

# Penyelesaian Lengkap

## Kertas Model SPM

### Kertas 1

1

$$\begin{array}{r|l} 7 & 584 \\ \hline 7 & 83 \quad \dots 3 \\ \hline 7 & 11 \quad \dots 6 \\ \hline 7 & 1 \quad \dots 4 \\ \hline & 0 \quad \dots 1 \end{array}$$

$$\therefore 584 = 1463_7$$

Jawapan/Answer: B

2

$$\begin{array}{r} 3 \quad \overset{1}{1} \quad \overset{1}{2} \quad 5_6 \\ + 1 \quad 2 \quad 4 \quad 3_6 \\ \hline 4 \quad 4 \quad 1 \quad 2_6 \end{array}$$

Jawapan/Answer: C

$$\begin{aligned} 3 \quad 2 - 8(4 - 7) + \frac{2}{5} \times 4.25 &= 2 - 8(-3) + \left(\frac{2}{5} \times 4.25\right) \\ &= 2 + 24 + 1.7 \\ &= 27.7 \end{aligned}$$

Jawapan/Answer: C

$$\begin{aligned} 4 \quad \text{Jisim/Mass} &= 200\,000 \times 0.85 \text{ kg} \times 7 \text{ hari/days} \\ &= 1.19 \times 10^6 \text{ kg} \end{aligned}$$

Jawapan/Answer: D

5 Bentuk graf ialah  $\cap$ , maka  $a$  bernilai negatif.  
The shape of graph is  $\cap$ , therefore the value of  $a$  is negative.

Pintasan-y ialah 0, maka  $c = 0$

$y$ -intercept is 0, therefore  $c = 0$

Paksi simetri/Axis of symmetry,  $x = 4$

$$\begin{aligned} -\frac{b}{2(-2)} &= 4 \\ b &= 16 \end{aligned}$$

Jawapan/Answer: A

$$6 \quad 0.29964 \approx 0.0300$$

Jawapan/Answer: C

$$\begin{aligned} 7 \quad \text{Luas kadboard asal/Area of the original cardboard} &= (3x + 2)(x + 2) \\ &= 3x^2 + 8x + 4 \\ \text{Luas kadboard dikeluarkan/Area of the removed} & \\ \text{cardboard} &= 2x(x + 1) \\ &= 2x^2 + 2x \end{aligned}$$

Luas kadboard tertinggal

$$\begin{aligned} \text{Area of the remaining cardboard} &= 3x^2 + 8x + 4 - (2x^2 + 2x) \\ &= 3x^2 + 8x + 4 - 2x^2 - 2x \\ &= x^2 + 6x + 4 \end{aligned}$$

Jawapan/Answer: B

$$8 \quad P = \{1, 2, 4, 8\}, Q = \{2, 3, 5, 7, 11, 13\},$$

$$Q' = \{1, 4, 6, 8, 9, 10, 12, 14, 15\}$$

$$P \cap Q' = \{1, 4, 8\}$$

Jawapan/Answer: D

9 Kesimpulan palsu/False conclusion  $\rightarrow$  Lemah/Weak  $\rightarrow$  Tidak meyakinkan/Not cogent

Jawapan/Answer: B

$$10 \quad x = 180^\circ - 115^\circ$$

$$= 65^\circ$$

$$y = [(5 - 2) \times 180^\circ] - (60^\circ + 150^\circ + 90^\circ + 115^\circ)$$

$$= 540^\circ - 415^\circ$$

$$= 125^\circ$$

Jawapan/Answer: A

11 Sudut pedalaman/Interior angle

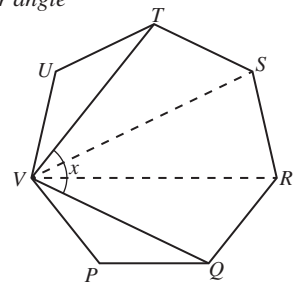
$$= \frac{(7 - 2) \times 180^\circ}{7}$$

$$= 128\frac{4}{7}^\circ$$

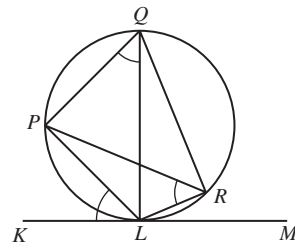
$$x = \frac{3}{5} \times 128\frac{4}{7}^\circ$$

$$= 77\frac{1}{7}^\circ$$

Jawapan/Answer: C



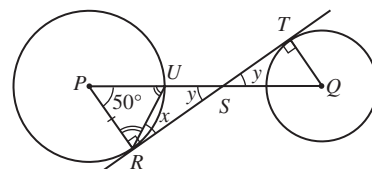
12



Sudut di seberang selang-seli yang sepadan  
Corresponding angle in the alternate segment  
 $\angle LRP$  dan/and  $\angle LQP$

