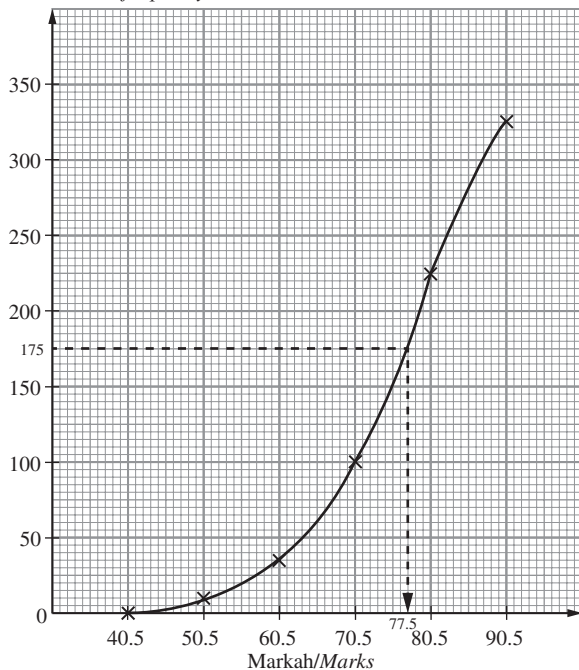


(ii) Kedudukan Q_2 / Position of Q_2

$$= \frac{330}{2}$$

$$= 165$$

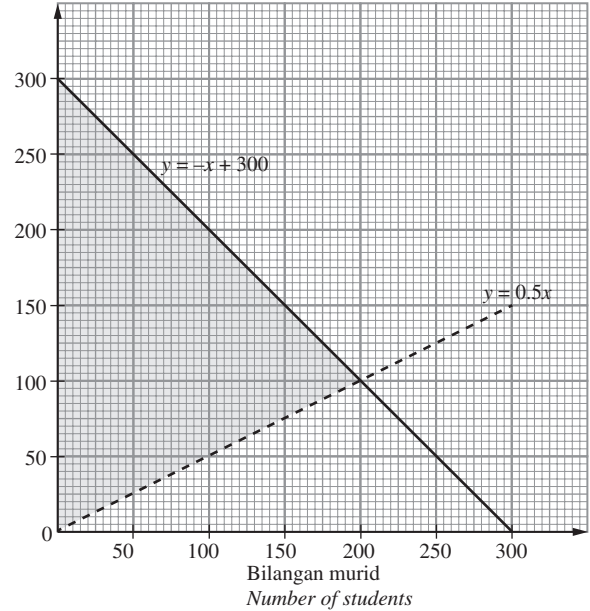
Kekerapan longgokan
Cumulative frequency



14 (a) $x + y \leq 300$
 $x < 2y$

(b) Graf Bilangan Orang Dewasa melawan Bilangan Murid
Graph of Number of Adults against Number of Students

Bilangan orang dewasa
Number of adults



(c) (i) 199

(ii) 150 orang murid dan 70 orang dewasa tidak dapat memuaskan situasi yang dibagi sebab (150, 70) tidak berada dalam kawasan berlorek.

150 students and 70 adults does not fulfill the condition given because (150, 70) is not within the shaded region.

15 (a) Jumlah pendapatan tahunan / Total annual income

$$= \text{RM}126\,800 - \text{RM}10\,500$$

$$= \text{RM}116\,300$$

Pendapatan bercukai = Jumlah pendapatan tahunan – Pengecualian cukai – Pelepasan cukai

Chargeable income = Total annual income – Tax exemption – Tax relief

$$= \text{RM}116\,300 - \text{RM}3\,000 - (\text{RM}9\,000 + \text{RM}5\,600 + \text{RM}2\,500)$$

$$= \text{RM}96\,200$$

(b) Cukai pendapatan yang perlu dibayar/Income tax payable

$$= \text{RM}3\,700 + 0.19(\text{RM}26\,200) - \text{RM}1\,200$$

$$= \text{RM}7\,478$$

(c) (i) Jumlah PCB/Total PCB

$$= \text{RM}700 \times 12 = \text{RM}8\,400$$

Encik Fouzi tidak perlu membuat bayaran tambahan cukai pendapatan. Lebihan potongan PCB sebanyak $\text{RM}8\,400 - \text{RM}7\,478 = \text{RM}922$ akan dipulangkan oleh Lembaga Hasil Dalam Negeri ke dalam akaun bank Encik Fouzi.

Encik Fouzi does not need to make any additional income tax payment. Excess deduction of PCB of $\text{RM}8\,400 - \text{RM}7\,478 = \text{RM}922$ will be refunded by the Inland Revenue Board to Encik Fouzi's bank account.

(ii) Rebat cukai sebanyak $\text{RM}400$ untuk pembayar cukai sekiranya pendapatan bercukai tidak melebihi $\text{RM}35\,000$.

Tax rebate of $\text{RM}400$ for taxpayer with chargeable income not exceeding $\text{RM}35\,000$.