Jawapan/Answer: C

13



$$\angle PRU = \frac{180^\circ - 50^\circ}{2}$$

$$= 65^\circ$$

$$x = 90^\circ - 65^\circ$$

$$= 25^\circ$$

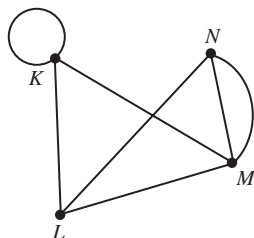
$$y = 180^\circ - 90^\circ - 50^\circ$$

$$= 40^\circ$$

$$x + y = 25^\circ + 40^\circ = 65^\circ$$

Jawapan/Answer: C

14



$$\begin{aligned} n(E) &= 7 \\ d(K) &= 4 \\ \sum d(V) &= 2n(E) \\ &= 14 \end{aligned}$$

Graf yang terbentuk **bukan** graf mudah kerana terdapat gelung dan berbilang tepi.

Jawapan/Answer: C

15 Nilai pulangan pelaburan/Return on Investment

$$= \frac{\text{RM}200 + \text{RM}(8\,800 - 8\,000)}{\text{RM}8\,000} \times 100\%$$

$$= 12.5\%$$

Jawapan/Answer: D

16 Caj kewangan/Finance charges

$$= \text{RM}4\,560 \times \frac{18}{100} \times \frac{15}{365}$$

$$= \text{RM}33.73$$

Caj bayaran lewat/Late charges

$$= \frac{1}{100} \times \text{RM}(4\,560 + 33.73)$$

$$= \text{RM}45.94$$

Jumlah perlu dibayar/Total payable

$$= \text{RM}(4\,560 + 33.73 + 45.94)$$

$$= \text{RM}4\,639.67$$

Jawapan/Answer: A

$$\begin{aligned} 17 \quad 7x - 6 > 14 - 3x & \quad \text{dan/and} \quad 2x - 1 \leq 7 \\ 7x + 3x > 14 + 6 & \quad 2x \leq 7 + 1 \\ 10x > 20 & \quad 2x \leq 8 \\ x > 2 & \quad x \leq 4 \end{aligned}$$



$$x = 3, 4$$

Jawapan/Answer: C

$$18 \quad 2rt - t = \frac{w}{3t}$$

$$3t(2rt - t) = w$$

$$3t^2(2r - 1) = w$$

$$t^2 = \frac{w}{3(2r - 1)}$$

$$t = \sqrt{\frac{w}{6r - 3}}$$

Jawapan/Answer: B

19 Luas kebun berbentuk segi empat tepat

$$\text{Area of rectangular farm} = 16x^2 + 32x$$

$$\begin{aligned} \text{Panjang/Length} &= \frac{16x^2 + 32x}{4x} \\ &= \frac{16x(x + 2)}{4x} \\ &= 4(x + 2) \end{aligned}$$

Luas kebun yang tinggal/Area of the remaining farm

$$= \frac{1}{2} \times 4(x + 2) \times 4x$$

$$= (8x^2 + 16x) \text{ m}^2$$

Jawapan/Answer: D

$$\begin{aligned} 20 \quad \frac{(pq^2)^6 \times pq^{-2}}{(p^6q^3)^{\frac{1}{3}}} &= \frac{p^6q^3 \times pq^{-2}}{p^2q^1} \\ &= p^{6+1-2}q^{3+(-2)-1} \\ &= p^5q^0 \\ &= p^5 \end{aligned}$$

Jawapan/Answer: A

$$\begin{aligned} 21 \quad \frac{ab + 3b}{a^2 - a} \div \frac{a^2 + a - 6}{a^2 - 1} &= \frac{b(a + 3)}{a(a - 1)} \times \frac{(a + 1)(a - 1)}{(a + 3)(a - 2)} \\ &= \frac{b}{a} \times \frac{(a + 1)}{(a - 2)} \\ &= \frac{b(a + 1)}{a(a - 2)} \end{aligned}$$

Jawapan/Answer: A

22 Fungsi kuadratik/Quadratic function

$$y = ax^2 + x + c$$

$$\text{Pintasan-}y = -5$$

$$\therefore n = 2, c = -5$$

Jawapan/Answer: C

$$23 \quad 5x + 12 = 50 - 18$$

$$5x + 12 = 32$$

Jawapan/Answer: C

24 Tempoh masa berehat/Period of time of rest

$$= (5 - 3) \text{ jam/hours}$$

$$= 2 \text{ jam/hours}$$

$$\text{Laju purata/Average speed} = \frac{420}{7} \text{ km j}^{-1}(\text{km h}^{-1})$$

$$= 60 \text{ km j}^{-1}(\text{km h}^{-1})$$

Jawapan/Answer: C

$$25 \quad (\cos/\cos q, \sin q) = (-0.9397, -0.3420)$$

$$\text{Sudut rujukan/Reference angle} = \cos^{-1}(\cos^{-1}) 0.9397$$

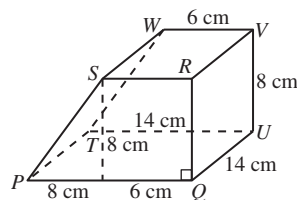
$$= 20^\circ$$

$$q = (180 + 20)^\circ$$

$$= 200^\circ$$

Jawapan/Answer: D

26



$$PS = \sqrt{8^2 + 8^2}$$

$$PS = 8\sqrt{2} \text{ cm}$$

Jumlah luas permukaan/Total surface area

$$= 2B + Ph$$

$$= 2\left[\frac{1}{2} \times (6 + 14) \times 8\right] + (14 + 8 + 6 + 8\sqrt{2}) \times 14$$

$$= 160 + (28 + 8\sqrt{2}) \times 14$$

$$= 710.39 \text{ cm}^2$$

Jawapan/Answer: A

$$27 \text{ Min/Mean} = \frac{(3 + 4 + 4 + 4 + 6 + 8 + 10 + 12 + 12)}{9}$$

$$= 7$$

Sisihan piawai/Standard deviation

$$= \sqrt{\frac{3^2 + 4^2 + 4^2 + 4^2 + 6^2 + 8^2 + 10^2 + 12^2 + 12^2}{9} - (7)^2}$$