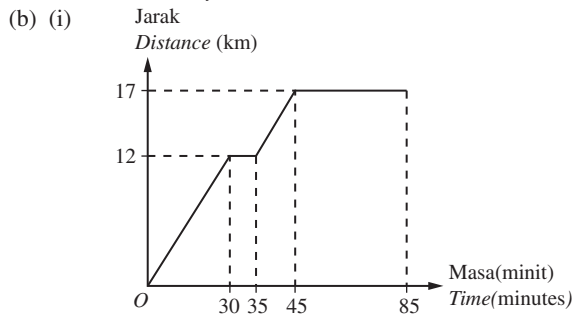
Bahagian C

16 (a) (i) $M : V = 22 : 11 = 2 : 1$

$$(ii) 100(1.5) + 3y = 420$$

$$3y = 420 - 150$$

$$y = 90$$



(ii) (35, 12) (45, 17)

Laju/Speed

$$= \frac{17 - 12}{45 - 35}$$

$$= 0.5 \text{ km min}^{-1}$$

(c) Purata/Average

$$\frac{40 + 45 + 45 + 45 + 50 + 50 + 50 + 50 +}{53 + 55 + 55 + 60 + 65 + 70}$$

$$= \frac{400}{14}$$

$$= 52.36$$

Perniagaan Kafe Salmah tidak mempunyai pretasi yang baik sebab bilangan purata pelanggan hanya 52.36 sehari, iaitu kurang daripada 55 orang pelanggan seperti yang diberi dalam pernyataan tersebut.

The business of Salmah Cafe is not performing well because the average number of customers per day is only 52.36, which is lower than 55 customers as given in the statement.

(d) RM5 : RM10 : RM100 = 20 : 4 : 1

$$1 \text{ bahagian/part} = \frac{200}{25}$$

$$= 8$$

$$\frac{1}{8} \times \frac{8}{200} = 0.005$$

$$0.005 \times 1200 = 6$$

Hanya 6 keping baucar RM100 diperlukan. Terdapat 8 keping baucar RM100 dalam Kotak P.

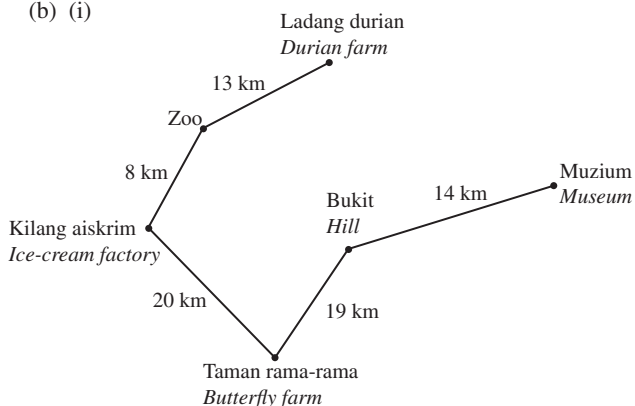
Maka, bilangan baucar RM100 dalam Kotak P adalah mencukupi.

Only 6 pieces of RM100 voucher is needed. There are 8 pieces of RM100 voucher in Box P. Thus, the number of RM100 vouchers in Box P is sufficient.

17 (a) (i) $(1.2 - \frac{2}{3})60 = 32 \text{ min}$

(ii) $0.5(100 + 60)(\frac{2}{3}) + 0.5(2 - 1.2)(60)$
 $= 77.33 \text{ km}$

(b) (i)



(ii) Laju seragam = $\frac{\text{Jumlah jarak}}{\text{Jumlah masa}}$

$$\text{Uniform speed} = \frac{\text{Total distance}}{\text{Total time}}$$

$$50 = \frac{14 \text{ km} + 19 \text{ km} + 20 \text{ km} + 8 \text{ km} + 13 \text{ km}}{t}$$

$$t = 1.48 \text{ jam/hours}$$

$$= 5328 \text{ s}$$

(c) Luas sekeping piza dari kedai A /Area of a slice of pizza from shop A

$$= \frac{90^\circ}{360^\circ} \times \frac{22}{7} \times 9^2$$

$$= 63.64 \text{ cm}^2$$

Harga 1 cm² /Price of 1 cm²

$$= \frac{\text{RM5}}{63.64 \text{ cm}^2}$$

$$= \text{RM}0.07857$$

$$\approx \text{RM}0.08$$

Luas sekeping piza dari kedai B /Area of a slice of pizza from shop B

$$= \frac{30^\circ}{360^\circ} \times \frac{22}{7} \times 9^2$$

$$= 26.19 \text{ cm}^2$$

Harga 1 cm² /Price of 1 cm²

$$= \frac{\text{RM1.80}}{26.19 \text{ cm}^2}$$

$$= \text{RM}0.06872$$

$$\approx \text{RM}0.07$$

Piza dari kedai B adalah lebih berbaloi sebab harga 1 cm² piza adalah RM0.07, iaitu lebih murah daripada 1 cm² piza dari kedai A yang berharga RM0.08.

Pizza from shop B is more worth it because the price of 1 cm² of pizza is RM0.07, which is cheaper than 1 cm² of pizza from shop A which cost RM0.08.

(d) Syarikat X /Company X

$$(\text{RM}500 \times 6) + 0.9(\text{RM}800) + 0.98[(\text{RM}500 \times 6) + 0.9(\text{RM}800)]$$

$$= \text{RM}3720 + \text{RM}3645.60$$

$$= \text{RM}7365.60$$

Syarikat Y /Company Y

$$[(\text{RM}520 \times 6) + \text{RM}300 + 0.75(\text{RM}420) + \text{RM}20] \times 2$$

$$= \text{RM}7510.00$$

Puan Linda dan suaminya sepatutnya memilih Syarikat X memandangkan harga pakejnya, RM7 365.60 adalah lebih berbaloi daripada pakej yang ditawarkan oleh Syarikat Y dengan harga RM7 510.

Puan Linda and her husband should choose Company X since the price of package, RM7 365.60 is more worth it compared to the package offered by Company Y with the price of RM7 510.