$$= 3.399 \approx 3.4$$

Jawapan/Answer: C

$$28 \quad y = 4x + c$$

$$16 = 4(2) + c$$

$$c = 16 - 8$$

$$= 8$$

$$y = 4x + 8$$

pada paksi-x,  $y = 0$

$$4x + 8 = 0$$

$$4x = -8$$

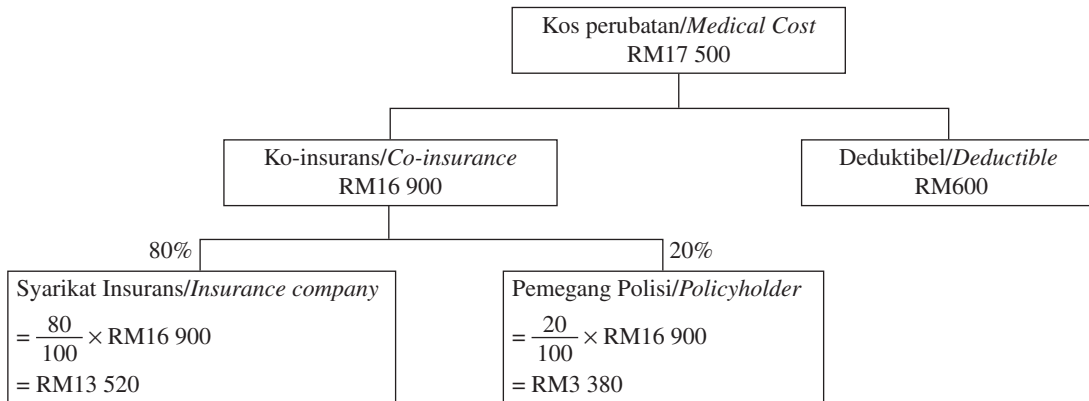
$$x = -2$$

Jawapan/Answer: D

29 Boleh diukur/Measureable

Jawapan/Answer: B

30



Jumlah tanggungan Khalid/Total borne by Khalid

$$= \text{RM}(600 + 3\,380)$$

$$= \text{RM}3\,980$$

Jawapan/Answer: B

31 Cukai pintu/Property assessment tax

Jawapan/Answer: D

32 Graf fungsi kosinus/Graph of cosine function

$$a = \frac{37.5 - 36.5}{2}$$

$$= 0.5$$

$$b = \frac{360}{24}$$

$$= 15$$

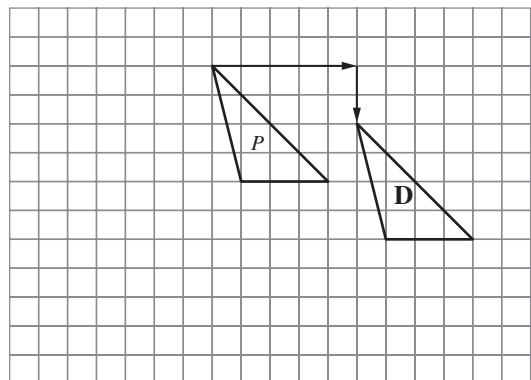
$$c = \frac{37.5 + 36.5}{2}$$

$$= 37$$

$$y = 0.5 \cos 15t + 37$$

Jawapan/Answer: A

33



Jawapan/Answer: D

$$34 \quad J \propto \frac{b}{h}$$

$$J = \frac{kb}{h}$$

$$k = \frac{Jh}{b}$$

Diberi/Given  $J = 2\,500$  apabila/when  $b = 1\,000$  dan/and  $h = 200$ ,

$$k = \frac{(2\,500)(200)}{1\,000} \\ = 500$$

Maka/therefore,  $J = \frac{500b}{h}$

Jawapan/Answer: **D**

$$35 \quad M = N$$

$$\begin{bmatrix} 3a & 5 \\ c-7 & 6 \end{bmatrix} = \begin{bmatrix} 12 & 2b-7 \\ 5-3c & 6 \end{bmatrix}$$

Bandingkan unsur yang sepadan/Compare the corresponding elements

$$m_{11} = n_{11} \quad m_{12} = n_{12} \quad m_{21} = n_{21} \\ 3a = 12 \quad 5 = 2b - 7 \quad c - 7 = 5 - 3c$$

$$a = \frac{12}{3} \quad 2b = 5 + 7 \quad c + 3c = 5 + 7$$

$$a = 4 \quad b = \frac{12}{2} \quad 4c = 12 \\ \quad \quad \quad = 6 \quad \quad \quad c = 3$$

$$a + b + c = 4 + 6 + 3 \\ = 13$$

Jawapan/Answer: **B**

$$36 \quad A = \begin{bmatrix} 2 & 4 \\ -1 & 3 \end{bmatrix}$$

$$A^{-1} = \frac{1}{2(3) - 4(-1)} \begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix} \\ = \frac{1}{10} \begin{bmatrix} 3 & -4 \\ 1 & 2 \end{bmatrix}$$

Jawapan/Answer: **C**

37	<b>Titik Tengah Midpoint (km)</b>	25.5	35.5	45.5	55.5	65.5	75.5
	<b>Kekerapan/Frequency</b>	2	3	5	9	6	5

$$\text{Min/Mean} = \frac{2(25.5) + 3(35.5) + 5(45.5) + 9(55.5) + 6(65.5) + 5(75.5)}{2 + 3 + 5 + 9 + 6 + 5}$$

$$= 55.17$$

Sisihan piawai/Standard deviation

$$= \sqrt{\frac{2(25.5^2) + 3(35.5^2) + 5(45.5^2) + 9(55.5^2) + 6(65.5^2) + 5(75.5^2)}{30} - (55.17)^2}$$

$$= \sqrt{\frac{97\,397.5}{30} - (55.17)^2}$$

$$= 14.24$$

Jawapan/Answer: **B**

38 Taburan simetri/Symmetric distribution

Jawapan/Answer: **B**

39 Kelas 5R mempunyai keputusan yang lebih konsisten kerana julat antara kuartil adalah lebih kecil.

*Class 5R has more consistent result because the interquartile range is smaller.*

Jawapan/Answer: **A**

	1	2	3	4	5	6
1		✓	✓		✓	
2	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓
4		✓	✓		✓	
5	✓	✓	✓	✓	✓	✓
6		✓	✓		✓	

$P$ (Sekurang-kurangnya satu nombor perdana/At least a prime number)

$$= \frac{27}{36}$$

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

Bilangan kali/Number of times

$$= \frac{3}{4} \times 300$$

$$= 225$$

Jawapan/Answer: A

**Kertas 2**

**Bahagian A**

- 1 Andaikan/Let  $x$  = umur Janet/Janet's age  
 $y$  = umur adik perempuan  
 younger sister's age

$$x + y = 10 \dots \textcircled{1}$$

$$x - y = 4 \dots \textcircled{2}$$

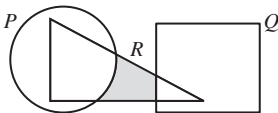
$$\textcircled{1} + \textcircled{2}: \quad 2x = 14$$

$$x = 7$$

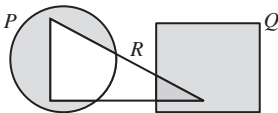
Daripada/From  $\textcircled{1}$ :  $7 + y = 10$   
 $y = 10 - 7$   
 $= 3$

Umur Janet/Janet's age = 7 tahun/years old  
 Umur adik perempuan/younger sister's age = 3 tahun/years old

- 2 (a)  $(P \cup Q)'$

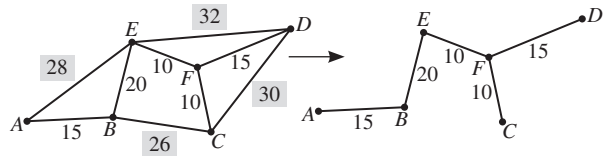


- (b)  $P \cap R' \cup Q$



- 3  $n(E) = n(V) - 1$   
 $= 6 - 1$   
 $= 5$

Bilangan tepi yang perlu dikeluarkan/Number of edges that need to be removed =  $9 - 5$   
 $= 4$



Jumlah nilai pemberat minimum/Minimum value of weight =  $15 + 20 + 10 + 10 + 15$   
 $= 70$

- 4 Premium asas polisi pihak ketiga, kebakaran dan kecurian

Basic premium of third party, fire and theft policy

$$= \frac{75}{100} \times \text{RM1 985.32}$$

$$= \text{RM1 488.99}$$

Premium kasar/Gross premium

$$= (100 - 25)\% \text{ daripada premium asas/of basic premium}$$

$$= \frac{75}{100} \times \text{RM1 488.99}$$

$$= \text{RM1 116.74}$$

- 5 (a) Kuartil ketiga/Third quartile = 15  
 (b) Julat antara kuartil/Interquartile range =  $15 - 5$   
 $= 10$

- 6 (a)  $AB = \sqrt{13^2 + 5^2}$   
 $= 12 \text{ cm}$   
 $BD = 13 - 12$   
 $= 1 \text{ cm}$

(b) (i)  $\sin x = \sin \angle ABC$   
 $= \frac{5}{13}$

(ii)  $\tan x = -\tan \angle ABC$   
 $= -\frac{5}{12}$

- 7 (a) Diberi/Given  $F \propto \frac{G}{H}$

$$F = k \left( \frac{G}{H} \right)$$

$$k = \frac{FH}{G}$$

$$= \frac{20(2)}{5}$$

$$= 8$$

$$F = \frac{8G}{H}$$

(b)  $6 = \frac{8G}{24}$

$$G = 6(3)$$

$$= 18$$

(c)  $F_{\text{baharu/new}} = \frac{8(1.3)G}{0.9H}$   
 $= \left( \frac{13}{9} \right) \left( \frac{8G}{H} \right)$   
 $= \frac{13}{9} F_{\text{asal/original}}$

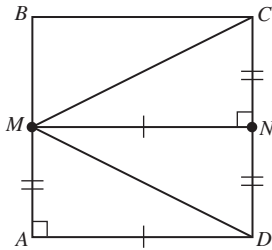
Peratusan perubahan/Percentage of changes in  $F$

$$= \frac{4}{9} \times 100\%$$

$$= 44\frac{4}{9}\%$$

$F$  bertambah/increases  $44\frac{4}{9}\%$ .

8 (a)



Didapati/It is known that  $AD = NM$

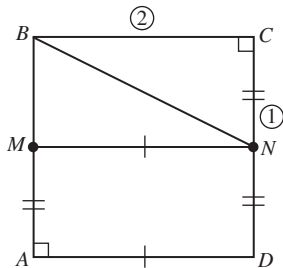
$$AM = NC$$

$$\angle MAD = \angle CNM$$

Segi tiga  $AMD$  dan  $NCM$  memenuhi sifat Sisi-Sudut-Sisi (SAS). Maka, segi tiga  $AMD$  dan  $NCM$  adalah kongruen.

*Triangles  $AMD$  and  $NCM$  satisfy the characteristics of Side-Angle-Side (SAS). Thus, triangles  $AMD$  and  $NCM$  are congruent.*

(b)



$$BN = \sqrt{1^2 + 2^2} = \sqrt{5}$$

$$\sin \angle CNB = \frac{2}{\sqrt{5}}$$

9 (a) Lelayang tidak mempunyai sepasang sisi bertentangan yang selari.

*Kites do not have a pair of opposite sides that are parallel.*

(b) Sah kerana mematuhi format hujah deduktif yang sah.

Tidak munasabah kerana kesimpulan adalah palsu.  
*Valid because it complies with the valid form of deductive argument.*

*Not sound because the conclusion is false.*

10 (a)  $M_{PR} = (1, 4)$

$$\left( \frac{a+5}{2}, \frac{1+7}{2} \right) = (1, 4)$$

$$a+5 = 1(2)$$

$$a = 2 - 5$$

$$= -3$$

(b)  $PR = \sqrt{[5 - (-3)]^2 + (7 - 1)^2}$

$$= \sqrt{8^2 + 6^2}$$

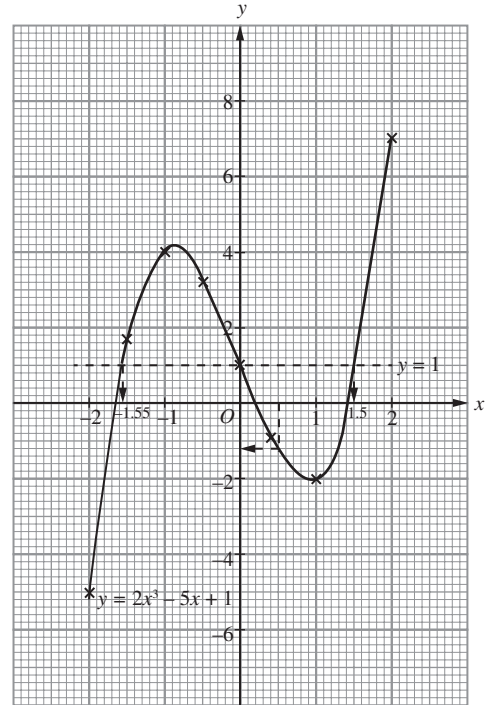
$$= 10 \text{ unit/units}$$

## Bahagian B

11 (a)  $y = 2x^3 - 5x + 1$

$x$	-2	-1.5	-1	-0.5	0	0.4	1	2
$y$	-5	1.75	4	3.25	1	-0.87	-2	7

(b)

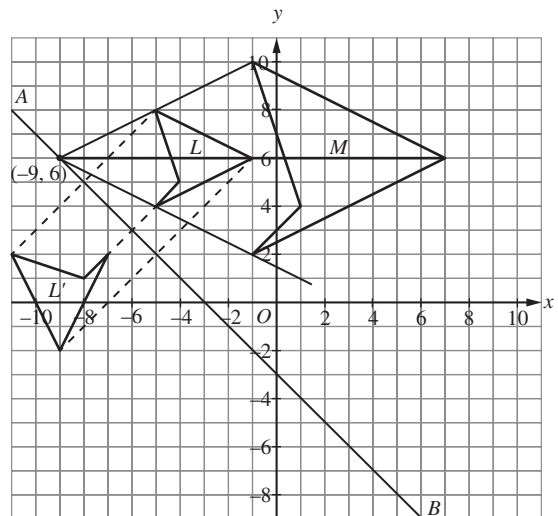


(c) (i)  $x = -1.55, 1.5$  (ii)  $y = -1.25$

12 (a) (i) Poligon mempunyai saiz dan bentuk yang sama.  
*The polygons have same size and shape.*

(ii) Poligon mempunyai bentuk yang sama dan saiz adalah berkadar.  
*Polygons have the same shape and their size are in proportion.*

(b), (c)



**P** = Pembesaran dengan faktor skala,  $k = \frac{1}{2}$  pada pusat  $(-9, 6)$

*Enlargement with a scale factor,  $k = \frac{1}{2}$  about the centre  $(-9, 6)$*

13 (a)

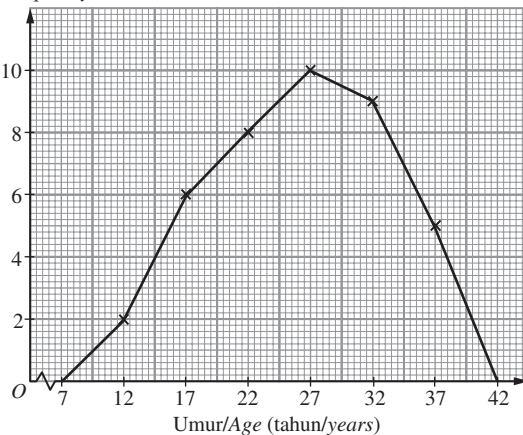
Umur (tahun) Age (years)	Titik Tengah Midpoint	Kekerapan Frequency
10 – 14	12	2
15 – 19	17	6
20 – 24	22	8
25 – 29	27	10
30 – 34	32	9
35 – 39	37	5

(b) 
$$\begin{aligned} \text{Min/Mean} &= \frac{(2 \times 12) + (6 \times 17) + (8 \times 22) + (10 \times 27) + (9 \times 32) + (5 \times 37)}{40} \\ &= \frac{1\,045}{40} \\ &= 26.125 \end{aligned}$$

Sisihan piawai/Standard deviation

$$\begin{aligned} &= \sqrt{\frac{(2 \times 12^2) + (6 \times 17^2) + (8 \times 22^2) + (10 \times 27^2) + (9 \times 32^2) + (5 \times 37^2)}{40} - [26.125]^2} \\ &= \sqrt{\frac{29\,245}{40} - [26.125]^2} \\ &= 6.972 \end{aligned}$$

(c) Kekerapan  
Frequency



14 (a)  $m(5) - 3(3) = 0$   
 $5m = 9$   
 $m = \frac{9}{5}$

(b) (i) Katakan/Let  $x$  = harga sekotak pensel warna/price of a box of colour pencils  
 $y$  = harga sebuah kamus/price of a dictionary

$$x + 3y = 150$$

$$3x + 5y = 270$$

$$\begin{bmatrix} 1 & 3 \\ 3 & 5 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 150 \\ 270 \end{bmatrix}$$

$$\begin{aligned} \begin{bmatrix} x \\ y \end{bmatrix} &= \frac{1}{1(5) - 3(3)} \begin{bmatrix} 5 & -3 \\ -3 & 1 \end{bmatrix} \begin{bmatrix} 150 \\ 270 \end{bmatrix} \\ &= \frac{1}{-4} \begin{bmatrix} 5(150) + (-3)(270) \\ (-3)(150) + 1(270) \end{bmatrix} \\ &= \begin{bmatrix} 15 \\ 45 \end{bmatrix} \end{aligned}$$

∴ Harga sekotak pensel warna/*Price of a box of colour pencils* = RM15

Harga sebuah kamus/*Price of a dictionary* = RM45

$$\begin{aligned} \text{(ii) Jumlah bayaran/Total payment} \\ &= [(100 - 10)\% \times \text{RM}15] + [(100 - 15)\% \times \text{RM}45] \\ &= \left(\frac{90}{100} \times \text{RM}15\right) + \left(\frac{85}{100} \times \text{RM}45\right) \\ &= \text{RM}51.75 \end{aligned}$$

$$\begin{aligned} \text{15 (a) Pendapatan bercukai/Chargeable income} &= \text{RM}(45\,800 - 500 - 12\,630) \\ &= \text{RM}32\,670 \end{aligned}$$

$$\begin{aligned} \text{Cukai pendapatan/Income tax} &= \text{RM}150 + (32\,670 - 20\,000) \times \frac{3}{100} \\ &= \text{RM}(150 + 380.10) \\ &= \text{RM}530.10 \end{aligned}$$

$$\begin{aligned} \text{Cukai pendapatan perlu dibayar/Income tax payable} &= \text{RM}(530.10 - 400) \\ &= \text{RM}130.10 \end{aligned}$$

$$\begin{aligned} \text{(b) Jumlah PCB telah dibayar/Total PCB paid} &= 12 \times \text{RM}90 \\ &= \text{RM}1\,080 \end{aligned}$$

Encik Kumar tidak perlu membayar lagi cukai pendapatan kepada pihak LHDN. Jumlah PCB melebihi daripada cukai yang perlu dibayar. Beliau akan terima bayaran balik sebanyak

$$\text{RM}(1\,080 - 130.10) = \text{RM}949.90$$

*Mr Kumar does not need to pay tax to IRB. The total PCB he paid is more than the income tax payable. So, he will be refunded of RM(1 080 - 130.10) = RM949.90*

$$\begin{aligned} \text{(c) Cukai jualan dan perkhidmatan/Sales and service tax} \\ \text{Cukai jalan/Road tax} \end{aligned}$$

### Bahagian C

$$\text{16 (a) (i) Aiman (2, 1); Mikael (6, 4)}$$

$$\begin{aligned} m &= \frac{4 - 1}{6 - 2} \\ &= \frac{3}{4} \end{aligned}$$

Gantikan (2, 1) dan  $m = \frac{3}{4}$  ke dalam  $y = mx + c$ .

Substitute (2, 1) and  $m = \frac{3}{4}$  into  $y = mx + c$ .

$$1 = \frac{3}{4}(2) + c$$

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

$$y = \frac{3}{4}x - \frac{1}{2}$$

$$\text{(ii) Jarak antara Aiman dengan pintu/Distance between Aiman and the entrance}$$

$$\begin{aligned} &= \sqrt{(2 - 0)^2 + (1 - 5)^2} \\ &= \sqrt{20} \text{ m} \end{aligned}$$

Jarak antara Mikael dengan pintu/Distance between Mikael and the entrance

$$\begin{aligned} &= \sqrt{(6 - 0)^2 + (4 - 5)^2} \\ &= \sqrt{37} \text{ m} \end{aligned}$$

∴ Aiman akan sampai di pintu terlebih dahulu kerana lebih dekat dengan pintu.

*Aiman will arrive at the entrance first because he is nearer to the door.*

$$\begin{aligned} \text{(b) (i) Katakan/Let } x &= \text{bilangan bungkus nasi lemak/number of packets of nasi lemak} \\ y &= \text{bilangan bungkus mi goreng/number of packets of fried noodles} \end{aligned}$$

$$\begin{aligned} \text{I } (4 - 1)x + (3 - 1)y &\geq 1\,000 \\ 3x + 2y &\geq 1\,000 \end{aligned}$$

$$\text{II } x + y \leq 500$$

$$\text{III } x \leq 2y$$



(ii)  $3x + 2y = 1\ 000$

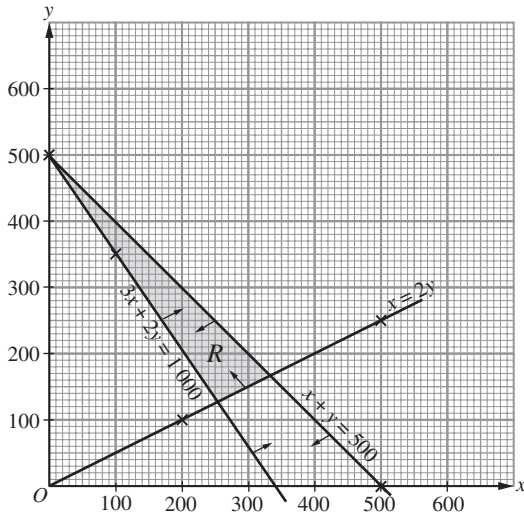
$x$	0	100
$y$	500	350

$x + y = 500$

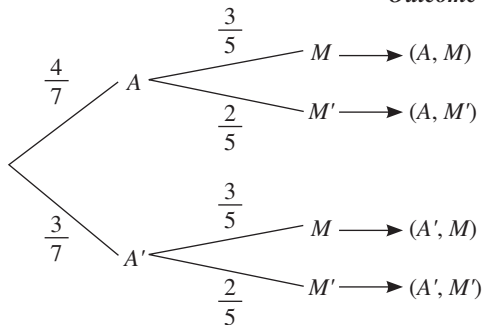
$x$	0	500
$y$	500	0

$x = 2y$

$x$	200	500
$y$	100	250



(c) **Aiman**                      **Mikael**                      **Kesudahan Outcome**



$A$  – Aiman hadir ke sekolah/Aiman goes to school

$A'$  – Aiman tidak hadir ke sekolah/Aiman is absent from school

$M$  – Mikael hadir ke sekolah/Mikael goes to school

$M'$  – Mikael tidak hadir ke sekolah/Mikael is absent from school

Kebarangkalian salah seorang tidak hadir ke sekolah

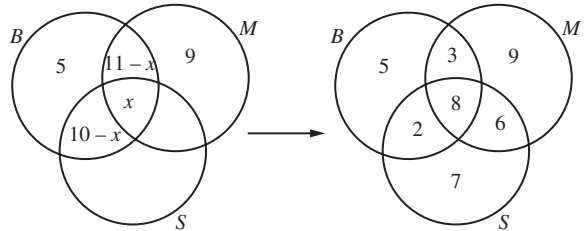
Probability that one of them is absent from the school

$= P(A, M') \text{ or } P(A', M)$

$= \frac{4}{7} \left( \frac{2}{5} \right) + \frac{3}{7} \left( \frac{3}{5} \right)$

$= \frac{17}{35}$

17 (a) (i)



$n(B) = 18$

$5 + 11 - x + x + 10 - x = 18$

$26 - x = 18$

$x = 26 - 18$

$= 8$

$n(M \cap S \text{ sahaja/only}) = 26 - 9 - 11$

$= 6$

$n(S \text{ sahaja/only}) = 23 - 10 - 6$

$= 7$

(ii)  $2 + 3 + 6 = 11$

(b) (i)  $\text{Min/Mean} = \frac{3\ 060}{40}$   
 $= 76.5$

(ii) Sisihan piawai/Standard deviation

$= \sqrt{\frac{234\ 258.1}{40} - 76.5^2}$

$= 2.05$

(iii) Min baharu/New mean  $= 76.5 + 2$   
 $= 78.5$

(c) Murid/Student A:

$2146_7 = 2(7^3) + 1(7^2) + 4(7) + 6(7^0)$

$= 769$

Min markah/Mean marks  $= 769 \div 10$

$= 76.9$

Murid/Student B:

$1011102_3$

$= 1(3^6) + 0(3^5) + 1(3^4) + 1(3^3) + 1(3^2) + 0(3) + 2(3^0)$

$= 848$

Min markah/Mean marks  $= 848 \div 10$

$= 84.8$

$\therefore$  Keputusan murid B lebih baik.

Student B's result is better.